DUTCH MEDIA TOOLS

LS-120 Videoprocessor

ORDERCODE 101414

SHOWELECTRONICS FOR PROFESSIONALS

CONTENT

1. Brief Introduction

System Overview

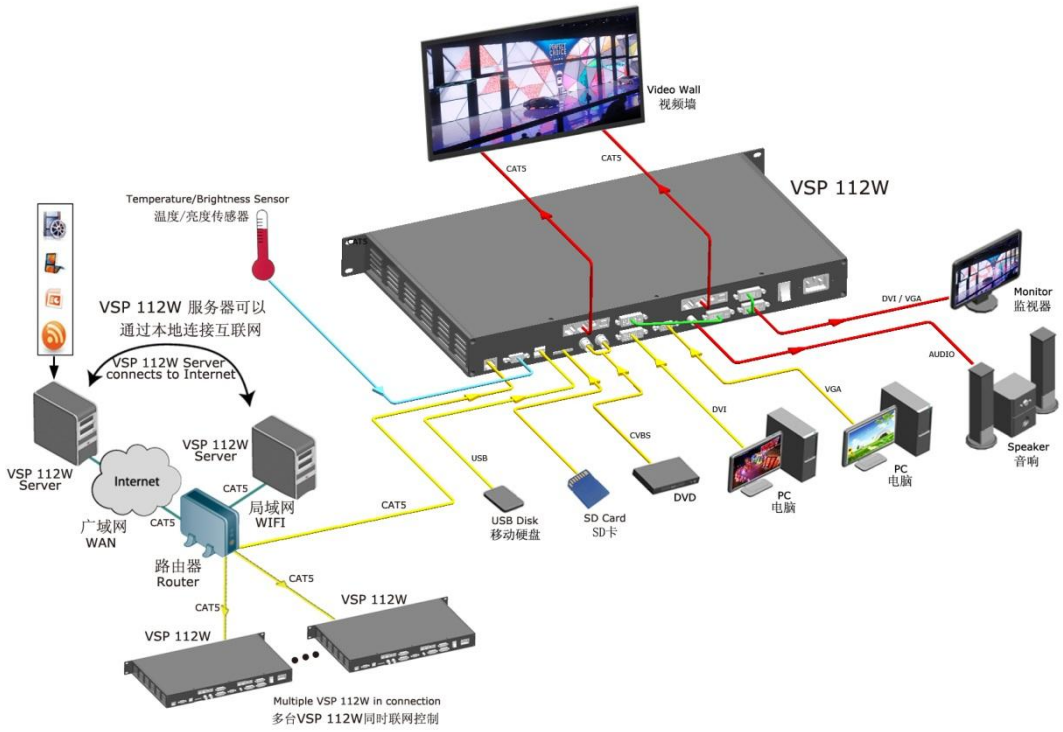
System Overview

LS-120 is the latest in entry level LED video processing, providing basic inputs and versatile functionality for both mobile and fixed installation advertising markets. Utilizing the latest in motion adaptive de-interlacing, true color reconstruction and dynamic range adjustment technologies enables the processor to provide high quality pixel based scaling for all inputs including the integrated USB media interface.

It supports 2 composite (CVBS), 1 VGA, 1 DVI (compatible with HDMI1.3), 1 SD card, 4 USB inputs, and 1 audio, 2 DVI, 1 VGA outputs.

Application Questions

RGBlink offers solutions to demand technical problems. Any application questions, or required further information, please contact with our Customer Support Engineers. Refer to Appendix B for contact details.



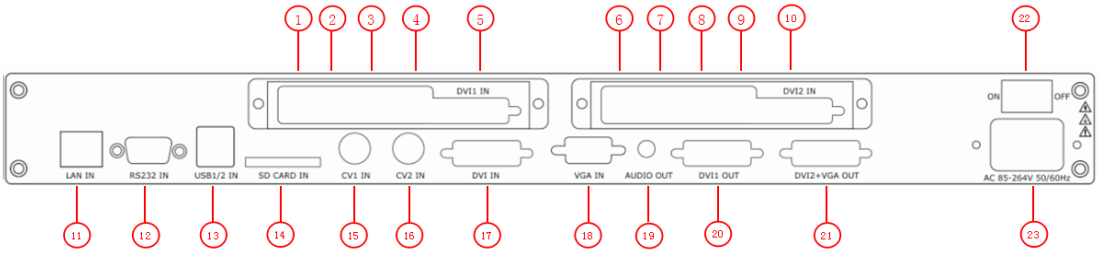
2. Hardware Orientation

In This Chapter

This chapter provides detailed information about the LS-120 hardware. The following topics are discussed:

LS-120 Back Panel

The figure below illustrates the professional interface and control signals of LS-120 back panel.



NO	INTERFACE	NO	INTERFACE
1.2.6.7.11	10/100M Interface RJ45	17	DVI Input DVI-I
3.8	Power supply port of Sending Card	18	VGA Input DSUB15 port
4.9	USB control port of Sending Card	19	Audio Output
5.10	DVI input port of sending card	20	DVI Output DVI-I
12	RS232 Interface	21	DVI+VGA DVI-I Output
13	USB input port	22	Switch
14	SD card input	23	Power IEC-3 port
15.16	CVBS Input BNC port		

CONT Interface

11. 10/100M Interface RJ45

12. RS232 Interface

It is used to connect the computer.

INPUT Interface

It includes 2 CVBS (BNC port), 4 USB, 1 DVI-I(compatible with the HDMI input), 1 VGA (DB15port), and 1 SD card Input.

13：USB Input

USB input interface: can access the USB device or mobile hard disk with USB storage function. Support image formats: JPGE, BMP, PNG; Support video formats: MP4, MPEG1, MPEG2, RMVB, MJPG. Mainly used to store video program package (USB function can only achieve when transcoding through PC,below USB1 in USB2）。

Note

USB1is master interface，USB2 is spare interface； recommend the use of a priority when USB1，not recommend for USB1 and USB2 at the same time.

14：SD Card Input

SD card input interface, it is mainly used to store video program package or application upgrade package.

Note

SD card and USB are mobile storage interface, but SD card input is prior to USB input. When SD card and USB both are inserted into the device, the system will only play SD card. After SD card is removed, it will play USB.

15. 16：CVBS Input

CVBS input. Can receive standard video signal from players, cameras etc. Input supports resolution 480i and 576i via BNC. Support standards include: PAL, NTSC and SECAM.

17：DVI Input

DVI input interface: Input the video signal from computer, DVI signal generator. Connect to the same DVI interface on LS-120;

（This Connection does not support hot-plugging）

Note

DVI-I is compatible with HDMI.

18：VGA Input

VGA Interface input the video signal from HD player and Computer, etc. compatible with YPbPr signal, input signal via the DB15 interface.

OUTPUT

1.2.6.7: 10/100M **Interface RJ45**

Gigabit copper port, used to connect LED screen.

3. 8：Power Supply Port of Sending Card

Power has been already supplied by video processor itself, no external power supply needed.

4. 9：USB Control Port of Sending Card

5. 10：DVI Input

Input the DVI out originating from other video processors.

（This DVI connector does not support hot-plugging）

19：AUDIO Output

It is used to access the speakers or audio power amplifier system. Can be connected with the DVI output interface video processor directly.

（This connector does not support hot-plugging）

20：DVI Output

Connect to the monitor or LED screen which has DVI interface

（This DVI connector does not support hot-plugging）.

21：DVI +VGA DVI Output

DVI +VGA output via DVI connector connect to the monitor or LED screen which has DVI interface.

（This DVI connector does not support hot-plugging）.

2. Hardware Orientation

LS-120 Back Panel

DVI +VGA, VGA output connector can be connected to monitor or projector which has VGA interface.

Note

Via  adapter, can connect with DVI-based or VGA-based equipment, and via  DVI to VGA adapter, can output VGA only.

Switch and Power

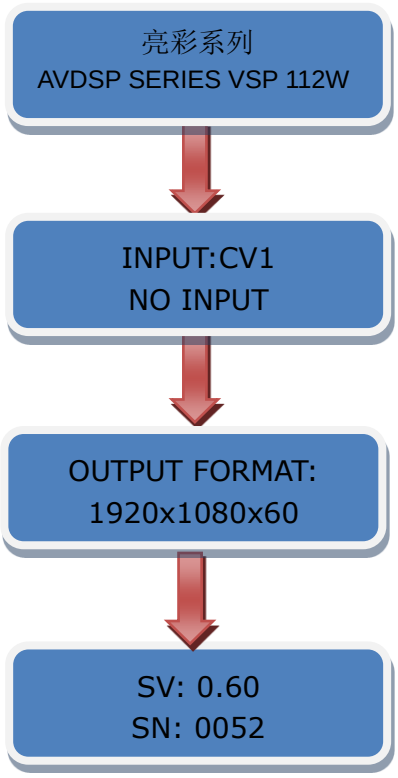
22.23：Power Interface and Switch

AC 85-264V 3.8A 50/60Hz IEC-3 Power Interface

LS-120 Front Panel

Insert power cord and push power to ON position. LCD module on the front panel will show device information and go into self verification before it load last setting and send processed image to the target monitor. For the first setup, CV1 input is default source. With front panel keyboard, user can operate LS-120 through the menus on LCD panel.

LS-120 front panel as shown in figure:

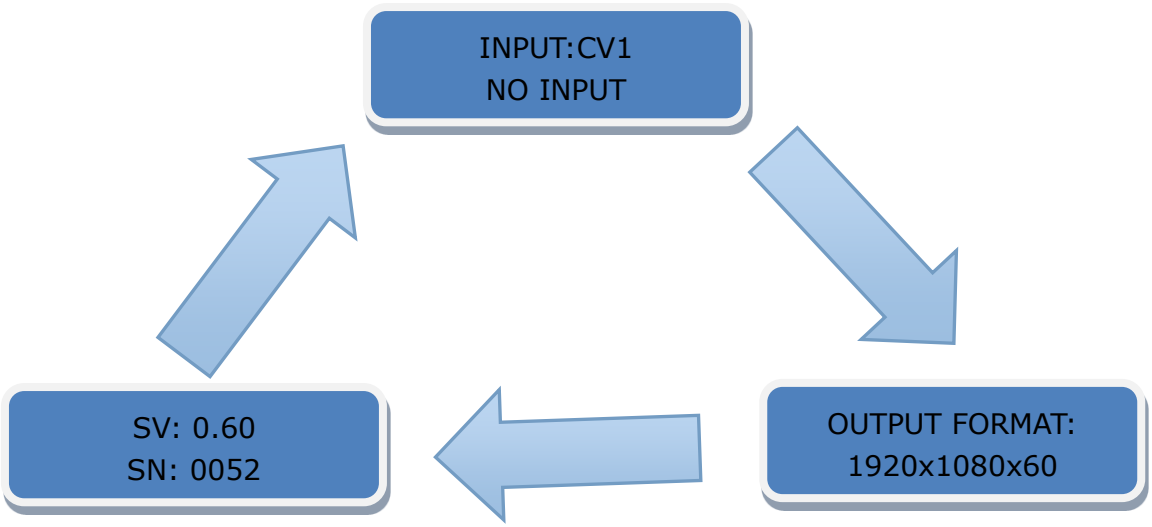


2. Hardware Orientation

LS-120 Front Panel

System into the Circulation Statement:

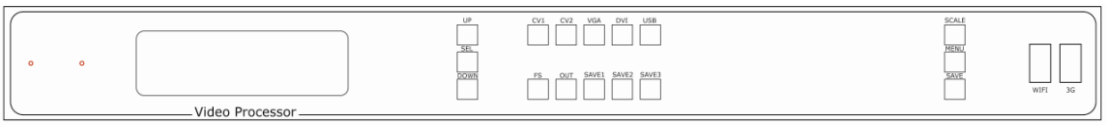
Cycle process displays the current input signal source, the current output format, the current program version information, the current equipment serial number; the user hold equipment serial number will get more effective service and support.



2. Hardware Orientation

LS-120 Front Panel

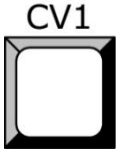
LS-120 front panel is as following:



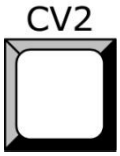
LCD Panel

Used to show button menu and menus for interactive communication；

Signal Keys

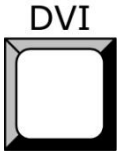


CV1 input selection button, its LED light turns on, output will be switched to this channel;



CV2 input selection button, its LED light turns on, output will be switched to this channel;

VGA input selection button, its LED light turns on, output will be switched to this channel;

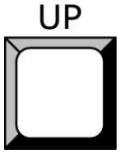


DVI input selection button, its LED light turns on, output will be switched to this channel;

USB input selection, its LED light turns on, output will be switched to this channel, and the LCD panel will show the network, WIFI, USB and SD card information.

Function Keys

Push to confirm the current choice item;

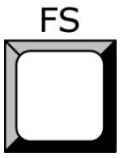


Push to select up items in LCD menu;

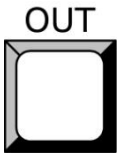
Push to select down items in LCD menu;

2. Hardware Orientation

LS-120 Front Panel



Switch to select full size or screen size, just for single picture mode;



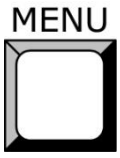
Push to select the output format by using the UP/ DOWN key.

Switch to use the user-defined mode 1;

Switch to use the user-defined mode 2;

Switch to use the user-defined mode 3;

Push to go to between scale→zoom→crop→scale mode；



Advanced menu: press the **MENU** to enter the main menu, the submenus: Device information, Factory Reset, Language and Alpha setting are all included. Push the UP/DOWN to select the relevant submenu. For details, please refer to MENU in menu orientation.

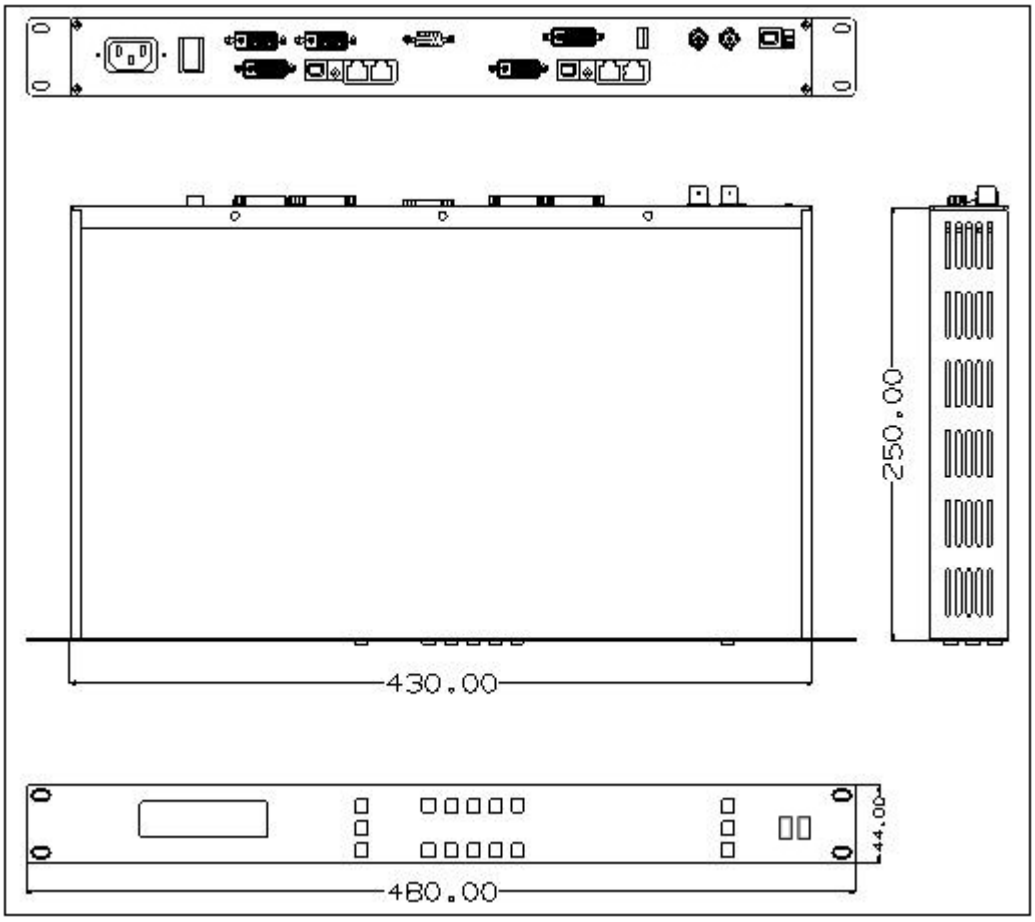
Push to save current config.

3. Hardware Installation

In This Chapter

This chapter provides comprehensive installation instruction for LS-120 hardware:

Following is the size of LS-120 for your reference.



Safety Precautions

For all LS-120 processor installation procedures, please observe the following important safety and handling rules to avoid damage to yourself and the equipment.

- To protect users from electric shock, ensure that the chassis connects to earth via the ground wire provided in the AC power Cord.
- The AC Socket-outlet should be installed near the equipment and be easily accessible.

Unpacking and Inspection

Before opening LS-120 process shipping box, inspect it for damage. If you find any damage, notify the shipping carrier immediately for all claims adjustments. As you open the box, compare its contents against the packing slip. If you find any shortages, contact your sales representative.

Once you have removed all the components from their packaging and checked that all the listed components are present, visually inspect the system to ensure there was no damage during shipping. If there is damage, notify the shipping carrier immediately for all claims adjustments.

Site Preparation

The environment in which you install your LS-120 should be clean, properly lit, free from static, and have adequate power, ventilation, and space for all components.

4. Menu Orientation

In This Chapter

This chapter describes all LS-120 processor menus, including how they are accessed, the functions that are available, and descriptions of each menu tree (in block diagram format).

The following topics are discussed:

- **MENU**
  - INPUT
  - OUTPUT
  - TRANSITION
  - AUDIO
  - SPLIT
  - SAVE SETUP
  - SYSTEM
  - LANGUAGE
  - FACTORY RESET

4. Menu Orientation

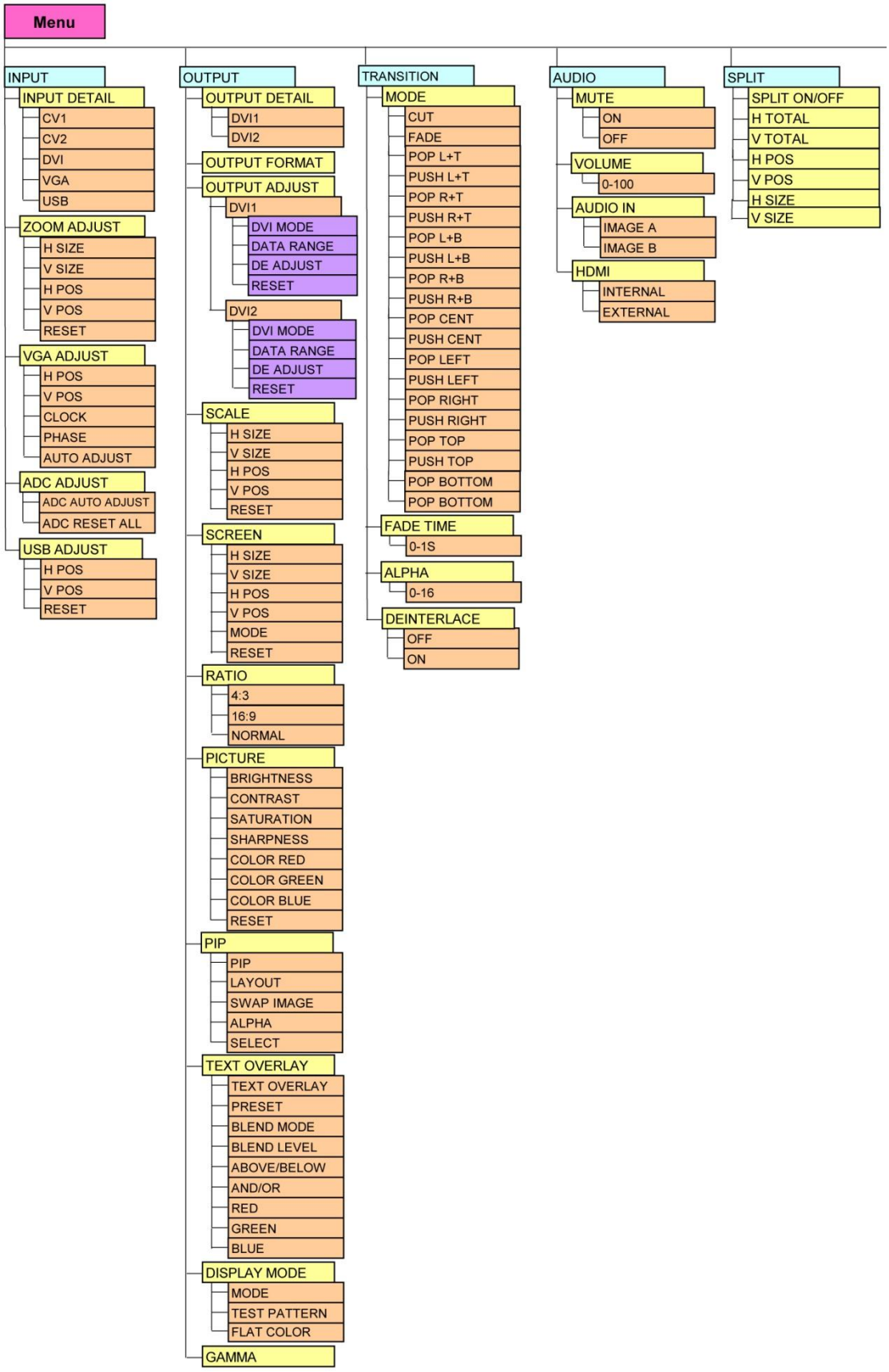
MENU

MENU

Press the **MENU** to main menu, main menu as shown below. Press knob buttons to select left or right menu item. “*” before the menu means it’s in selected state. Press knob button to enter corresponding setting or view the menu.

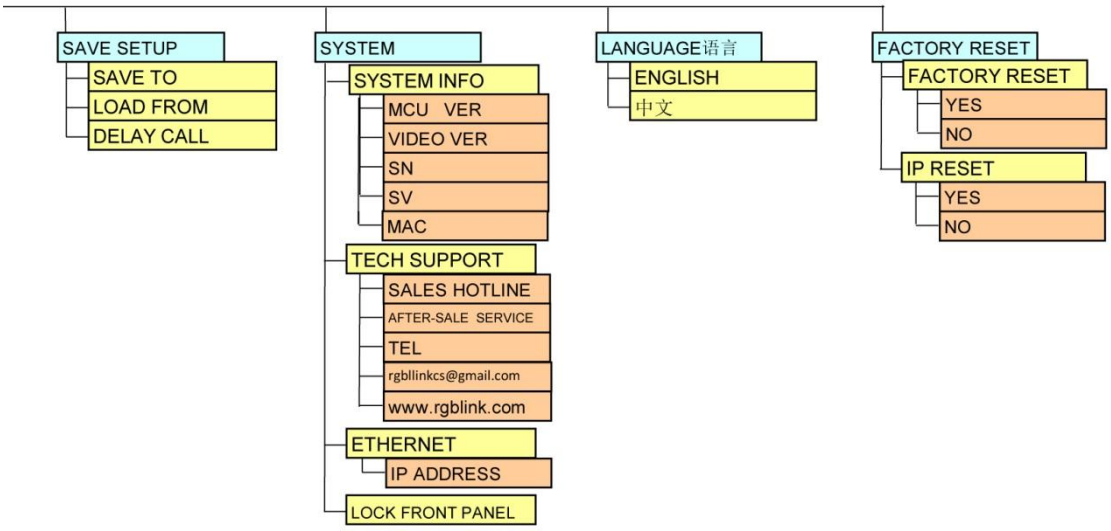
4. Menu Orientation

MENU



4. Menu Orientation

MENU



MENU---INPUT

Select INPUT, press it to confirm, show level 2 menus as follows:

INPUT DETAIL: Display input signal information, including CV1, CV2, DVI, VGA, USB.

ZOOM ADJUST: It can adjust the position and the scale, as following:

H SIZE: Width setting.

V SIZE: Height setting.

H Pos: Horizontal phase setting.

V Pos: Vertical phase setting.

RESET: If quality image distort by mistake in improper operation, it can be initialized operation to recover factory setting.

VGA ADJUST： Mainly aimed at H POS, V POS, CLOCK, PHASE when VGA input. It also can use the AUTO ADJUST to adjust.

ADC AUTO ADJUST：Mainly aim at the BRIGHTNESS to auto adjusting.

USB ADJUST： Mainly aimed at H POS, V POS when USB input. It also can use the AUTO ADJUST to adjust. If quality image distort by mistake in improper operation, it can be initialized operation to recover factory setting.

MENU ---OUTPUT

Select OUTPUT, press it to confirm, show level 2 menus as follows:

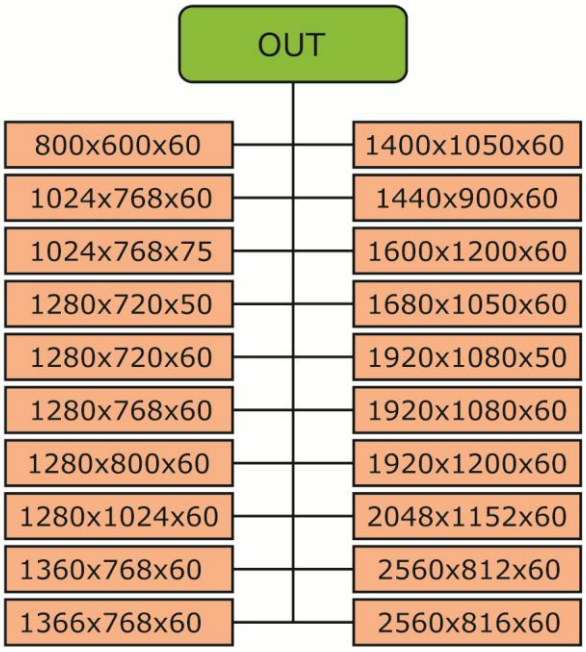
OUTPUT DETAIL: Display output signal information, including DV1, DV2,

4. Menu Orientation

MENU

OUT FORMAT: Mainly display the current output signal and output resolution.

Users can choose different output formats through the UP/DOWN button, this option includes 20 common output resolutions, shown as follow:



Note

The OUT button can also fulfill this setting.

OUTPUT ADJUST: Output adjust menu, the sub-menu as following:

DVI1, setting as following:

DVI MODE: Can select HDMI agreement or DVI; by default is DVI output, When need HDMI signal output, choose HDMI.

DATE RANGE: DVI1 out range adjustment can choose RGB or YCBCR; among them the RGB adjusting range is between 0-255, YCBCR adjusting range from 16 to 235.

DE ADJUST: DE adjust, the sub-menu as following:

DE ON/OFF: Can choose to open or close, when choose open, it can be adjusted to DE, as follows:

H SIZE: Width setting;

4. Menu Orientation

MENU

V SIZE: Height setting;

H Pos: Horizontal phase setting;

V Pos: Vertical phase setting;

When the signal source of the screen appear black side, can use this function adjustment, make the image to full screen display.

RESET: If quality image distorts by mistake in improper operation, it can be initialized operation to recover factory setting.

DVI2: Including DVI MODE, DATA RANGE, DE ADJUST, and RESET, same with DVI1.

SCALE： Scale menu as following:

H SIZE: Width setting.

V SIZE: Height setting.

H Pos: Horizontal phase setting.

V Pos: Vertical phase setting.

RESET: If quality image distorts by mistake in improper operation, it can be initialized operation to recover factory setting.

Note

The SCALE button can also fulfill this setting.

SCREEN： Screen setting, user can change the screen through the digital setting parameters to easily change the screen size and position. Mainly used in the LED large screen users. Settings as follow:

H SIZE: Width setting;

V SIZE: Height setting;

H Pos: Horizontal phase setting;

V Pos: Vertical phase setting;

Mode: window mode, can scale the（Screen）and（Full）switch.

Note

The FS button can also fulfill this setting.

4. Menu Orientation

MENU

RESET: If quality image distorts by mistake in improper operation, it can be initialized operation to recover factory setting.

RATIO： Proportional setting, press it, can realize the conversion between high and wide.

Normal: Original video proportion, 4:3 aspect ratios; 16:9 aspect ratios;

PICTURE: Picture setting, the sub-menu as following:

BRIGHTNESS: It can change the image color BRIGHTNESS via BRIGHTNESS Settings.

CONTRAST: It can change the image color CONTRAST via CONTRAST settings.

SATURATION: It can change the image color SATURATION via SATURATION Settings.

SHARPNESS: It can change the image color SHARPNESS via SHARPNESS Settings.

COLOR RED: It can change the image color Red via Red Settings.

COLOR GREEN: It can change the image color Green via Green Settings.

COLOR BLUE: It can change the image color Blue via Blue Settings.

RESET: If quality image distorts by mistake in improper operation, it can be initialized operation to recover factory setting.

Users can set according to their actual situation, this function mainly suitable for these very professional for image quality. Non-professionals are not suggesting above operations. If quality image distorted by mistake in improper operation, it can be initialized operation to recover factory setting.

The numerical range that needs adjusting is between 0-100. Press MENU to exit and return to higher level MENU.

PIP: PIP setting, press PIP and choose ON to set PIP mode.

LAYOUT: Can choose PIP layout, the corresponding results are as follows:

4. Menu Orientation

MENU

PIP L+T PBP L+R PBP T+B



SWAP IMAGE: It can set PIP to swap exchange, when choose ON, it can realize the main and sub-picture exchange.

ALPHA: Can set the image display transparency, regulating range between 0 - 16.

SELECT: Can choose to set the size or position of IMAGE A or IMAGE B individually.

TEXT OVERLAY: Text overlay function, settings as follows:

TEXT OVERLAY: Can select “ON” or “OFF”, OFF is the default state.

PRESET: Can preset value of the following functions, and total 13 modes:

User: User mode.

WhOnBk1: White On Black 1.

WhOnBk2: White On Black 2.

BkOnWh1: Black On White 1.

BkOnWh2: Black On White 2.

GrnOnBk1: Green On Black 1.

GrnOnBk2: Green On Black 2.

GrnOnWh1: Green On White 1.

GrnOnWh2: Green On White 2.

RedOnBk1: Red On Black 1.

RedOnBk2: Red On Black 2.

RedOnWh1: Red On White 1.

RedOnWh2: Red On White 2.

4. Menu Orientation

MENU

BLEND MODE: Blend mode, with two modes, “Mode 1” and “ Mode 2”.

Mode 1: Graphic content locate at the top and is non-transparent, background transparency is controlled by double-picture transparency;

Mode 2: Graphic content is controlled by double-picture transparency, the background is completely transparent;

BLEND LEVEL: Can set the image display transparency, regulating range between 0 - 16.

ABOVE/BELOW:

ABOVE: In image 2, if the pixel value is higher than the setting value, then the image is the graphic content pixel, otherwise, it is the graphic background pixel. It should combined with "AND/OR" conditions when judging.

BELOW: In image 2, if the pixel value is lower than the setting value, then the image is the graphic content pixel, otherwise, it is the graphic background pixel. It should combined with "AND/OR" conditions when judging.

AND/OR:

AND: All “Red, Green, Blue” value must meet ABOVE or BELOW conditions.

OR: Any one of “Red, Green, Blue” value should meet ABOVE or BELOW conditions.

RED: Red limit, cut-off point condition of ABOVE and BELOW condition in red channel, the range is 0 ~ 255.

GREEN: Green limit, cut-off point condition of ABOVE and BELOW condition in green channel, the range is 0 ~ 255.

BLUE: Blue limit, cut-off point condition of ABOVE and BELOW condition in blue channel, the range is 0 ~ 255.

DISPLAY MODE:

MODE: Image mode selection, user can choose different output modes

according to their requirement, such as: black, video image, freeze image, pure color image, test pattern.

TEST PATTERN: Test pattern setting, press UP/DOWN button, there are 1-66 kinds of modes for choose.

FLAT COLOR: When the output mode is pure color image, choose corresponding red, green and blue color value in this option to meet the practical needs.

GAMMA: Gamma setting, press it to adjust the image gamma value; Gamma values include: -1.2, -1.4, -1.6, 1, 1.2, 1.4, 1.6, sRGB;

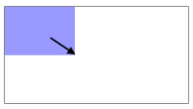
MENU --- TRANSITION

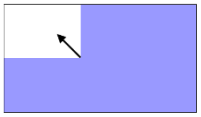
Choose the TRANSITION, press SEL to confirm, then the LCD screen displays the level 2 menu as following:

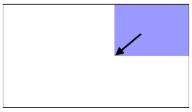
MODE: Switch mode, including the following modes:

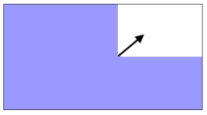
CUT: Seamless switching.

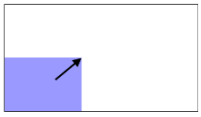
FADE: Fade in fade out.

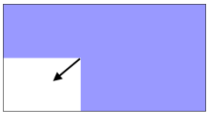
POP L+T: Upper left corner pop up 

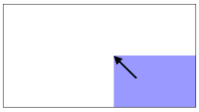
PUSH L+T: Upper left corner push 

POP R+T: Upper right corner pop up 

PUSH R+T: Upper right corner push 

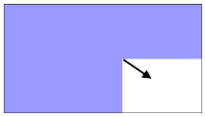
POP L+B: Lower left corner pop up 

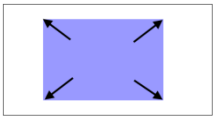
PUSH L+B: Lower left corner push 

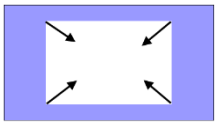
POP R+B: Lower right corner pop up 

4. Menu Orientation

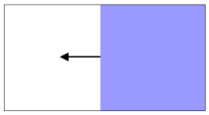
MENU

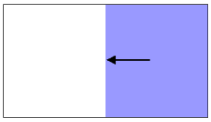
PUSH R+B: Lower right corner push 

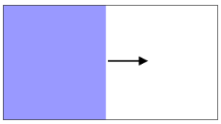
POP CENTRE: Centre pop up 

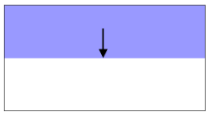
PUSH CENTRE: Centre push 

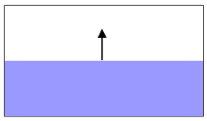
POP LEFT: Left pop up 

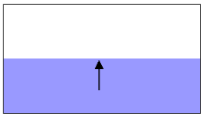
PUSH LEFT: Left push 

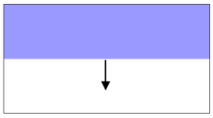
POP RIGHT: Right pop up 

PUSH RIGHT: Right push 

POP TOP: Top pop up 

PUSH TOP: Top push 

POP BOTTOM: Bottom pop up 

PUSH BOTTOM: Bottom push 

Note:  On behalf of the image emerging;

 On behalf of the image disappearing;

Arrows represents the direction of the image move, that is, the image that arrow point, is compressed or stretched to the direction that arrow indicates, until disappear or full screen.

4. Menu Orientation

MENU

FADE TIME: Switch time setting. Press UP/DOWN button to choose the time and press SEL to confirm. The switching time ranges from 0 to1.0.

ALPHA: It can set the image transparency, regulating range between 0 - 16.

DEINTERLACE: Force Deinterlace function, can choose “ON” or “OFF”.

ON: Force interlace, no effect switching.

OFF: No deinterlace, with effect switching.

MENU --- AUDIO

MUTE: Mute, can open or close it.

VOLUME: Volume adjustment.

AUDIO IN: Can choose audio input source for IMAGE A main image or IMAGE B sub-image.

HDMI: Can choose HMDI audio as INTERNAL embedded audio or EXTERNAL audio.

MENU --- SPLIT

Choose the SPLIT, press SEL to confirm, then the LCD screen displays the level 2 menu as following:

SPLIT ON/OFF: Split function, can choose “ON” or “OFF”.

H TOTAL: Horizontal total.

V TOTAL: Vertical total.

H SIZE: Width setting.

V SIZE: Height setting.

H POS: Horizontal phase setting.

V POS: Vertical phase setting.

MENU --- SAVE SETUP

SAVE TO: The device provides ten save modes, users can save the current operation to SAVE1, SAVE2, SAVE3;

Note

The SAVE button can also fulfill this setting.

4. Menu Orientation

MENU

LOAD FROM: It can call the saved user modes via the call save function.

DELAY CALL: Set delay the output time. When more than one equipment power on, and the processor is the end equipment in order to improve question that can't identify the input signal and phenomenon that LED screen appear messy code and flash screen, now need to delay the input time.

MENU --- SYSTEM

SYSTEM INFO: System information.

MCU VER: Information of MCU version.

VIDEO VER: Information of VIDEO version.

SN: It is the Factory serial number of LS-120 which is used to search the information of LS-120.

SV: Information of software version.

MAC: MAC address.

TECH SUPPORT:

SALES HOTLINE.

AFTER-SALE SERVICE.

TEL: Phone of technology support.

WEB SITE: Company web site of technology support.

EMAIL: Email of technology support.

ETHERNET: Network setting, including:

IP ADDRESS: 192.168.000.100.

LOCK FRONT PANEL: Through this setting can choose whether to lock the keys, if the key is locked, the equipment will remind: "please click MUNE and SEL key to release button!" User can also press the two keys to unlock equipment.

MENU --- LANGUAGE

Through this option, user can choose Chinese or English according to their needs to operate the interface more quickly.

4. Menu Orientation

MENU

MENU --- FACTORY RESET

Enter FACTORY RESET or IP reset; choose YES and press the SEL button to confirm; then LS-120 is reset to its factory settings. After 5 seconds, it completes factory settings and is ready for more operations.

5. Communication Software Guideline

In This Chapter

This chapter provides detailed information about the control communication software. The following topics are discussed:

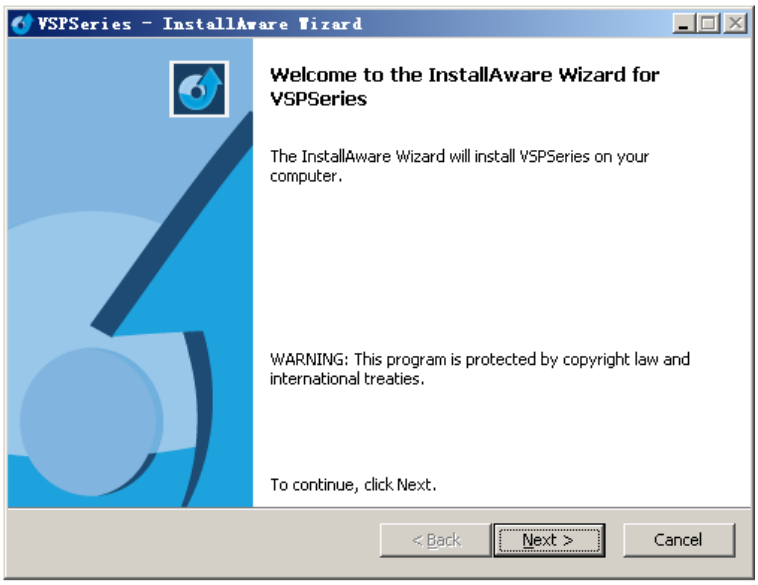
- Software Installation
- Software Operation
- How to Connect PC Through LAN Interface?

Software Installation

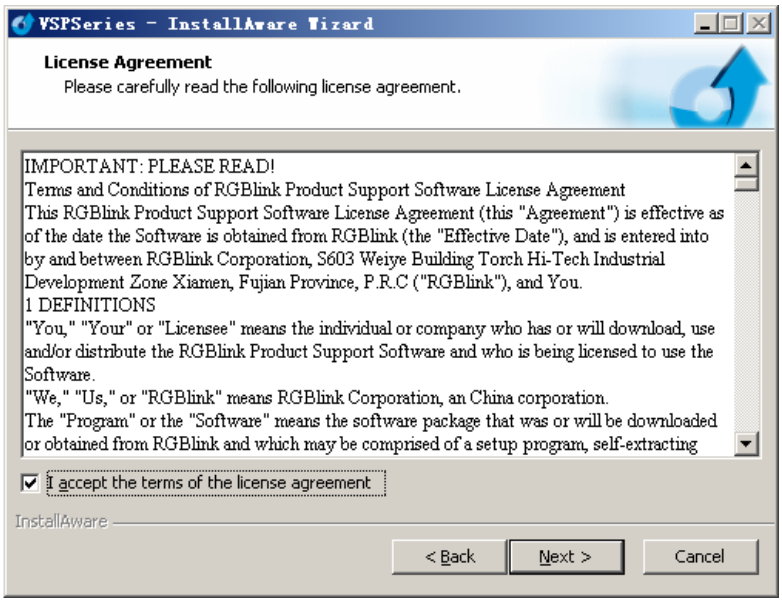
AVDSP video processor is very easy to be configured with user friendly communication software, support drag and drop operation for edit and display. Also it can be customized with schedule function.

Double click 

to install, English version default for use, click “select” to next dialog:

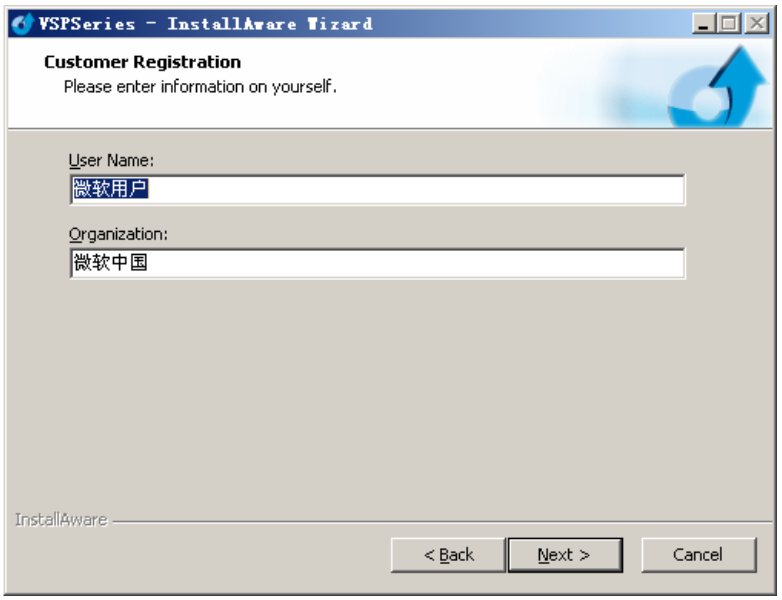


And in next dialog is the user agreement of the software, click Agree to go on:

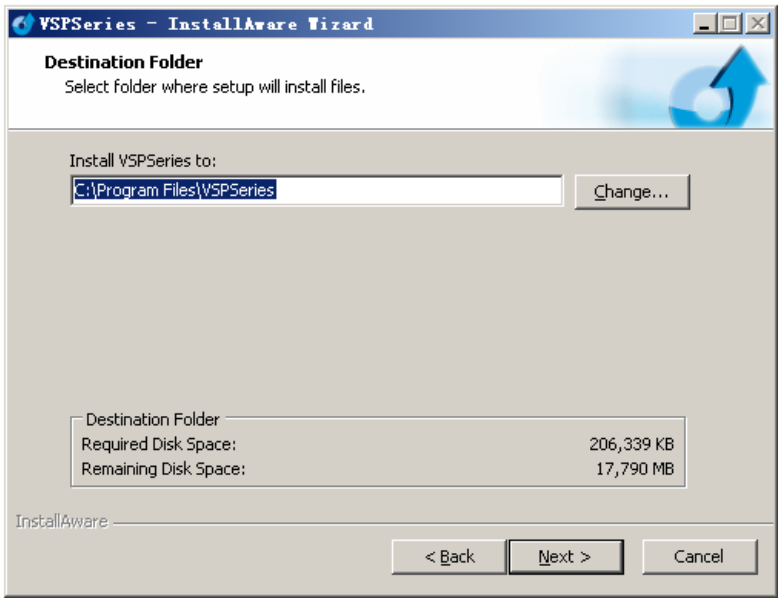


5. Communication Software Guideline

Software Installation



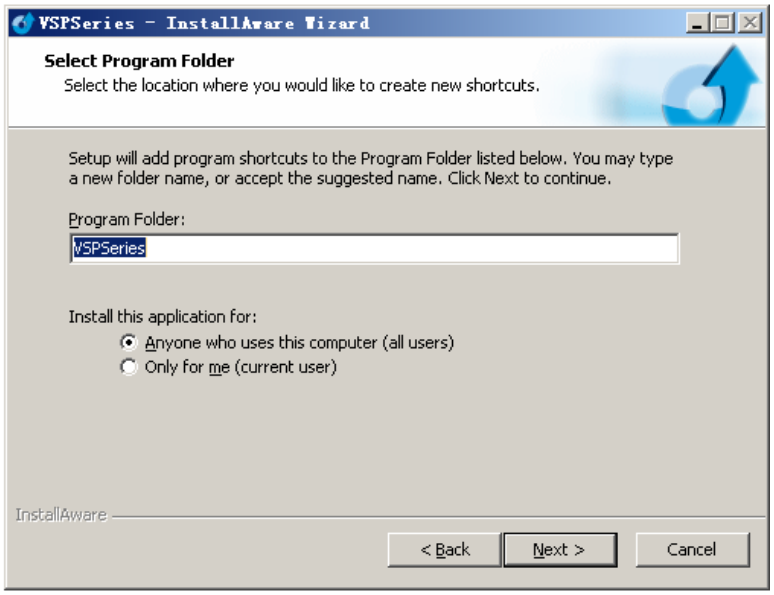
User can select “Change” to choose the LS-120 install software:



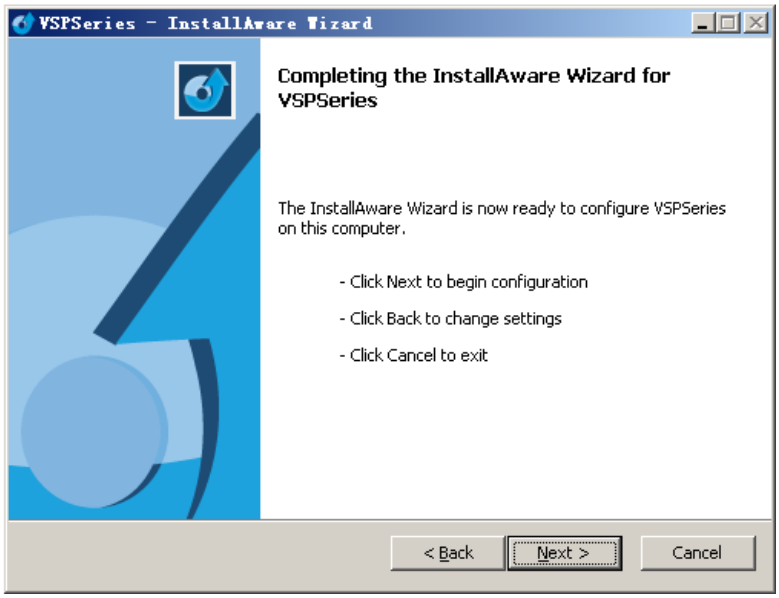
5. Communication Software Guideline

Software Installation

Click “Next” to go on：



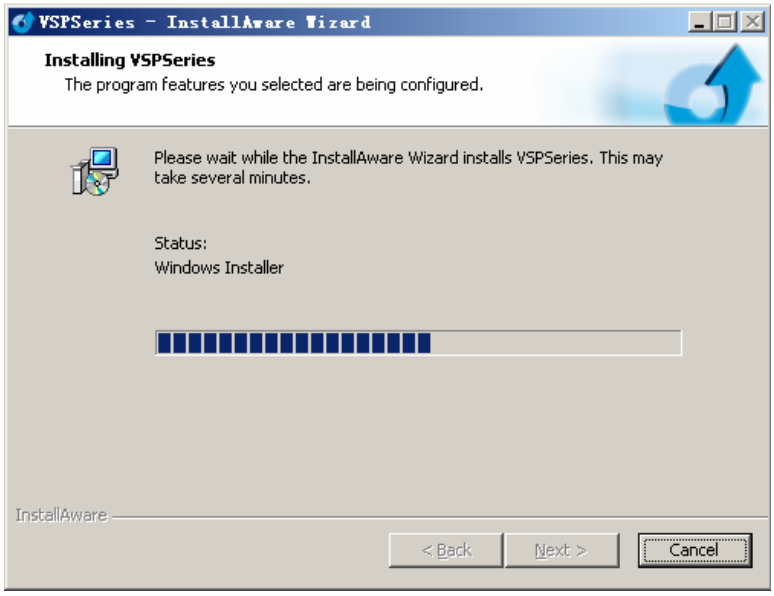
Click “Next” to go on：



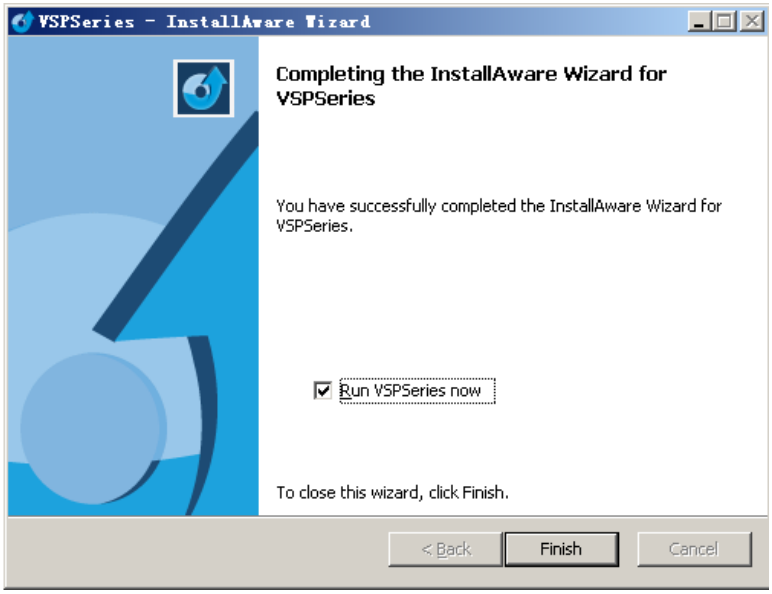
5. Communication Software Guideline

Software Installation

Click “Next” to go on:



Click “Finish” and ready to run LS-120 console:



Software Operation

Install communication which comes with the package of LS-120 device.

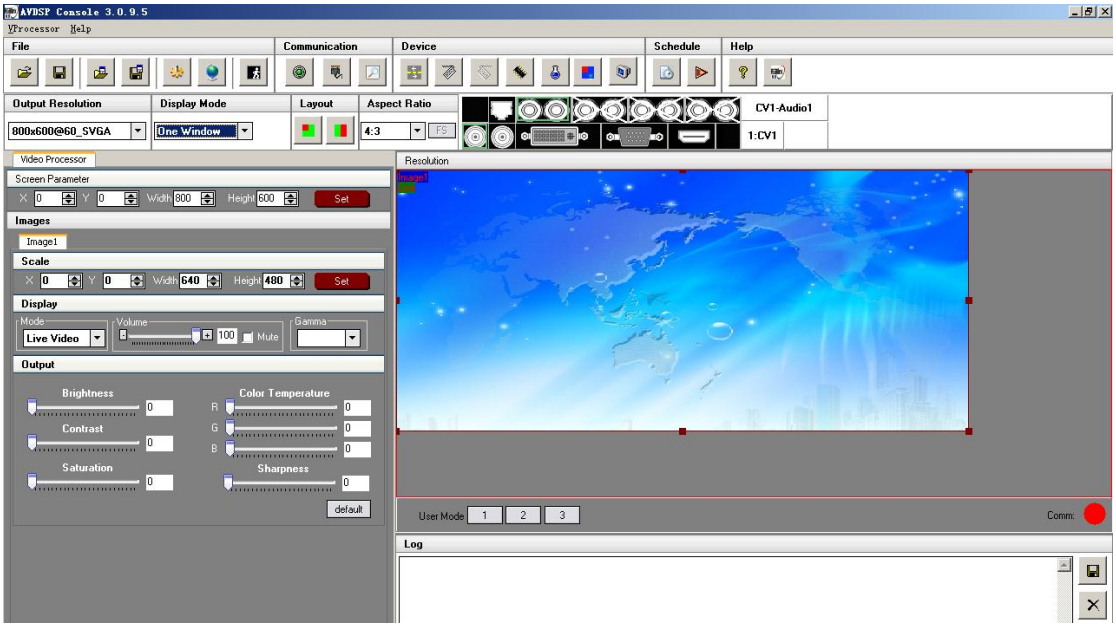
Double click 

icon from home screen to run the software.

Double click 

to run the software.

LS-120 communication software interface as shown：



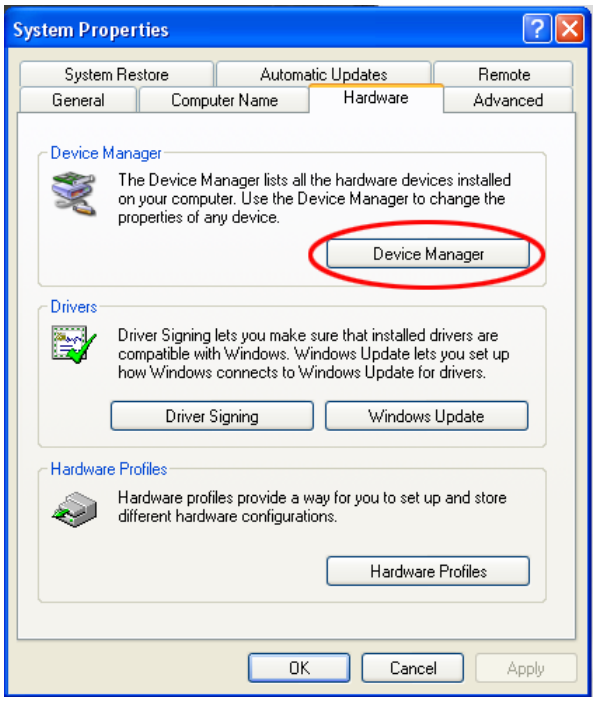
Connection

When control video processor through PC software, besides the power cord, the product default equip with a line that is COM (RS-232), 9-pin (DB9F), RJ11 COM crystal head (6 B4C). Below are the details about connection of steps:

First connect 9-pin (DB9F) to the computer on the corresponding port, and connect COM crystal to RS232 port on video processor. Open video processor; Next, operate the computer, back to computer desktop, right click【My computer】to【Properties】, find the【Hardware】option card, as follows, left click【Device manager】:

5. Communication Software Guideline

Software Operation

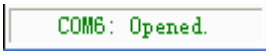


Find 【(COM and LPT)】 port in 【device manager】, click the plus sign on the left, record serial interface name that computer provides, as following chart, the serial port is COM1.

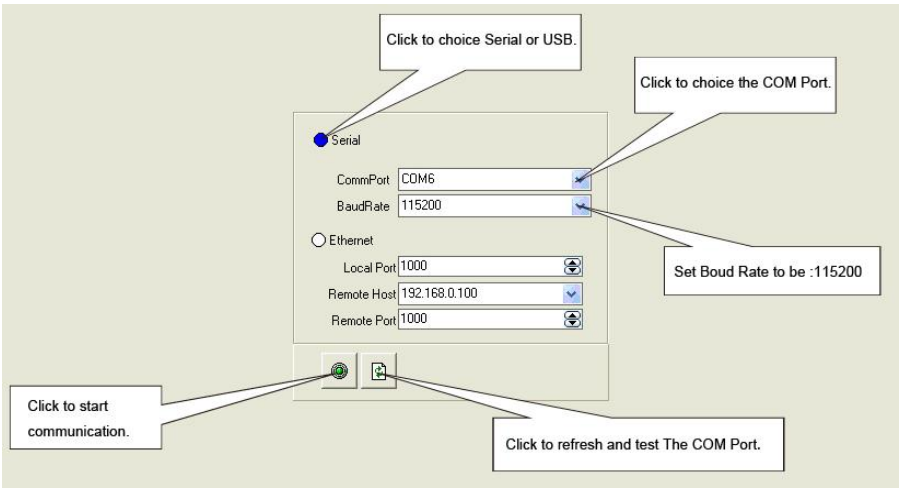
Confirm used COM and open control software, click **【communication】** page，enter setup option，Serial is the default COM，click icon  to refresh COM number，choose available COM，default Baud rate is115200. After serial setting, click  icon，the icon becomes  when

5. Communication Software Guideline

Software Operation

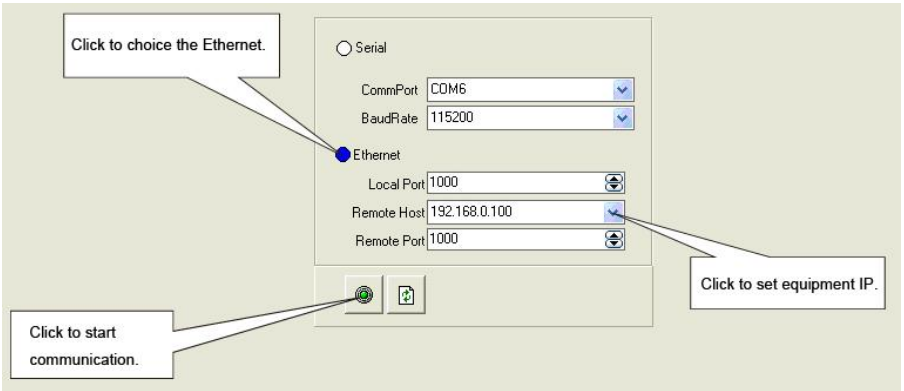
successfully connected，on the left button showing 

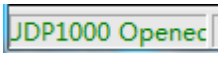
, meaning has connected video processor through COM, and can control video processor through the PC software.



Note

It is unavailable for LS-120 V1.4 currently.



Ethernet ，user can fill any number less than 1023 in local port，the remote port must be 192.168.0.100 and the remote port must be 1000. After setting above, click the icon  to connect with the network. If successful connect, the icon becomes  ，status on the left button showing 

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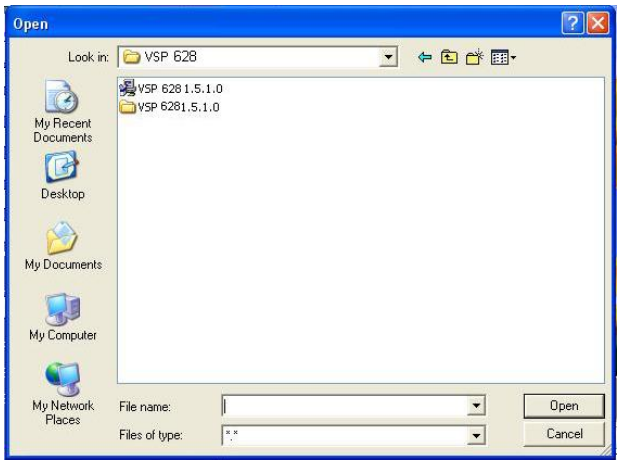
5. Communication Software Guideline

Software Operation

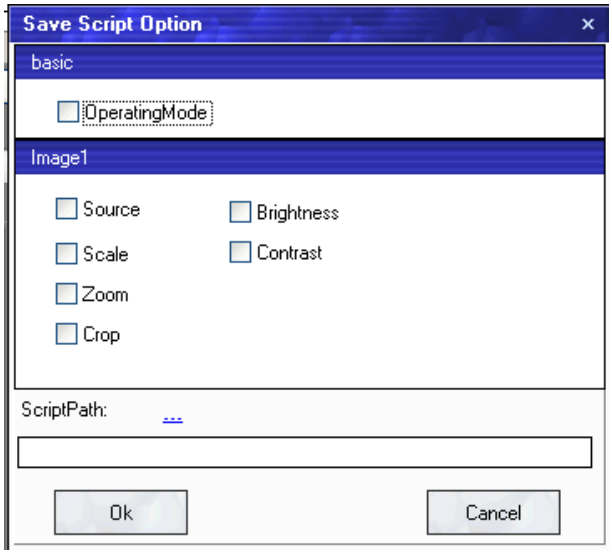
Use

File Toolbar

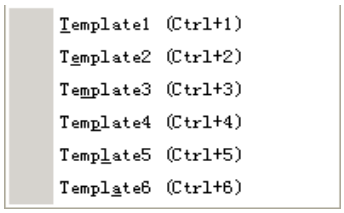
 ：Open script. User can open saved script and alter its parameters.



 ：Save script. Save current user parameters as script to the prescribed path.



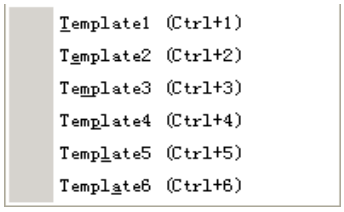
 ：Import template. There are six templates for user. Users can setup one of templates as the common one.



5. Communication Software Guideline

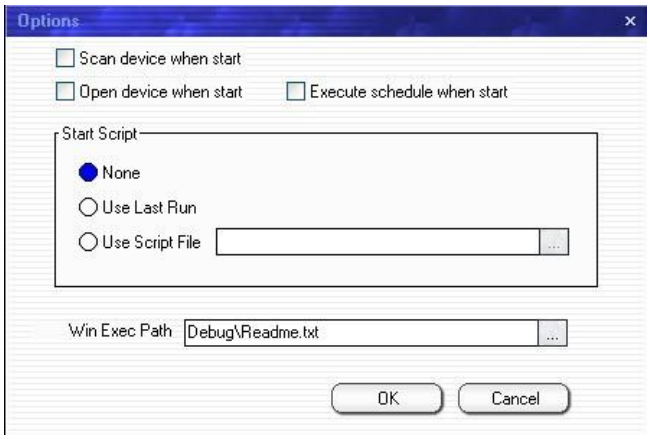
Software Operation

 : Export template. Export current config as template.

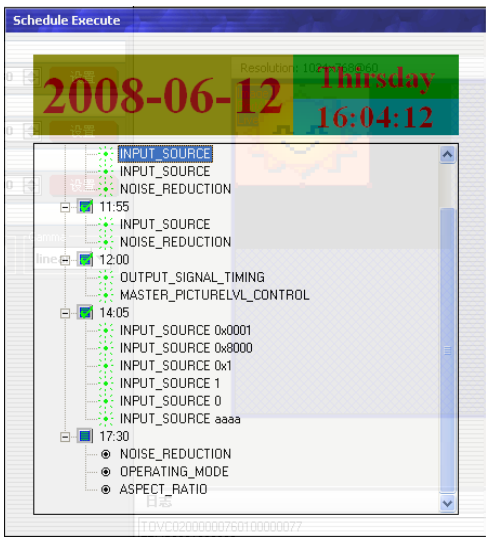


 : Option: User can choose open device when start and using script saved before or execute schedule edited before when start.

If user choose open device when start, user can use last run, use script file or none when user start. User can click  to choose which script user want to open.



If user choose execute schedule when start, the next dialogue will display when software run.



5. Communication Software Guideline

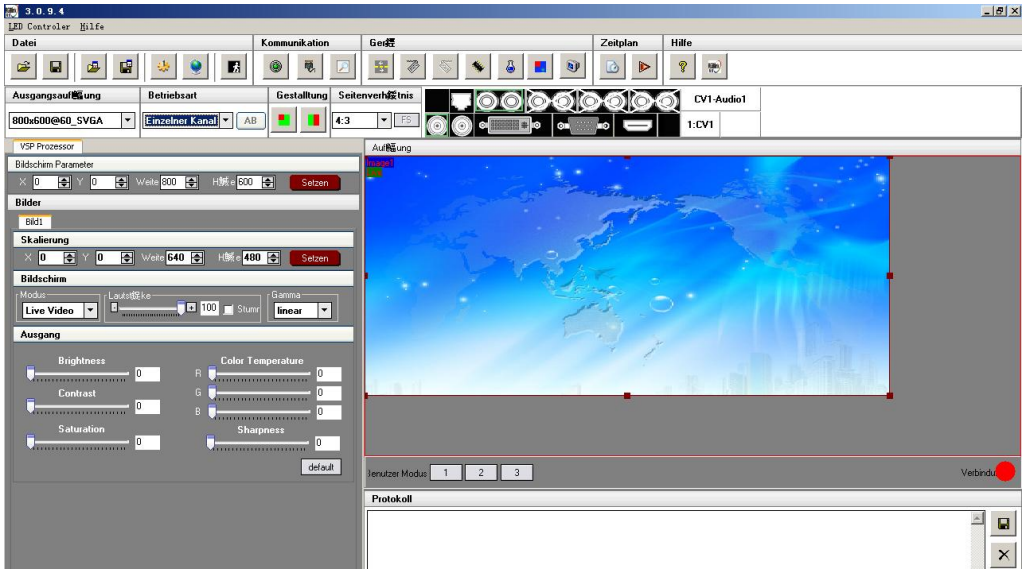
Software Operation

Note

It is unavailable for LS-120 V1.4 currently.

 : Language: The software supports Chinese, English and German version.

The picture following is the German dialogue.



 : Exit

Communication Toolbar

 : Open COM.

 : Close COM

 : Set COM.

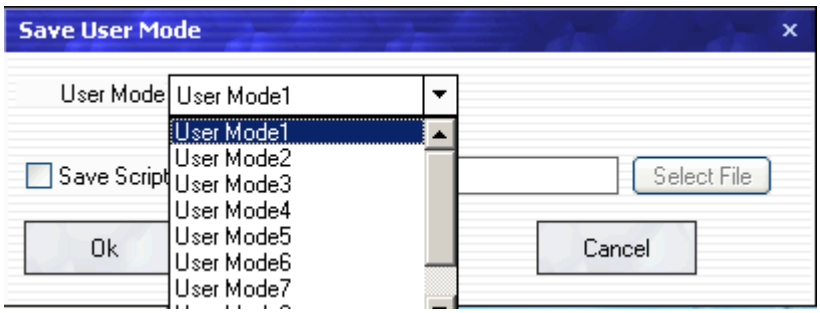
5. Communication Software Guideline

Software Operation

Device Toolbar

 : Synchronization.

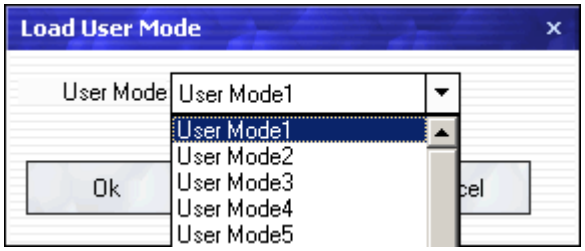
 : Save to flash.



Note

Same as MENU → SAVE SETUP → SAVE TO or the same as the SAVE key.

 : Load form Flash.



Note

Same as MENU→ SAVE SETUP → LOAD FROM.

 : Factory setup；

 : Advance

5. Communication Software Guideline

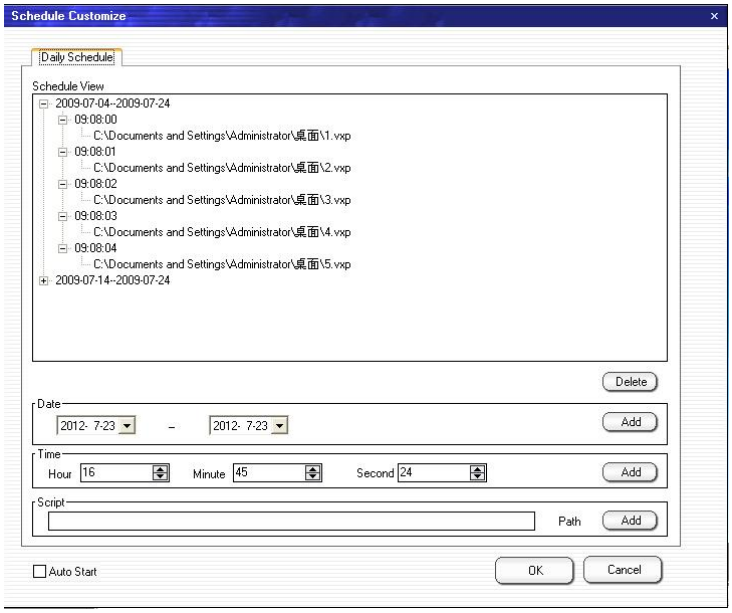
Software Operation

Note

Advance is only done by engineer. Please connect us for password.

Schedule Toolbar

 ：Customize schedule



 ：Execute schedule. Execute tasks according to schedule.

5. Communication Software Guideline

Software Operation

Help Toolbar

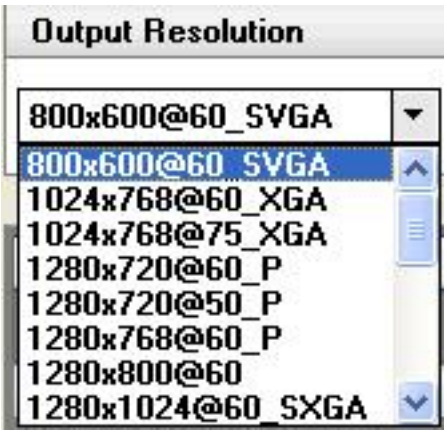
 ：Help: Display helps dialogue；

 ： About: Display information of software；

Output Resolution Toolbar

User can choose different output resolution by selecting from pull down list.

LS-120 has 20 output resolutions for users selection.



Note

Same as MENU → OUTPUT → FORMAT OUT or OUT key.

Images Display Mode Toolbar

Choose to work in single channel or dual channel.

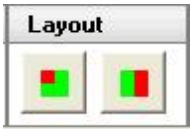
Layout Toolbar

If in single channel mode, the dialog is in grey and it is in limited use.

If in dual channel mode, user can set the device to work in PIP or PBP mode directly with quick preset layout button as following.

5. Communication Software Guideline

Software Operation

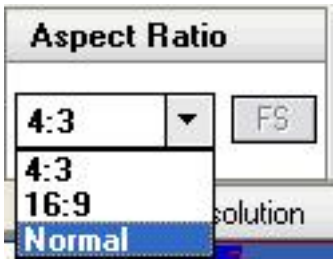


Note

Same as MENU → OUTPUT → PIP → LAYOUT.

Aspect Ratio Toolbar

Users can select 4:3 or 16:9 in the pull-down options.

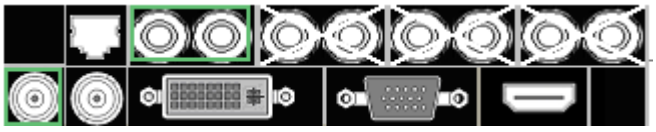


Note

Same as MENU → OUTPUT → RATIO

Signal Input Toolbar

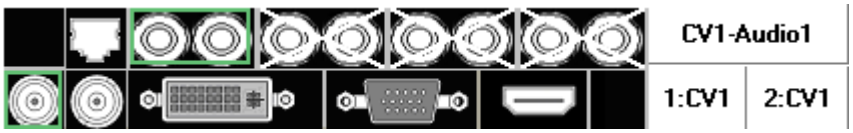
The white area displays the name of input interface when the mouse is over the interface picture on the left. The green pane means current selected interface.



When user selects a dual channel mode, select any channel image, click on the toolbar interface the ICONS for the channel selection input interface, i.e.: Composite1, Composite2, DVI, VGA, green toolbar says it has chosen the current interface for channel 1 input interface, the default last single channel chosen interface for channel 2 input interface, the currently selected channel will be shown on the right side of the source.

5. Communication Software Guideline

Software Operation



Screen Parameter Toolbar

User can set size and position of the screen simply, mainly applies to LED screens users. After setting screen parameter， the user choice PIP or PBP operation, display picture can directly shows on corresponding screen.

Note

Same as MENU → OUTPUT → SCREEN

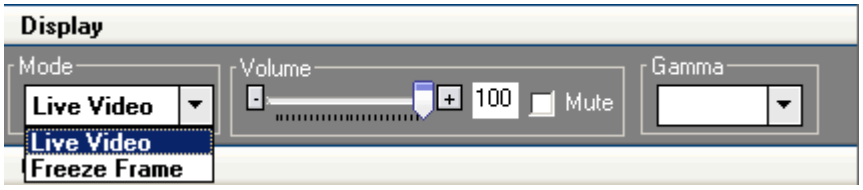
Image Toolbar

User can scale the images；Image 2 can’t choose in single channel mode.

Note

Same as MENU → OUTPUT → SCALE , or SCALE key.

Display Toolbar



When it is in Live Video, the video plays properly; when it is in Freeze Frame, the video stop playing.

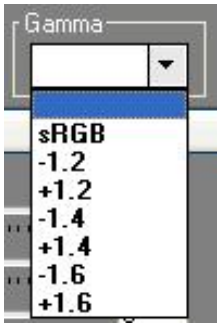
Note

Same as MENU → OUTPUT → DISPLAY MODE → MODE.

5. Communication Software Guideline

Software Operation

Setting Gamma is generally not recommended, since LED large screen itself has Gamma function. For further information, users can contact with our customer service team.

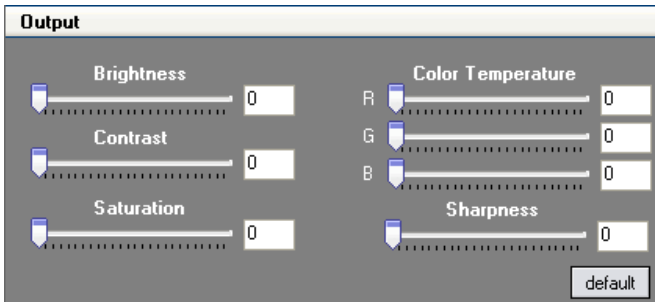


Note

Same as MENU → OUTPUT → GAMMA

Output Image Setup Toolbar

User can customize the brightness and the contrast.



Note

Same as MENU → OUTPUT → PICTURE.

Images Display Toolbar

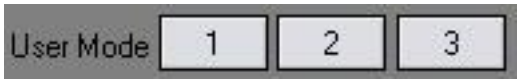
User can customize image or images position and size just by drag and drop image (images) in this area. This process is sync to the parameters in images toolbars.

5. Communication Software Guideline

Software Operation

User Mode Toolbar

Users can recall the saved user mode1, mode2 or mode3

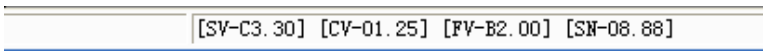


Log Toolbar

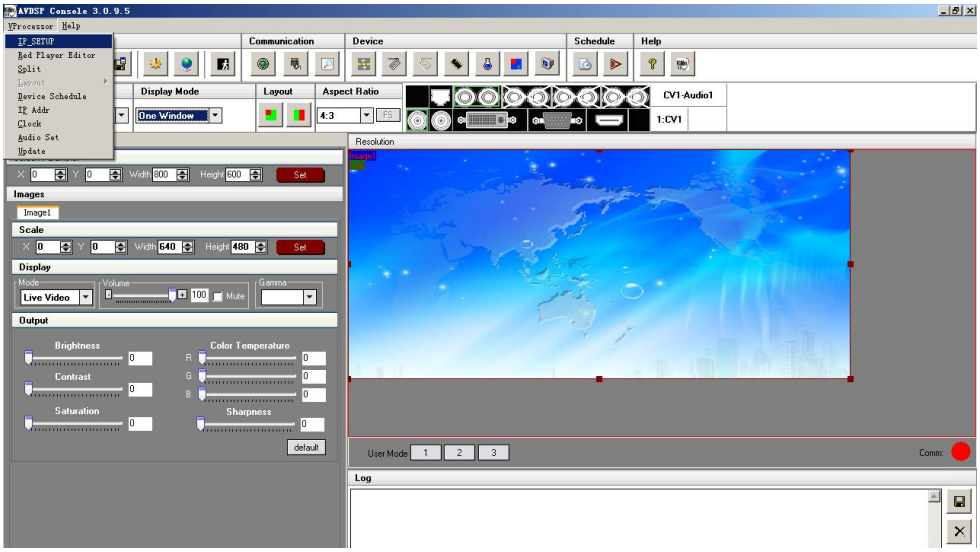
User can save or delete the operate log file.

Information Toolbar

It is the LS-120 software version, core board version, firmware version and the serial number in bottom of the software interface.



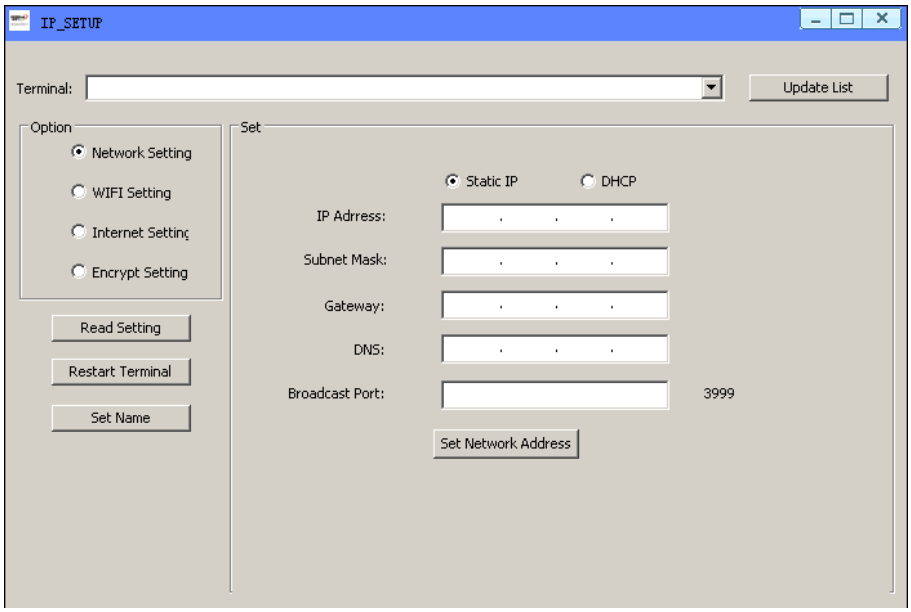
【Video Processor】Options



5. Communication Software Guideline

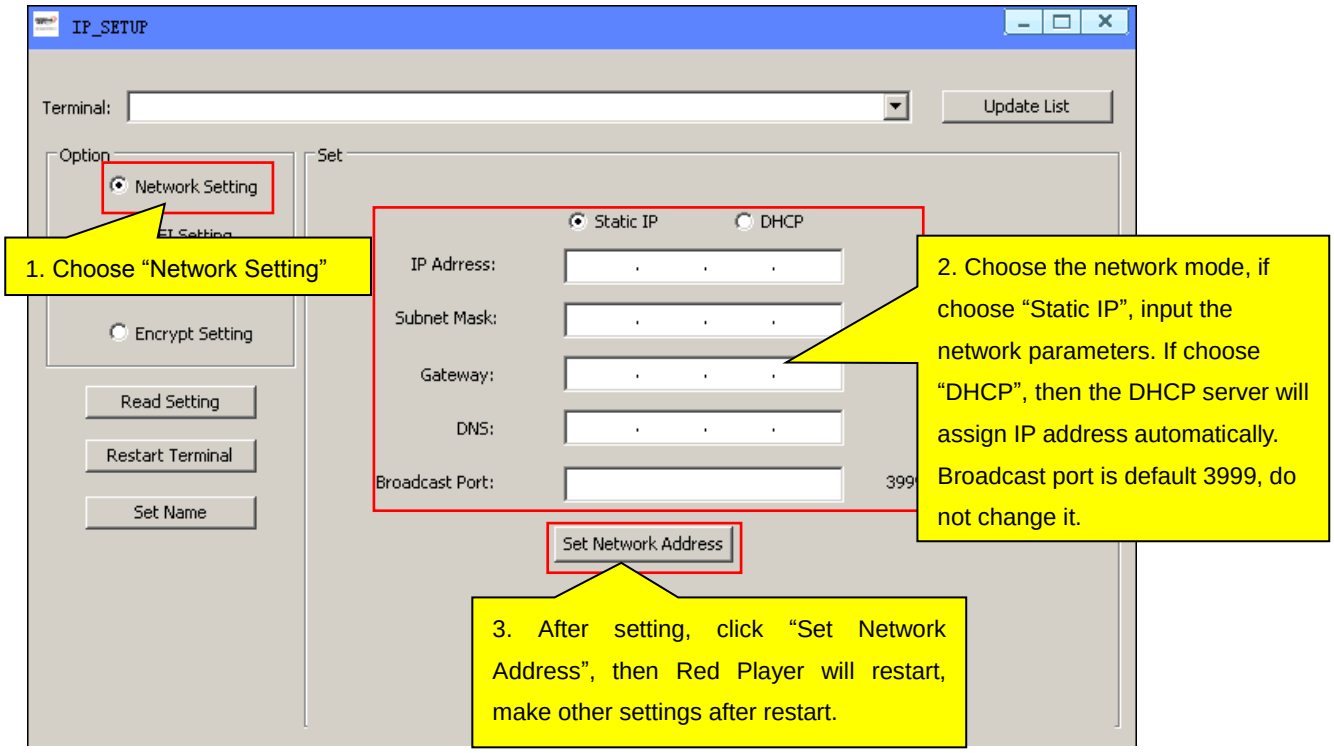
Software Operation

IP SETUP: shown as follows:



Specific operation is as follows:

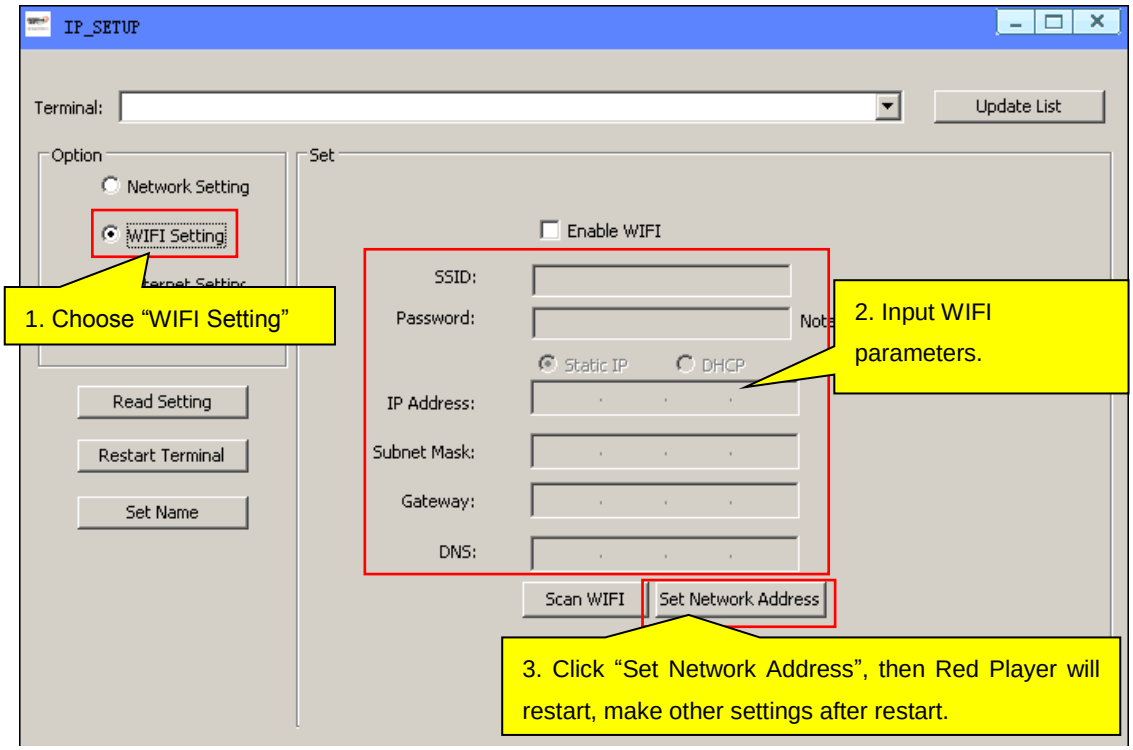
Network Setting:



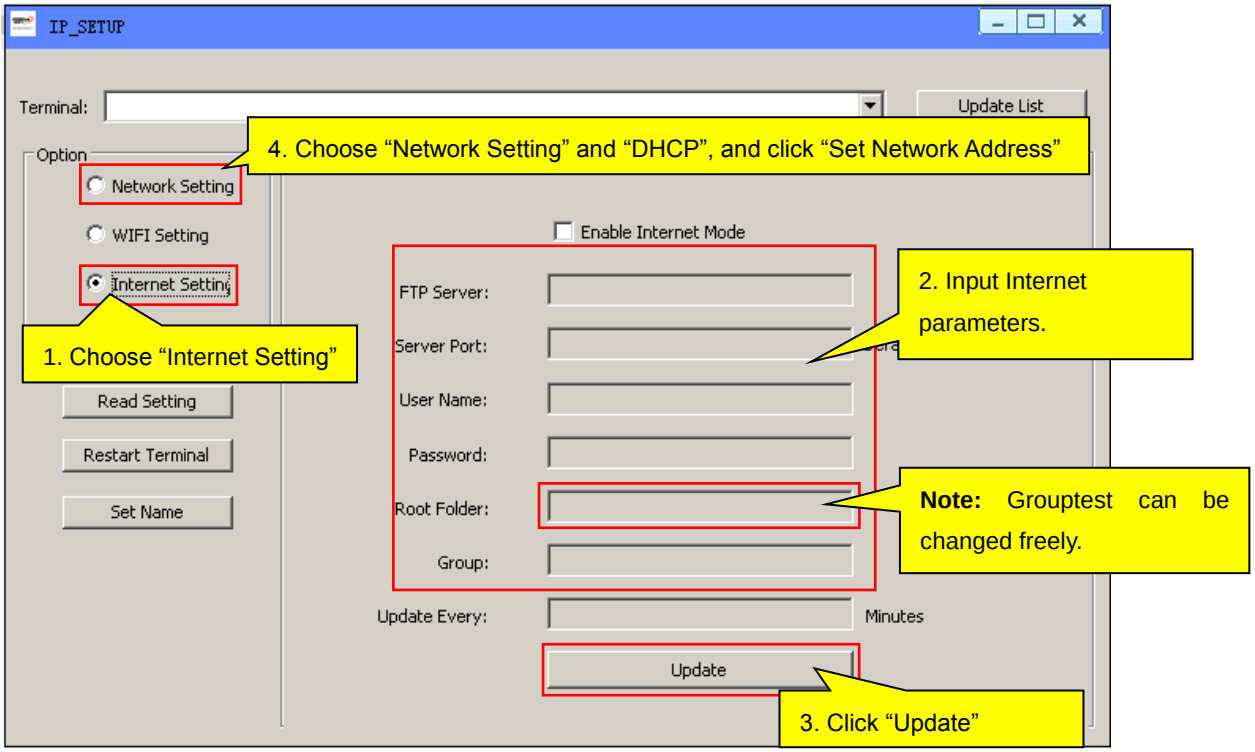
5. Communication Software Guideline

Software Operation

WIFI Setting:



Internet Setting:

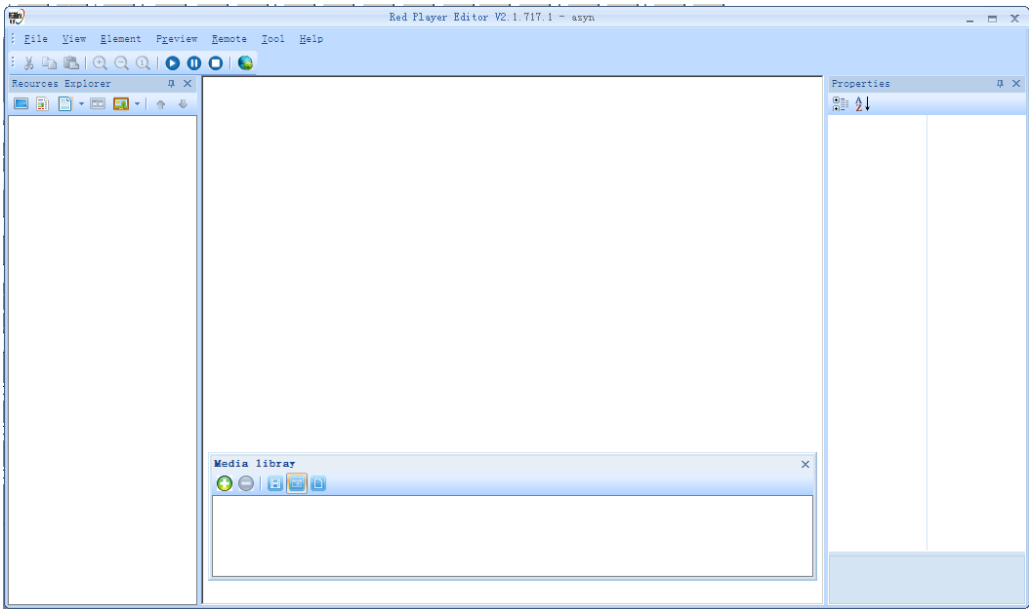


After setting, user can read setting, restart terminal, and set name.

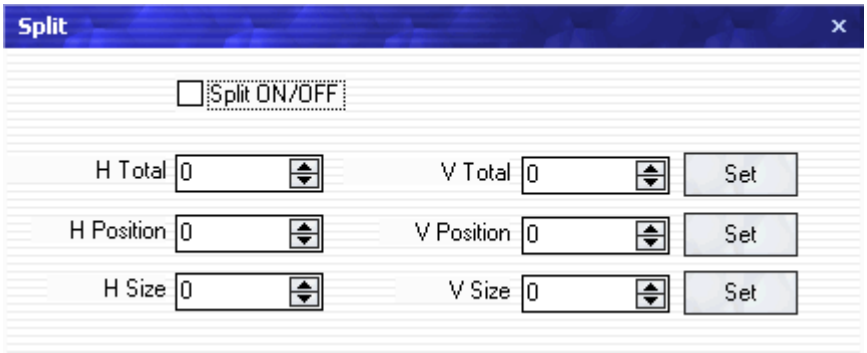
Red Player Editor: Can edit the program, click it and shows as follows, for details, please refer to: How to edit the Program.

5. Communication Software Guideline

Software Operation



Split:



Split function, choose “ON” can set H total, V total, H position, V position, H size and V size.

Note

Same as MENU → SPLIT.

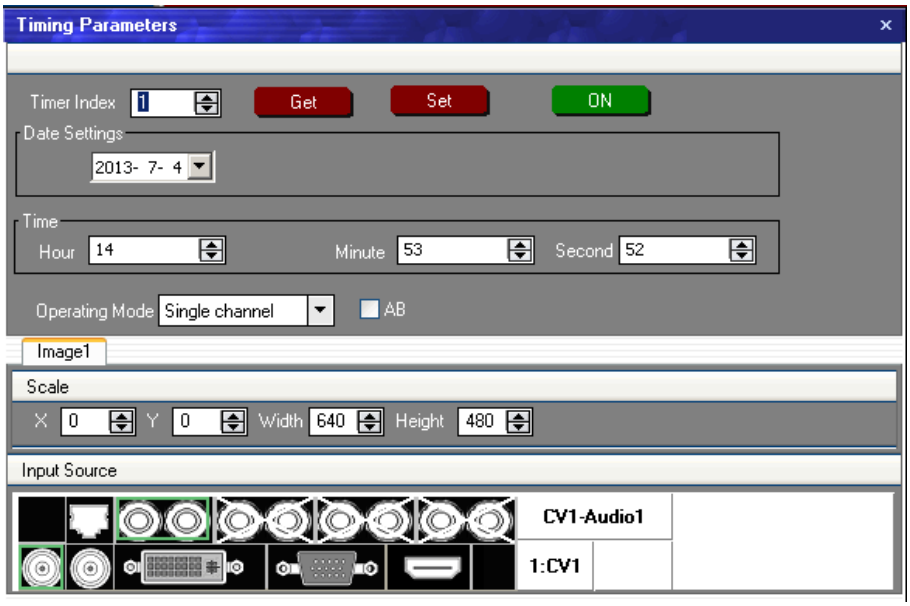
Device Schedule:

Users can set up LS-120 to play the appointed input video automatically in time and operation of single or dual channels, ratio place.

Users can setup up to 10 timing operation in the schedule.

5. Communication Software Guideline

Software Operation

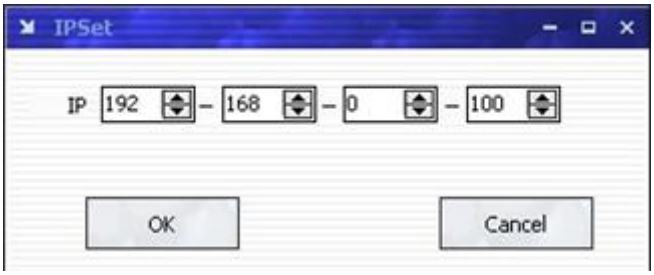


Note

It is unavailable for LS-120 V1.4 currently.

IP Address：

Users can set equipment IP, usually used under the condition of one computer control or remote control several computers. It takes effect immediately after users change IP through serial port; and when users change IP through network, it takes effect after reopen the software.



Note

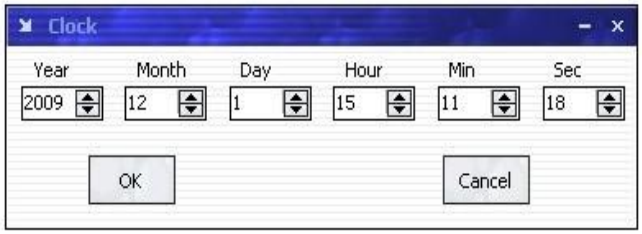
It is unavailable for LS-120 V1.4 currently.

Clock：

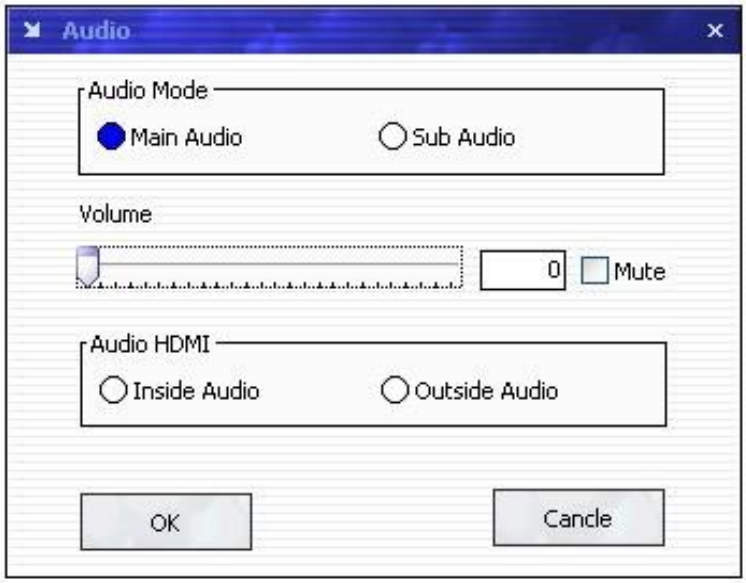
Users can set or adjust lower computer time through” clock”

5. Communication Software Guideline

Software Operation



Audio setting：



【Help】Options

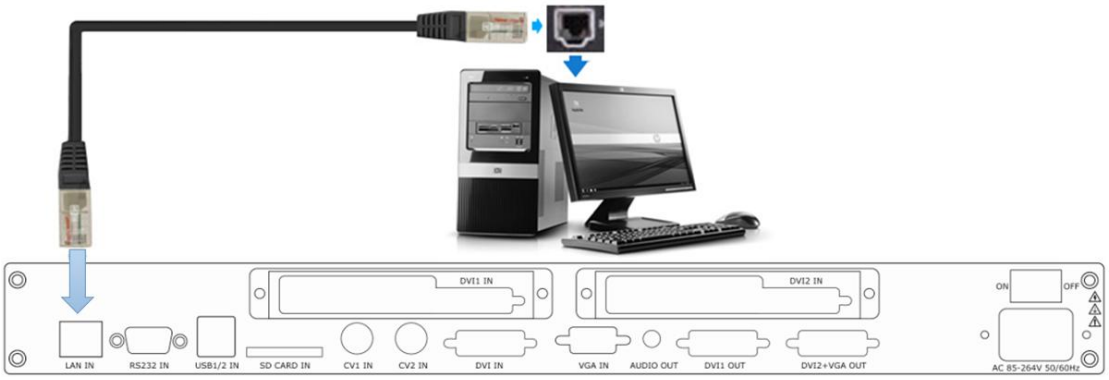
Version: The update of software

About: The information of the software version and the company.

How to Connect PC Through LAN Interface?

First, install the upper computer software in the computer;

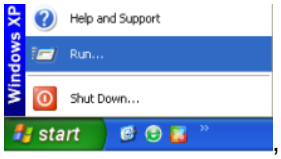
Connect LS-120 and computer with cable, the connection diagram is as follows:



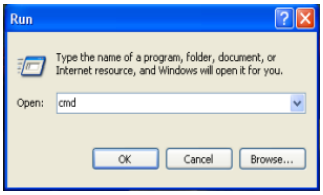
Power on LS-120, start the network function, specific steps are as below:

The first step：push MENU button ,login MENU—SYSTEM—ETHERNET，check the IP address of the equipment ,the equipment factory default IP address : 192.168.0.100；

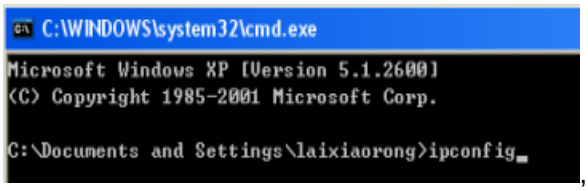
The second step：check computer IP address,

Click start, then press button Run 

,

Enter <cmd>,then click< ok> 

,

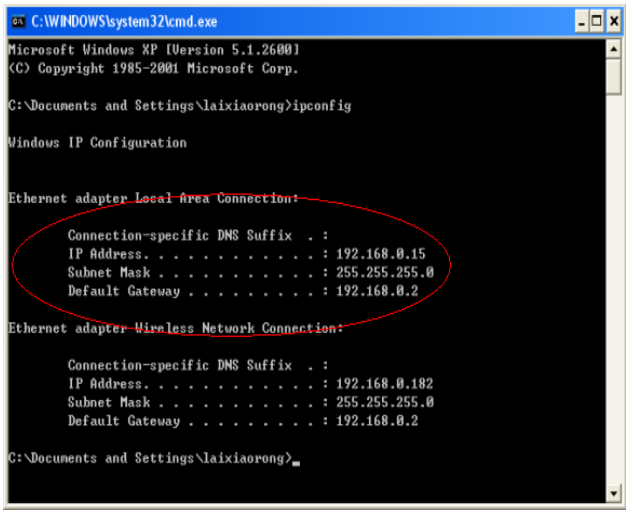
, Enter <ipconfig> 

,

Then press <Enter> button, the IP address will (the red circle) display on the computer: 192.168.0.15 ;

5. Communication Software Guideline

How to Connect PC Through LAN Interface?



The third step: Equipment IP address :192.168.0.100；

Computer IP address :192.168.0.15；

The fourth step: the first two section IP address are in the same band,192.168.0.XXX,

But the fourth section number(XXX) cannot be the same.

If so, the communication connection can be built by line CAT5.

Note

If the computer IP address and equipment address are totally different, the connection will not be built. For example, the computer IP address is 218.032.010.201； Equipment IP address :192.168.0.100；

Solution 1:change the IP address of the Equipment for :218.032.010.xxx。

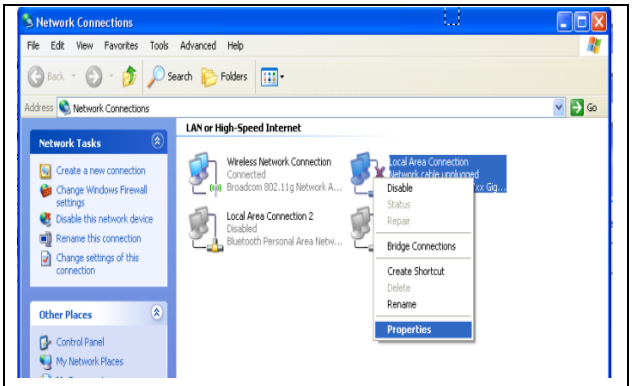
Change the IP address process: push <MENU> button ,enter into <MENU>--<SYSTEM>--<TTHERNET>--<IP ADDRESS>,you can change the IP address of the equipment and computer's to the same band， 218.032.010.xxx. More details,please refer to the operation of <MENU---SYSTEM>,Restart the processor.

Solution 2:change the computer IP address for 192.168.0.xxx；

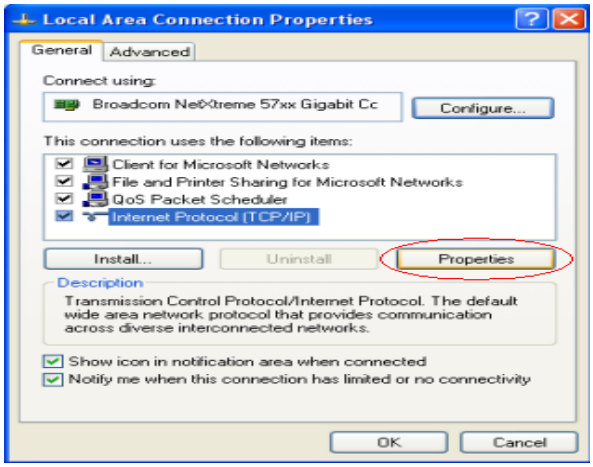
Open network connections,right click on properties,

5. Communication Software Guideline

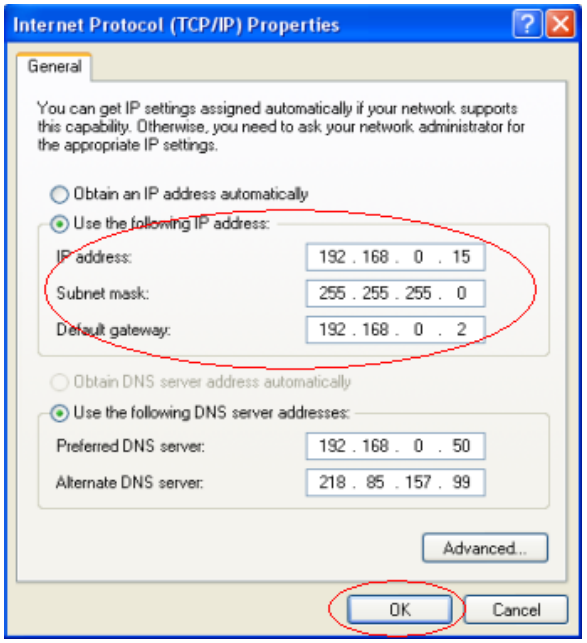
How to Connect PC Through LAN Interface?



,choose Internet protocol(TCP/IP),



Click properties,



you can change the IP address of equipment and computer to the same band192.168.0.XXX；

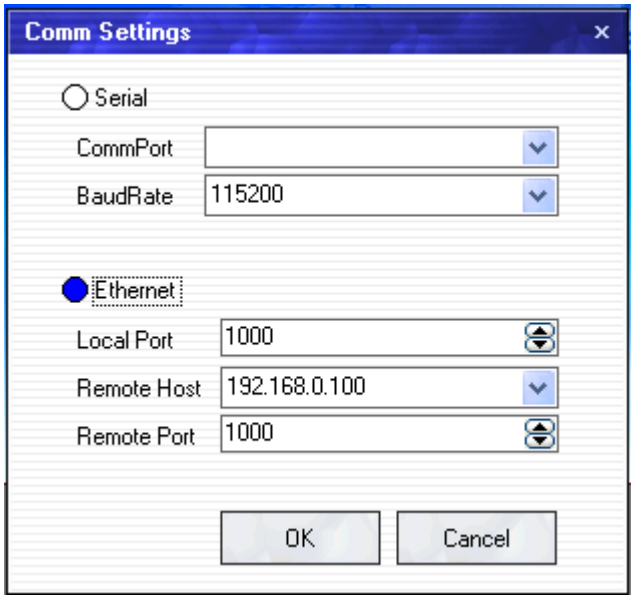
5. Communication Software Guideline

How to Connect PC Through LAN Interface?

The fifth step: Open the upper computer software, click  ,

Interface is shown as below

Choose【Ethernet】;



Input IP address, click 【OK】.

Click  to open the serial port, if the 【Comm】butoon (in the lower-right corner of the control software interface) is green, and log outputs information smoothly, then you would control the device through PC software.

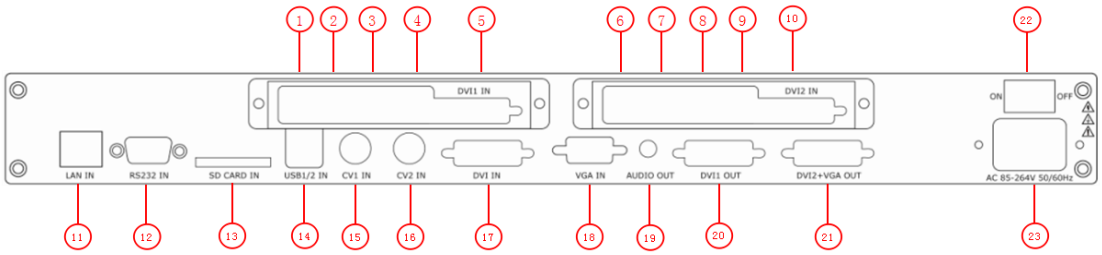
6. System Setup and Operations

In This Chapter

This chapter provides comprehensive instructions for system setup and operations. The following topics are discussed:

- Interface and Input Signal Option
- How to Confirm the Device is in Normal Operation
- How to choose the language on the LCD
- How to Adjust the Output Resolution
- How to Realize Single Image Switching
- How to Set up the Size and Position of Signal Image
- How to Realize Screen Size and Full Size Switching
- How to Edit the Program
- How to Set Router VPN
- How to Save the Parameter
- How to Load the Saved Parameter

Interface and Input Signal Option



NO	INTERFACE	NO	INTERFACE
1.2.6.7.11	10/100M Interface RJ45	17	DVI Input DVI-I
3.8	Power supply port of Sending Card	18	VGA Input DSUB15 port
4.9	USB control port of Sending Card	19	Audio Output
5.10	DVI input port of sending card	20	DVI Output DVI-I
12	RS232 Interface	21	DVI+VGA DVI-I Output
13	USB input port	22	Switch
14	SD card input	23	Power IEC-3 port
15.16	CVBS Input BNC port		

20. DVI1 have default the main image output , use for connecting the sending card of led screen. LS-120 support resolution format as following: 800x600x60Hz, 1024x768x60Hz, 1024x768x75Hz, 1280x720x60Hz, 1280x720x50Hz, 1280x768x60Hz, 1280x800x60Hz, 1280x1024x60Hz, 1360x768x60Hz, 1366x768x60Hz, 1400x1050x60Hz, 1440x900x60Hz, 1600x1200x60Hz,1680x1050x60Hz,1920x1080x60Hz,1920x1080x50Hz, 1920x1200x60Hz, 2048x1152x60Hz, 2560x812x60Hz, 2560x816x60Hz.

Note

6. System Setup and Operation

Interface and Input Signal Option

Same as MENU →OUTPUT→ OUTPUT FORMAT or OUT key.

21. DVI2 + VGA output interface default for preview, mainly through the display preview will output signal, the output signal for DVI video signal and VGA video signal, may meet with DVI interface or VGA interface display and display equipment signal images look prison. Through the DVI - I interface output signal (Preview adopt standard DVI - I interface, compatible VGA output, through the terminal adapter VGA output; The resolution of the output support for:

800x600x60Hz,1024x768x60Hz,1024x768x75Hz,1280x720x60Hz, 1280x720x50Hz, 1280x768x60Hz, 1280x800x60Hz, 1280x1024x60Hz, 1360x768x60Hz, 1366x768x60Hz, 1400x1050x60Hz, 1440x900x60Hz, 1600x1200x60Hz,1680x1050x60Hz,1920x1080x60Hz,1920x1080x50Hz, 1920x1200x60Hz, 2048x1152x60Hz, 2560x812x60Hz, 2560x816x60Hz.

In addition to CONT part and send card and power interface outside, other interface for video signal input interface,

CVBS（BNC Port）Can receive standard video signal from players, cameras etc. Input supported resolution 480i and 576i via BNC. Supported standards include: PAL, NTSC and SECAM.

USB（USB Port）Can access the USB device or mobile hard disk with USB storage function. Mainly used to store video program package.

DVI（DVI-I Port）Computer graphics interface may receive the DVI output interface can also through the DVI turn HDMI cable to connect the computer graphics HDMI output or DVD HDMI output;

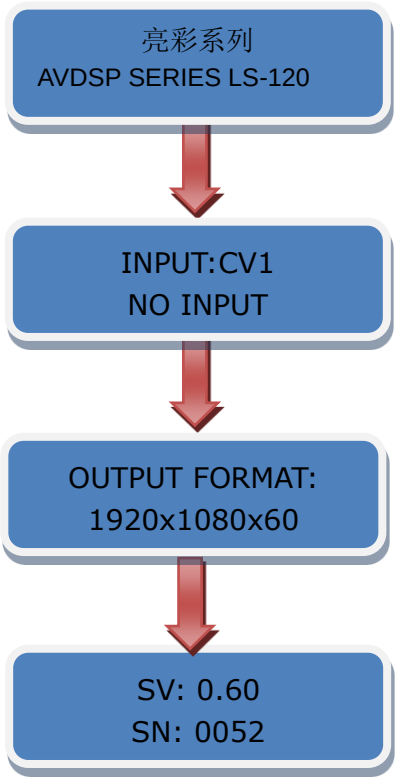
VGA（DB15 Port）Can support HD player, computer, video signal. Through the DB15 interface input signal.

22. Power：Power has been already supplied for video processor

23. AEC Port： AC 85-264V 3.8A 50/60Hz IEC-3 Power Interface.

How to Confirm the Device is in Normal Operation

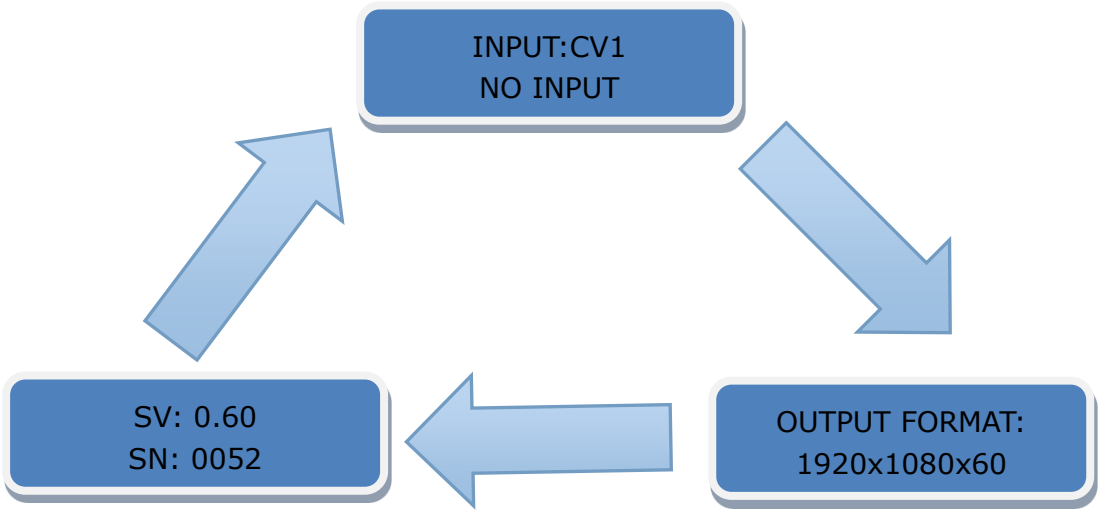
1. Firstly , make sure the power of device setup
2. After power on , the fans running , the button scanning
3. After the button scanned, the device operate, the LCD display that:



6. System Setup and Operation

How to Confirm the Device is in Normal Operation

4. After the start, the completion of equipment factory default call parameter or save1 system parameters, CV1 key light is lit up; System into the circulation state: circulation process indicates that the current input signal source, the current output format, the current program version information, the current equipment serial number, the user hold equipment serial number will get more effective service and support.



5. System into the circulation state of equipment for the normal starting.

How to Choose the Language on the LCD

1. Press MENU button, enter menu option, press UP/DOWN button, and choose 【LANGUAGE 语言】option.

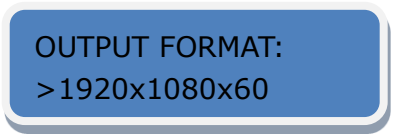
2. Press SEL button，change the status of option“**>**”to“*****”:

3. Press UP/DOWN button again, change the default “ENGLISH” to “Chinese”.

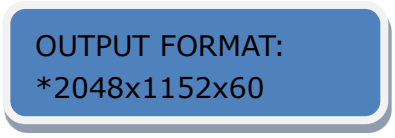
4. After finishing, press SEL button to confirm, the LCD display “ENGLISH” has been changes to “Chinese”.

How to Adjust the Output Resolution

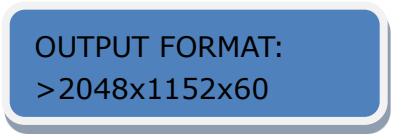
1. Press OUT button, enter output format option:



2. Press UP/DOWN button, choose the required resolution. for example: 2048x1152x60;



3. Press SEL button, finish the choice of resolution.

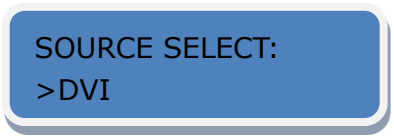


Note

Same as MENU → OUTPUT → OUTPUT FORMAT

How to Realize Single Image Switching

Boot the system default CV1 to the current input source (key light and scintillation), if need seamless switching other source such as DVI, direct light touch DVI key, LCD screen display as follows



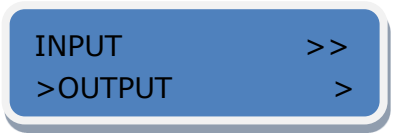
Choose DVI buttons, CV1 key light is off, and DVI key lights and shining, can realize single picture of input signal source switching (input signal source by original CV1 switching to DVI).The same method can be switched CV2, VGA, USB.

Note

Seamless switch: means signal switch will not appear any flash point, black, shaking or delay

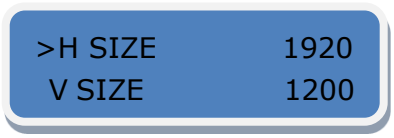
How to Set Up the Size and Position of the Single Image

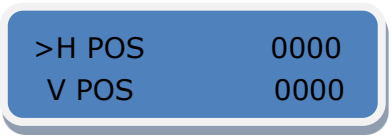
1. Press MENU button, enter the menu option. Press UP/DOWN button, choose the 【OUTPUT】option.



2. Press SEL button to confirm, then press UP/DOWN button, choose 【SCALE】option.

3. Press SEL button, and set the required value, press SEL button to confirm.





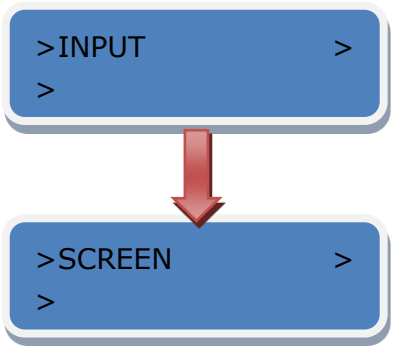
4. After finish, press MENU to return to top level menu.

Note

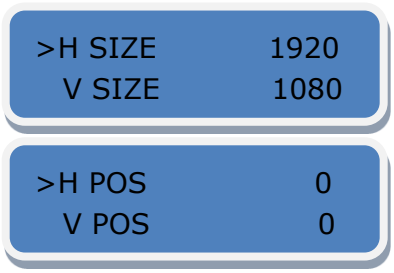
The【SCALE】button can also fulfill this setting.

How to Realize the Screen Size and Full Size Switching

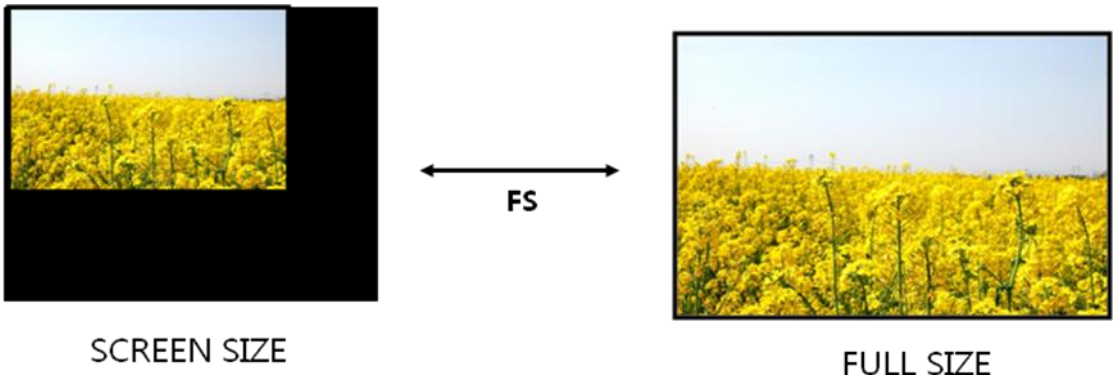
1. Press MENU button, through UP/DOWN button, choose 【OUTPUT】, and choose【SCREEN】option:



2. Press SEL to confirm, according to user needs, can be shown on the screen size and position are Settings:



3. When setup is completed, choose the option SCREEN SIZE or FULL SIZE in【 MODE 】 option in the【SCREEN】, it can realize the screen size and full size switching.

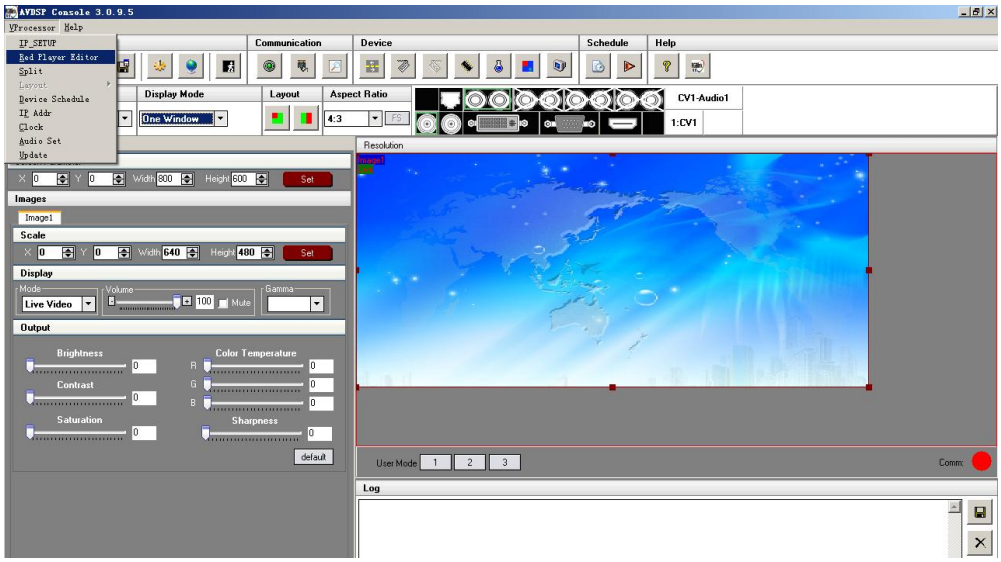


Note

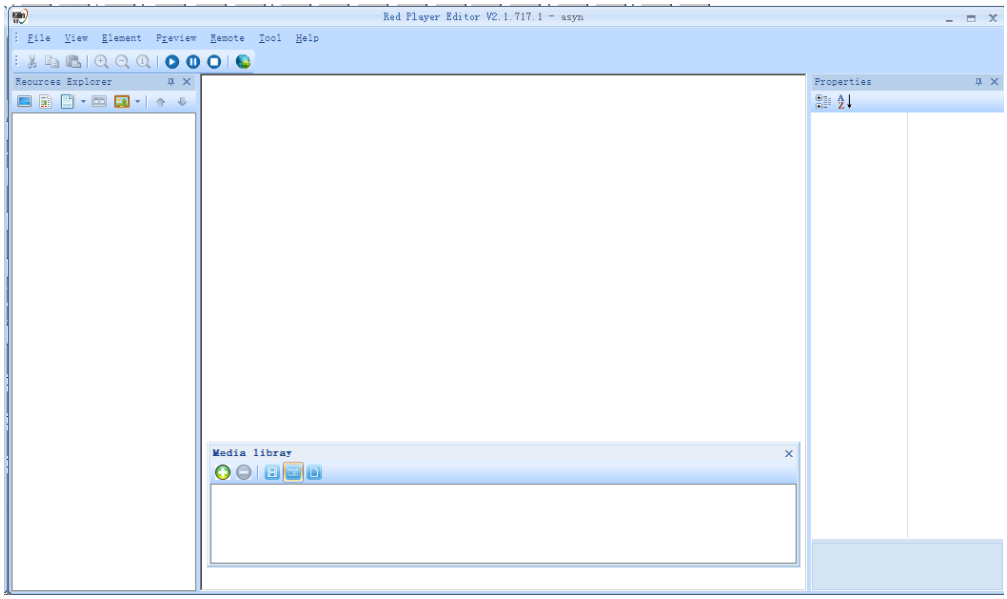
The【FS】button can also fulfill this setting.

How to Edit the Program

Open the LS-120 PC software, choose “Red Player Editor” option in 【VProcessor】, shown as follows:



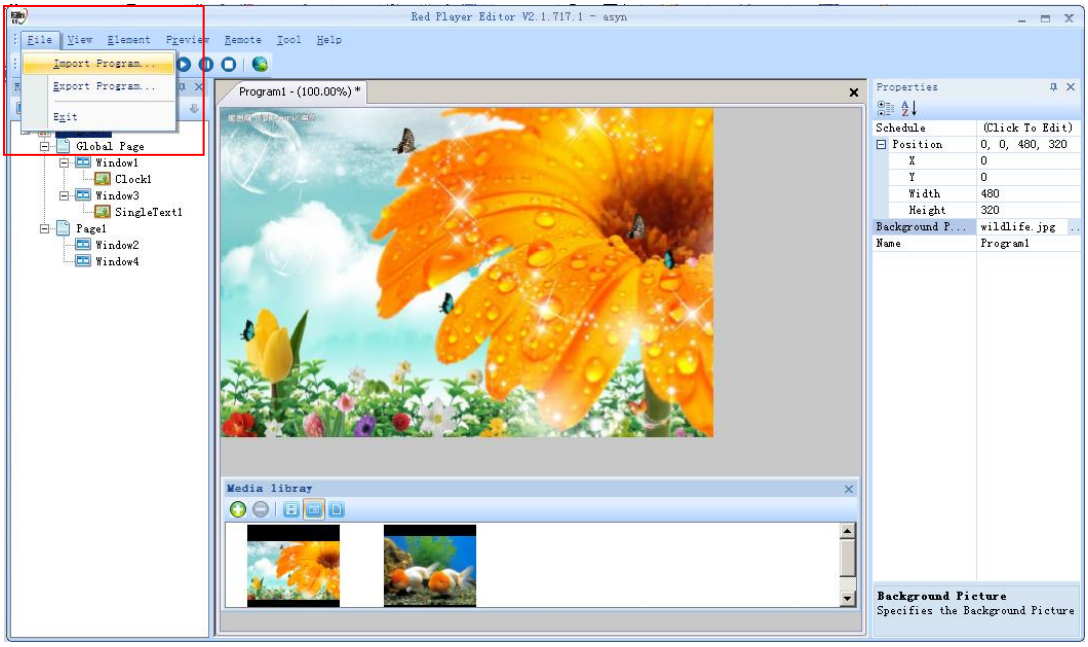
Red Player Editor interface is as follows:



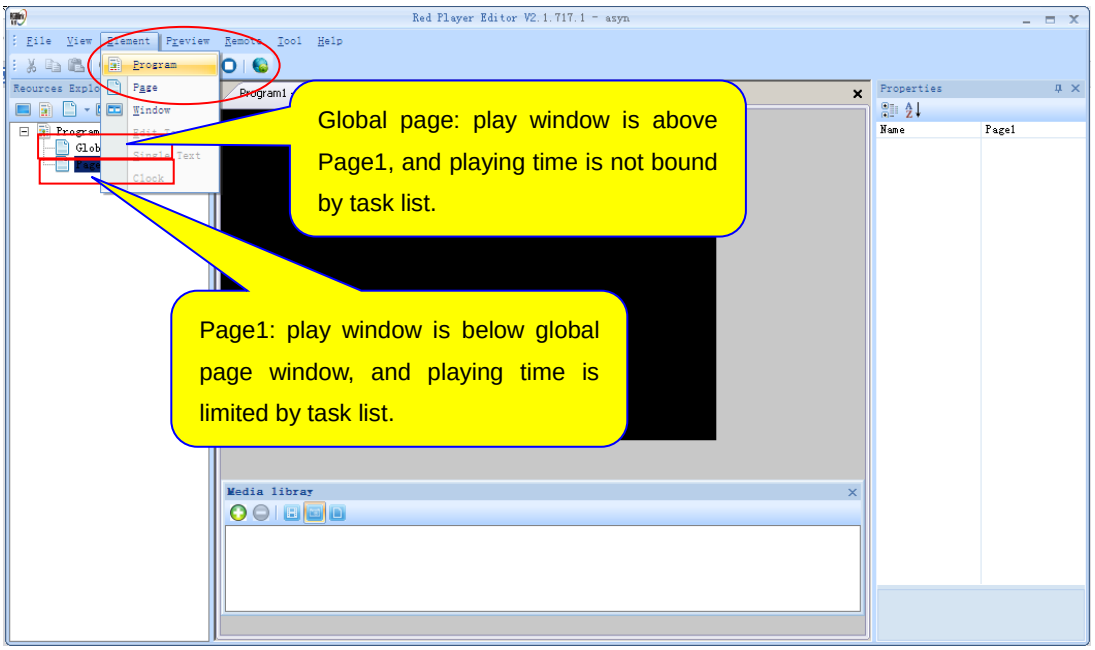
6. System Setup and Operation

How to Edit the Program

1. Import and export program, user can export the edited program.



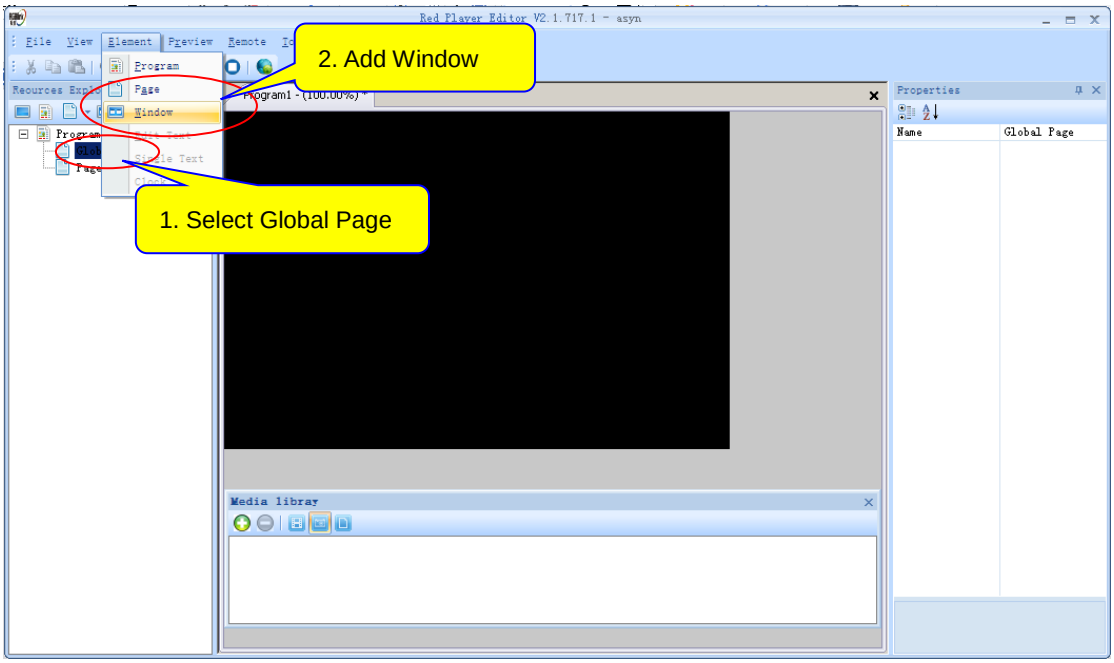
2. Add program



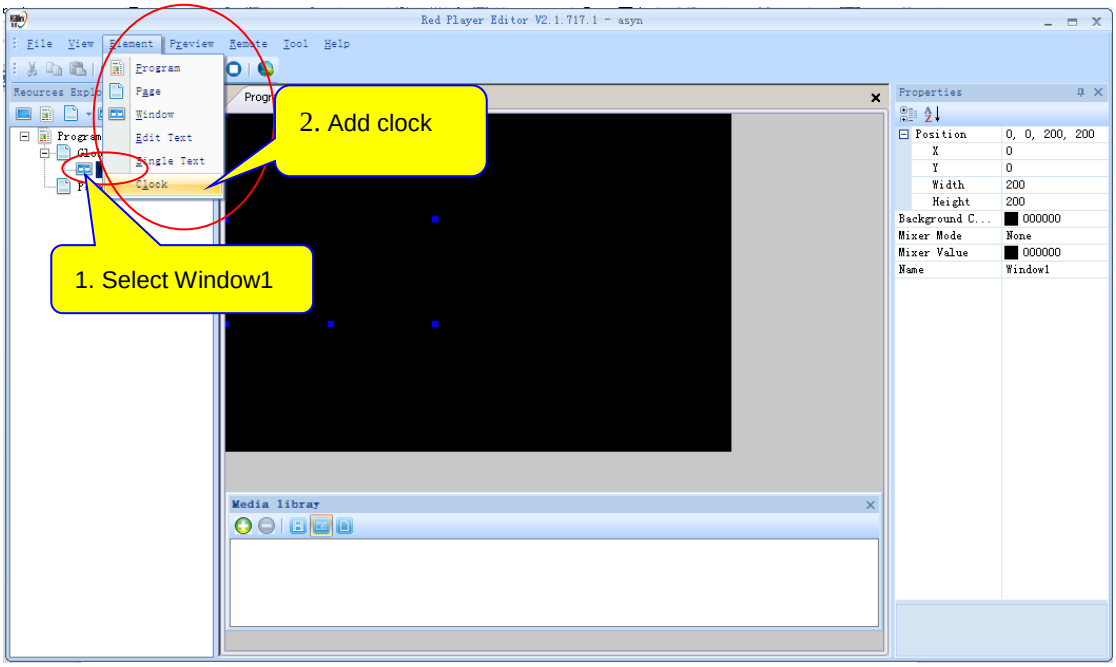
6. System Setup and Operation

How to Edit the Program

3.1 Display clock



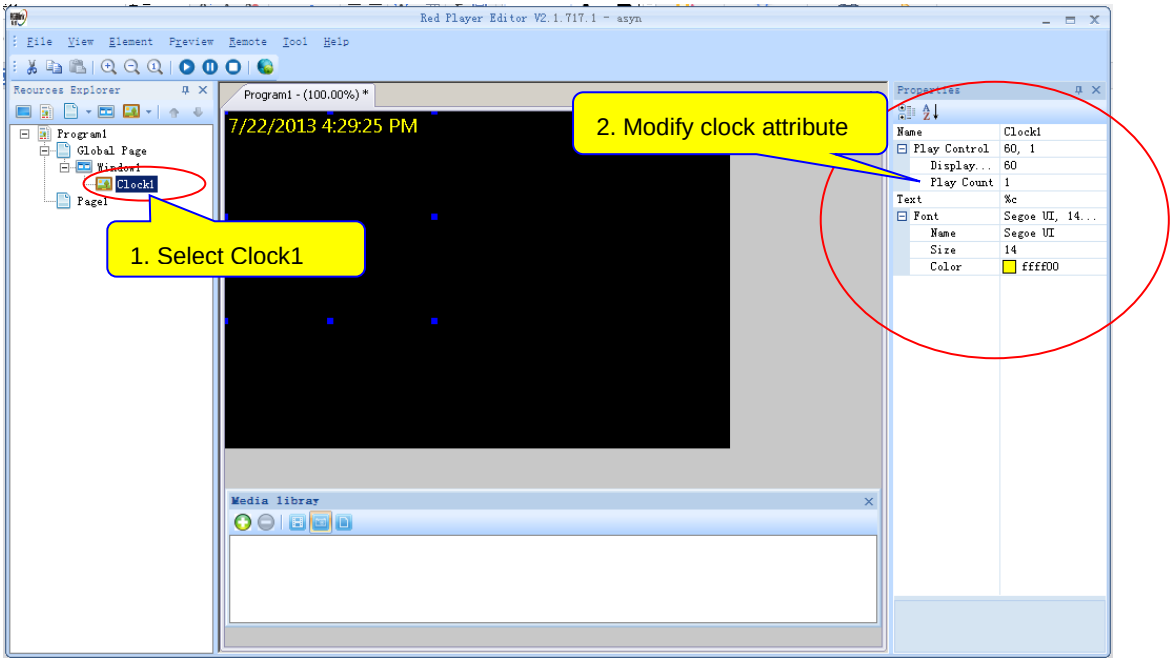
3.2 Add clock in play window



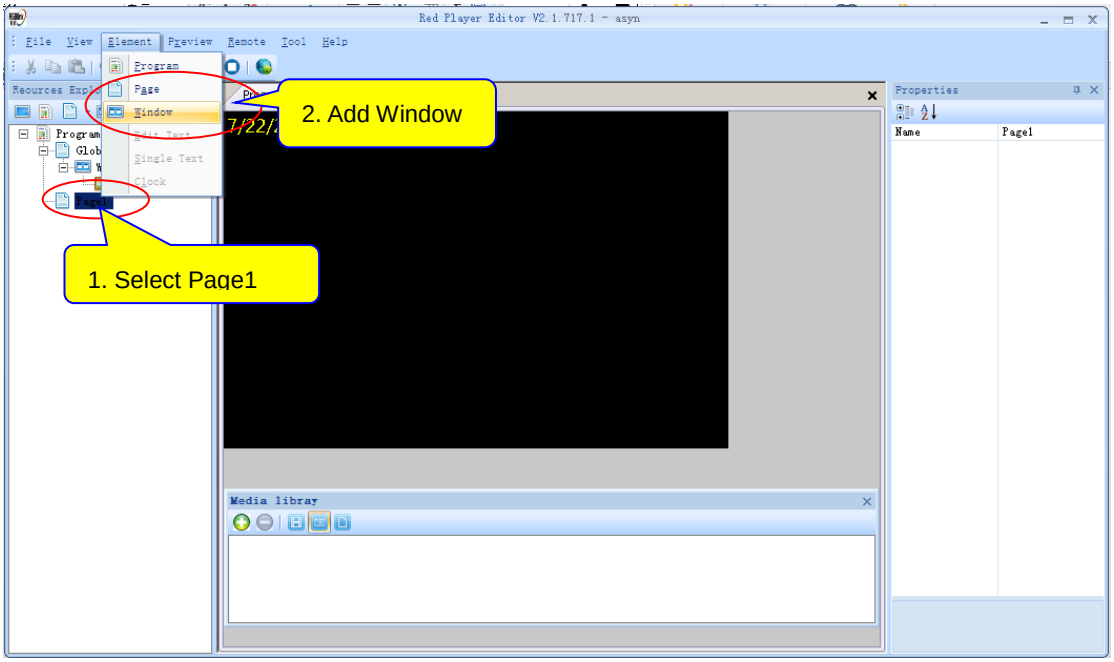
6. System Setup and Operation

How to Edit the Program

3.3 Modify clock attribute



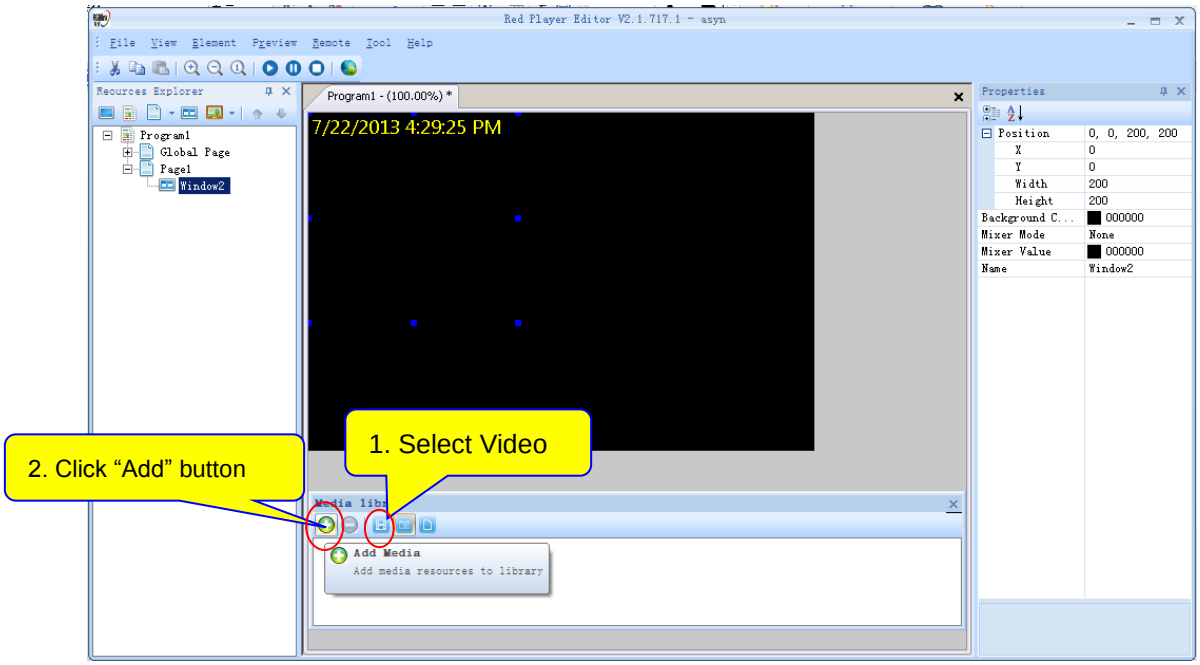
4.1 Video play



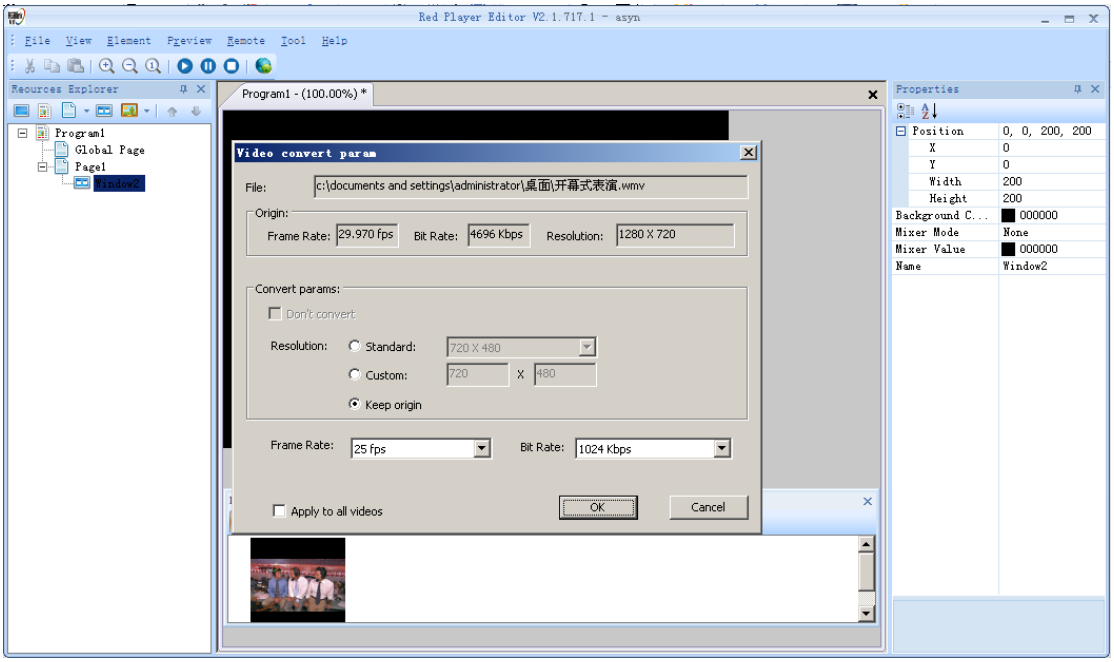
6. System Setup and Operation

How to Edit the Program

4.2 Add video file in media library



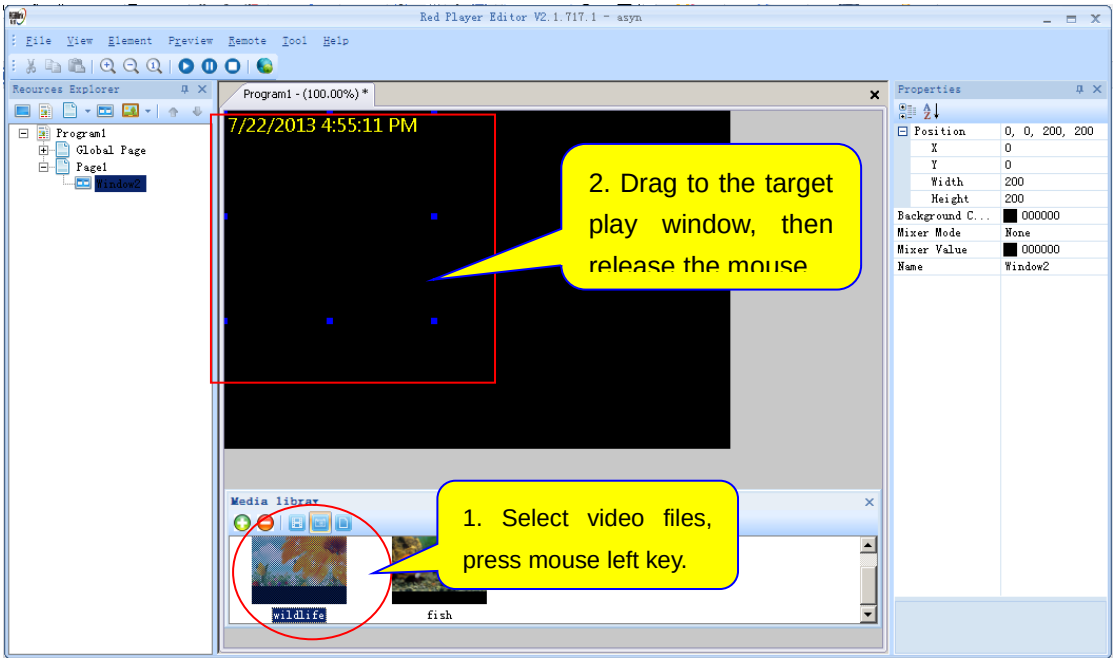
4.3 Set video file conversion parameters



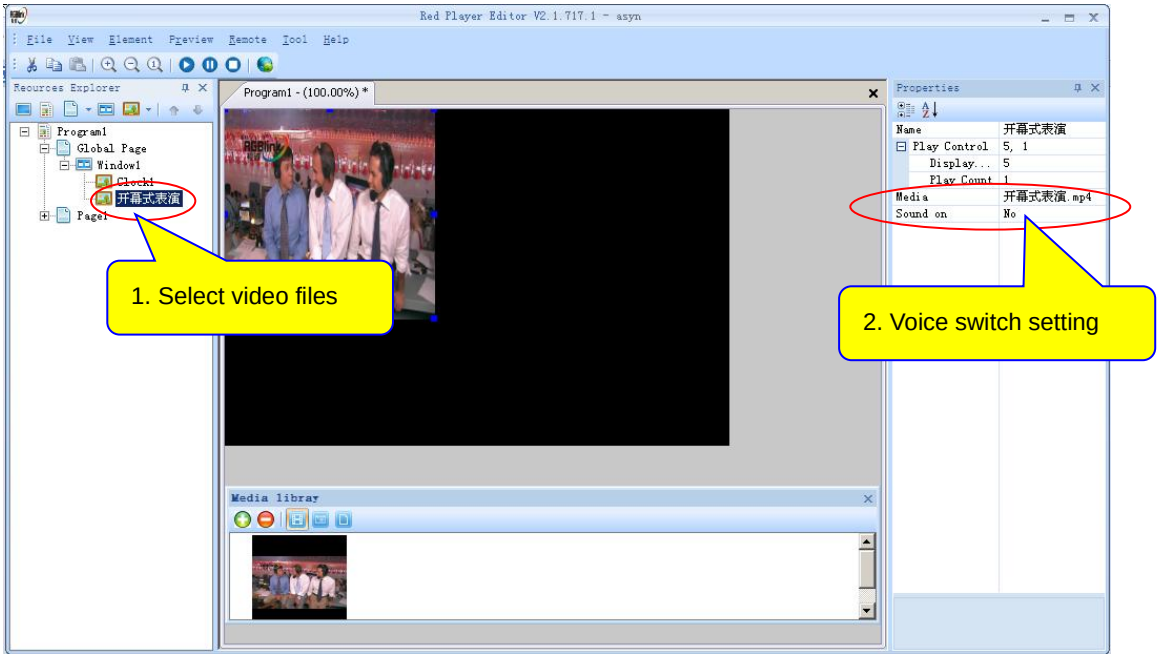
6. System Setup and Operation

How to Edit the Program

4.4 Drag the video in media library to play window



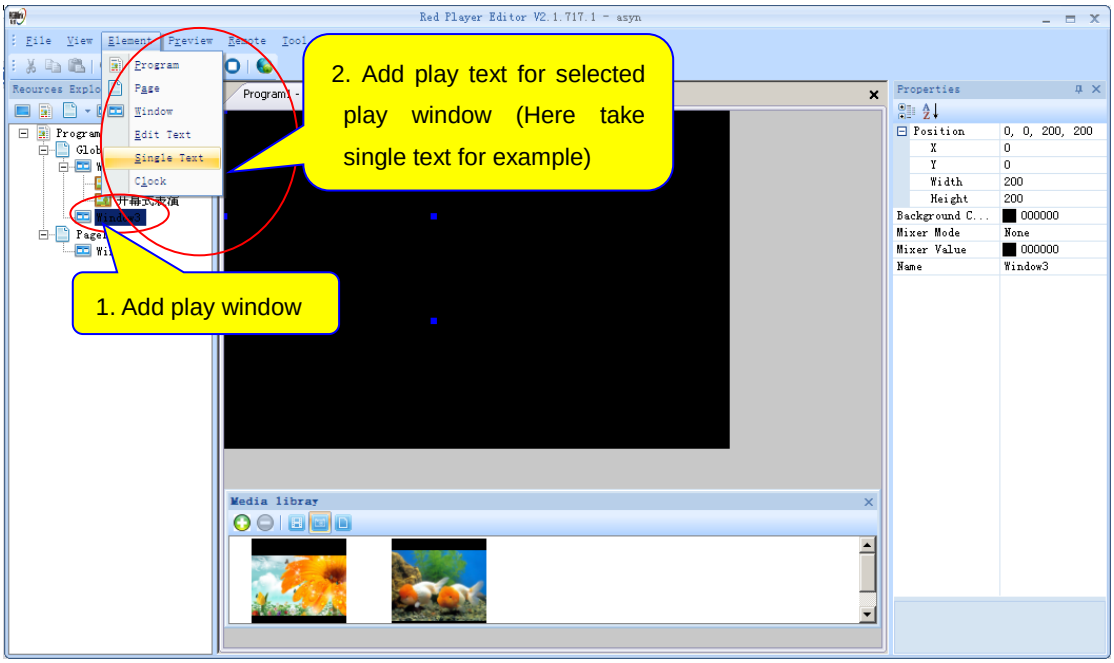
4.5 Video voice switch



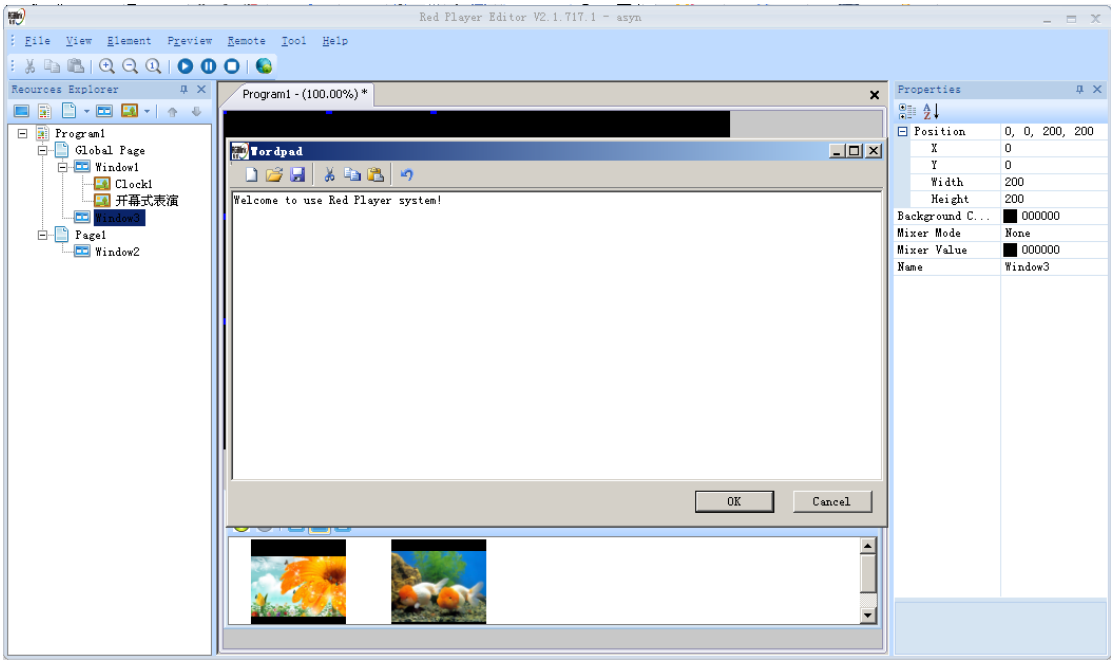
6. System Setup and Operation

How to Edit the Program

5.1 Broadcast Text



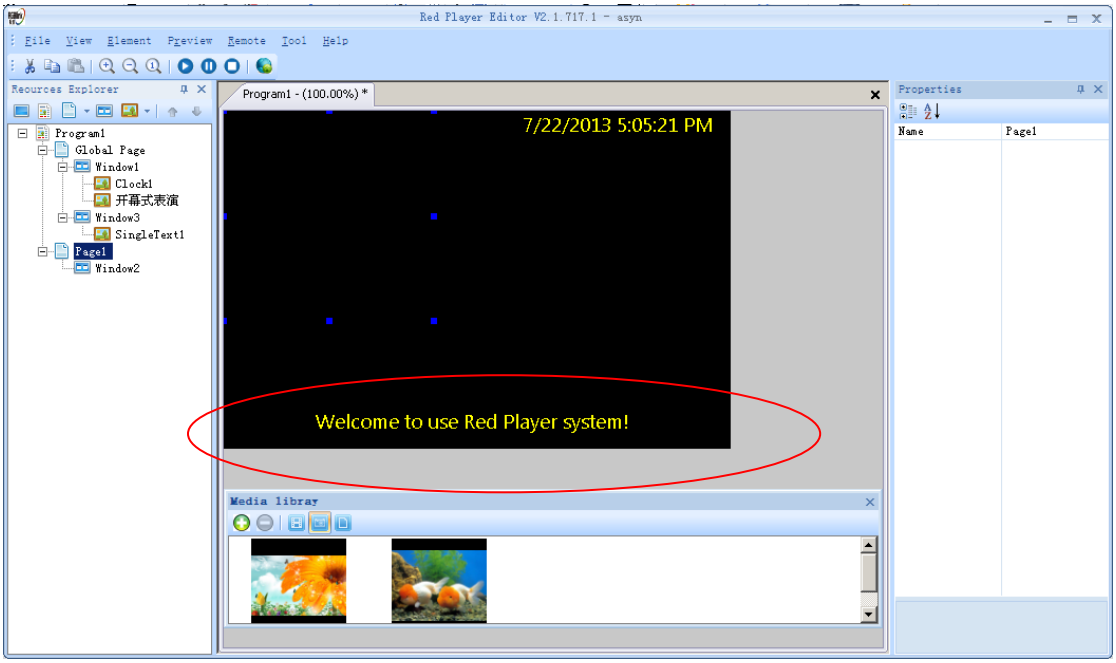
5.2 Edit broadcast text in pop-up edit box



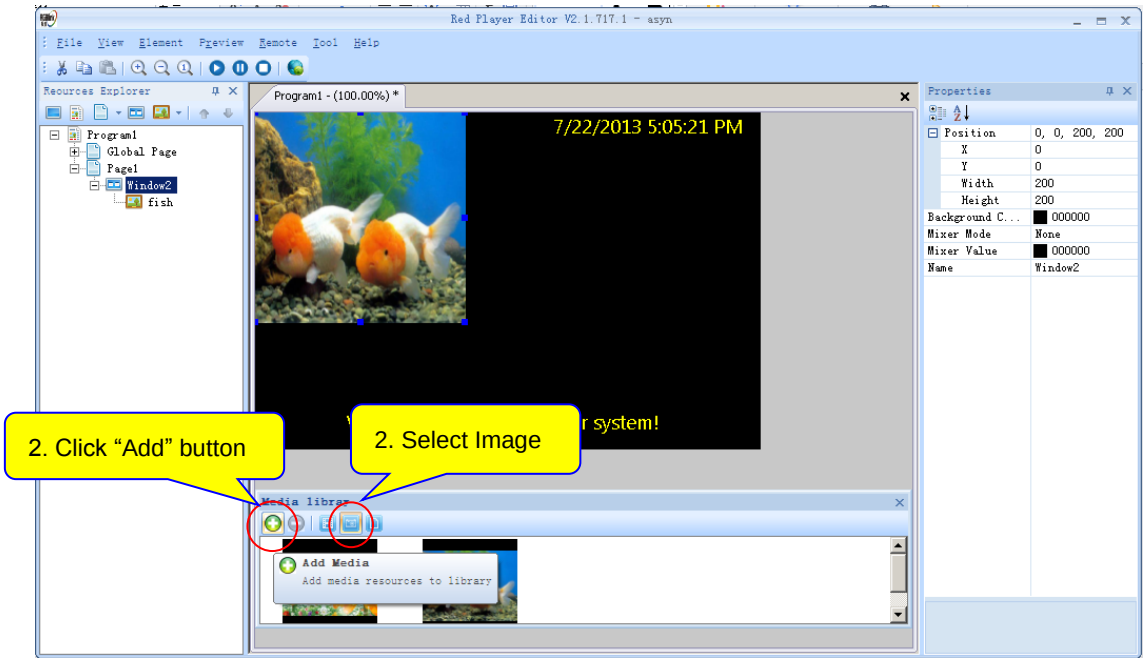
6. System Setup and Operation

How to Edit the Program

5.3 Adjust the position of text play window, can adjust by dragging the mouse or properties window on the right side.



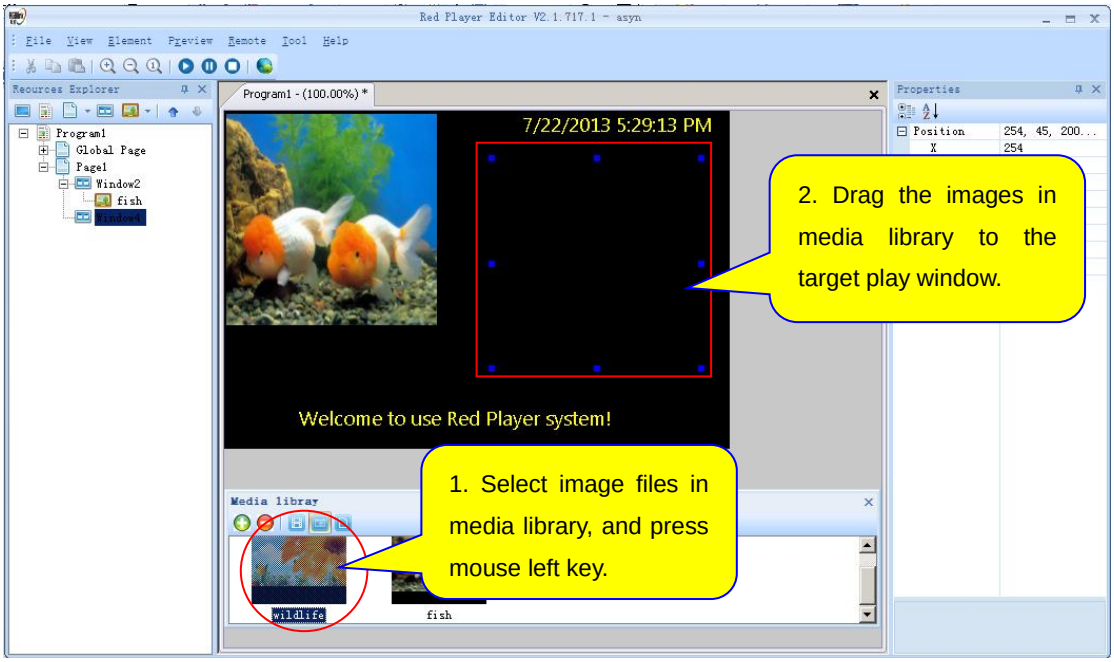
6.1 Image play, Import images to media library.



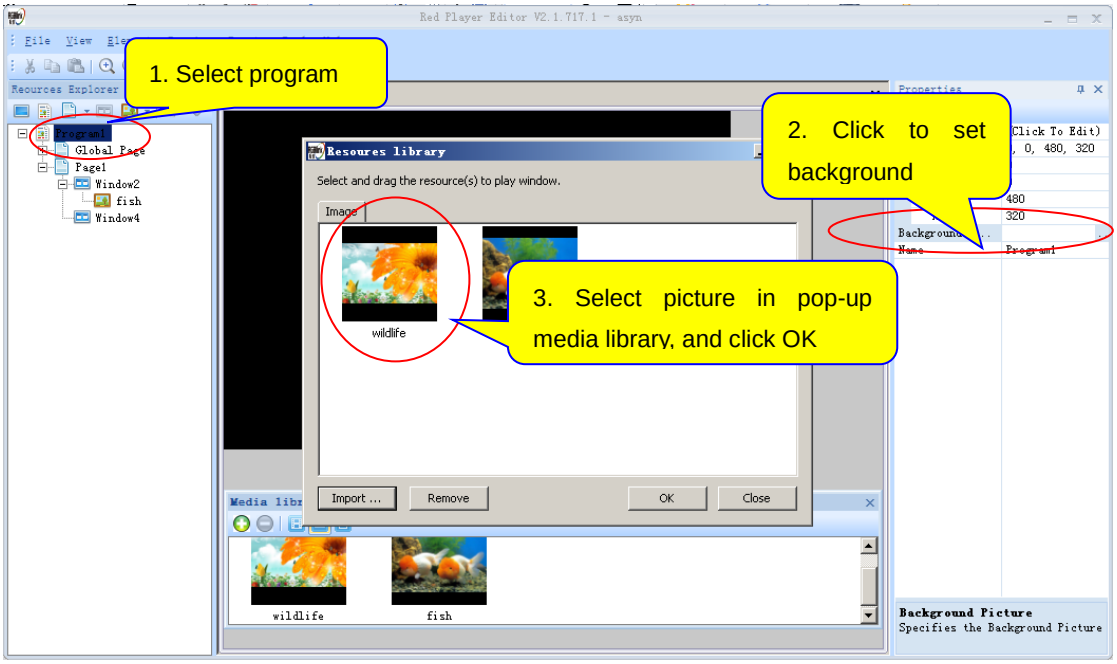
6. System Setup and Operation

How to Edit the Program

6.2 Add image files in media library to play window



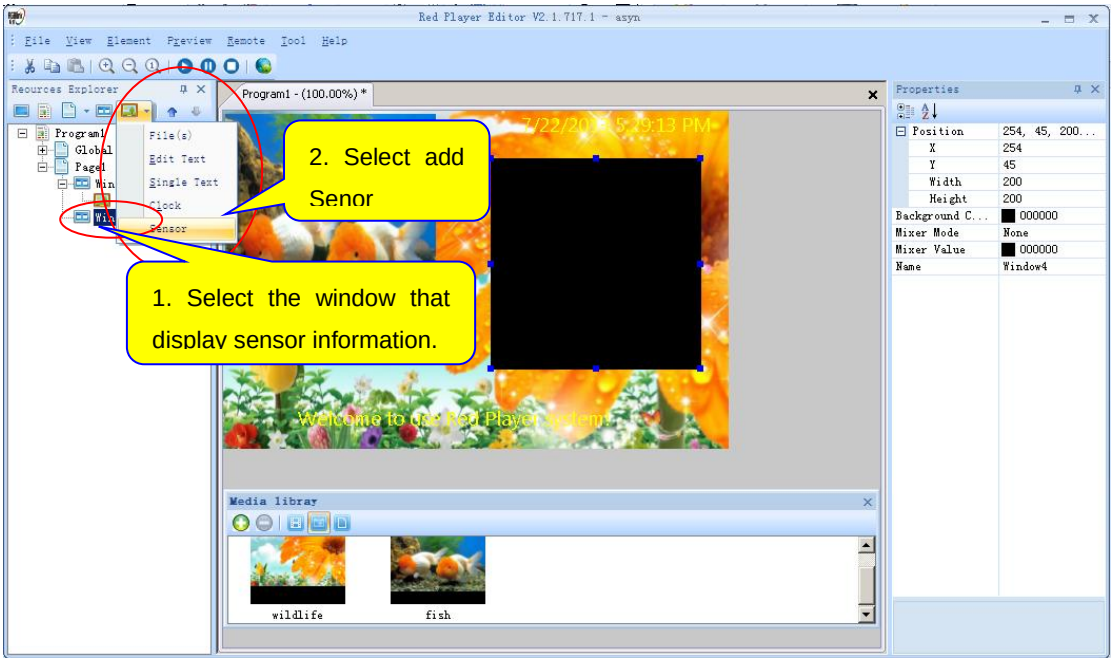
6.3 Add program background picture



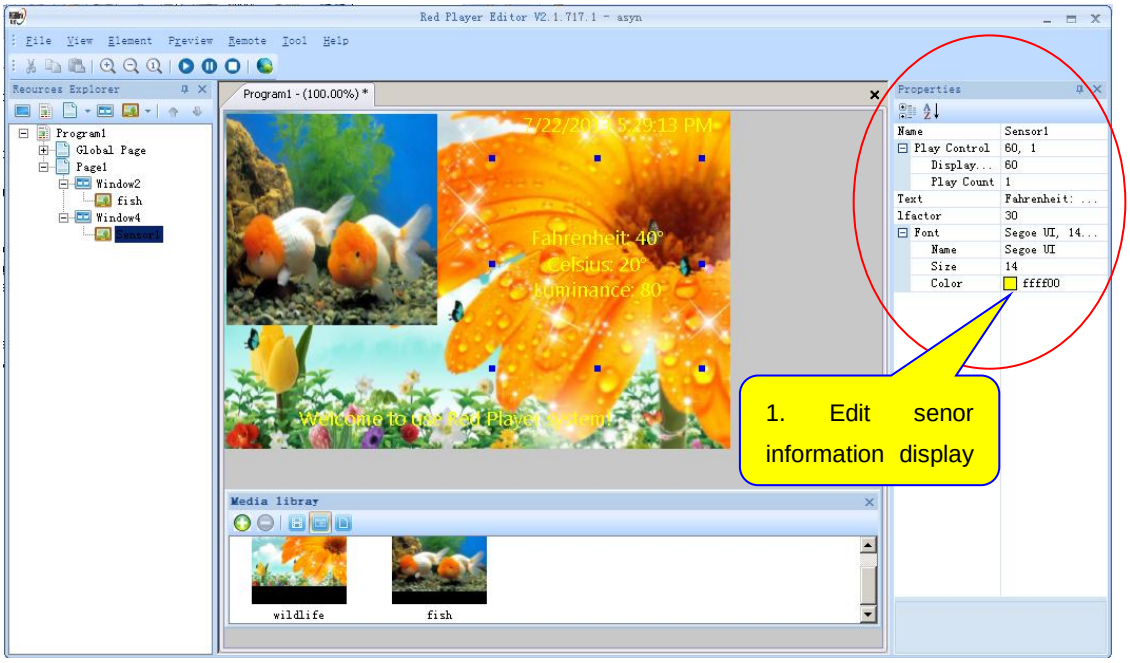
6. System Setup and Operation

How to Edit the Program

7.1 Display sensor information



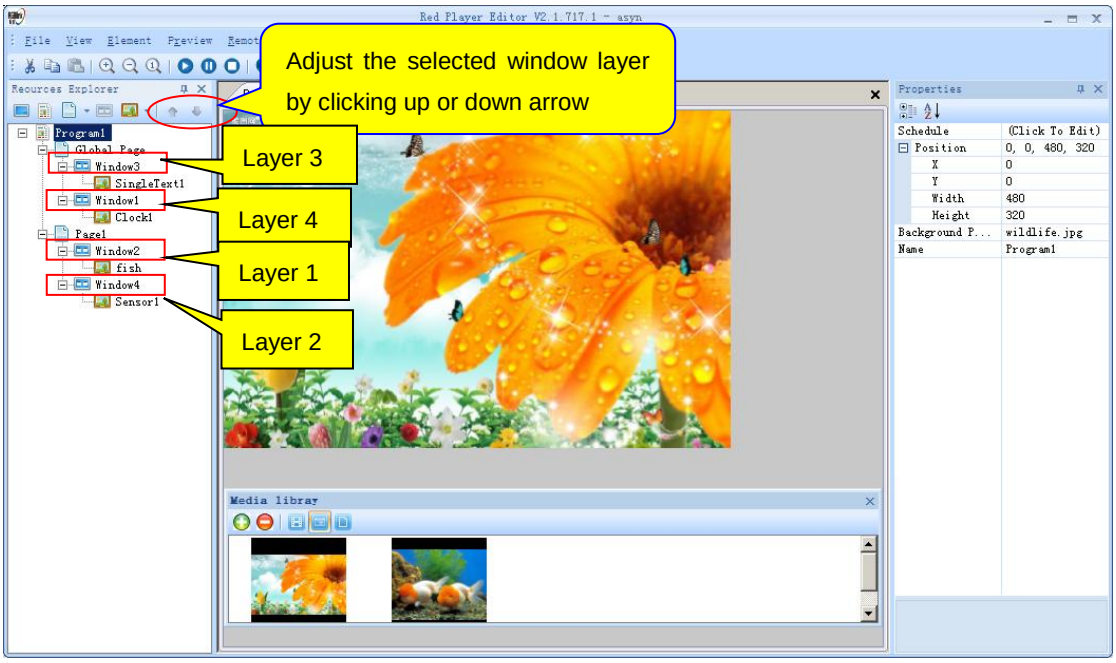
7.2 Edit sensor information display format



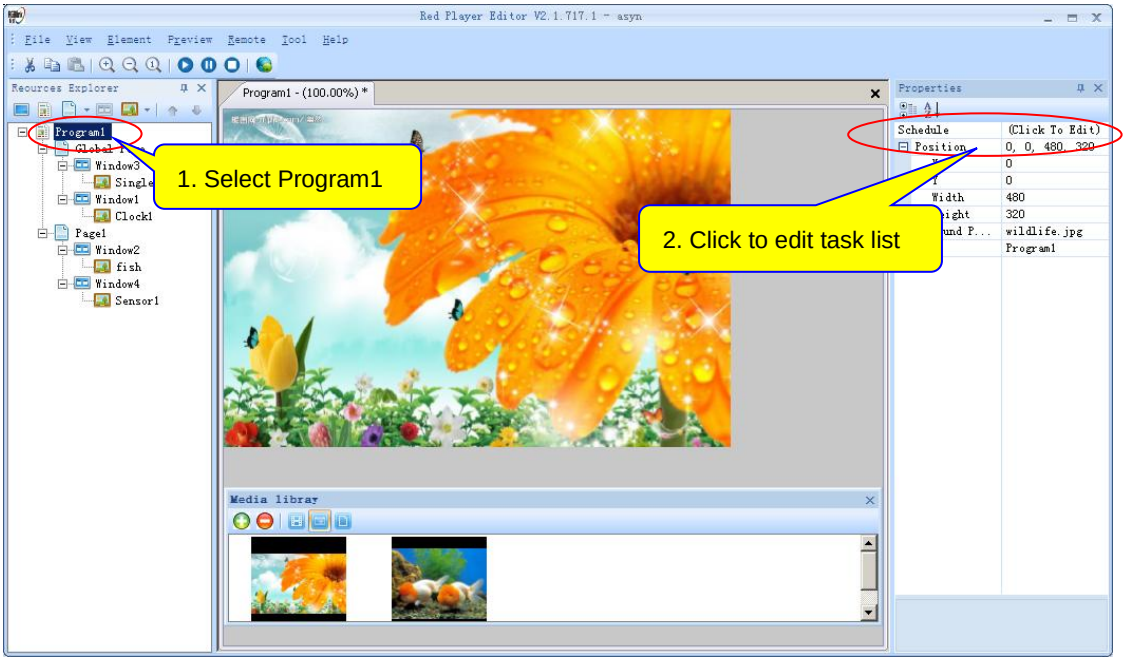
8. Adjust play window layer, as follows: play window of Global Page is above Page1 play window, that is Global Page covers Page1. Layer relationships in Page1 play window are: more from the back play window rows the layer appears higher, as shown below, Window4 covers Window2.

6. System Setup and Operation

How to Edit the Program



9.1 Edit program task list

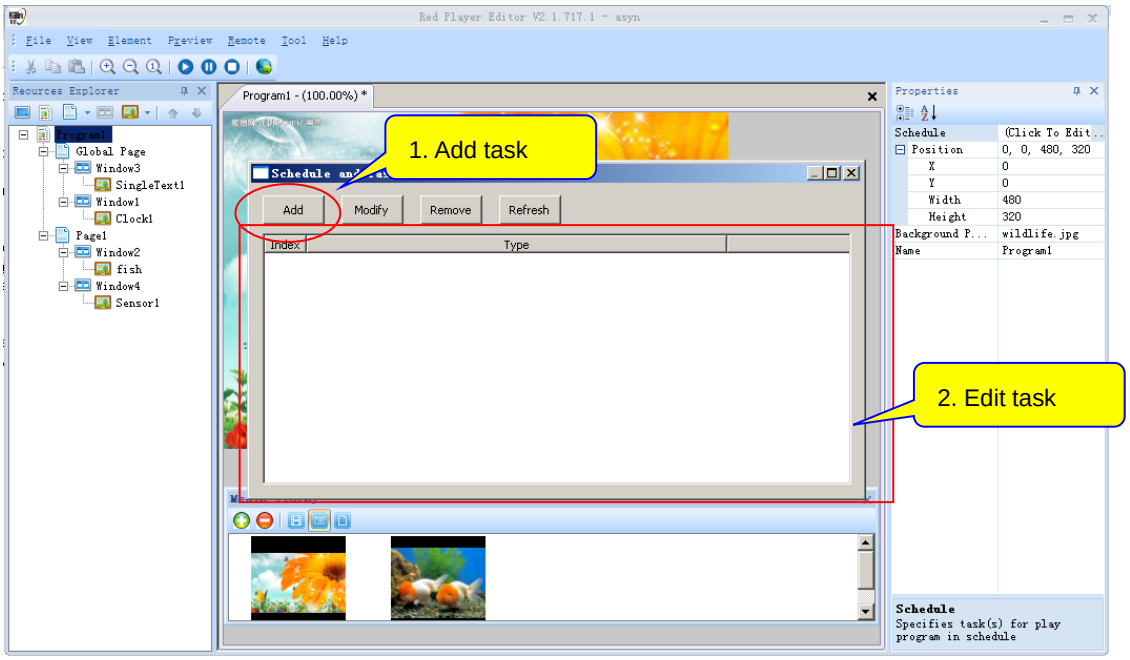


9.2 Edit task list

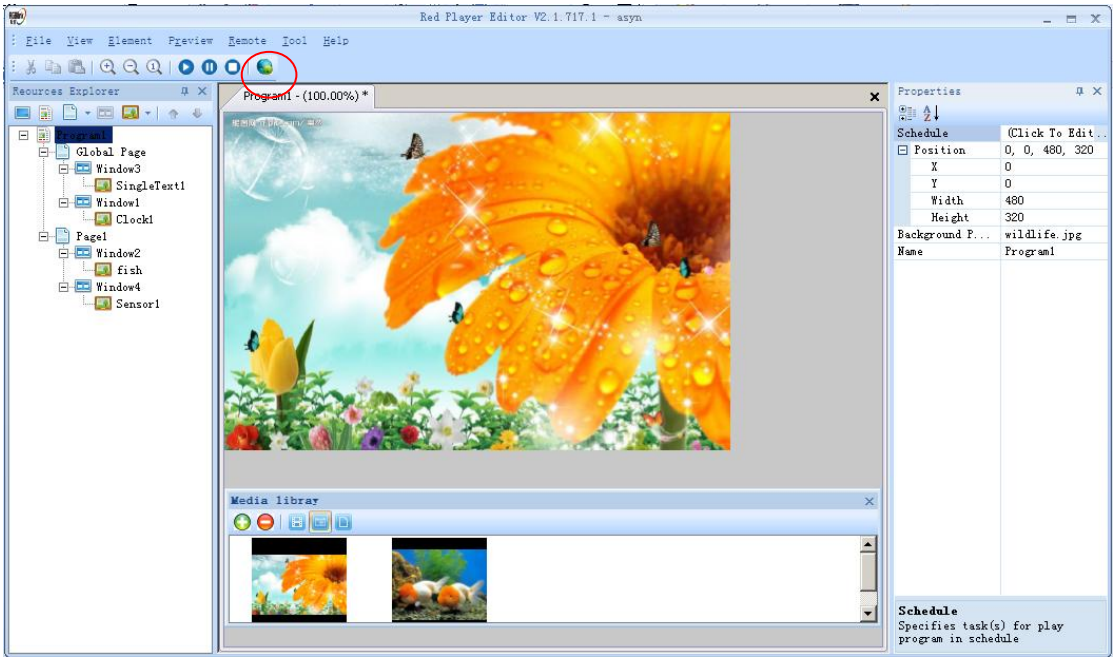
Play mode: 1. Normal means continuously play from beginning to the end, if set invalid week, it will not play in invalid week; 2. Interval means play from the starting time to end time between the start date and end date. If the starting time is greater than the end time, it will span the midnight to the end time of the second day. For example, if set starting time for 2012/1/1 12:00:00, and the end time is 2012/1/5 8:00:00, then program will play from 2012/1/1 12: 00:00 to 2012/1/2 8:00:00, because it is before its play time, it will play again on 2012/1/2 12:00:00.

6. System Setup and Operation

How to Edit the Program



10.1 Publish the edited program



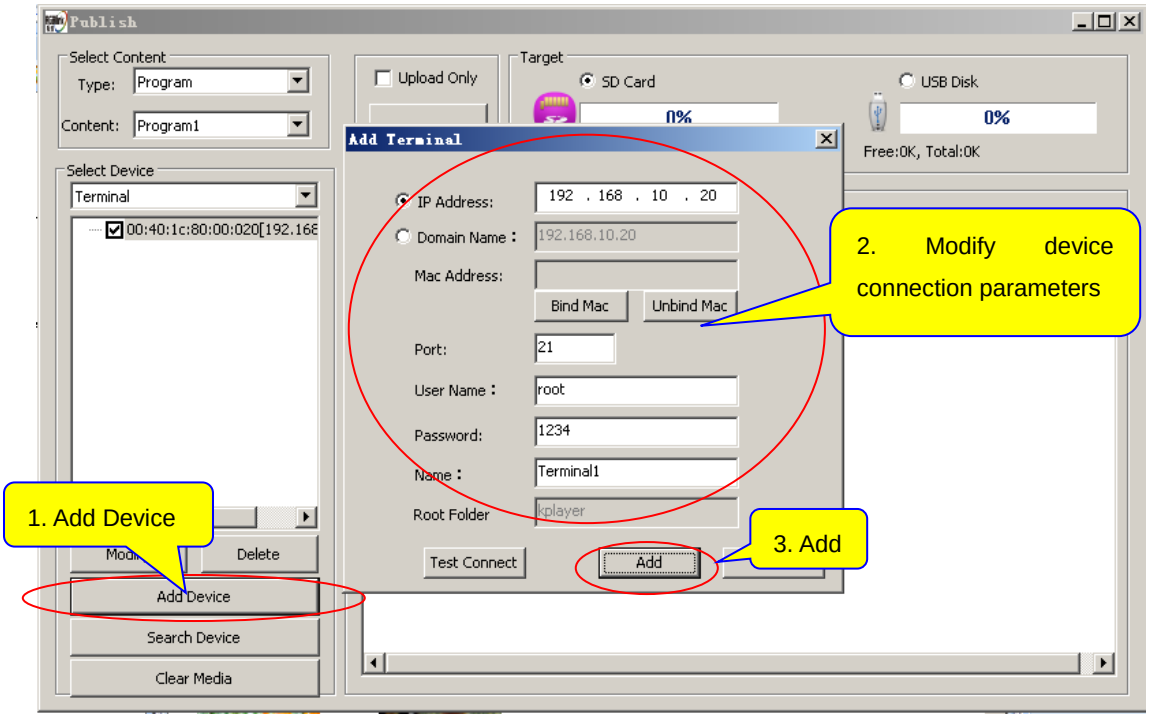
10.2 Add Terminal Device

Known IP: manually input IP address and add terminal;

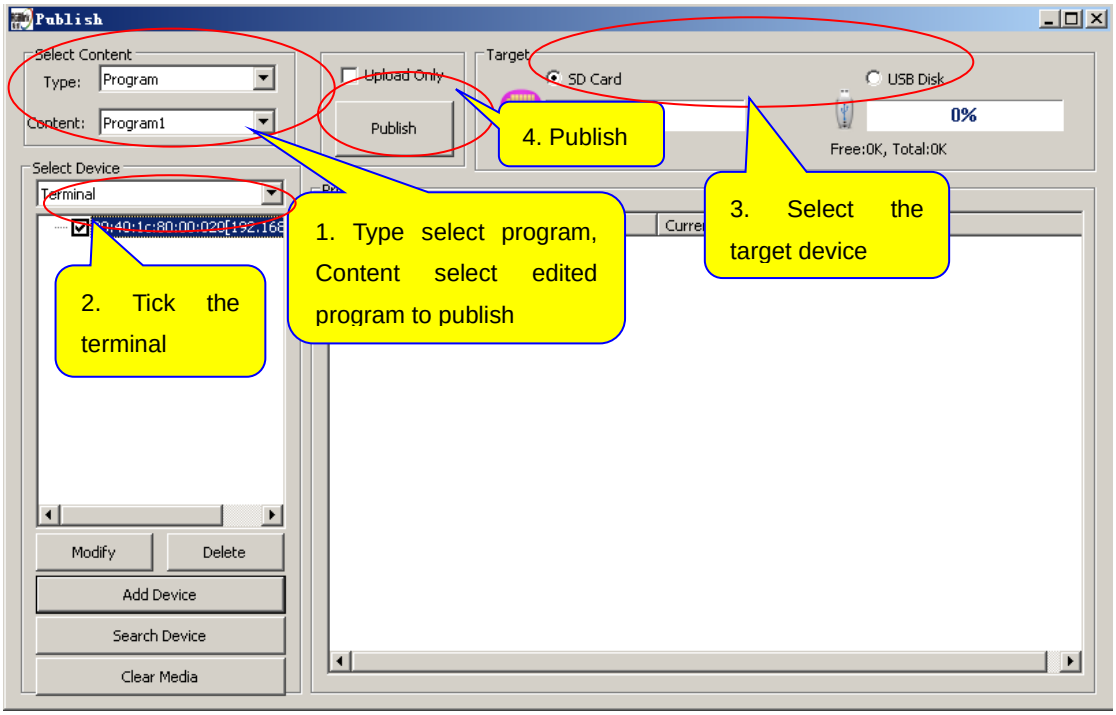
IP automatic retrievals: When PC and asynchronous control card access the same LAN, and both are dynamic access IP, click "search" in publish window to search device, then the device will be automatically added to the terminal list.

6. System Setup and Operation

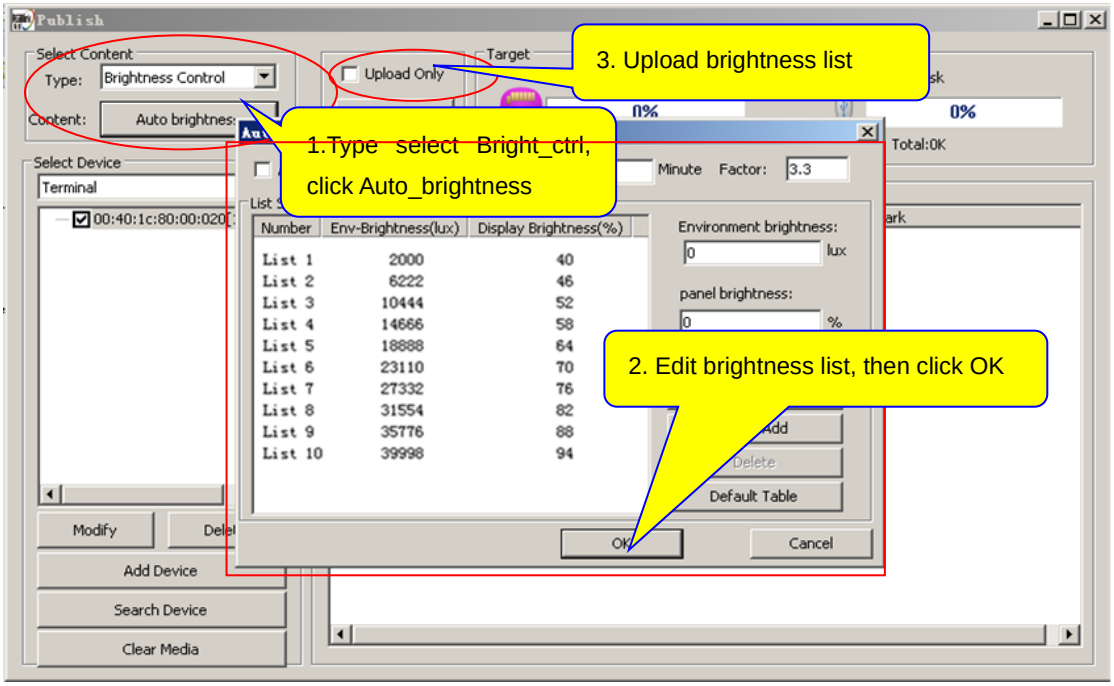
How to Edit the Program



10.3 Publish program



10.4 Upload auto brightness control. Set brightness list, then publish as upload program.

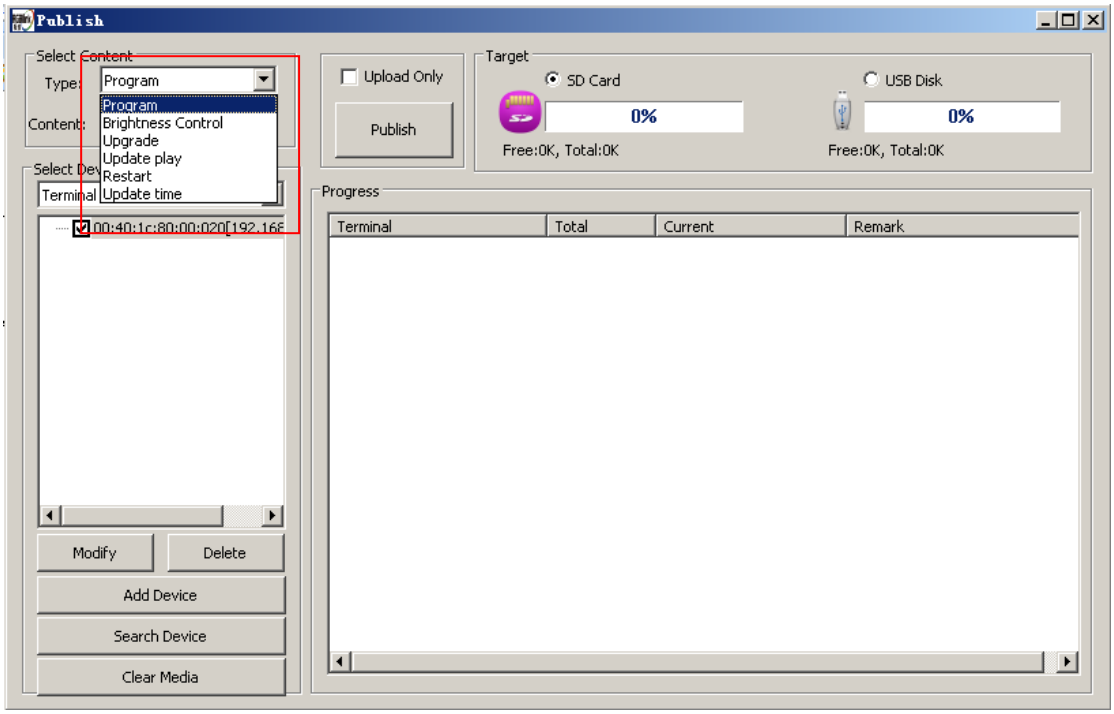


10.5 Asynchronous control card publish introduction. As shown below, the main publish types include:

1. **Program:** Program list, can be uploaded to the terminal program;
2. **Bright_ctrl**：Automatic brightness control, Led display brightness will change according to the list ambient brightness;
3. **Upgrade**: Upgrade asynchronous control card;
4. **Update play**;
5. **Restart**: Restart asynchronous control card;
6. **Update time:** Update asynchronous control card time (Set to PC current time)

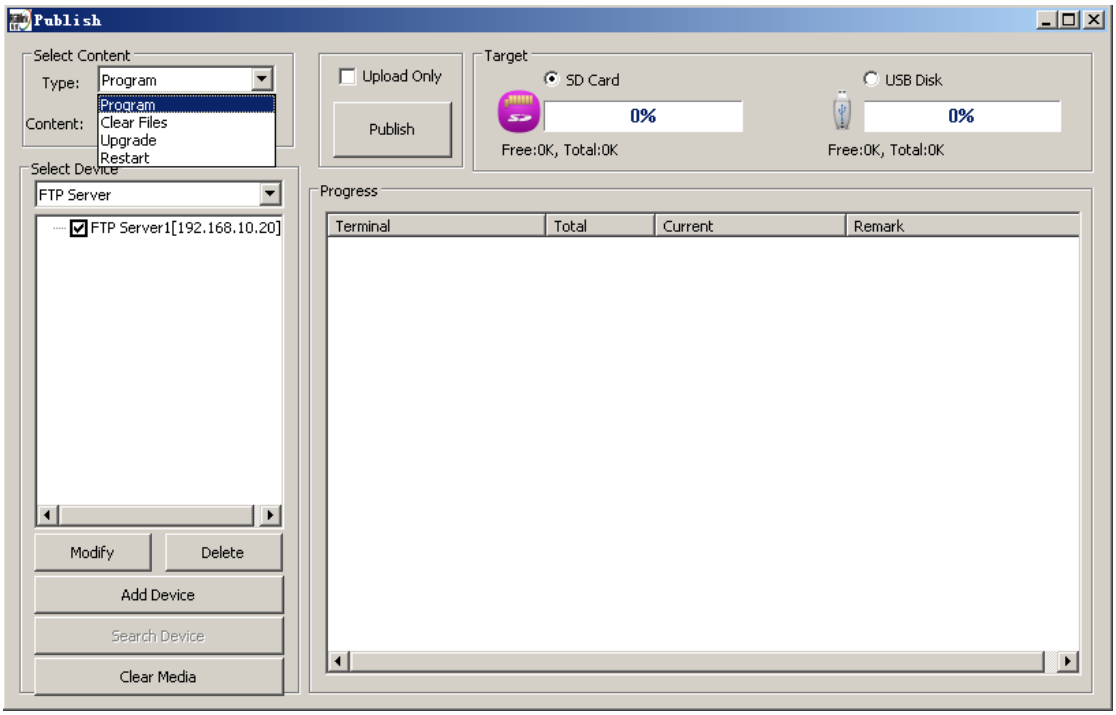
6. System Setup and Operation

How to Edit the Program



10.6 FTP server publish introduction. As shown below, the main publish types include：

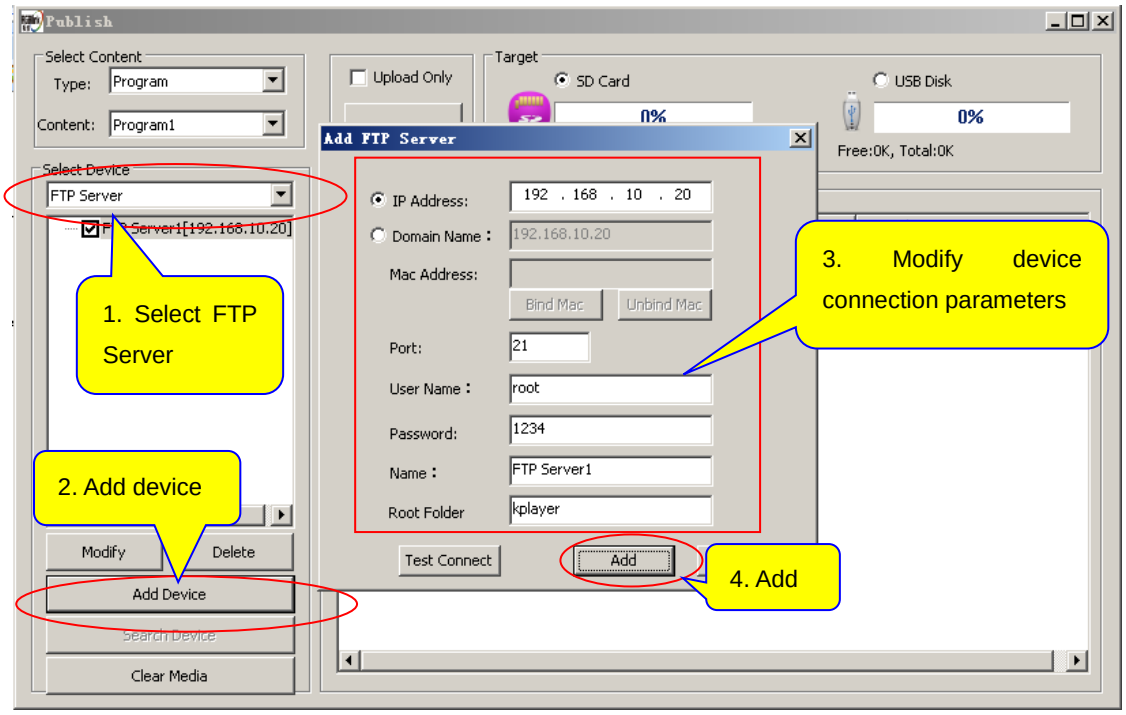
1. **Program:** The program that get from asynchronous control card timing to the server.
2. **Clear Files:** Remote clear the asynchronous control card media files;
3. **Upgrade:** Remote upgrade the asynchronous control card;
4. **Restart:** Remote restart the asynchronous control card;



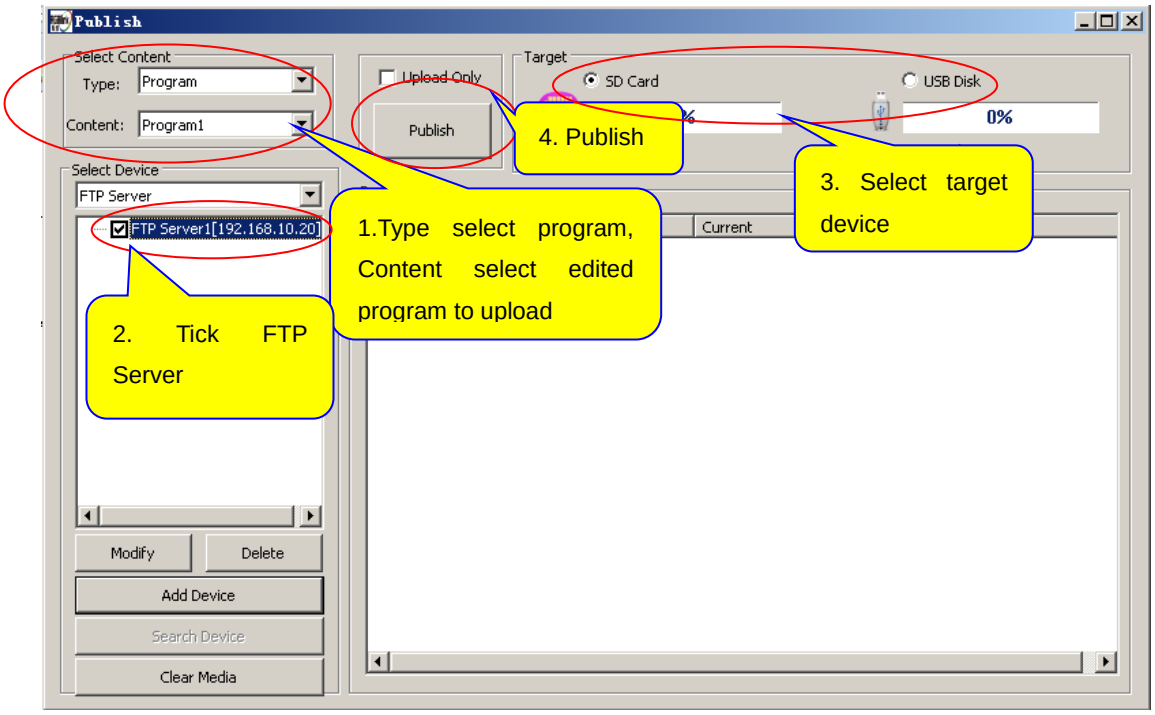
6. System Setup and Operation

How to Edit the Program

11.1 Publish program to FTP Server. First, add Ftp server, as follows:



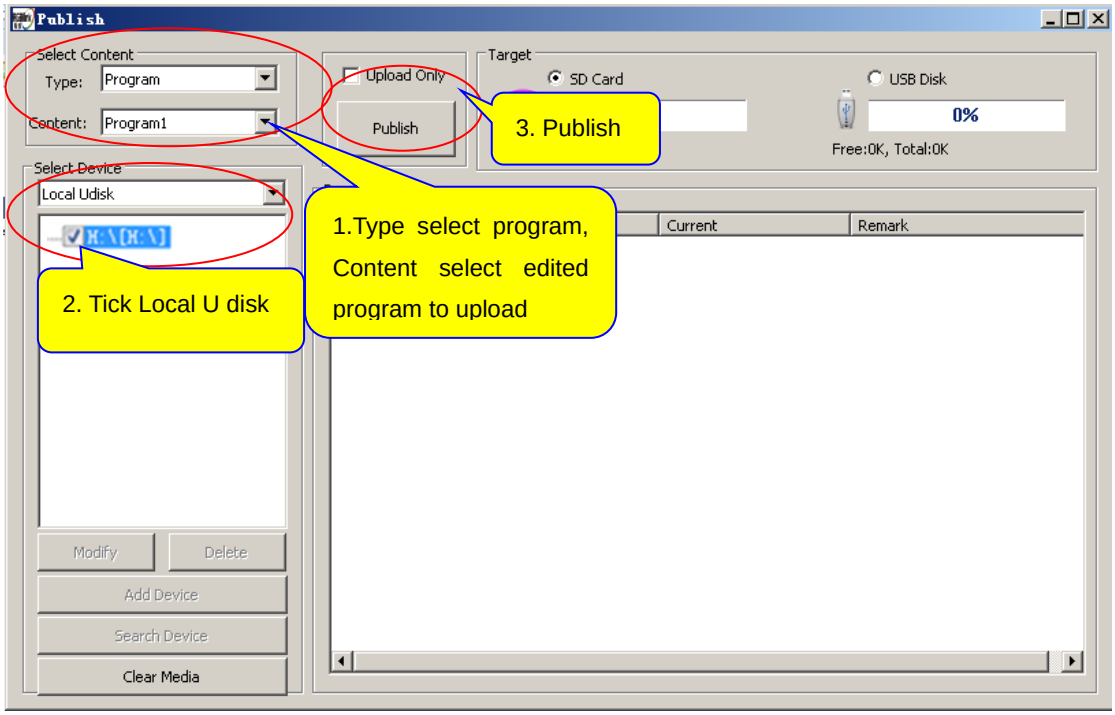
11.2 Upload program to FTP Server



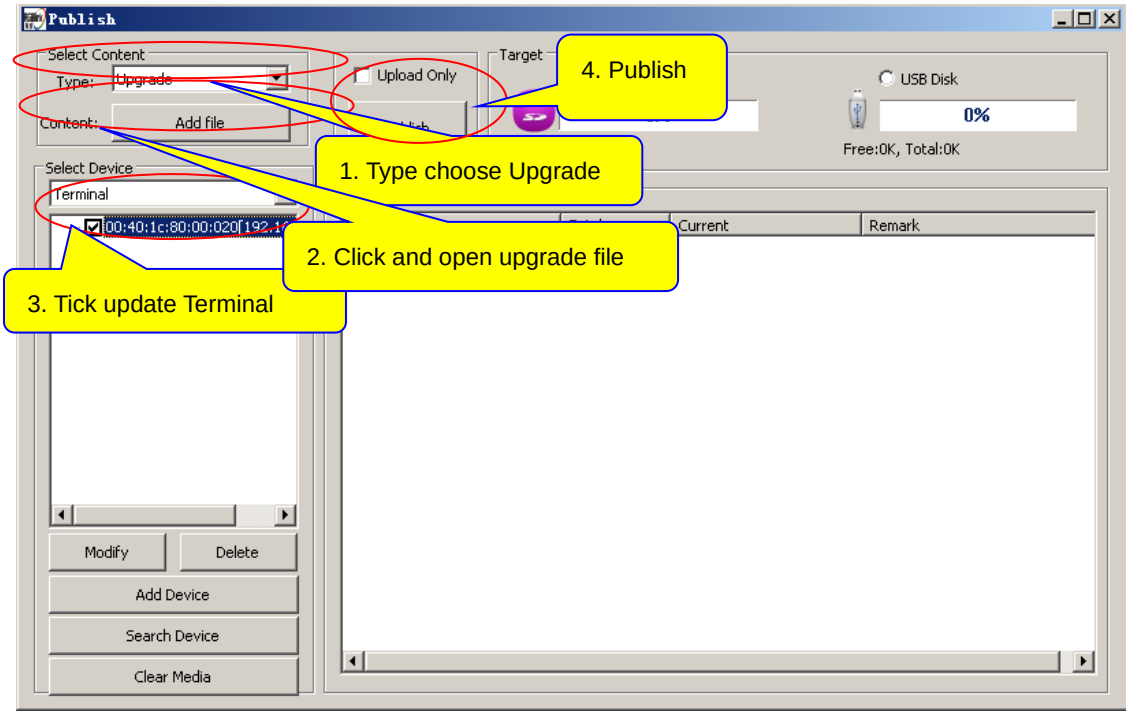
6. System Setup and Operation

How to Edit the Program

12. Publish program to local U disk



12.1 Asynchronous control card upgrade, open the window as follows:



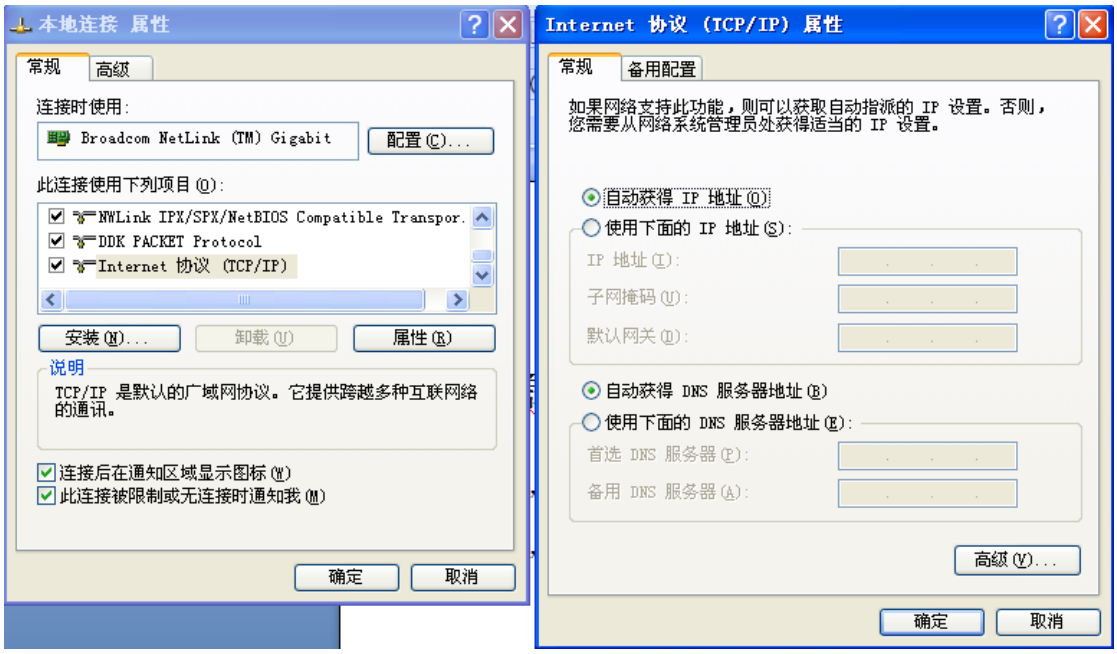
How to Set Router VPN

Here we take VOLANS router VE760w for example, and it is similar to other routers with VPN function.

VPN Server Set Up

1. VOLANS router default gateway is192.168.0.1, default account is admin, and default password is admin.

2. Set local connection to automatically obtain IP and connect to the router.

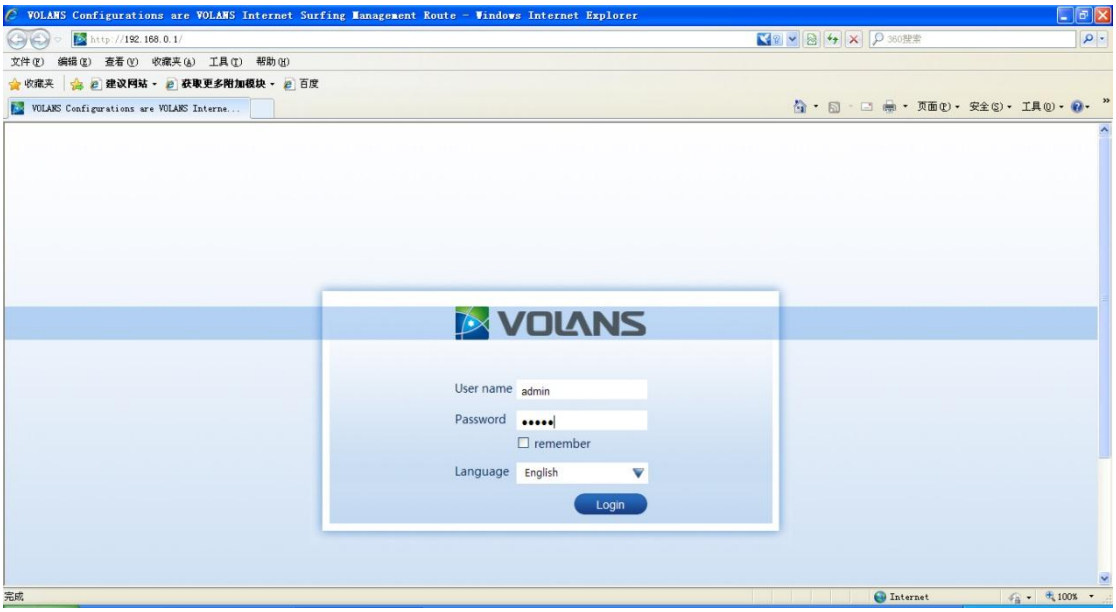


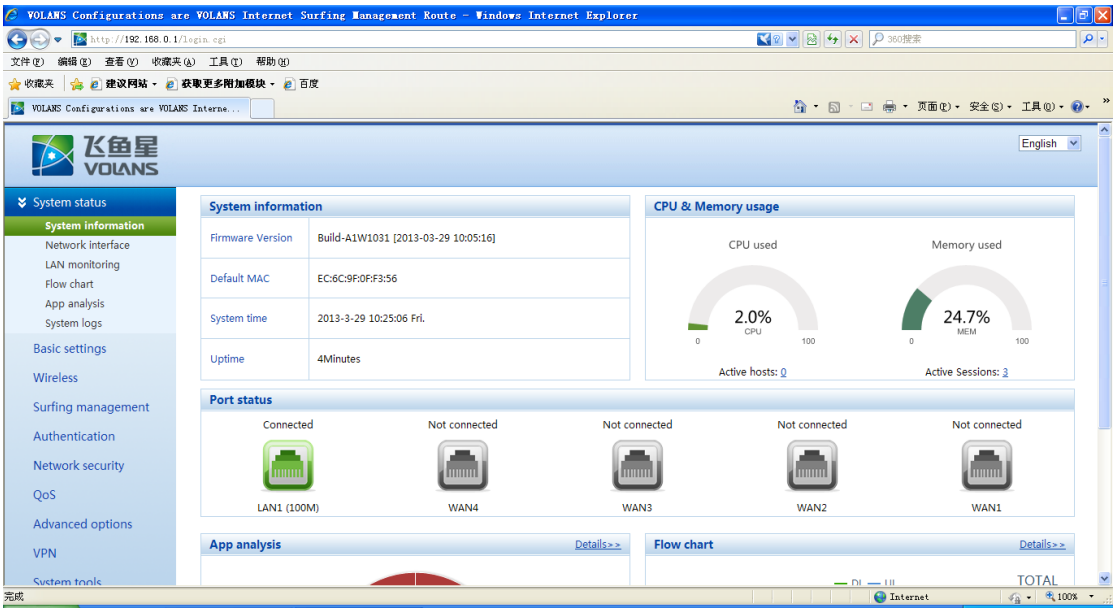
3. After connect successfully, get IP 192.168.0.174.

4. Enter the router IP 192.168.0.1 in browser address bar, then input account admin and password admin in the login window, be sure enter the router setting page.

6. System Setup and Operation

How to Set Router VPN





5. This step depends on the environment set up by router, including:

Environment A router connect to the broadband line

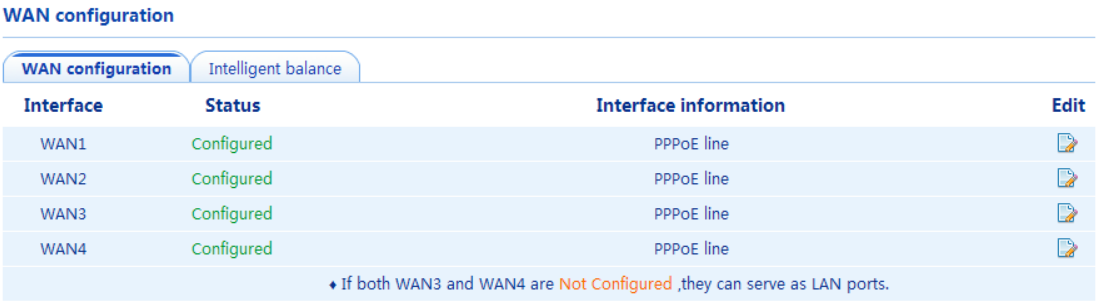
Environment B router set up in the local area network (LAN), and access to the wide area network (WAN).

(1) For environment A, it should enter the router's broadband connection setting.

Click the basic setup on the left side - WAN configuration

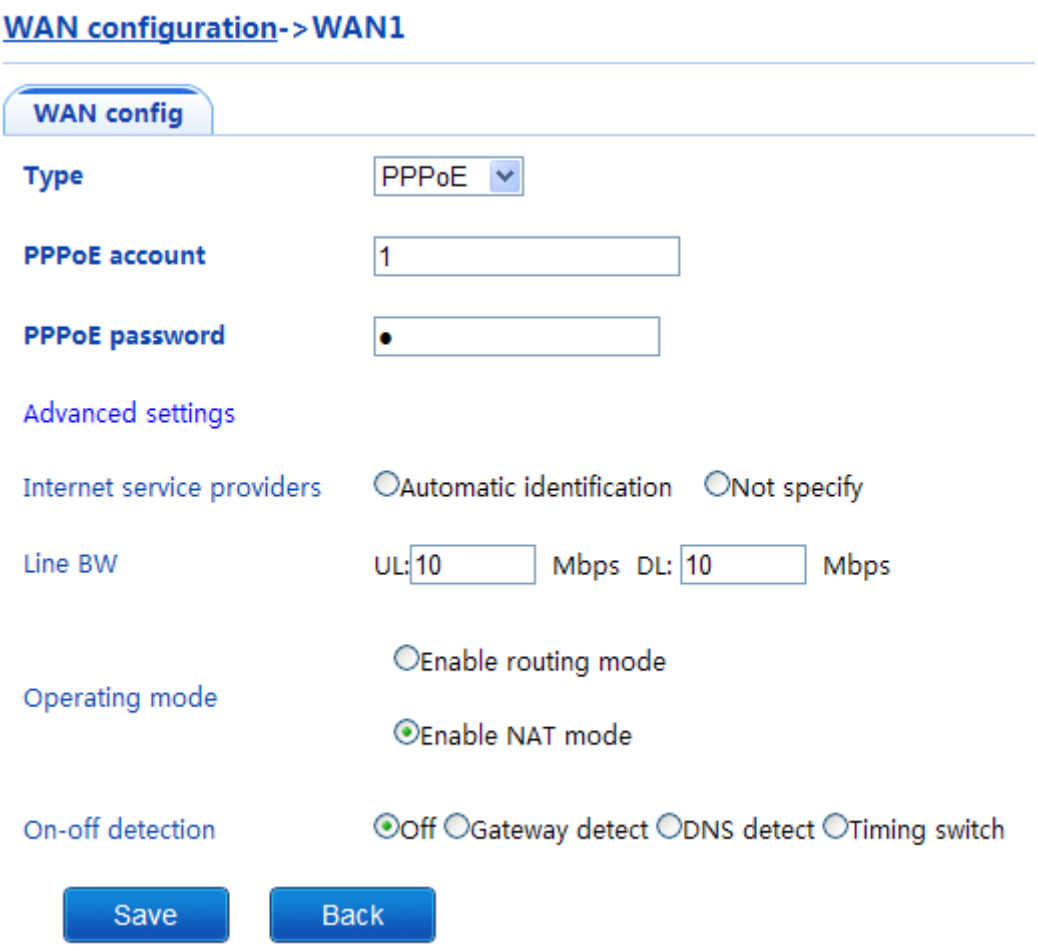
6. System Setup and Operation

How to Set Router VPN



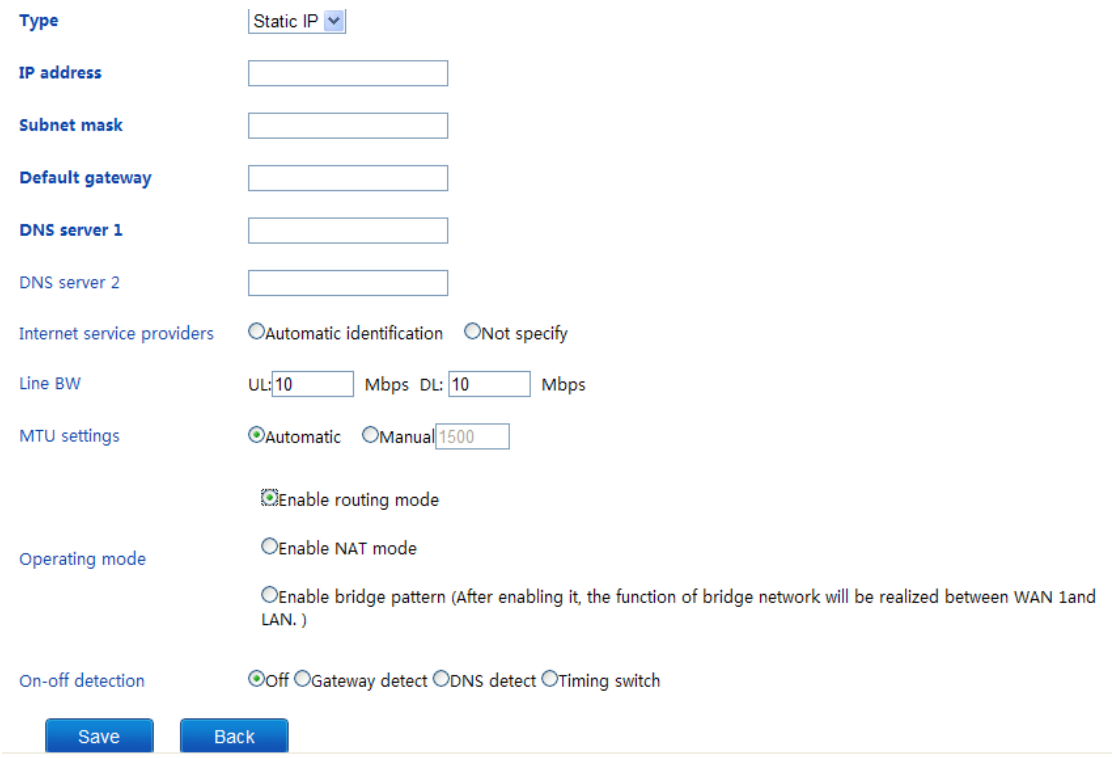
Click WAN1 edit .

Fill in the broadband account and password or static IP address and save, confirm if connected to the WAN.



6. System Setup and Operation

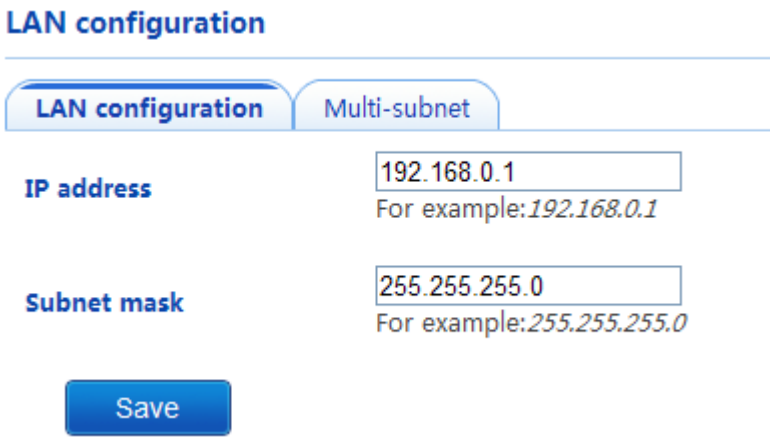
How to Set Router VPN



(2) If is environment B, ignore environment A setting.

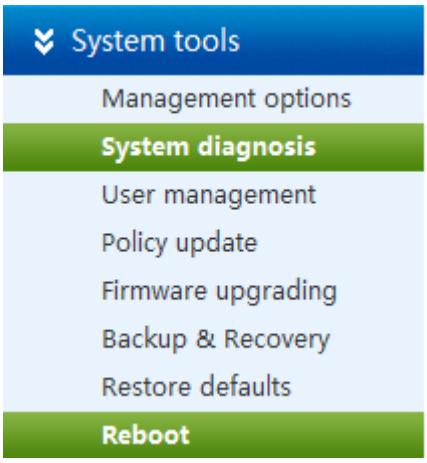
Then VE760w used as child router for switching. The router IP cannot conflict with the IP already set up in the LAN. Need to change the router IP.

Click the basic setup on the left side - LAN configuration, modify 192.168.0.X and save, then reboot the router.

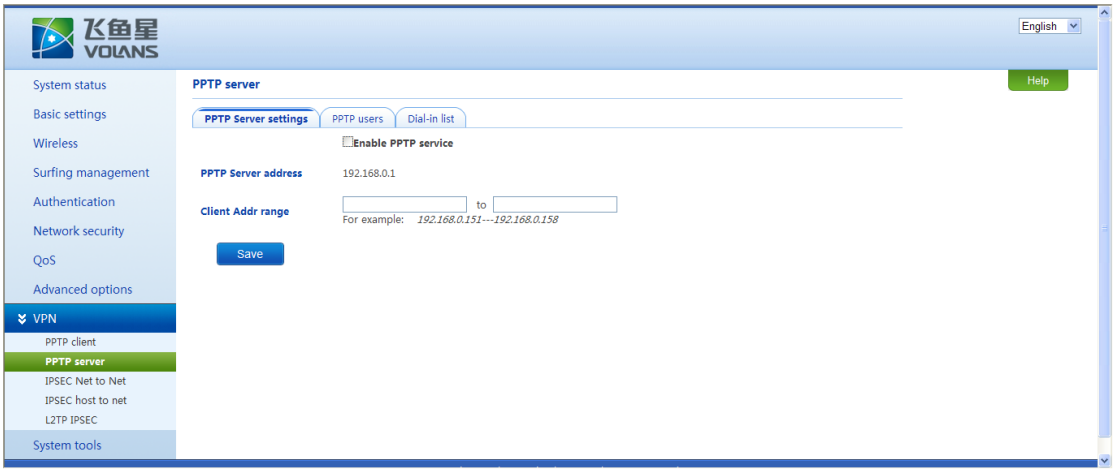


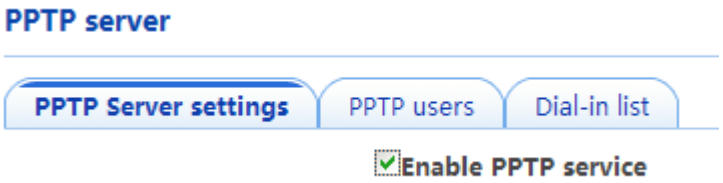
6. System Setup and Operation

How to Set Router VPN



6. Click "virtual private network" on the left side menu--"PPTP server"

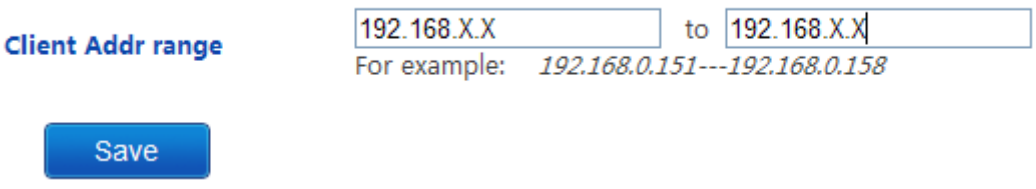




Tick and enable PPTP,

The PPTP client address range should be assigned to the IP address that VPN client dialed, should avoid conflict with other PC user's IP address.

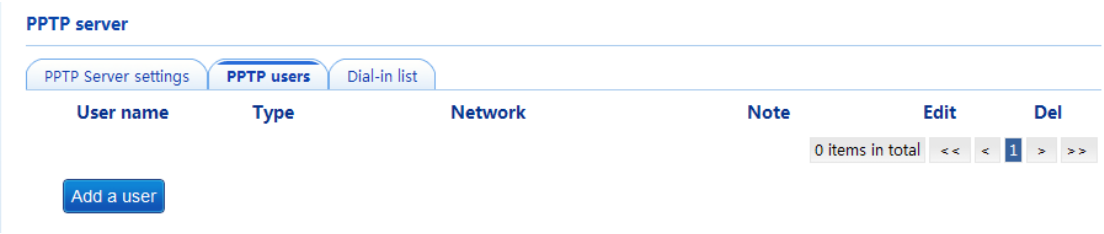
The setting address is



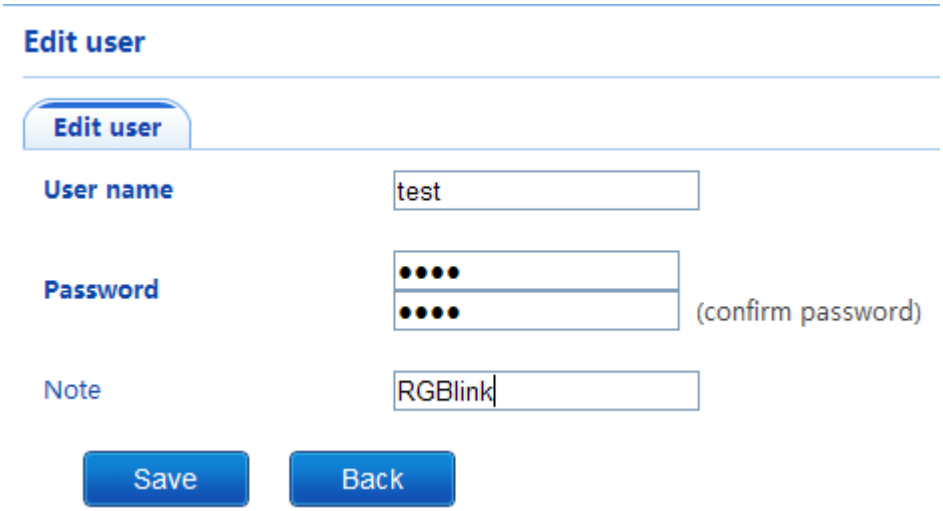
7. Click "PPTP users" after save.

6. System Setup and Operation

How to Set Router VPN



8. Click Add a user, fill in the user name and password (the account and password that necessary for VPN dial-up), and then save.



How to Save the Parameter

Save user mode to the customer for different scene directly call; leave out the edit operation inconvenience, LS-120 provides ten save preferences.

1. Press SAVE button, the key lights, the SAVE function open.
2. SAVE1, SAVE2, SAVE3 all light;
3. Select the location of the need to save, light touch the corresponding key, such as save to SAVE2, light touch SAVE2 key can complete parameter preservation.

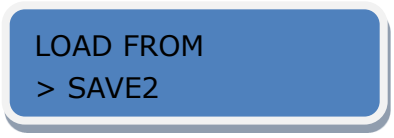
Note

Same as MENU→ SAVE SETUP →SAVE TO

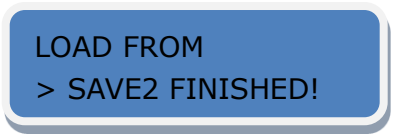
How to Load the Saved Parameter

Save user mode to the customer for different scene directly call; leave out the edit operation inconvenience, LS-120 provides ten save preferences;

1. Press 【SAVE1】、【SAVE2】、【SAVE3】 button to load the saved parameter, for example, load from SAVE2:



2. After about 2 seconds, the LCD shows load finished.



Note

Same as MENU→ SAVE SETUP →LOAD FROM

A. Specification

BNC Input	
Number of Inputs	2
Supported Standards	PAL/NTSC
Signal Level	1Vpp±3db (0.7V Video+0.3v Sync) 75 ohm
Multiplex	480i,576i
VGA DB15 Input	
Number of Inputs	1
Connector	Standard DB15 Socket
Supported Standard	VGA-UXGA
Signal Level	R、G、B、Hsync、Vsync:0 to1Vpp±3dB (0.7V Video+0.3v Sync) 75 ohm black level: 300mV Sync-tip: 0V
Supported Resolution	1024*768*60, 800*600*60, 640*480*60, 1280*720*60, 1280*800*60, 1280*960*60, 1280*1024*60, 1440*900*60, 1400*1050*60, 1600*1200*60, 1680*1050*60, 1920*1080*60, 1366*768*60
DVI Input	
Number of Outputs	1
Connector	Standard DVI-I socket
Supported Resolution	SMPTE ： 625/25 PAL, 525/29.97 NTSC, 625/50p PAL, 525/59.94p NTSC 1080i50,1080i59.94/60,720p50,720p59.94/60 VESA：800×600×60Hz，1024×768×60Hz，1280×768×60Hz，1280×1024×60Hz， 1600×1200×60Hz， 1920×1080×60Hz，1920×1080×50Hz
Signal Level	TMDS pwl, single pixel input,165MHz bandwidth
Format Standard	HDMI 1.3
USB Input	
Number of Inputs	4
Connector	Standard USB port
Supported Standard	Image format: JPGE,BMP,PGN Audio format: WMA,MP3,M4A(AAC) Video format: MPEG2,MPEG3, MPEG4,H264, RM,RMVB,MOV,MJPEG, VC1,DivX,FLV
DVI Output	
Number of Outputs	2
Connector	Standard DVI-I Socket
Signal Level	TMDS pw, 165MHz bandwidth
Supported Resolution	VESA: 800×600×60Hz, 1024×768×60Hz, 1024×768×75Hz,

	1280×720×60Hz, 1280×720×50Hz, 1280×768×60Hz, 1280×800×60Hz, 1280×1024×60Hz, 1360×768×60Hz, 1366×768×60Hz, 1400×1050×60Hz, 1440×900×60Hz, 1600×1200×60Hz, 1680×1050×60Hz, 1920×1080×60Hz, 1920×1080×50Hz, 1920×1200×60Hz, 2048×1152×60Hz, 2560×812×60Hz, 2560×816×60Hz
VGA Output	
Number of Outputs	1
Connector	Standard DB15 Socket
Supported Resolution	VESA: 800×600×60Hz, 1024×768×60Hz, 1024×768×75Hz, 1280×720×60Hz, 1280×720×50Hz, 1280×768×60Hz, 1280×800×60Hz, 1280×1024×60Hz, 1360×768×60Hz, 1366×768×60Hz, 1400×1050×60Hz, 1440×900×60Hz, 1600×1200×60Hz, 1680×1050×60Hz, 1920×1080×60Hz, 1920×1080×50Hz, 1920×1200×60Hz, 2048×1152×60Hz, 2560×812×60Hz, 2560×816×60Hz
Signal Level	R、G、B、Hsync、Vsync:0 to1Vpp±3dB (0.7V Video+0.3v Sync) 75 ohm black level：300mV Sync-tip：0V
Function	
Input channel configuration	Support each input channel signal programming configuration
Throughout the year timing	Support throughout the year month, week, day time
Extras	
Communication	LAN, front panel and PC software
Power Supply	85-264V 2.1A IEC-3
Working Environment	0°C~45°C
Stored Environment	10% to 90%
Product Warranty	3-year parts and labor warranty

Supported 3G USB Adaptor, WIFI and VPN Router List

For the 3G wireless USB network module, we comments to use the following models:

1. Huawei E1750/E1550 (WCDMA);

2. ZTE AC581 (CDMA2000);

3. Huawei E169 (CDMA2000);

4. ZTE AC8710 (CDMA2000);

5. ZTE MU351 (TD-SCDMA).

For the WIFI USB module, we comments to use the following models:

1. TP-LINK TL-WN321G;

2. TP-LINK TL-WN321G+;

3. TP-LINK TL-WN322G+;

4. ASUS WL-167g;

5. TOTOLINK N500UA;

6. OPPO AK093;

7. EDUP N8508.

For the VPN router, we comments to use following model:

1. Netcore NR255 or NR266;

2. VOLANS VE760W or 982W.

DUTCH MEDIA TOOLS