



IEI Technology Corp.



MODEL:
iSignager 500A/510H

**Video Input/Output, Audio Input/Output,
S-Video, DVI, VGA, LAN, USB 2.0**

User Manual

Rev. 1.01 – 19 June, 2009





Revision

Date	Version	Changes
19 June, 2009	1.01	Modified supported image formats
19 May, 2009	1.00	Initial Release

Copyright

COPYRIGHT NOTICE

The information in this document is subject to change without prior notice in order to improve reliability, design and function and does not represent a commitment on the part of the manufacturer.

In no event will the manufacturer be liable for direct, indirect, special, incidental, or consequential damages arising out of the use or inability to use the product or documentation, even if advised of the possibility of such damages.

This document contains proprietary information protected by copyright. All rights are reserved. No part of this manual may be reproduced by any mechanical, electronic, or other means in any form without prior written permission of the manufacturer.

TRADEMARKS

All registered trademarks and product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective owners.

Table of Contents

1 INTRODUCTION.....	1
1.1 IMPORTANT NOTICE.....	2
1.2 iSIGNAGER 500A/510H OVERVIEW.....	2
1.3 iSIGNAGER 500A/510H MODEL VARIATIONS	3
1.4 FEATURES.....	3
1.5 SYSTEM OVERVIEW	4
1.5.1 <i>iSignager 500A/510H System Overview (Front View)</i>	4
1.5.2 <i>iSignager 500A System Overview (Rear View)</i>	4
1.5.3 <i>iSignager 510H System Overview (Rear View)</i>	5
1.6 PACKING LIST.....	5
1.7 BEFORE START	7
1.7.1 <i>Understand the Display Device</i>	7
1.7.2 <i>Choose Mass Storage Device - CF Card or HDD</i>	7
1.7.3 <i>The Concept of the iSignager AdDesign</i>	7
1.8 SUPPORTED FORMATS.....	9
2 INSTALLATION	10
2.1 HARDWARE INSTALLATION.....	11
2.1.1 <i>iSignager 500A/510H Set-Up</i>	11
2.1.2 <i>HDD Installation (Optional)</i>	11
2.1.3 <i>Mounting the iSignager 500A/510H with Wall Mount Kit</i>	14
2.2 iSIGNAGER 500A/510H AND DISPLAY DEVICE CONNECTION.....	16
2.2.1 <i>VGA Connection</i>	16
2.2.2 <i>DVI Connection (iSignager 500A Only)</i>	18
2.2.3 <i>HDMI Connection</i>	19
2.2.3.1 <i>iSignager 500A HDMI Connection</i>	19
2.2.3.2 <i>iSignager 510H HDMI Connection</i>	21
2.2.4 <i>Component (YPbPr) Connection</i>	22
2.2.5 <i>TV Connection</i>	24
2.2.6 <i>Supported Output Ports and Resolutions</i>	26

A VIDEO, AUDIO AND GRAPHIC FORMATS.....	27
A.1 OVERVIEW OF VIDEO FORMATS.....	28
A.1.1 MPEG-1.....	28
A.1.2 MPEG-2.....	28
A.1.3 MPEG-4.....	28
A.1.4 DivX® and XviD.....	28
A.1.5 DVD .ISO.....	29
A.1.6 DVD .VOB and .IFO.....	29
A.1.7 .TS.....	29
A.2 OVERVIEW OF AUDIO FORMATS.....	30
A.2.1 Dolby® Digital.....	30
A.2.2 MP3	30
A.2.3 AAC.....	30
A.2.4 WAV or WAVE.....	30
A.2.5 WMA	30
A.3 OVERVIEW OF GRAPHIC FORMATS.....	31
A.3.1 JPEG and JPG	31
A.3.2 BMP.....	31
A.3.3 GIF	31
A.3.4 PNG.....	31
A.4 STANDARD DEFINITION (SD) INTRODUCTION.....	32
A.4.1 SDTV.....	32
A.5 HIGH DEFINITION (HD) INTRODUCTION	32
A.5.1 Notation	33
A.5.2 Progressive Scan vs. Interlaced Scan.....	33
B CHECK AND MODIFY THE PLAYER STATUS BY SERIAL PORT	34
B.1 CHECK AND MODIFY THE ISIGNAGER 500A PLAYER STATUS BY SERIAL PORT	35
B.1.1 Successful Message—LAN Connection	42
B.1.2 Successful Message—Wifi Connection	43
B.2 CHECKING CONNECTION	45
B.2.1 Check the LED.....	45
B.2.2 Ping in DOS Environment or Hyper Terminal Session	45
B.2.2.1 PC.....	45
B.2.2.2 iSignager 500A/510H.....	45

<i>B.2.3 Check the Status in the Player Manager</i>	46
B.3 iSIGNAGER 500AWL/510HWL NETWORK BEHAVIOR	46
C HAZARDOUS MATERIALS DISCLOSURE	47
C.1 HAZARDOUS MATERIAL DISCLOSURE TABLE FOR IPB PRODUCTS CERTIFIED AS ROHS COMPLIANT UNDER 2002/95/EC WITHOUT MERCURY	48

Chapter

1

Introduction

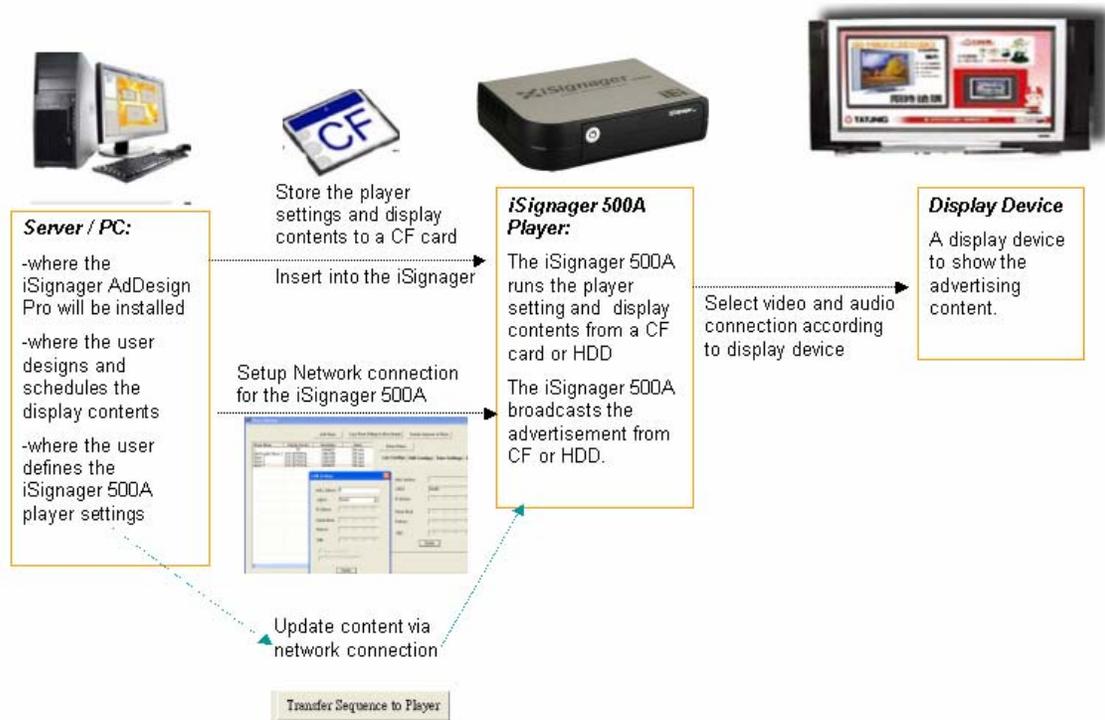
1.1 Important Notice



This iSignager 500A/510H user manual only contains the hardware information. For the detailed information of the iSignager AdDesign software that came with the iSignager 500A/510H, please refer to the iSignager AdDesign user manual.

1.2 iSignager 500A/510H Overview

The iSignager 500A/510H is a multimedia device developed by IEI to design and display dynamic, visual and audio contents for a target audience. The user can update the display sources anytime anywhere. With the iSignager 500A/510H, an advertising station is easily established and promotes the product and services in the simplest way.



iSignager 500A/510H

1.3 iSignager 500A/510H Model Variations

Four IEI iSignager 500A/510H models are available. The models are listed in **Table 1-1**.

Model	Network	Output Ports	USB
iSignager 500A	LAN	DVI, VGA, TV, YPbPr, LVDS*	USB 2.0
iSignager 500AWL	LAN & Wireless LAN	DVI, VGA, TV, YPbPr, LVDS*	USB 2.0
iSignager 510H	LAN	VGA, TV, YPbPr, HDMI, LVDS*	USB 2.0
iSignager 510HWL	LAN & Wireless LAN	VGA, TV, YPbPr, HDMI, LVDS*	USB 2.0

*Customization: Need a special cable to connect the LVDS interface on the motherboard

Table 1-1: iSignager 500A/510H Model Variations

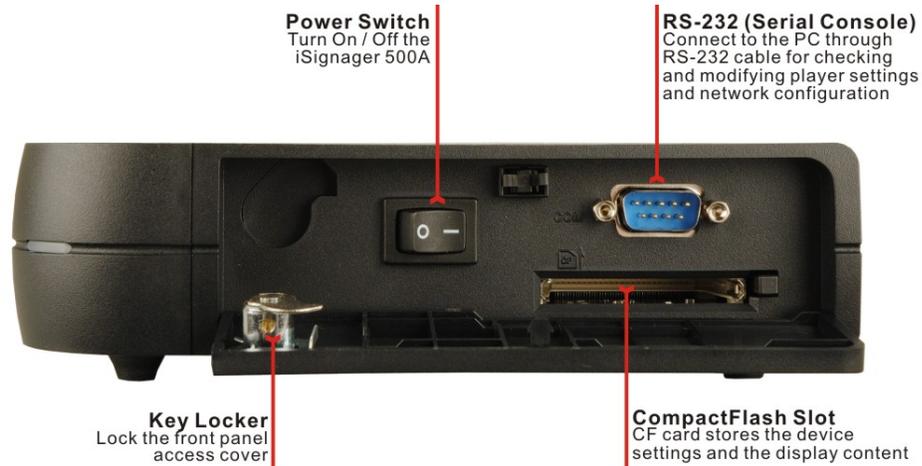
1.4 Features

Some of the iSignager 500A/510H features are listed below.

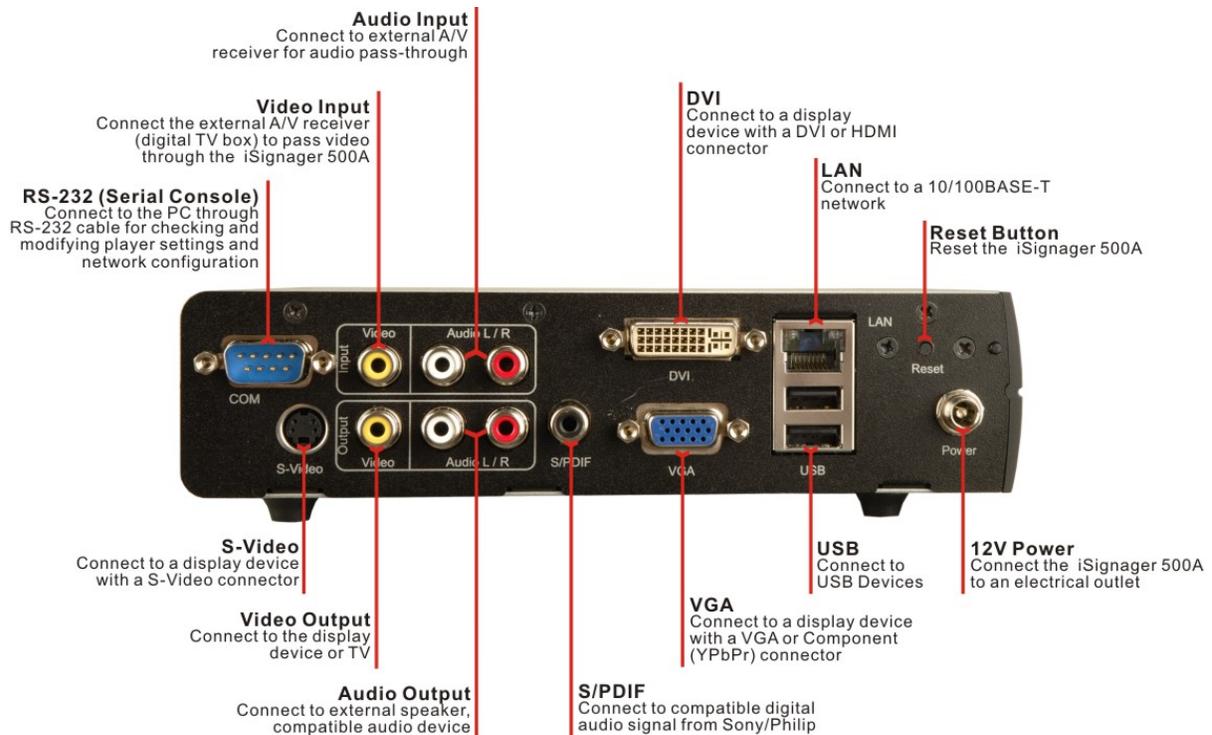
- Multi-zone layout supports full spectrum of media formats
- Flexible schedule management showing customized contents
- Real time A/V input to display video from DVD player, NTSC/ PAL TV signal, Digital Video Box, Cable TV within on large screen
- RISC-based structure allows low power consumption and provides superiors reliability
- High-resolution displays, HDTV, to produce the best advertising results
- Contents can be stored in CompactFlash® disk, USB 2.0 flash drive or IDE/ USB hard disk drive
- Network management function supports remote download contents to the iSignager 500A/510H

1.5 System Overview

1.5.1 iSignager 500A/510H System Overview (Front View)

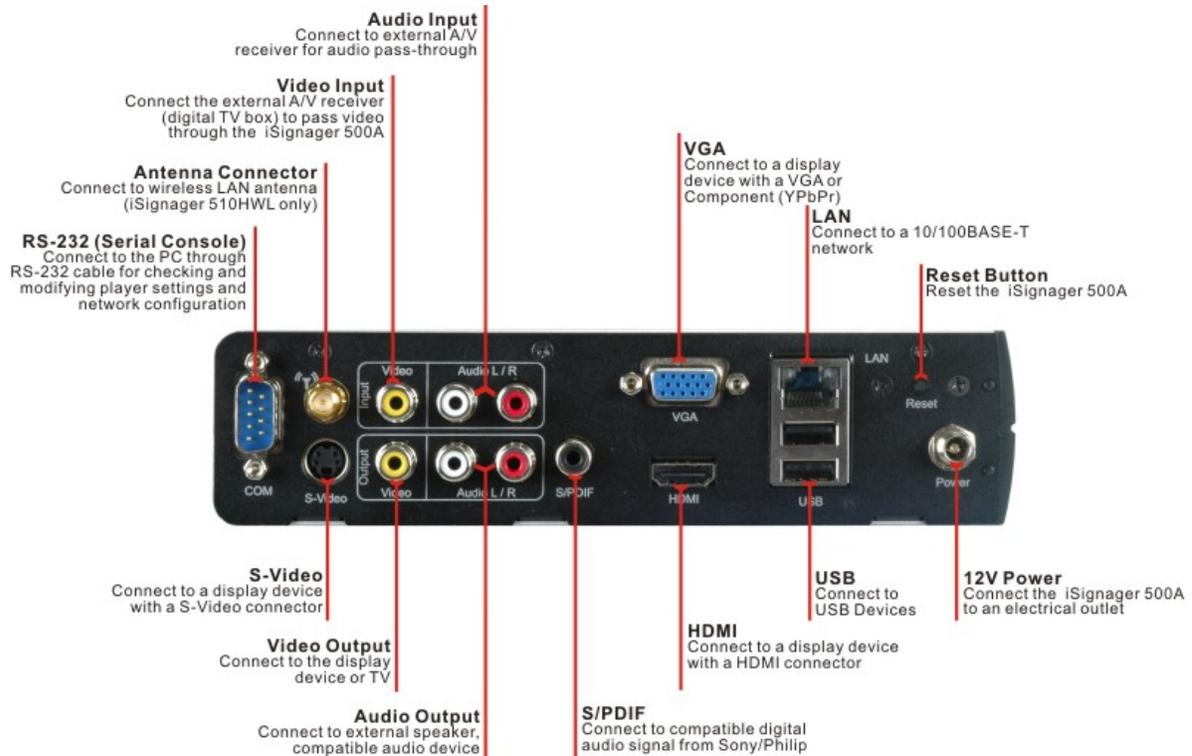


1.5.2 iSignager 500A System Overview (Rear View)



iSignager 500A/510H

1.5.3 iSignager 510H System Overview (Rear View)



1.6 Packing List

The iSignager 500A/510H is shipped with the following components. Should there be any missing parts or defects in the package, please contact IEI immediately.

Quantity	Item	Image
1	iSignager 500A/510H	
1	1GB demo CompactFlash® card	

1	Companion CD	
1	Wall-mount kit	
1	AC power adaptor	
1	Power cord	
1	AV cable	
1	IDE cable	
4	Rubber foot pads	
1	Screw set	
2	Keys	
1	VGA to Component (YPbPr) cable (optional)	
1	DVI to HDMI cable (optional)	

1.7 Before Start

1.7.1 Understand the Display Device

Various types of display devices are supported including,

- CRT TV
- LCD monitors
- LCD TV
- HDTV

Different devices support different input interfaces and resolutions. Please refer to the user guide of the display device for detailed information.

The iSignager 500A/510H has various output interfaces including AV, S-Video, VGA, and DVI, but **only one output port can be used to deliver content at a time except choosing DVI/VGA Dual mode**. When choosing **DVI/VGA Dual** in the device settings in the player manager of the iSignager AdDesign, the program with same content and resolution can be displayed via DVI and VGA ports.

The exact output destination and output resolution has to be configured in the iSignager AdDesign. Please refer to **Section 2.1.3** to see the connection between an iSignager 500A/510H and a display device.

1.7.2 Choose Mass Storage Device - CF Card or HDD

Before using the iSignager 500A/510H, choose either a CF card or a HDD as the mass storage device for the iSignager 500A/510H. Device settings and display content are saved in the mass storage device. The mass storage device (CF card or HDD) has to be formatted as **FAT 32** format for initial use.

1.7.3 The Concept of the iSignager AdDesign

The iSignager AdDesign is the software the user can use to design display contents for the iSignager 500A/510H. Two essential components of the display content are the layout and the sequence. The following descriptions help the user to understand the concepts of the iSignager AdDesign. For the detailed information of the iSignager AdDesign, please refer to the iSignager AdDesign user manual.

Layout

To design a layout is to arrange what and where the content is displayed. A layout can contain several display items, including:

- Pictures
- Crawling banners
- Rolling banners
- A video
- A digital clock

Multiple files can be added into each display item.

Sequence

A sequence decides the broadcast sequence and the broadcast time of the created layout. After creating a layout, the layout must be added into a sequence. A sequence can include several layouts.

Player

A player refers to an iSignager 500A/510H. Before transferring the sequence to the iSignager 500A/510H for broadcast, a new player must be added and configured correctly in the Player Manager of the iSignager AdDesign. More than one player can be added in the Player Manager of the iSignager AdDesign.

Export Layout/Sequence

To copy the individual layout or sequence to another directory or computer, please use the “Export Layout/Sequence” function to export the file.

iSignager 500A/510H

1.8 Supported Formats

The iSignager 500A/510H supports many kinds of video, audio and graphic formats. The supported formats are listed in **Table 1-2**. Detailed descriptions of each format can be found in **Appendix A**.



NOTE:

The video in .mpe format can be run by iSignager 500A/510H, but the video length information will not be available.

iSignager 500A/510H Supported Formats	
Video	MPEG-1 VCD format (1.15 Mbps CBR) [.mpg, .mpe, .mpeg, .dat, .m1v] SD and HD MPEG-2 up to 15 Mbps [.mpg, .mpe, .mpeg, .m2v, .vob, .vro] SD and HD MPEG-4 (OpenDivX, XviD, RMP4) [.avi, .divx, .mp4] AVI audio codec: MP3, AC3, PCM, WMA
Audio	MPEG-1 Layer 1 (MP1) [.mp1, .mpa] MPEG-1 Layer 2 (MP2) [.mp2] MPEG-1 Layer 3 (MP3) [.mp3] Microsoft® PCM Wave (WAV) [.wav] Advanced Audio Coding (AAC, ADIF, ADTS) [.aac] Apple MPEG-4 AAC Audio (M4A) [.m4a] Microsoft® Windows® Media Audio version 1 and version 2 (WMA) [.wma, .asf] Microsoft® Windows® Media Audio Professional (WMA Pro) [.asf]
Graphic	16/24/32-bit color BMP, PNG, JPEG

Table 1-2: iSignager 500A/510H Supported Formats



Chapter

2

Installation

iSignager 500A/510H

2.1 Hardware Installation

2.1.1 iSignager 500A/510H Set-Up

To set up the iSignager 500A/510H (the player), follow the steps below:

- Step 1:** Connect the player to the display device. Please refer to **Section 2.1.3** for connection of various kinds of video and audio output signals. To be able to configure various display devices, please install the iSignager AdDesign first and add a new player in the player setting.
- Step 2:** Connect audio and video input to the player (if available).
- Step 3:** To transfer player settings or sequences to the player via the network, connect the iSignager 500A/510H to the same LAN of the PC via an Ethernet cable (optional step).
- Step 4:** Connect the player to the power supply.



NOTE:

After the hardware installation, a formatted CF card/HDD with display content and player settings generated by iSignager AdDesign has to be installed in the iSignager 500A/510H for broadcasting.

2.1.2 HDD Installation (Optional)

A hard drive disk (HDD) can be used as the storage device on the iSignager 500A/510H instead of the CF card. The HDD provides larger data storage capacity. Before installing the HDD, please install the iSignager AdDesign first and design the layout and sequence with the iSignager AdDesign (see iSignager AdDesign user manual). After designing the display content in the iSignager AdDesign, follow the steps below to install IDE HDD.

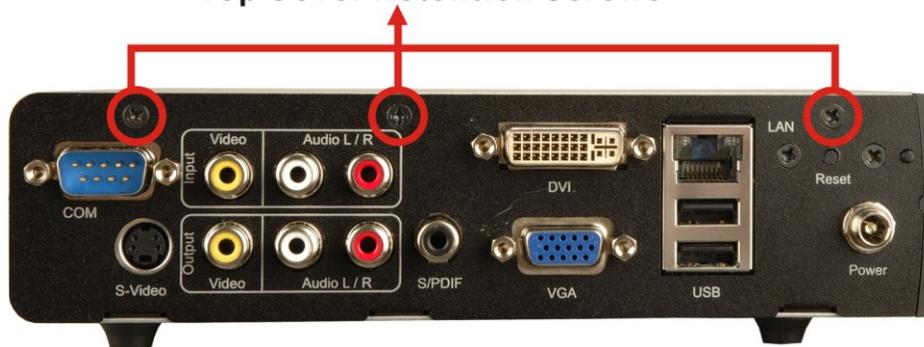
Step 1: Format the HDD as FAT 32 format. Connect the HDD to a computer with an IDE-USB cable and format the HDD.



Step 2: Generate a playable disk to the HDD. Follow the steps described in **Generate a Playable Disk Section** to copy the player settings and the sequence to the HDD. Disconnect the HDD from the computer.

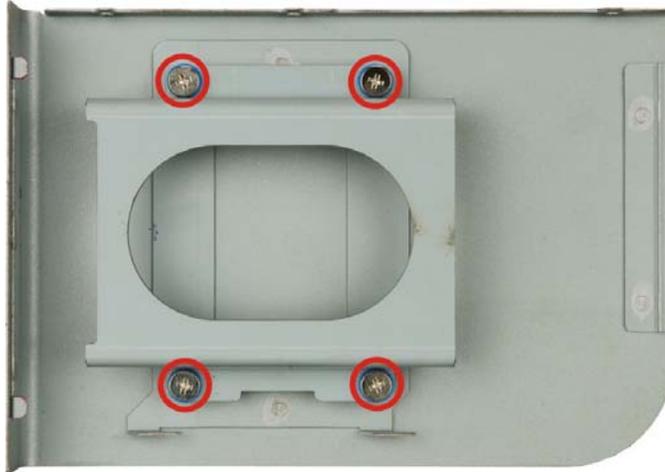
Step 3: Remove the top cover of the iSignager 500A/510H. The top cover is secured to the chassis with three retention screws on the rear panel. Remove the three retention screws, slide the top cover and lift the top cover off the iSignager 500A/510H.

Top Cover Retention Screws



Step 4: Remove the HDD bracket. The HDD bracket is secured to the iSignager 500A/510H with four retention screws on the backside of the top cover. Remove the four retention screws and lift the bracket off the iSignager 500A/510H top cover.

iSignager 500A/510H



Step 5: Attach the HDD bracket to the HDD. To do this, align the four retention screw holes on both sides of the HDD bracket with the retention screw holes on the sides of the HDD. Insert four retention screws into the HDD bracket. Connect the IDE cable to the rear of the HDD.



NOTE:

The IDE connector of the iSignager 500A/510H is located on the right side. To connect the HDD with the IDE connector properly, please be aware of the direction of the HDD installation.

Step 6: Install the HDD into the iSignager 500A/510H. Align the retention screw holes in the HDD bracket with the retention screw holes on the top cover. Insert the four previously removed retention screws.

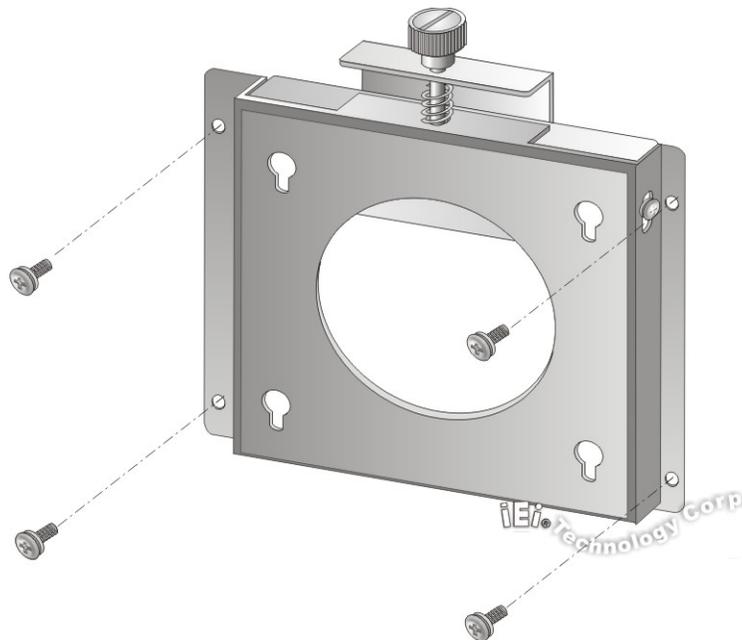
Step 7: Connect the HDD to the IDE connector on the motherboard with the IDE cable.

Step 8: Replace the top cover.

2.1.3 Mounting the iSignager 500A/510H with Wall Mount Kit

To mount the iSignager 500A/510H onto a wall using the VESA MIS-D 75 wall mount kit, please follow the steps below.

- Step 1:** Select the location on the wall for the wall-mounting bracket.
- Step 2:** Carefully mark the locations of the four bracket screw holes on the wall.
- Step 3:** Drill four pilot holes at the marked locations on the wall for the bracket retention screws.
- Step 4:** Align the wall-mounting bracket screw holes with the pilot holes.
- Step 5:** Secure the mounting-bracket to the wall by inserting the retention screws into the four pilot holes and tightening them.



- Step 6:** Insert the four monitor mounting screws provided in the wall mounting kit into the four screw holes on the bottom panel of the system and tighten until the screw shank is secured against the bottom panel.
- Step 1:** Align the mounting screws on the iSignager 500A/510H bottom panel with the mounting holes on the bracket.

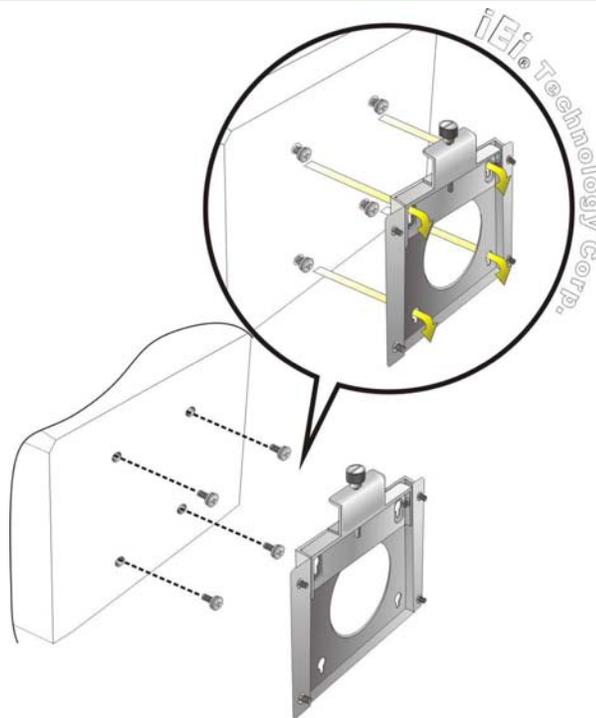
iSignager 500A/510H

Step 2: Carefully insert the screws through the holes and gently pull the monitor downwards until the iSignager 500A/510H rests securely in the slotted holes. Ensure that all four of the mounting screws fit snugly into their respective slotted holes.

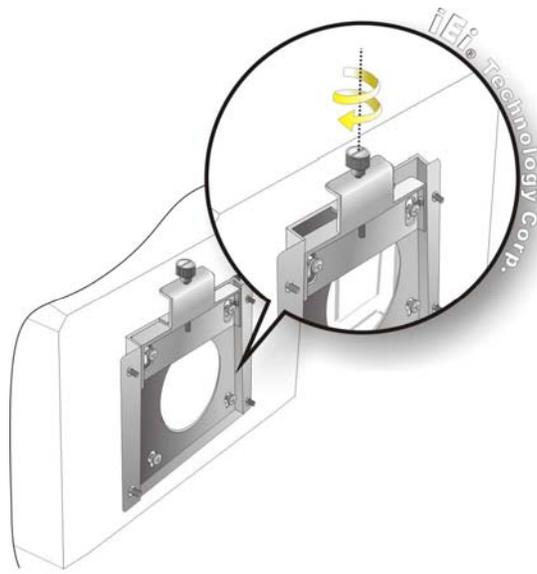


NOTE:

In the diagram below the bracket is already installed on the wall.



Step 7: Secure the embedded system by fastening the retention screw of the wall-mounting bracket.



2.2 iSignager 500A/510H and Display Device Connection

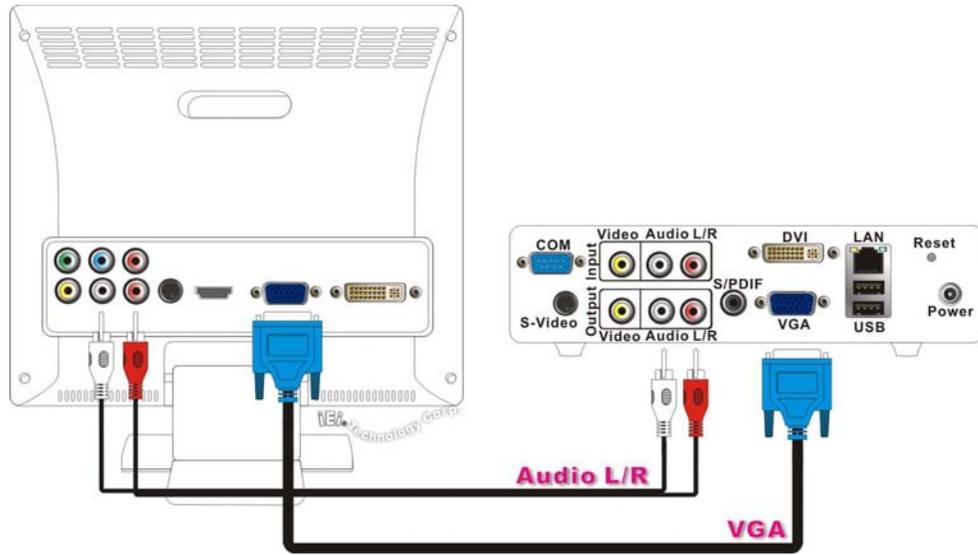
2.2.1 VGA Connection

To connect the iSignager 500A/510H to a VGA display device, follow the instructions below.

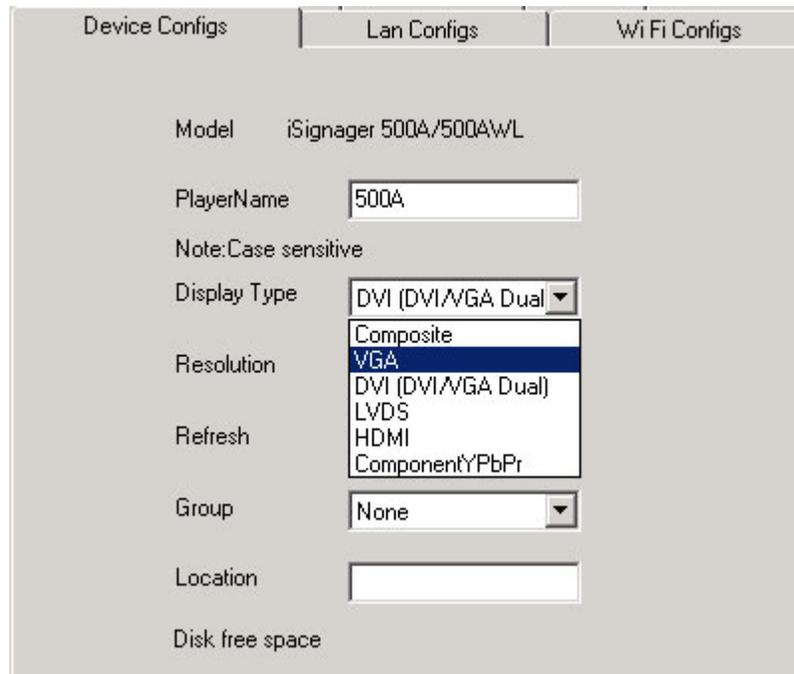
Step 3: Connect the VGA cable to the VGA port on the rear panel of the iSignager 500A/510H. Connect the other side of the VGA cable to the display device.

Step 4: Connect the composite audio cable to the audio output ports on the rear panel of the iSignager 500A/510H. Connect the other side of the composite audio cable to the composite audio input ports of the display device.

iSignager 500A/510H



Step 5: Set the display device to **VGA** or **DVI (DVI/VGA Dual)** in the Device Configs of the player settings in the iSignager AdMinistrator-Lite.

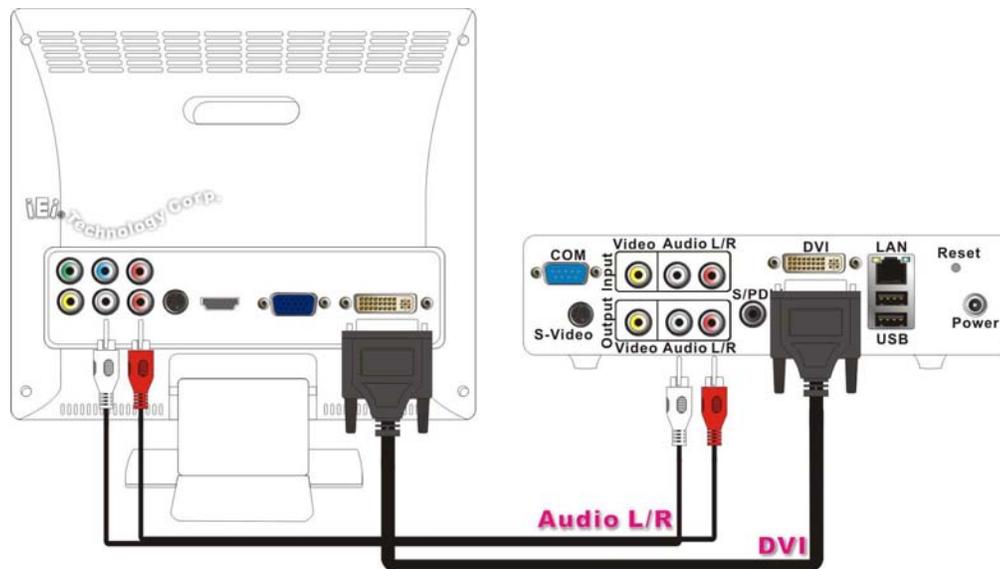


2.2.2 DVI Connection (iSignager 500A Only)

To connect the iSignager 500A to a DVI display device, follow the instructions below.

Step 1: Connect the DVI cable to the DVI port on the rear panel of the iSignager 500A. Connect the other side of the DVI cable to the display device.

Step 2: Connect the composite audio cable to the audio output ports on the rear panel of the iSignager 500A. Connect the other side of the composite audio cable to the composite audio input ports of the display device.



Step 3: Set the display device to **DVI (DVI/VGA Dual)** in the Device Configs of the player settings in the iSignager AdAdministrator-Lite.

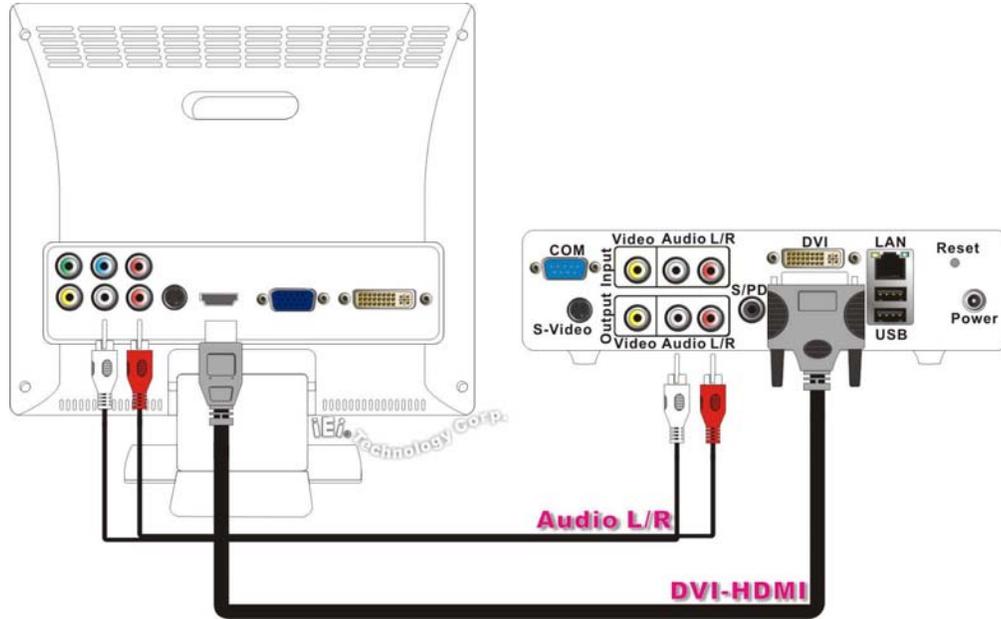
Device Configs	Lan Configs	Wi Fi Configs
Model	iSignager 500A/500AWL	
PlayerName	<input type="text" value="500A"/>	
Note:	Case sensitive	
Display Type	<input type="text" value="DVI (DVI/VGA Dual)"/> <ul style="list-style-type: none"> Composite VGA DVI (DVI/VGA Dual) LVDS HDMI ComponentYPbPr 	
Resolution		
Refresh		
Group	<input type="text" value="None"/>	
Location	<input type="text"/>	
Disk free space		

2.2.3 HDMI Connection

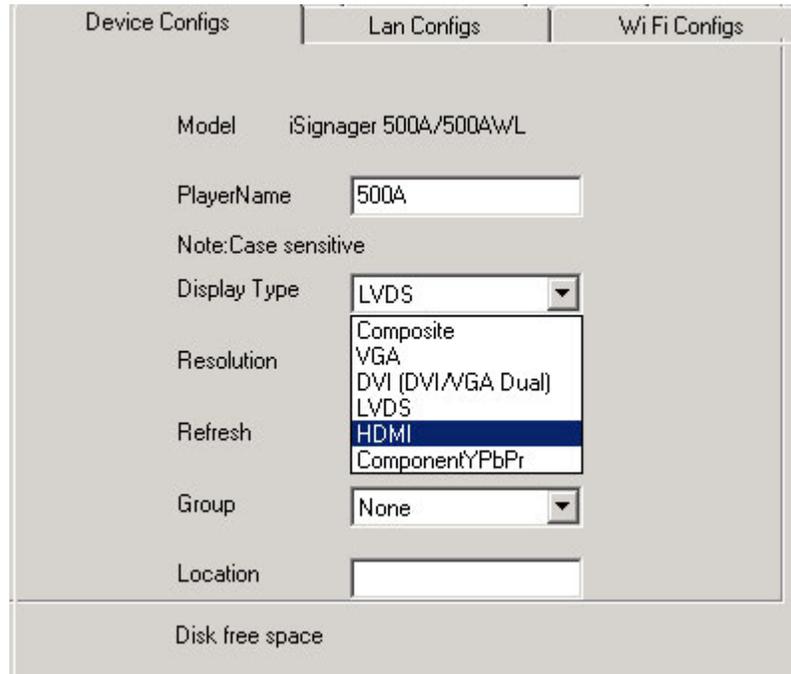
2.2.3.1 iSignager 500A HDMI Connection

To connect the iSignager 500A to a HDMI display device, follow the instructions below.

- Step 1:** Connect the DVI-HDMI cable (optional item from IEI) to the DVI port on the rear panel of the iSignager 500A. Connect the other side of the DVI-HDMI cable to the HDMI port of the display device.
- Step 2:** Connect the composite audio cable to the audio output ports on the rear panel of the iSignager 500A. Connect the other side of the composite audio cable to the composite audio input ports of the display device.



Step 3: Set the display device to **HDMI** in the device settings in the Device Configs of the player settings in the iSignager AdMinistrator-Lite.

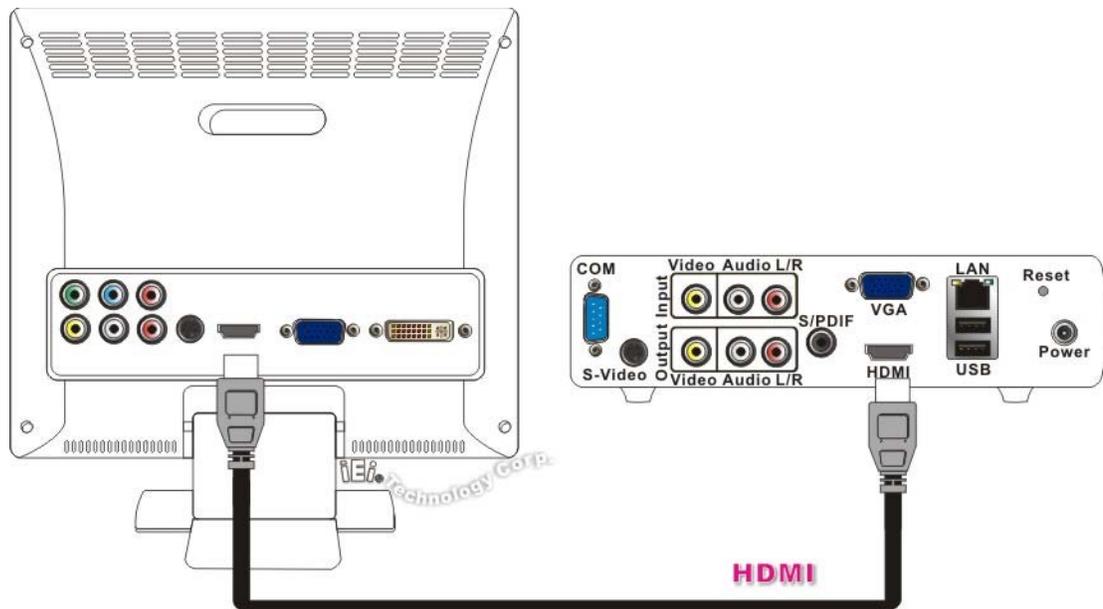


iSignager 500A/510H

2.2.3.2 iSignager 510H HDMI Connection

To connect the iSignager 510H to a HDMI display device, follow the instructions below.

Step 1: Connect the HDMI cable to the HDMI port on the rear panel of the iSignager 510H. Connect the other side of the HDMI cable to the HDMI port of the display device.



Step 2: Set the display device to **HDMI** in the Device Configs of the player settings in the iSignager AdMinistrator-Lite.

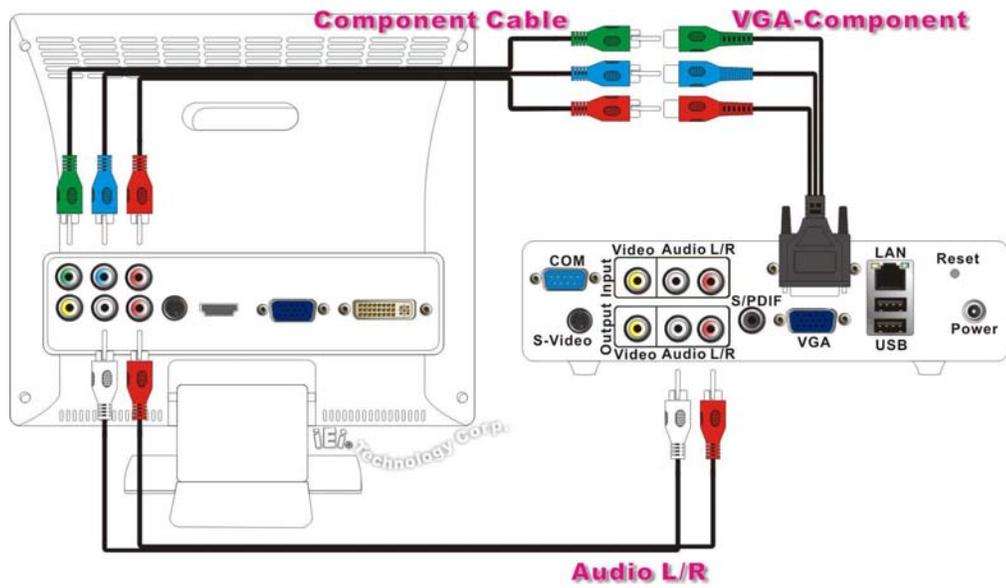
Device Configs	Lan Configs	Wi Fi Configs
Model	iSignager 510H	
PlayerName	<input type="text" value="510H"/>	
Note:	Case sensitive	
Display Type	<input type="text" value="HDMI"/>	
Resolution	<div style="border: 1px solid black; padding: 2px;"> Composite VGA LVDS HDMI ComponentYPbPr </div>	
Refresh		
Group	<input type="text" value="None"/>	
Location	<input type="text"/>	
Disk free space		

2.2.4 Component (YPbPr) Connection

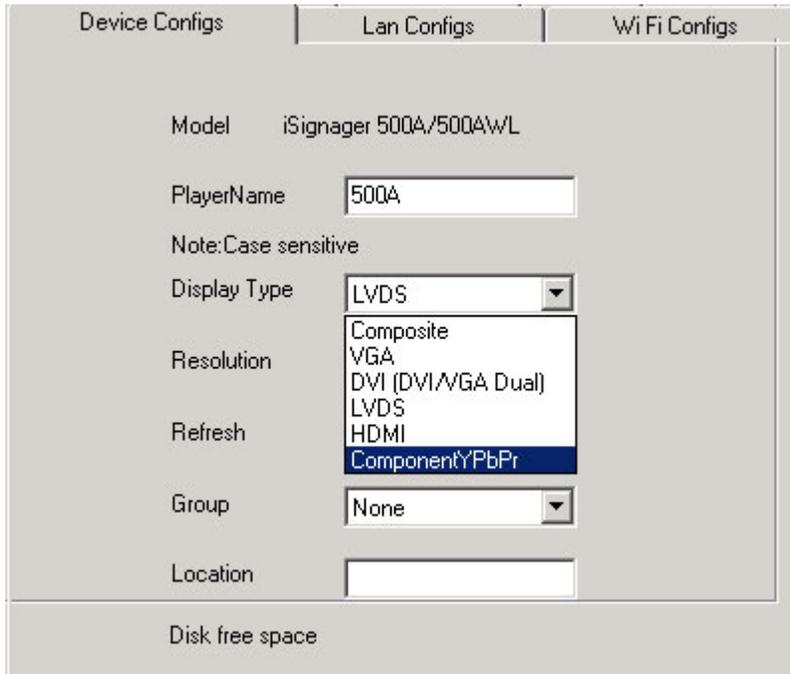
To connect the iSignager 500A/510H to a display device with component ports, follow the instructions below.

- Step 1:** Connect the VGA-component cable (optional item from IEI) to the VGA port on the rear panel of the iSignager 500A/510H. Connect the component extension cable to the VGA-Component cable.
- Step 2:** Connect the other side of the component extension cable to the component (YPbPr) port of the display device.
- Step 3:** Connect the composite audio cable to the audio output ports on the rear panel of the iSignager 500A/510H. Connect the other side of the composite audio cable to the composite audio input ports of the display device.

iSignager 500A/510H



Step 4: Set the display device to **ComponentYPbPr** in the Device Configs of the player settings in the iSignager AdMinistrator-Lite.

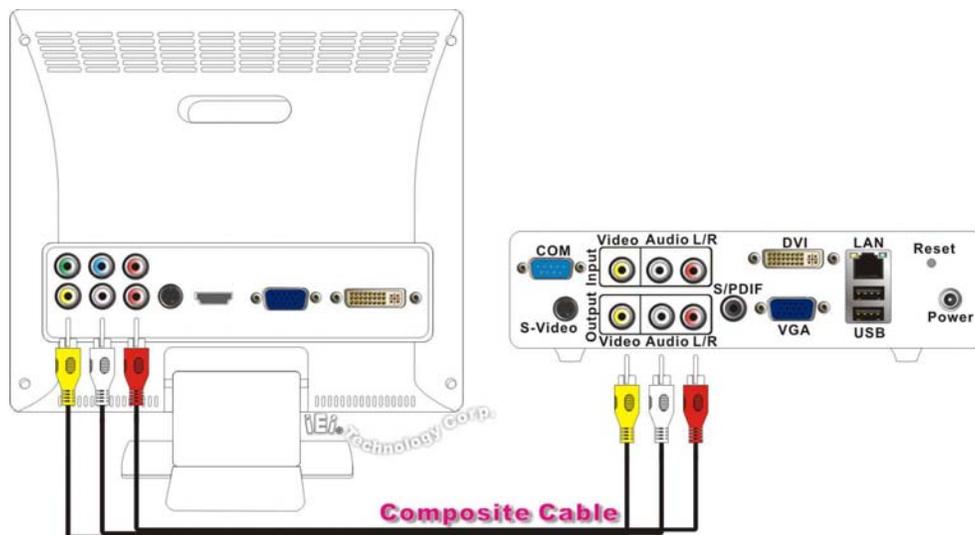


2.2.5 TV Connection

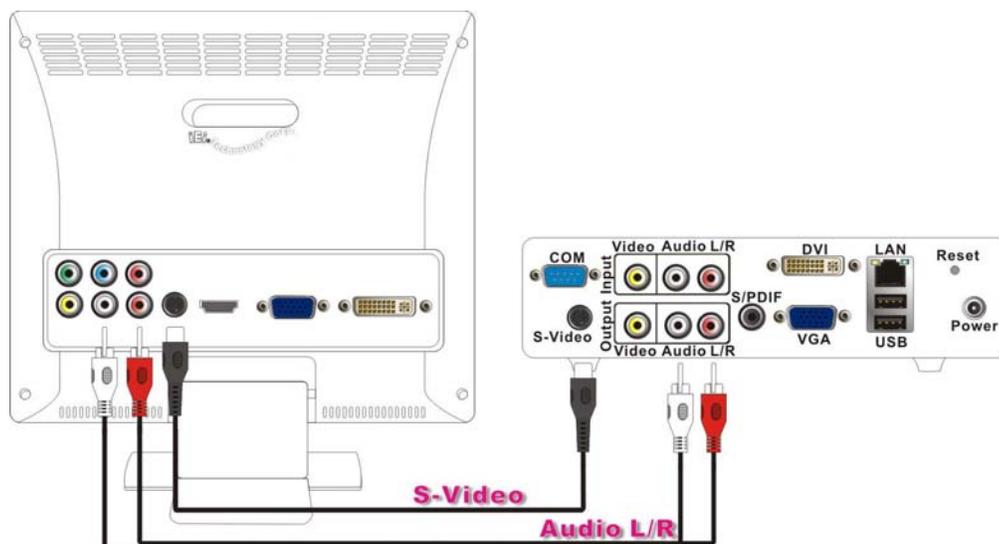
To connect the iSignager 500A/510H to a TV, follow the instructions below.

Step 1: Connect the composite cable/S-Video cable to the video and audio output ports/S-Video port on the rear panel of the iSignager 500A/510H. Connect the other side of the composite cable/S-Video cable to the video and audio input ports/S-Video port of the display device.

Using Composite Cable

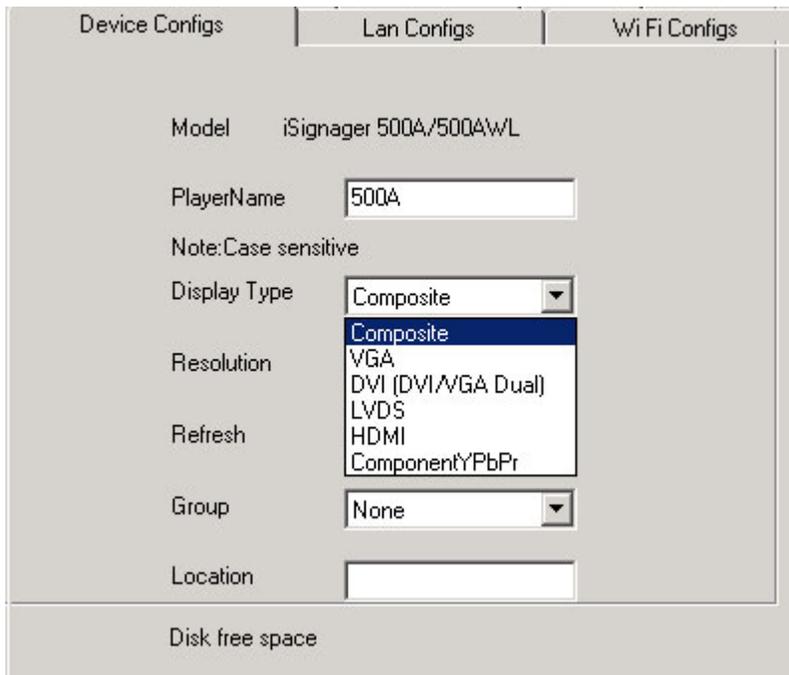


Using S-Video Cable



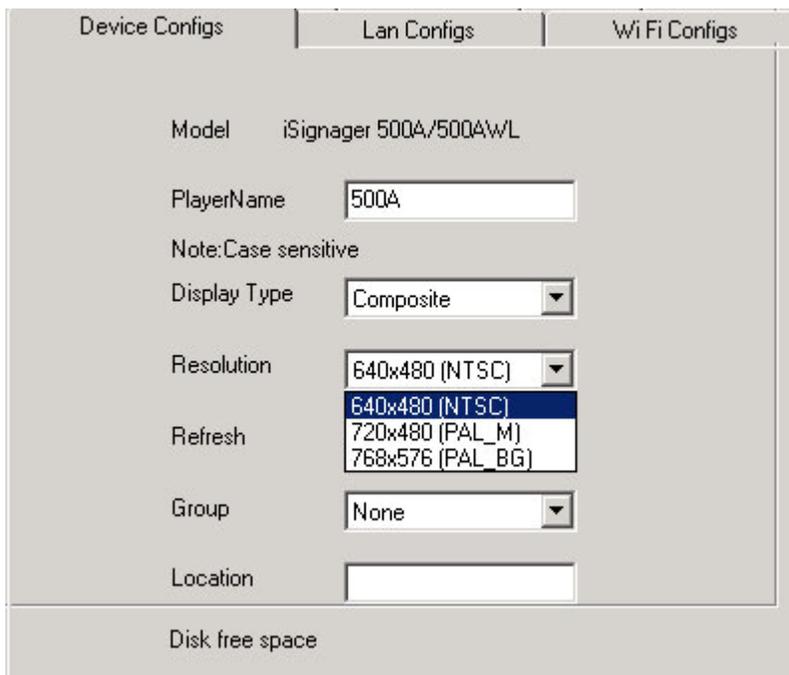
iSignager 500A/510H

Step 2: Set the display device to **Composite** and select resolution as **640 x 480 for NTSC** or **720x480 for PAL** in the Device Configs of the player settings in the iSignager AdMinistrator-Lite.



The screenshot shows the 'Device Configs' tab of the iSignager AdMinistrator-Lite interface. The 'Display Type' dropdown menu is open, showing options: Composite, VGA, DVI (DVI/VGA Dual), LVDS, HDMI, and ComponentYPbPr. The 'Resolution' field is currently empty.

Field	Value
Model	iSignager 500A/500A/W/L
PlayerName	500A
Note	Case sensitive
Display Type	Composite
Resolution	
Refresh	
Group	None
Location	
Disk free space	



The screenshot shows the 'Device Configs' tab of the iSignager AdMinistrator-Lite interface. The 'Resolution' dropdown menu is open, showing options: 640x480 (NTSC), 640x480 (NTSC), 720x480 (PAL_M), and 768x576 (PAL_BG). The 'Display Type' is set to 'Composite'.

Field	Value
Model	iSignager 500A/500A/W/L
PlayerName	500A
Note	Case sensitive
Display Type	Composite
Resolution	640x480 (NTSC)
Refresh	
Group	None
Location	
Disk free space	

2.2.6 Supported Output Ports and Resolutions

The iSignager 500A/510H supports multiple resolutions for different output ports. The supported output resolutions are listed in **Table 2-1**.

Output Port	Output Mode	Resolution
DVI	DVI	640x480, 848x480, 800x600, 1024x768, 1152x864, 1280x768, 1280x960, 1280x1024, 1360x768, 1400x1050, 1600x1200, 1920x1200
	HDMI	480p(720x480), 720p(1280x720), 1080i(1920x1080), 1080p(1920x1080)
VGA	VGA	640x480, 848x480, 800x600, 1024x768, 1152x864, 1280x768, 1280x960, 1280x1024, 1360x768, 1400x1050, 1600x1200, 1920x1200
	YPbPr	480p(720x480), 720p(1280x720), 1080i(1920x1080), 1080p(1920x1080)
S-Video	TV	640x480(NTSC_M), 720x480(PAL_M)
Composite RCA	TV	640x480(NTSC_M), 720x480(PAL_M)
Onboard LVDS	LVDS 24-bit	640x480, 848x480, 800x600, 1024x768, 1152x864, 1280x768, 1280x960, 1280x1024, 1360x768, 1400x1050, 1600x1200, 1920x1200

Table 2-1: Output Resolution

Appendix

A

Video, Audio and Graphic Formats

A.1 Overview of Video Formats

A.1.1 MPEG-1

MPEG-1 is a standard used to compress audio and video (AV) digital data. MPEG-1 defines a group of AV coding standards agreed upon by MPEG (Moving Picture Experts Group). MPEG-1 video is used by the Video CD format. The output quality at usual VCD bit rates is roughly that of a VCR. MPEG-1 audio layer 3 is the full name for the popular audio format MP3. The MPEG-1 AV format was later extended into the MPEG-2 and MPEG-4 formats. These extensions allow for greater compression for the same size of data.

A.1.2 MPEG-2

MPEG-2 is a standard used primarily to compress audio and video (AV) digital data. MPEG-2 is the designation for a group of coding standards for AV, agreed upon by MPEG (Moving Pictures Experts Group), and published as the ISO/IEC 13818 international standard. MPEG-2 is typically used to encode audio and video for broadcast signals, including direct broadcast satellite and Cable TV. MPEG-2, with some modifications, is also the coding format used by standard commercial DVD movies.

A.1.3 MPEG-4

MPEG-4 is a standard used primarily to compress audio and video (AV) digital data. It is the designation for a group of audio and video coding standards and related technology agreed upon by the ISO/IEC Moving Picture Experts Group (MPEG). The uses for the MPEG-4 standard are web (streaming media) and CD distribution, conversational (videophone), and broadcast television, all of which benefit from compressing the AV stream.

A.1.4 DivX® and XviD

DivX is a video codec created by DivX, Inc. which has become popular due to its ability to compress lengthy video segments into small sizes while maintaining relatively high visual quality. DivX uses lossy MPEG-4 Part 2 compression, where quality is balanced against file size for utility.

iSignager 500A/510H

XviD is a free and open source MPEG-4 video codec. XviD features MPEG-4 Advanced Simple Profile features such as b-frames, global and quarter pixel motion compensation, lumi masking, trellis quantization, and H.263, MPEG and custom quantization matrices.

A.1.5 DVD .ISO

An ISO image (.iso) is an informal term for a disk image of an ISO 9660 file system. Most CD/DVD authoring utilities can deal with ISO images: Producing them either by copying the data from existing media or generating new ones from existing files, or using them to create a copy on physical media.

A.1.6 DVD .VOB and .IFO

A VOB file (DVD-Video Object) is a file type contained in DVD-Video media. It contains the actual Video, Audio, Subtitle and Menu contents in stream form. VOB files are encoded very much like standard MPEG-2 files. When the extension is renamed from .vob to .MPG or .MPEG the file is still readable and continues to hold all information, although most players supporting MPEG-2 don't support subtitle tracks.

IFO file is a DVD information file that stores information about chapters, subtitles and audio tracks. IFO files contain the formatting information of the VOB files, which tells the DVD player how the DVD should be played.

A.1.7 .TS

Transport stream (TS) is used in MPEG-1, MPEG-2, and MPEG-4 systems protocols. TS has features for error correction for transportation over imperfect media, and are used in broadcast applications. The MPEG-2 transport stream is defined in the ISO/IEC standard (13818-1).

A.2 Overview of Audio Formats

A.2.1 Dolby® Digital

Dolby® Digital, or AC-3, is the common version containing 6 total channels of sound, with 5 channels for normal-range speakers (right front, center, left front, right rear and left rear) and one channel for the LFE, or subwoofer. The Dolby Digital format supports Mono and Stereo usages as well.

A.2.2 MP3

MPEG-1 Audio Layer 3, more commonly referred to as MP3, is a popular digital audio encoding and lossy compression format. MP3 is compression format. It provides a representation of pulse-code modulation-encoded (PCM) audio data in a much smaller size by discarding portions that are considered less important to human hearing.

A.2.3 AAC

AAC (Advanced Audio Coding) is one of the audio compression formats defined by the MPEG-2 standard. AAC is a higher quality codec than the MP3, therefore requiring less data for the same audio reproduction. As a result, an AAC file encoded at 96kbps bit rate may actually sound better than an MP3 encoded at 128kbps bit rate.

A.2.4 WAV or WAVE

WAV (or WAVE), short for Waveform audio format, is a Microsoft® and IBM audio file format standard for storing audio on PCs. It is a variant of the RIFF bitstream format method for storing data in "chunks", and thus also close to the IFF and the AIFF format used on Macintosh computers. WAV files store digital music data in a lossless format, meaning the file is digitally identical to its source. However, the result is a very large, uncompressed file.

A.2.5 WMA

WMA, or Windows Media Audio, is proprietary audio codec of Microsoft®. WMA offers the same quality as MP3 for half the bit rate (i.e., half the file size). WMA is now positioning itself as the main competitor to AAC (Advanced Audio Codec), MP3's successor.

A.3 Overview of Graphic Formats

A.3.1 JPEG and JPG

JPEG (pronounced as jay-peg) is a commonly used standard method of lossy compression for photographic images. JPEG is designed for compressing full-color or gray-scale images of natural, real-world scenes. It works well on photographs, naturalistic artwork, and similar material; not so well on lettering, simple cartoons, or line drawings. The file format which employs this compression is commonly also called JPEG; the most common file extensions for this format are .jpeg, .jfif, .jpg, .JPG, or .JPE although .jpg is the most common on all platforms.

A.3.2 BMP

The name is short for bitmap and these files can be saved at various bit-depths. It is a bitmapped graphics format used internally by the Microsoft® Windows® graphics subsystem (GDI), and used commonly as a simple graphics file format on that platform. Images are generally stored with a color depth of 1 (1-bit), 16 (4-bit), 256 (8-bit), 65,536 (16-bit), or 16.7 million (24-bit, referred to as true-color) colors (the bits represent the bits per pixel). 8-bit images can also be gray scale instead of indexed color. 24-bit BMP files are lossless but are much larger in file size than JPEGs.

A.3.3 GIF

GIF (Graphics Interchange Format) is a bitmap image format for pictures with up to 256 distinct colors from the over 16 million representable in 24 bit RGB.

A GIF file employs lossless data compression so that the file size of an image may be reduced without degrading the visual quality, provided the image fits into 256 colors. Therefore GIF is normally used for diagrams, buttons, etc., that have a small number of colors, while the JPEG format is used for photographs.

A.3.4 PNG

PNG (Portable Network Graphics) is a lossless compressed bitmap image format. PNG was created to both improve upon and replace the GIF format with an image file format not requiring a patent license to use. PNG is officially pronounced "ping" and, like GIF and

BMP, reduces file size by reducing the number of colors. PNG can also be 24-bit true-color and maintain all the original image information, but file sizes are large.

A.4 Standard Definition (SD) Introduction

A.4.1 SDTV

Standard-definition television or SDTV refers to television systems that have a lower resolution than HDTV systems. The term is usually used in reference to digital television, in particular when broadcasting at the same (or similar) resolution as analog systems.

In ATSC, SDTV can be broadcast in 704 pixels × 480 lines with 16:9 aspect ratio (40:33 rectangular pixel), 704 pixels × 480 lines with 4:3 aspect ratio (10:11 rectangular pixel) or 640 pixels × 480 lines with 4:3 ratio (and square pixels). The refresh rate can be any of 24, 30 or 60 pictures per second.

Digital SDTV in 4:3 aspect ratio has the same appearance as the regular analogue TV (NTSC, PAL, PAL2, SÉCAM) minus the ghosting, snowy images and static noises. However, if the reception is poor, the user may encounter various other artifacts such as blockiness and stuttering.

Standards that can broadcast digital SDTV include DVB, ATSC and ISDB. The latter two were originally developed for HDTV, but they have proved to be more often used for their ability to deliver multiple SD video and audio streams via multiplexing, than to use the entire bitstream for one HD channel.

A.5 High Definition (HD) Introduction

High-definition video or HDTV generally refers to any video system of higher resolution than standard-definition (SD), i.e. NTSC, SÉCAM and PAL. HDTV is broadcast digitally, and therefore its introduction sometimes coincides with the introduction of digital television (DTV). High-definition signals require a high-definition television or computer monitor in order to be viewed. High-definition video generally has an aspect ratio of 16:9 (1.78:1). The aspect ratio of regular widescreen film shot today is typically 1.85:1 or 2.40:1. Standard-definition television (SDTV) has a 4:3 (1.33:1) aspect ratio.

High-definition television (HDTV) resolution is 1080 or 720 lines. In contrast, regular digital television is 480 lines (NTSC-like) or 576 lines (PAL/SECAM-like).

iSignager 500A/510H

A.5.1 Notation

In the context of HDTV, the formats of the broadcasts are referred to using a notation describing:

720p60

720: The number of lines in the display resolution.

P: Progressive frames (p) or interlaced fields (i).

60: Number of frames or fields per second.

For example, the format 720p60 is 1280x720 pixels, progressive encoding with 60 frames per second (60 hertz known as Hz). The format 1080i50 is 1920x1080 pixels, interlaced encoding with 50 fields (25 frames) per second. Often the frame or field rate is left out. It can then usually be assumed to be either 50 or 60, except for 1080p which is only supported as 1080p24, 1080p25 or 1080p30 by consumer HDTV displays.

A frame or field rate can also be specified without a resolution. For example 24p means 24 progressive frames per second and 50i means 50 interlaced frames per second.

A.5.2 Progressive Scan vs. Interlaced Scan

Interlaced scan is the way a television decodes an image—a frame is broken into two fields, odd (1, 3, 5, 7...) and even (2, 4, 6, 8...). A television scans 60 fields per second with 30 odd and 30 even fields created. By combining the two fields every 1/30 of a second, a frame is created thus creating 30 frames per second.

Progressive scan differs from interlaced scan in that the image is displayed on a screen by scanning each line (or row of pixels) in a sequential order rather than an alternate order. Therefore, in progressive scan, the image lines are scanned in numerical order (1, 2, 3) down the screen from top to bottom, instead of in an alternate order (lines or rows 1, 3, 5, etc. followed by lines or rows 2, 4, 6). By progressively scanning the image onto a screen every 60th of a second rather than "interlacing" alternate lines every 30th of a second.



Appendix

B

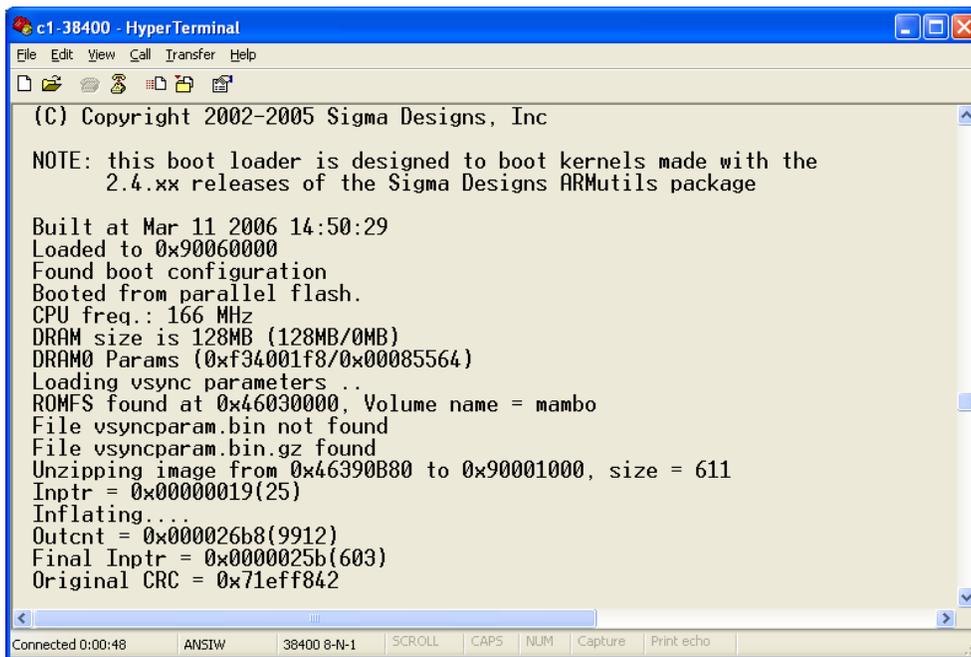
Check and Modify the Player Status by Serial Port

iSignager 500A/510H

B.1 Check and Modify the iSignager 500A Player Status by Serial Port

Follow the following steps and command to check and modify the iSignager 500A status by RS-232 serial port.

Step 1: In Windows® XP/ Windows® 2000 OS, create a HyperTerminal session and prepare a null modem cable to connect the PC and the iSignager 500A.



```

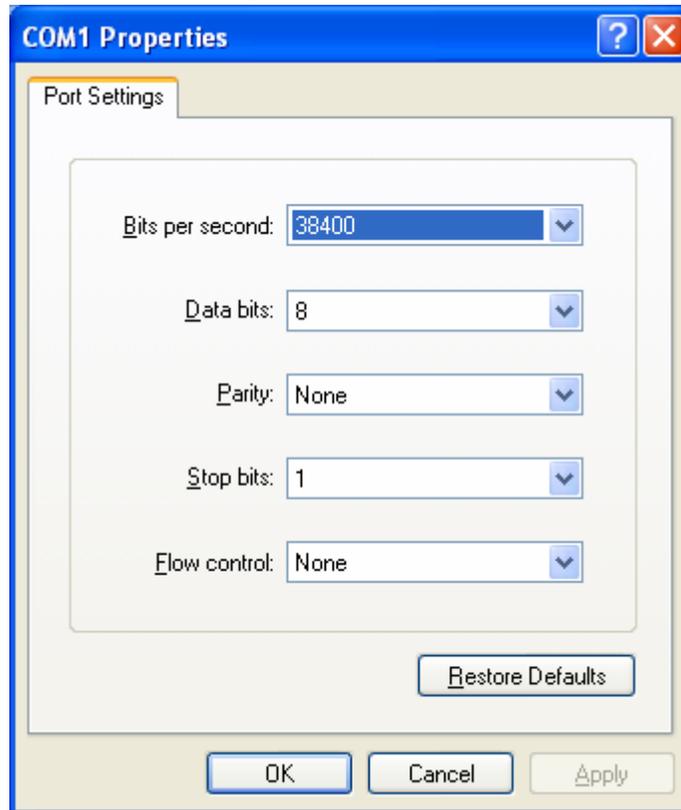
c1-38400 - HyperTerminal
File Edit View Call Transfer Help
(C) Copyright 2002-2005 Sigma Designs, Inc
NOTE: this boot loader is designed to boot kernels made with the
      2.4.xx releases of the Sigma Designs ARMTutils package
Built at Mar 11 2006 14:50:29
Loaded to 0x90060000
Found boot configuration
Booted from parallel flash.
CPU freq.: 166 MHz
DRAM size is 128MB (128MB/0MB)
DRAM0 Params (0xf34001f8/0x00085564)
Loading vsync parameters ..
ROMFS found at 0x46030000, Volume name = mambo
File vsyncparam.bin not found
File vsyncparam.bin.gz found
Unzipping image from 0x46390B80 to 0x90001000, size = 611
Inptr = 0x0000019(25)
Inflating...
Outcnt = 0x000026b8(9912)
Final Inptr = 0x000025b(603)
Original CRC = 0x71eff842
Connected 0:00:48  ANSIW  38400 8-N-1  SCROLL  CAPS  NUM  Capture  Print echo
  
```



NOTE:

All these settings can be done in the iSignager AdDesign.

Step 2: Modify COM1 Settings as below.



Step 3: Connect RS-232 cable to COM1 of iSignager 500A/510H:

```
vick[/]#  
run vick[/]# cd /bin
```

Step 4: Display Playerinfo function:

```
vick[/bin]# ./playerinfo  
BINFMT_FLAT: Loading file: ./playerinfo
```

Usage:

```
./playerinfo -i: To display all information  
./playerinfo -sh hostname: To change PC host name  
./playerinfo -ch hostname: To change client host name  
./playerinfo -ddev <val>: To change device type  
./playerinfo -si ip: To change PC IP  
./playerinfo -ci ip: To change client IP  
./playerinfo -d 1/0: To enable DHCP(1) or to disable DHCP(0)
```

iSignager 500A/510H

```

./playerinfo -pstop: To stop playlist
./playerinfo -pstart: To start playlist
./playerinfo -cstart: To restart client
./playerinfo -time <val>: To change time
./playerinfo -wal : To display wireless info
./playerinfo -reboot : To reboot system

```

Step 5: Examples:

Example 1.1 Use command `playerinfo-i` and show the information of the player is connected via LAN:

```

Glob1[/]# playerinfo -i
BINFMT_FLAT: Loading file: /new/part1/bin/playerinfo
*****Information*****
Romfs Version      : 107
Client Hostname    : Glob1
Client Ip eth0     : 10.10.19.253
Server Hostname    : RD-VICKWU-NB
Server Ip          : 10.10.18.37
Display Device     : VGA 1024x768 60
Apps Version       : 106

WIFI :
BINFMT_FLAT: Loading file: /new/part1/bin/playerinfo
no wireless extensions

```

Example 1.1 Use command `playerinfo-i` and show the information of the player is connected via Wifi

```

vick[/]# playerinfo -i
BINFMT_FLAT: Loading file: /new/part1/bin/playerinfo
*****Information*****
Romfs Version      : 200
Client Hostname    : vick
Client Ip eth0     : 192.168.10.7
Server Hostname    : RD-VICKWU-NB
Server Ip          : 192.168.10.5

```

```
Dhcp                : disable
Display Device      : VGA 1360x768 60
Apps Version        : 200

WIFI :
BINFMT_FLAT: Loading file: /new/part1/bin/playerinfo
Client ra0 Ip       : 192.168.10.3
Access Point        : 00:13:46:87:EA:02
Encryption key      : 132-3334-3536-3738-3930-6162-63
ESSID               : "iei_sw2"
vick[/]#
```

Example 2. Set iDSServer hostname to client system

```
vick[/bin]# ./playerinfo -sh RD-VICKWU-NB

BINFMT_FLAT: Loading file: ./playerinfo
Changing server hostname
Done
```

Example 3. Set client hostname to client system

```
vick[/bin]# ./playerinfo -ch vick

BINFMT_FLAT: Loading file: ./playerinfo
Changing client hostname
```

Example 4. Set device display mode type

```
vick[/bin]# ./playerinfo -ddev VGA 1360x768 60

BINFMT_FLAT: Loading file: ./playerinfo
Display Device: VGA 1360x768 60
```

Example 5. Set iDSServer IP to client system

```
vick[/bin]# ./playerinfo -si 10.10.10.58

BINFMT_FLAT: Loading file: ./playerinfo
```

iSignager 500A/510H

```
Changing server IP
Done
```

Example 6. Set client IP to client system

```
vick[/bin]# ./playerinfo -ci 10.10.10.74
```

```
BINFMT_FLAT: Loading file: ./playerinfo
```

```
Changing client IP 10.10.10.74
```

```
74
```

```
eth0: link up, 100Mbps, full-duplex, lpa 0x45E1
```

```
vick[/bin]# interface < eth0 > is up and running
```

```
=====
the systems IP address is :10.10.10.74
```

```
connecting to windows server.....
```

```
windows server ip address is : 10.10.10.58
```

```
windows server hostname is : RD-VICKWU-NB
```

```
connection = Y
```

```
CONNECTED TO WINDOWS SERVER!
```

```
=====
gateway: Unable to read gateway from interface
```

```
=====
Mac address of the board is: #00:0b:6a:36:a3:10
```

```
Default gateway of the board is: 0.0.0.0
```

```
Subnet mask is: 255.255.254.0
```

```
Host name is: vick
```

```
DNS of the board is: 172.16.2.6
```

```
=====
#00:0b:6a:36:a3:10#10.10.10.74#172.16.2.6#vick#0.0.0.0#255.255.254.0#0#0#0#0#0
##
```

Example 7. Set DHCP action

```
vick[/bin]# ./playerinfo -d 1

BINFMT_FLAT: Loading file: ./playerinfo
Changing dhcp.txt
Done
```

Example 8. Stop playing

```
vick[/bin]# ./playerinfo -pstop

BINFMT_FLAT: Loading file: ./playerinfo
killall: pictureplayer: no process killed
killall: play0: no process killed
killall: play1: no process killed
killall: play2: no process killed
munmap of non-mmapped memory by process 1811 (play_animate): 17e02000
munmap of non-mmapped memory by process 1812 (play_animate): 17e02000
killall: play_rotate: no process killed
killall: nano-X: no process killed
killall: audioplayer: no process killed
killall: audio: no process killed
killall: saver: no process killed
munmap of non-mmapped memory by process 1806 (banner): 17e02000
munmap of non-mmapped memory by process 1807 (banner): 17e02000
munmap of non-mmapped memory by process 1808 (banner): 17e02000
killall: mbanner: no process killed
killall: videoin: no process killed
```

Example 9. Restart Play action

```
vick[/bin]# ./playerinfo -pstart

BINFMT_FLAT: Loading file: ./playerinfo
vick[/bin]# *****PLAYING
```

iSignager 500A/510H

```
/new/playlist5.txt*****Fading: disabled
```

```
Alpha0: 255
Alpha1: 255
D 0
Running check
iEi WCODE 1 0x05 0x02
iEi RCODE 1 0x05 0x02
```

Example 10. Restart client connect

```
vick[/bin]# ./playerinfo -cstart
```

```

BINFMT_FLAT: Loading file: ./playerinfo
vick[/bin]# interface < eth0 > is up and running
=====
the systems ip address is :10.10.10.74
connecting to windows server.....
windows server ip address is : 10.10.10.58
windows server hostname is : RD-VICKWU-NB
connection = Y
CONNECTED TO WINDOWS SERVER!
=====
=====
Mac address of the board is :#00:0b:6a:36:a3:10
Default gateway of the board is :10.10.10.1
Subnet mask is :255.255.254.0
Host name is :vick
DNS of the board is :172.16.2.6
=====

```

```
#00:0b:6a:36:a3:10#10.10.10.74#172.16.2.6#vick#10.10.10.1#255.255.254.0#0#0#0#
0#
```

Example 11. Set system time

```
vick[/bin]# ./playerinfo -time 072211142006
```

```
BINFMT_FLAT: Loading file: ./playerinfo
Setting the date
Sat Jul 22 11:14:00 MDT 2006
```

Example 12. Reboot the player

```
vick[/bin]# ./playerinfo -reboot
```

Step 6: Use the following command to modify LAN settings:

- `ifconfig eth0 IP : set client IP value`
- `ifconfig eth0 netmask : set client mask`
e.g. `ifconfig eth0 netmask 192.168.1.255`
- `ifconfig eth0 broadcast: set client broadcast`
e.g. `ifconfig eth0 broadcast 255.255.255.0`

Step 7: Use the following command to modify Wifi settings:

- `ifconfig ra0 IP : set client IP value`
- `ifconfig ra0 netmask : set client mask`
e.g. `ifconfig ra0 netmask 192.168.1.255`
- `ifconfig ra0 broadcast: set client broadcast`
e.g. `ifconfig ra0 broadcast 255.255.255.0`

B.1.1 Successful Message—LAN Connection

If LAN is successfully connected, the following messages are shown.

```
*****PLAYING/new/playlist7.txt*****
Fading : disabled
vick[/]# Alpha0 : 255
Found RT61 Wifi Card
Alpha1 : 255
D 0
Runing check
killall: rcli: no process killed
killall: client: no process killed
```

iSignager 500A/510H

```

interface < eth0 > is up and running
=====
the systems ip address is :192.168.1.10
connecting to windows server.....
windows server ip address is : 192.168.1.5
windows server hostname is : RD-VICKWU-NB
error status-w: Contact iEi code=0x05 failed
connection = Y
CONNECTED TO WINDOWS SERVER!
=====
iEi WCODE 1 0x05 0x02
iEi RCODE 1 0x05 0x02
=====
Mac address of the board is :#00:9b:6b:36:a8:70
Default gateway of the board is :192.168.1.1
Subnet mask is :255.255.255.0
Host name is :vick
DNS of the board is :127.0.0.1
=====
#00:9b:6b:36:a8:70#192.168.1.10#127.0.0.1#vick#192.168.1.1#255.255.255.
0#0#0#0##read returned : 20

```

B.1.2 Successful Message—Wifi Connection

If Wifi is successfully connected, the following messages are shown.

```

eth0: link down
ra0
killall: udhcpc: no process killed
Found RT61 Wifi Card
12:34:56:78:90:00:00:00:00:00:00:00:00:00:00:00:
RT61: RfIcType= 3
Probing for Wifi Card.....
inf_name ra0

```

```
WiFi IP { 10.10.88.100 }
WiFi Encryption Enable { Y }
WiFi Key type { open }
WiFi cipher type { WEP }
WiFi key index { 1 }
WiFi Key Length { 128 }
WiFi Key { 1234567890abc }
WiFi Essid { iei_sw2 }
WiFi Network Type { infra }
Setting WiFi Ip Address.....
Setting Network Type.....
Command :iwpriv ra0 set NetworkType=infra
Setting Authenticaion Mode....
Command :iwpriv ra0 set AuthMode=open
Setting Encryption Type....
Command :iwpriv ra0 set EncrypType=WEP
Setting Default Key ID....
Command :iwpriv ra0 set DefaultKeyID=1
Setting Key .....
Command :iwpriv ra0 set Key1=1234567890abc
31:32:33:34:35:36:37:38:39:30:61:62:63:00:00:00:
Setting SSID....
Command :iwpriv ra0 set SSID=iei_sw2

interface < eth0 > is Down
interface < ra0 > is up and running
new compiled on Sep 21 2006 19:02:59
```

B.2 Checking Connection

There are several ways to check if the connection exists between the iSignager 500A/510H and PC.

B.2.1 Check the LED

Check the LEDs on the top of the LAN port in the rear panel of the iSignager 500A/510H. The green LED on the right side indicates LAN or Wifi is linked on the port. The orange LED on the left side indicates transmission activity.

B.2.2 Ping in DOS Environment or Hyper Terminal Session

B.2.2.1 PC

To check if the specific IP connection exists in the server side, check in DOS environment of the server. In DOS environment, type “ping” followed by the LAN IP or WLAN IP, e.g. ping 10.10.12.82. Press Enter. If the reply message is shown, the connection exists, e.g.

```
Reply from 10.10.12.82: bytes=32 time<10ms TTL=128
Reply from 10.10.12.82: bytes=32 time<10ms TTL=128
Reply from 10.10.12.82: bytes=32 time<10ms TTL=128
```

B.2.2.2 iSignager 500A/510H

To check if the specific IP connection exists in the client side, check in a Hyper Terminal session of the iSignager 500A/510H. To create a Hyper Terminal session, please refer to **Section B.1**. In Hyper Terminal session, type “ping” followed by the LAN IP or WLAN IP, e.g. ping 10.10.19.253. Press Enter. If the reply message is shown, the connection exists, e.g.

```
64 bytes from 10.10.19.253: icmp_seq=0 ttl=64 time=1.3 ms
64 bytes from 10.10.19.253: icmp_seq=1 ttl=64 time=0.7 ms
64 bytes from 10.10.19.253: icmp_seq=2 ttl=64 time=0.5 ms
```

B.2.3 Check the Status in the Player Manager

The iSignager AdDesign detects the player status automatically and shows the player status in the “Status” column in the Player Manager window. The status of the player is either On-Line, Off-Line or Playing.

B.3 iSignager 500AWL/510HWL Network Behavior

The user can setup LAN and Wifi settings in the iSignager 500AWL/510HWL at the same time. However, the iSignager 500AWL/510HWL takes LAN as the first priority by default when booting up. If the LAN is successfully activated, the iSignager 500AWL/510HWL does not activate the Wifi settings. The Wifi settings is activated only when the LAN activation process is failed.

Appendix

C

Hazardous Materials Disclosure

C.1 Hazardous Material Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

iSignager 500A/510H

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	X	O	O	O	O	X
Display	X	O	O	O	O	X
Printed Circuit Board	X	O	O	O	O	X
Metal Fasteners	X	O	O	O	O	O
Cable Assembly	X	O	O	O	O	X
Fan Assembly	X	O	O	O	O	X
Power Supply Assemblies	X	O	O	O	O	X
Battery	O	O	O	O	O	O

O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有“环境友好使用期限”的标签，此期限是估算这些物质“不会有泄漏或突变”的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	X	O	O	O	O	X
显示	X	O	O	O	O	X
印刷电路板	X	O	O	O	O	X
金属螺帽	X	O	O	O	O	O
电缆组装	X	O	O	O	O	X
风扇组装	X	O	O	O	O	X
电力供应组装	X	O	O	O	O	X
电池	O	O	O	O	O	O

O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。
X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。