User Manual

MPX-CH-12-N

Single Plug-in Card Matrix Switcher

All Rights Reserved

Version: MPX-CH-12-N_2016V1.0

Preface

Read this user manual carefully before using this product. Pictures shown in this manual is for reference only, different model and specifications are subject to real product.

This manual is only for operation instruction only, not for any maintenance usage.

Trademarks

Product model and its logo are trademarks. Any other trademarks mentioned in this manual are acknowledged as the properties of the trademark owner. No part of this publication may be copied or reproduced without prior written consent.

FCC Statement

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation.

Operation of this equipment in a residential area is likely to cause interference, in which case the user at their own expense will be required to take whatever measures may be necessary to correct the interference

Any changes or modifications not expressly approved by the manufacture would void the user's authority to operate the equipment.

SAFETY PRECAUTIONS

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

- Unpack the equipment carefully and save the original box and packing material for possible future shipment

- Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.

- Do not dismantle the housing or modify the module. It may result in electrical shock or burn.

- Using supplies or parts not meeting the products' specifications may cause damage, deterioration or malfunction.

- Refer all servicing to qualified service personnel.

- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.

- Do not put any heavy items on the extension cable in case of extrusion.

- Do not remove the housing of the device as opening or removing housing may expose you to dangerous voltage or other hazards.

- Install the device in a place with fine ventilation to avoid damage caused by overheat.

- Keep the module away from liquids.

- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the module immediately.

- Do not twist or pull by force ends of the optical cable. It can cause malfunction.

- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.

- Unplug the power cord when left unused for a long period of time.

- Information on disposal for scrapped devices: do not burn or mix with general household waste, please treat them as normal electrical wastes.

Contents

1. Introduction

1.1 Introduction to MPX-CH-12-N

MPX-CH-12-N is a high-performance seamlessly AV modular matrix switcher providing 12 flexible PCIE slots for single VGA/ DVI/ HDBaseT input/ output cards.

With its advanced modularization design, MPX-CH-12-N can make up a 11x1～1x11 matrix of HDMI, DVI, HDBaseT, VGA or their any combinations (count with one). All the cards support plug-and-play. It supports different video signals with seamless cross switching. Every video or audio signal is transmitted and switched independently to decrease signal attenuation. The switcher can handle all the audiovisual management, including the switching, driving, scaling etc.

1.2 Features

- 12 card slots for flexible input/ output combination
- Comprehensive signal card compatibility: DVI/ SDI/ VGA/ HDBT
- Automatically recognize input/ output signal card
- Powerful EDID management
- UPnP enables quick-connection to GUI
- HDCP Compliant
- Seamless AV distribution through different AV signal
- Controllable via front panel buttons, IR, RS232 & TCP/IP
- Adjustable output resolution
- Online firmware upgrade via USB port

1.3 Package List

- ✧ 1 x MPX-CH-12-N
- ✧ 1 x IR Remote
- ✧ 4 x Plastic cushions
- ✧ 1 x User Manual

- ✧ 1 x IR Receiver
- ✧ 2 x Pluggable Terminal Blocks
- ✧ 1 x Power Cord

📖 Signal cards are sold and packed separately, all the items listed above are for MPX-CH-12-N solely. Confirm all the accessories are included, if not, please contact with the dealers.

2. Panel Description
2.1 MPX-CH-12-N
2.1.1 Front Panel
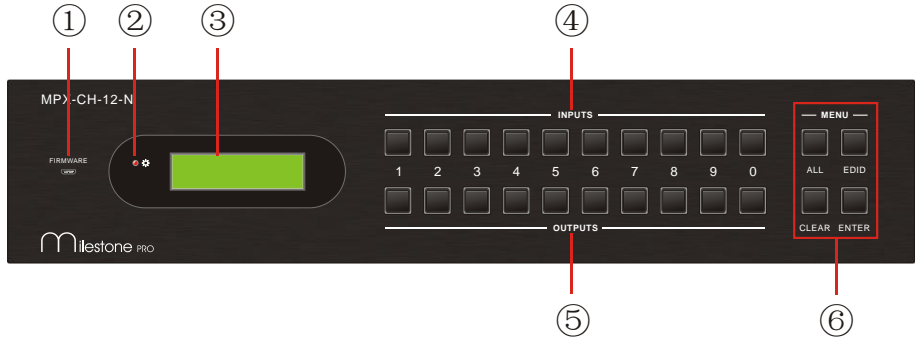
No.	Name	Description
①	FIRMWARE	Micro USB port, used for firmware update
②	Power indicator	➢ Light green once powered on ➢ Turn red in standby mode ➢ Turn off when powered off
③	System Monitor	Display real-time operation status
④	INPUTS	Input selection buttons, ranges from 0~ 9
⑤	OUTPUTS	Output selection buttons, ranges from 0~ 9
⑥	MENU	**ALL**: Select all inputs/ outputs
		EDID: EDID management button, enable input port to learn the EDID data from output devices.
		CLEAR：Withdraw an operation before it comes into effect/ exit inquiry mode
		ENTER: confirm operation/ long-press (3s or more) to enter inquiry mode

📖

1) Input/ output channels are recognized as double-digit, so press channel 1~9 as 01~09, besides, the interval should not exceed 8s.

2) Operations will be automatically canceled 8s later unless pressing ENTER to confirm.

2.1.2 Rear Panel
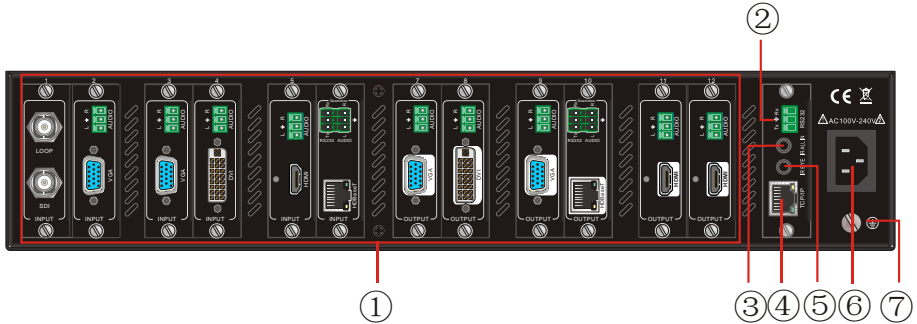
No.	Name	Description
①	Card Slots	Flexible card slots, 12 in total, insert input/ output signal cards here
②	RS232	Serial control port, connect with RS232 port of control device, control the device or 3ʳᵈ party device connected to I-TP &O-TP
③	IR ALL IN	Input port for IR control signal, connect with IR receiver (5V, with carrier), work with IR emitters connected to IR OUT of far-end HDBT receivers
④	TCP/IP	TCP/IP control port, connect with control device (e.g. a PC)
⑤	IR EYE	Connect with IR receiver (5V, with carrier) to control the switcher
⑥	Power port	Connect with 100~240V AC outlet
⑦	Ground	Connect to grounding

📖

1) MPX-CH-12-N supports flexible card connection to form 11x1～1x11 matrix.

2) Pictures shown in this manual are only for reference.

3

2.2 Signal Cards

MPX-CH-12-N boasts 12 card slot for flexible input& output signal card combinations, various signal card can be selected, including VGA, DVI, SDI, HDBT, HDMI, according to specific need. All the signal cards support seamless distribution and hot-plug.

The chart below shows all signal cards MPX-CH-12-N supported:

Input		Output	
Card	Ports	Card	Ports
		MPX-OU-HT	HDBT& Analog Audio& RS232
MPX-IN-SDI	SDI& Loop output		
MPX-IN-VG	VGA& Analog audio	MPX-OU-VG	VGA& Analog audio
MPX-IN-DVI	DVI& Analog Audio	MPX-OU-DVI	DVI& Analog Audio
MPX-IN-HD	HDMI& Analog Audio	MPX-OU-HD	HDMI& Analog Audio

2.2.1 MPX-OU-HT

HDBT signal output card (refer to *6.2.1* for detailed specification)

HDMI1.3 &HDCP1.3 compliant;

Work with HDBT receiver to attain long-distance (up to 70m via qualified CAT6 cable) (up to 70m via qualified CAT6 cable) transmission for 1080p signal and bi-directional RS232 control;

Real-time work status indicator: green LED blinks once powered on; yellow LED lights when the port is connected with HDBT devices;

HDBT port supports PoE;

Comprehensive audio capacity with embedded HDMI audio and 1 auxiliary analog audio port, audio source selectable via RS232 command/ GUI;

Output resolution adjustable via command or GUI;

Support EDID management and DDC communication.

Figure 2- 1 MPX-OU-HT

Pin layout of the HDBT connector:
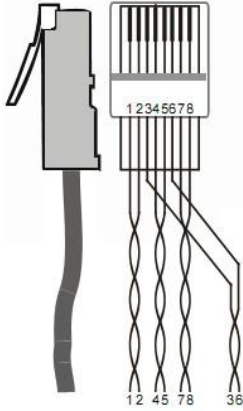
Pin	Color
1	orange white
2	orange
3	green white
4	blue
5	blue white
6	green
7	brown white
8	brown

Twist the pure-color cables with their half-color cables.

2.2.2 MPX-IN-SDI

Single SDI input card (refer to *6.2.2* for detailed specification)

1 SDI input transmits high-definition 3G-SDI/HD-SDI/SDI signal;

Resolution range: 1080p, 1080i, 720p;

Transmit 1080p signal up to 100m;

1 loop output for local monitoring.

Figure 2- 2 MPX-IN-SDI

The BNC connector is shown as the figure below.

BNC Connector

2.2.3 MPX-IN-VG & MPX-OU-VG
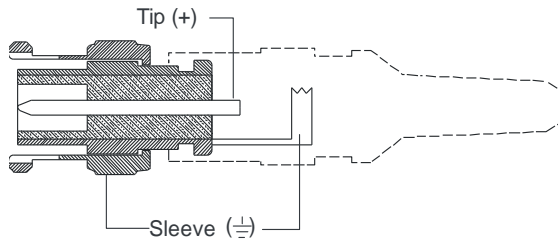
Single VGA signal card (refer to *6.2.3* for detailed specification)

VGA port supports VGA C-Video, YPbPr;

Input card automatically recognizes input signal format;

Output signal format adjustable via commands or GUI;

Output resolution adjustable via commands or GUI:

➢ Resolution range for VGA signal: 800x600, 1024x768, 720p, 1280x1024, 1080i, 1080p (default), 1920x1200;

➢ Resolution range for YPbPr signal: 720p, 1080i, 1080p;

➢ Resolution range for CVBS signal: 480i, 576i;

Figure 2- 3 MPX-IN-VG

Figure 2- 4 MPX-OU-VG

Pin layout of the VGA connectors (female):
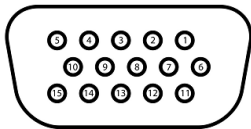
Pin	Signal	Pin	Signal
1	RED	9	KEY/PWR
2	GREEN	10	GND
3	BLUE	11	ID0/RES
4	ID2/RES	12	ID1/SDA
5	GND	13	HSync
6	RED_RTN	14	VSync
7	GREEN_RTN	15	ID3/SCL
8	BLUE_RTN		

When connecting to YPbPr or CVBS signal, insert converting cables according to specific pin definitions (see the figures below):

VGA- YPbPr:

Figure 2- 5 VGA-YPbPr converting guide

Pin	Signal	Pin	Signal
1	RED	6	GND
2	GREEN	7	GND
3	BLUE	8	GND

Other pins are not used.

VGA- CVBS:

Figure 2- 6 VGA-C-Video converting guide

Pin	Signal	Pin	Signal
1	RED	6	GND
7	GND	8	GND
Other pins are not used.			

2.2.4 MPX-IN-DVI & MPX-OU-DVI

Single DVI signal card (refer to *6.2.4* for detailed specification)

HDMI1.3& HDCP1.3 compliant, capable to transmit DVI/ HDMI signal;

Output resolution adjustable via commands or GUI: including auto, 800x600, 1024x768, 720p, 1280x1024, 1080i, 1080p (default), 1920x1200

Input/ Output audio can be enabled/ disabled via commands (default settings: input audio: disabled; output audio: enabled)

Features EDID management and DDC communication.
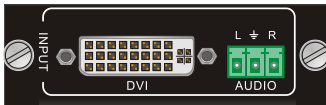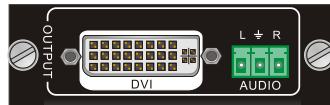
Figure 2- 7 MPX-IN-DVI   **Figure 2- 8 MPX-OU-DVI**

Pin Layout of the DVI-I connector (Dual-Link). (Female)

Pin	Function	Pin	Function
1	T.M.D.S.Data2-	13	T.M.D.S.Data3+
2	T.M.D.S.Data2+	14	+5V Power
3	T.M.D.S. Data 2/4 Shield	15	Ground (return for +5V, Hsync and Vsync)
4	T.M.D.S. Data 4-	16	Hot Plug Detect
5	T.M.D.S. Data 4+	17	T.M.D.S. Data 0-
6	DDC Clock	18	T.M.D.S. Data 0+
7	DDC Data	19	T.M.D.S. Data 0/5 Shield

8	Analog Vertical Sync	20	T.M.D.S.Data5-
9	T.M.D.S.Data1-	21	T.M.D.S.Data5+
10	T.M.D.S.Data1+	22	T.M.D.S. Clock Shield
11	T.M.D.S.Data1/3 Shield	23	T.M.D. S. Clock +
12	T.M.D.S.Data3-	13	T.M.D.S.Data3+

2.2.5 MPX-IN-HD & MPX-OU-HD

Single HDMI signal card (refer to *6.2.5* for detailed specification)

HDMI1.3& HDCP1.3 compliant, capable to transmit DVI/ HDMI signal;

Auto-detect input resolution;

Max resolution: 1080p@60Hz

Output resolution adjustable via commands or GUI: including auto, 800x600, 1024x768, 720p, 1280x1024, 1080i, 1080p (default), 1920x1200

Support EDID Management and DDC communication;

Input audio source selectable via command, including HDMI embedded audio (default), and analog audio;

Analog output audio can be enabled/ disabled via commands (default: enabled)

Support EDID management& DDC communication
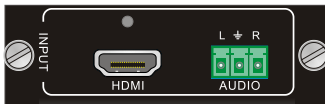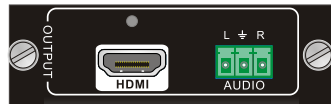
Figure 2- 9 MPX-IN-HD   **Figure 2- 10 MPX-OU-HD**

Pin layout of the HDMI connector (female).
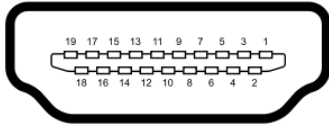
No.	Signal	No.	Signal
1	TMDS Data 2+	**11**	TMDS Clock Shield
2	TMDS Data 2 Shield	**12**	TMDS Clock-
3	TMDS Data 2-	**13**	CEC
4	TMDS Data 1+	**14**	N.C.
5	TMDS Data 1 Shield	**15**	SCL
6	TMDS Data 1-	**16**	SDA
7	TMDS Data 0+	**17**	DDC/CEC Ground
8	TMDS Data 0 Shield	**18**	+5V Power
9	TMDS Data 0-	**19**	Hot Plug Detect
10	TMDS Clock+		TMDS Clock Shield

3. System Connection

3.1 Usage Precautions

1) System should be installed in a clean environment and has a prop temperature and humidity.

2) All of the power switches, plugs, sockets and power cords should be insulated and safe.

3) All devices should be connected before power on.

3.2 System Diagram

The following diagram illustrates typical input and output connections that can be utilized with MPX-CH-12-N:
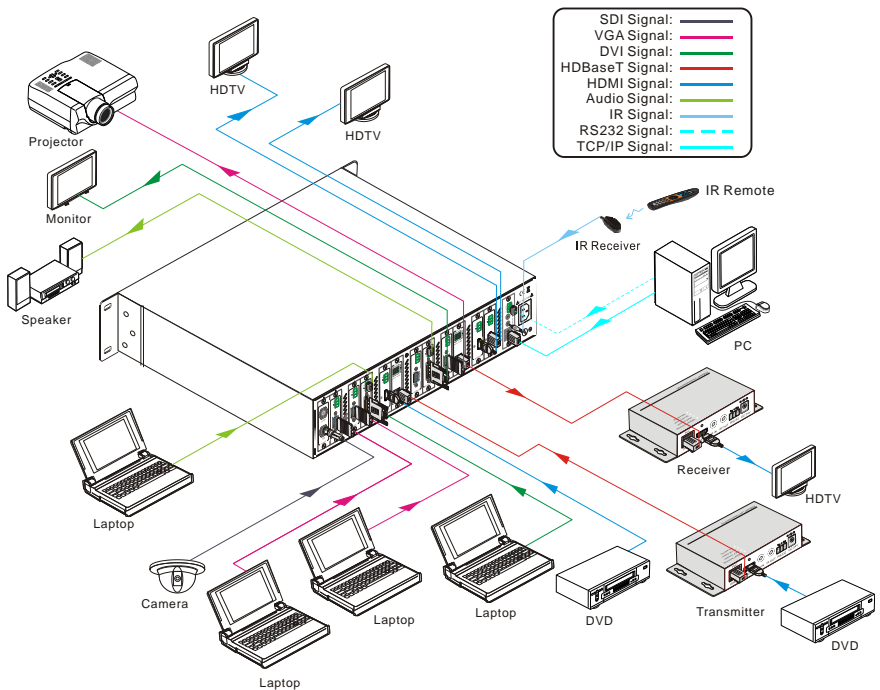

Figure 3- 1 Connection Diagram

3.3 Connection Procedures

Step1. Insert necessary signal cards to the card slots.

Step2. Connect source device(s) (e.g. Blue-ray DVD) to corresponding input ports.

Step3. Connect displays to corresponding output ports.

Step4. Connect amplifier/ speaker to audio output ports.

Step5. Connect an IR Receiver to **IR EYE** to enable IR control.

Step6. Connect control device (e.g. a PC) to the RS232 port to enable serial control.

Step7. Connect control device (e.g. a PC) to the TCP/IP port to enable TCP/IP control.

Step8. Insert 100~240V AC outlet via the included power cord.

3.4 Application

Owing to its flexible card design, MPX-CH-12-N is an all-in-one solution which is ideal for different projects such as public display, educational demo, professional presentation, advertising display or control center. The switcher can handle all the audiovisual management, including the switching, driving, scaling etc.

4. Operations

4.1 Front Panel Control

MPX-CH-12-N provides with convenient front panel button control for I/O switch, EDID management, and system inquiry. Here we make a brief introduction to the operations.

4.1.1 Switching I/O connection

Input/ output channels are recognized in double-digit, press 01~09 for channel 1~9.

1) To convert one input to an output:

Operation: "INPUT"+"OUTPUT"+"ENTER"

Example: transfer input 01 to output 12:
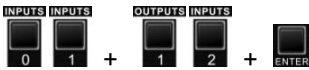
2) To convert an input to several outputs:

Operation: "INPUT" + "OUTPUT" + "OUTPUT" +… + "ENTER"

Example: Switch input 2 to output 2, 4

3) To convert an input to all outputs:

Operation: "input" + "ALL" + "ENTER"

Example: Convert input 02 to all outputs

4.1.2 EDID Learning

MPX-CH-12-N features EDID management to maintain compatibility between all devices.

➢   One input port learns the EDID data of one output port

Operation: "EDID"+"INPUT"+"OUTPUT"+"ENTER".

Example: Input 02 learns EDID data from output 4

➢   All input ports learn EDID data from one output port

Operation: "EDID"+"ALL"+"OUTPUT"+"ENTER"

Example: All input ports learn EDID data from output 04
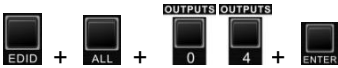

4.1.3 Inquiry

Press and hold the button "ENTER" for 3 seconds to enter system inquiry mode. The chart below shows information that can be inquired:

Function Items	Description	Example
Check customer serial	Interface shown after entering inquiry mode, customer serial can be changed via RS232 command.	K181201E01A15070 001 customer
Check output resolution	In inquiry mode, press output channel to check its resolution	Resolution Out02 1920x1080P
Correspondence between inputs and outputs	"**OUTPUT**" + "**ENTER**"	Matrix Switch AV: 06 ->08

4.1.4 Clear operation

Function: clear the previous operations before pressing **ENTER** to enforce it. Press **CLEAR** can only erase the operations not confirmed by pressing **ENTER**.

📖

1) Input/ output channels are recognized in double-digit, press 01~09 instead of 1~9.

2) The input delay time between two numbers of every input& output channel must be less than 8 seconds; otherwise the operation will be cancelled.

3) The input/output channels on the rear panel are counting from left to right no matter whether there is signal card.

4.2 IR Control

Connect an IR receiver to **IR EYE** on the rear panel, users can control the switcher with the included IR remote (shown as below):

① Standby: enter/ exit standby mode.

② INPUTS: input selection buttons, channels 1~9 should be pressed as 01~09.

③ Function Buttons: share the same operation with front panel buttons.

④ ENTER: .
   - ➢ Confirm operation.
   - ➢ Long-press (3 seconds or more) to enter inquiry mode.

   Note: navigation buttons are unavailable.

⑤ OUTPUTS: output selection buttons, channels 1~9 should be pressed as 01~09

4.3 RS232 Control

MPX-CH-12-N provides with 1 3.5mm RS232 port for serial port control. Connect MPX-CH-12-N to the control device (e.g. a PC) with RS232 cable and set the correct parameters, the control device is capable to control MPX-CH-12-N via designed software.

4.3.1 Installation/uninstallation of RS232 Control Software

Installation: Copy the control software file to the computer connected with MPX-CH-12-N.

Uninstallation: Delete all the control software files in corresponding file path.
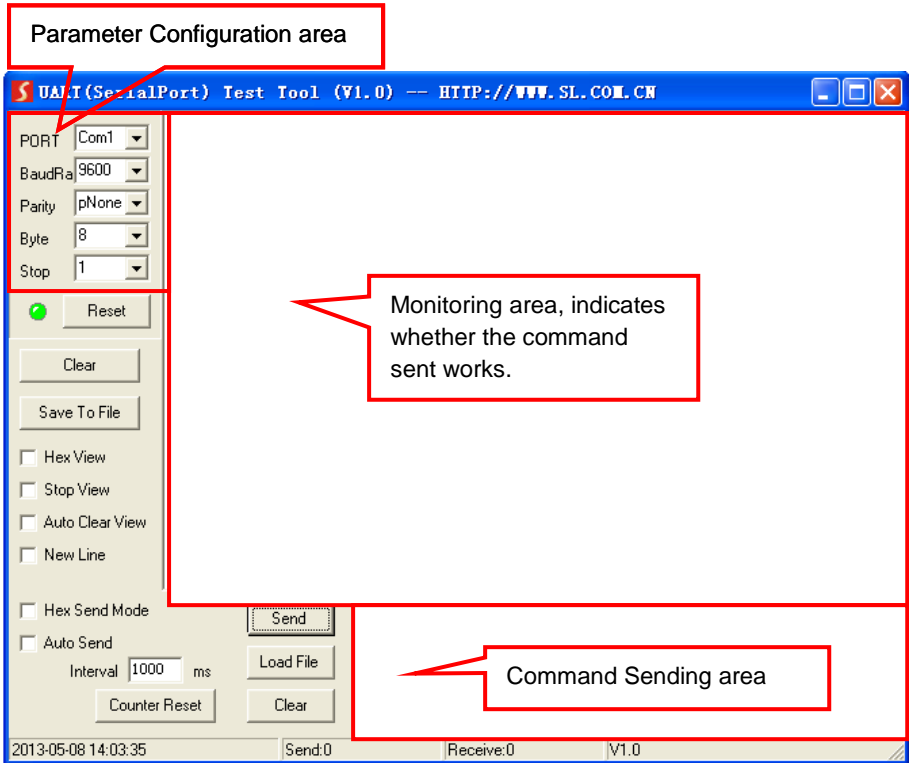
4.3.2 Basic Settings

Firstly, connect MPX-CH-12-N with an input device and an output device. Then, connect it with a computer which is installed with RS232 control software. Double-click the software icon to run this software.

Here we take the software **CommWatch.exe** as example. The icon is showed as below:

The interface of the control software is showed as below:

Parameter Configuration area

PORT | Com1
BaudRa | 9600
Parity | pNone
Byte | 8
Stop | 1

Reset

Clear

Save To File

☐ Hex View
☐ Stop View
☐ Auto Clear View
☐ New Line

☐ Hex Send Mode
☐ Auto Send
  Interval 1000 ms

Send

Load File

Counter Reset

Clear

Monitoring area, indicates whether the command sent works.

Command Sending area

2013-05-08 14:03:35 | Send:0 | Receive:0 | V1.0

Please set the parameters of COM number, bound rate, data bit, stop bit and the parity bit correctly, only then will you be able to send command in Command Sending Area.

4.3.3 RS232 Communication Commands

📖

1. Case insensitive.

2. In following commands, "["and "]" are symbols for easy reading and do not need to be typed in actual operation.

3. Type in the complete commands including ending symbol "." or ";".

4. For input/ output channels 1~9 in the commands, type in 01~09 instead of 1~9.

5. After sending command "%0911." to restore factory default, wait for 10s or so before you reboot the device. Or the restoration may fail, and it will prompt "Default failed, please try again!" in the feedback.

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

Command	Description	Feedback
System Command		
/*Type;	Inquire the model	MPX-CH-12-N
/%Lock;	Lock the front panel buttons	System Locked!
/%Unlock;	Unlock the front panel buttons	System Unlock!
/^Version;	Inquire the firmware version	VX.X.X
/:MessageOff;	Turn off the feedback from the com port. It only shows "switcher OK".	/:MessageOff;
/:MessageOn;	Turn on the feedback from the com port.	/:MessageOn;
Operation Command		
Undo.	Cancel the previous operation.	Undo Ok!
Demo.	Switch to the "demo" mode, 02->01, 2->2, 3->3 … and so on.	Demo Mode AV: 02-> 01 ……
[x]All.	Transfer signal from Input [x] to all outputs	02 To All.
All@.	Switch on all the outputs	All Open.
[x]@.	Switch on output [x]	02 Open.
All$.	Switch off all the outputs	All Closed.
[x]$.	Switch off output [x]	01 Closed.

[x1]V[x2],[x3],[x4]…	Transfer signal from input [x1] to output [x2],[x3],[x4].., separate output channels with ","	AV: 01->07 AV: 01->08 …
Save[Y].	Save the present operation to the preset command [Y], [Y]=0~9	Save To F1
Recall[Y].	Recall the preset command [Y]	Recall From F1 AV: 02->04 AV: 02->06 …
Clear[Y].	Clear the preset command [Y]	Clear F1
EDIDMInit.	Reset factory default EDID	EDIDMInit.
EDIDM[X]B[Y].	Manage EDID, enable input [Y] learn EDID data from output [X]	EDIDM07B03
PWON.	Work normally	PWON
PWOFF.	Enter standby mode	PWOFF
STANDBY.	Enter standby mode, can be awaken via front panel button operations	STANDBY
POE/[X]:[Y].	Enable/ Disable PoE function of signal card [X] [X]=1~12, enable/ disable PoE function of 1 signal card, [X]=13, enable/ disable PoE function of all signal cards [Y]=0 (disable PoE) or 1 (enable PoE)	POE/1:0

/+[Y]/[X]:******.	Set communication between PC and HDBaseT receiver. ① Y is for RS232 port (connect with RS232 port of HDBaseT receiver) **a.** Y = 1~12, send this command to the corresponding HDBaseT receiver to control far-end device. **b.** Y = A~L, send this command to the corresponding HDBaseT receiver when MPX-CH-12-N is powered on **c.** Y = M~X, send this command to the corresponding HDBaseT receiver when MPX-CH-12-N is powered off ② X is for baud rate, its value ranges from 1 to 7 (1--2400, 2--4800, 3--9600, 4--19200, 5--38400, 6—57600, 7--115200) ③ ***** is for data (max 48 Byte)	601% Volume of MIC : 60 (****** and feedback from HDBT receiver)
%0911.	Reset factory default	Factory Default
Inquiry Command		
Status[x].	Inquire the respective input for output [x]	AV:01-> 02
Status.	Inquire respective inputs for all outputs	AV:01->02 AV:03->06 … …
CheckInKatype.	Get the input signal card type *-- no available input signal card/ output card, 1--VGA, 2--DVI, 4--BT, 5--SDI, 6--HDMI	Channel IN:*11*4**11*4*.
CheckOutKatype.	Get the output signal card type *-- no available output signal card/ input card, 1--VGA, 2--DVI, 4--BT, 6--HDMI	Channel OUT:***4*62**1**.
POEstatus.	Check PoE status of all the signal cards "Y" means PoE function is enabled; "N" means not	Port 01 02 03 04 POE Y Y Y Y Port 05 06 07 08 POE Y Y Y Y Port 09 10 11 12 POE Y Y Y Y

%88[XX].	Inquire the command send to port [XX]+1 [XX]=00~11, get the command sent to port 1~12 when powered on MPX-CH-12-N [XX]=12~23, get the command sent to port 1~12 when powered off MPX-CH-12-N	Port 11: 2A1. when PWOFF
%9961.	Get current keylock status	System Unlock!/ System Locked!
%9962.	Inquire current working status	PWON/STANDBY /PWOFF
%9963.	Return all input& output connection status	Port 01 02 … … Mode In Ou … … Port … … 11 12 Mode … … Ou Ou
%9964.	Inquire the IP	IP: 192.168.0.178
%9973.	Return resolutions of all outputs	Resolution Out05 1920x1080P … …
%9975.	Get current input& output card correspondence status	Out 01 02 … … In 00 06 … … Out … … 11 12 In … … 06 06
%9976.	Get the output card type	Channel 4 output mode is Digital Channel 6 output mode is VGA Channel 7 output mode is Digital Channel 10 output mode is VGA
%9977.	Inquire force output signal format status	Channel xx is auto/manual signal format
%9978.	Inquire output resolution configuration mode (manual/ auto EDID)	Channel xx is auto/manual signal format

		Port 01 02 03 04
%9981.	Inquire input/output type of current inserted cards Note: If there is no card inserted in a slot, it will show "Nc" instead of In/ Ou.	Port 01 02 03 04 Mode In In Ou In Port 05 06 07 08 Mode Ou Ou Ou Ou Port 09 10 11 12 Mode Ou Ou Nc Nc Channel status has changed
Commands for Signal Cards		
MPX-OU-HT/VG/ DVI/ HD		
USER/O/[x]:0804%;	Set the resolution of output [x] to 720P 60Hz	Resolution Out08 1280x720P
USER/O/[x]:0810%;	Set the resolution of output [x] to 1080I 30Hz	Resolution Out08 1920x1080I
USER/O/[x]:0813%;	Set the resolution of output [x] to 1080P 60Hz	Resolution Out08 1920x1080P
USER/O/[x]:0822%;	Set the resolution of output [x] to 800X600 60Hz	Resolution Out08 800x600
USER/O/[x]:0824%;	Set the resolution of output [x] to 1024x768 60Hz	Resolution Out08 1024x768
USER/O/[x]:0826%;	Set the resolution of output [x] to 1280X1024 60Hz	Resolution Out08 1280x1024
USER/O/[x]:0837%;	Set the resolution of output [x] to 1920X1200 60Hz	Resolution Out08 1920x1200
MPX-OU-VG		
USER/O/[x]:0900%;	Set the resolution of CVBS output [x] to 480i	Resolution Out 01 720x480 I
USER/O/[x]:0901%;	Set the resolution of CVBS output [x] to 576i	Resolution Out 02 720x576 I
USER/O/[x]:0201%;	Set the signal format of VGA output [x] to YPBPR	0201%
USER/O/[x]:0202%;	Set the signal format of VGA output [x] to VGA	0202%
USER/O/[x]:0203%;	Set the signal format of VGA output [x] to CVBS	0203%
USER/O/[x]:0110%;	Enable analog audio output for output [x]	Channel 11 out audio command is:0110%
USER/O/[x]:0111%;	Disable analog audio output for output [x]	Channel 11 out audio command is:0111%

USER/O/[x]:0710%;	Inquire analog audio output status for output [x]	Channel 11 audio output is mute
MPX-OU-HT		
USER/O/[x]:0108%;	Enable analog audio output for channel [x]	Channel 02 out audio command is:0108%
USER/O/[x]:0109%;	Disable analog audio output for channel [x]	Channel 02 out audio command is:0109%
USER/O/[x]:0710%;	Inquire analog audio output status for output [x]	Channel 11 audio output is mute
USER/O/[x]:0103%;	Set the output signal to HDMI and neglect hot-plug detection	0103%
USER/O/[x]:0104%;	Set the output signal to DVI and neglect hot-plug detection	0104%
USER/O/[x]:0105%;	Capture the best resolution of far-end display connected to output [x] and enable hot-plug detection	0105%
USER/O/[x]:0106%;	Switch on the HDCP compliance of output [x]	0106%
USER/O/[x]:0107%;	Switch off the HDCP compliance of output [x]	0107%
MPX-OU-DV		
USER/O/[x]:0101%;	Set the resolution of output [x] through auto EDID (after detected new output, automatically capture the output device's EDID)	Resolution Out 02 Auto
USER/O/[x]:0110%;	Enable analog audio output for output [x]	Channel 11 out audio command is:0110%
USER/O/[x]:0111%;	Disable analog audio output for output [x]	Channel 11 out audio command is:0111%
USER/O/[x]:0710%;	Inquire analog audio output status for output [x]	Channel 11 audio output is mute
USER/O/[x]:0103%;	Set the output signal to HDMI and neglect hot-plug detect	0103%
USER/O/[x]:0104%;	Set the output signal to DVI and neglect hot-plug detect	0104%
USER/O/[x]:0105%;	Set normal hot-plug detect for DVI output [x]	0105%
USER/O/[x]:0106%;	Switch on the HDCP compliance of output [x]	0106%

USER/O/[x]:0107%;	Switch off the HDCP compliance of output [x]	0107%
MPX-IN-HD		
USER/I/[x]:0706%;	Set the audio source of input [x] to HDMI embeded audio	Channel 04 in audio command is:0706%
USER/I/[x]:0707%;	Set the audio source of input [x] to analog audio	Channel 04 in audio command is:0707%
USER/I/[x]:0708%;	Get the audio source of input [x]	Channel 01 in audio is HDMI
MPX-OU-HD		
USER/O/[x]:0110%;	Enable analog audio output for output [x]	Channel 11 out audio command is:0110%
USER/O/[x]:0111%;	Disable analog audio output for output [x]	Channel 11 out audio command is:0111%
USER/O/[x]:0710%;	Inquire analog audio output status for output [x]	Channel 11 audio output is mute
USER/O/[x]:0106%;	Switch on the HDCP compliance of output [x]	0106%
USER/O/[x]:0107%;	Switch off the HDCP compliance of output [x]	0107%

4.4 TCP/IP Control

MPX-CH-12-N boasts option TCP/IP port for IP control.

Default settings: IP: 192.168.0.178; Subnet Mast: 255.255.255.0; Gateway: 192.168.0.1; Serial Port: 4001.

IP& gateway can be changed as you need, Serial Port cannot be changed.

Connect the Ethernet port of control device and TCP/IP port of MPX-CH-12-N, and set same network segment for the 2 devices, users are able to control the device via web-based GUI or designed TCP/IP communication software.

4.4.1 Control Modes

MPX-CH-12-N can be controlled by PC without Ethernet access or PC(s) within a LAN.

● **Controlled by PC without Ethernet access**
Connect a computer to the TCP/IP port of the MPX-CH-12-N, and set its network segment to the same as the MPX-CH-12-N's.
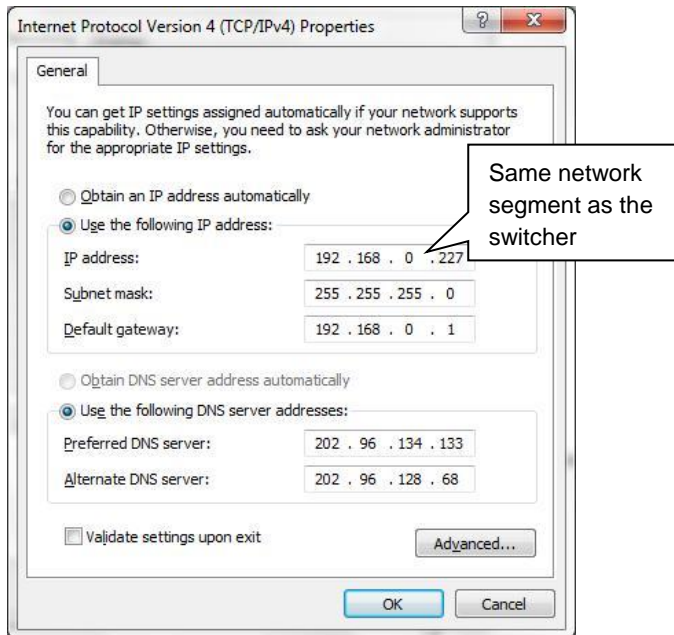
● **Controlled by PC(s) in LAN**
Connect MPX-CH-12-N, a router and several PCs to setup a LAN (as shown in the following figure). Set the network segment of MPX-CH-12-N to the same as the router's, then PCs within the LAN are able to control MPX-CH-12-N.
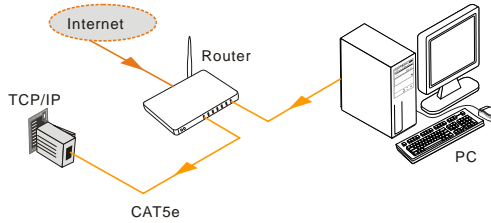
Follow these steps to connect the devices:

Step1. Connect the TCP/IP port of the MPX-CH-12-N to Ethernet port of PC with straight-thru CAT5e/6.

Step2. Set the PC's network segment to the same as the MPX-CH-12-N's.

**Step3.** Set the MPX-CH-12-N's network segment to the same as the router.

Step4. Set the PC's network segment to the original ones.

**Step5.** Connect the MPX-CH-12-N and PC(s) to the router. PC(s) within the LAN is able to control the MPX-CH-12-N asynchronously.

4.4.2 Control via TCP/IP communication software

(Exampled by TCPUDP software)

1) Connect a computer and MPX-CH-12-N to the same network. Open the TCPUDP software (or any other TCP/IP communication software) and create a connection, enter the IP address and port of MPX-CH-12-N (default IP: 192.168.0.178, port:4001):
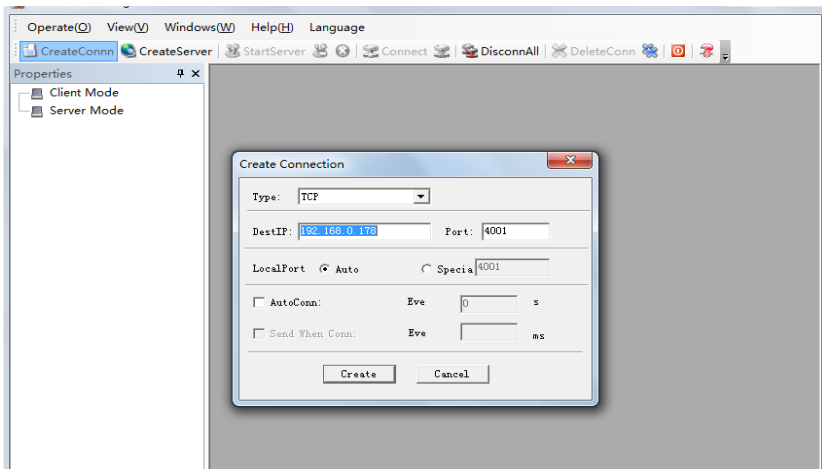
2) After connect successfully, we can enter commands to control the MPX-CH-12-N, as below:
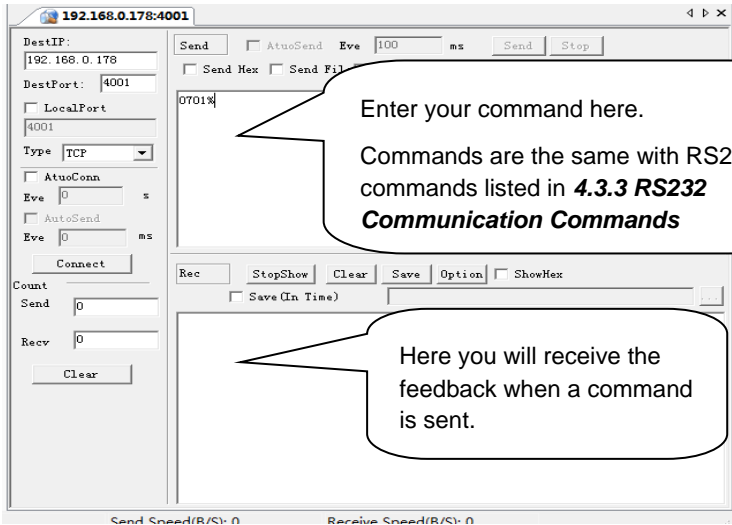
4.4.3 Control via web-based GUI

MPX-CH-12-N provides with built-in GUI for convenient TCP/IP control. GUI allows users to interact with MPX-CH-12-N through graphical icons and visual indicators.

Access GUI interface through any one of the following methods:

1) Access through UPnP: Go to **My Network Place** in your PC, and click the icon named MPX-CH-12-N.

2) Access through web browser: type the IP of the device (default: 192.168.0.178, changeable) in the browser

📖 PCs running Windows XP system may occur issues in finding UPnP icon, follow these steps to switch on UPnP protocol:

1) Add UPnP component: go to "**Control Panel**" -> double-click "**Add/ Delete Programs**" -> double-click "Add/ Delete windows component" ->tick "UPnP" -> click "Next" -> click "OK"

2) Enable Windows Firewall: go to "**Control Panel**" -> double-click "**Windows Firewall**" -> click "Others" -> tick "UPnP framework"

3) Enable UPnP auto-starting: go to "**Control Panel**" -> double-click "**Administrative Tools** " -> double-click "Services" -> find and click **SSDP Discovery Servic** and **Universal Plug and Play Device Host** -> click "OK"

UPnP will now automatically start when you turn on your computer.

26

4) Reboot the device.

The log-in interface is shown below:

Figure 4- 1 Log-in interface

There are 2 selectable accounts to log in. Type the right name and password in relative column and click **Login** to enter configuration interfaces.

> **Name**: admin; **Password**: admin (default setting, changeable via GUI)

> **Name**: user; **Password**: user (default setting, changeable via GUI)

It will enter scene management interface (left) after log-in, which provides direct scene switch. The chart below illustrates the main structure of GUI interfaces:
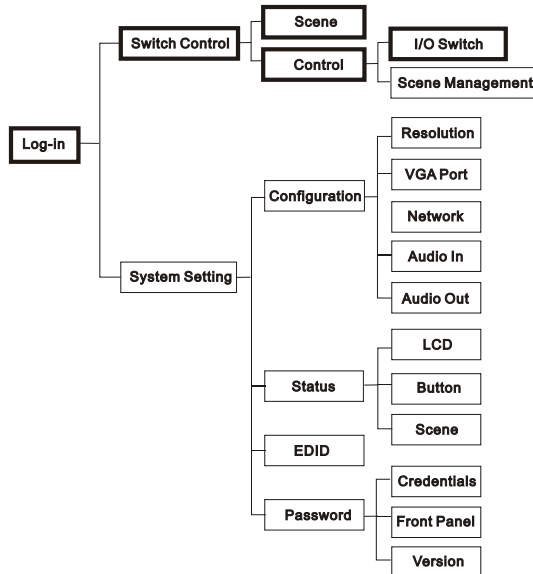

Figure 4- 2 GUI Structure

Log in as user will only access interfaces in bold in **Figure 4-2**.

Switch Control: 2 selectable interfaces in total, including scene switch interface and I/O switch interface

Figure 4- 3 Scene Switch

Figure 4- 4 I/O Switch

In these interfaces, you can:

- ➢ Scene switch: scene button + Load
- ➢ I/O switch: "input" + "output 1 + …/ All" +"Confirm"
- ➢ Scene management (save/ delete/ modify)
- ➢ Switch to system setting interfaces by pressing 🔧 at the left-bottom corner

System Setting: 4 submenu items in total, including configuration, status, EDID and password.

Configuration: 5 submenu items in total, including Resolution, VGA Port, Network, Audio In and Audio Out
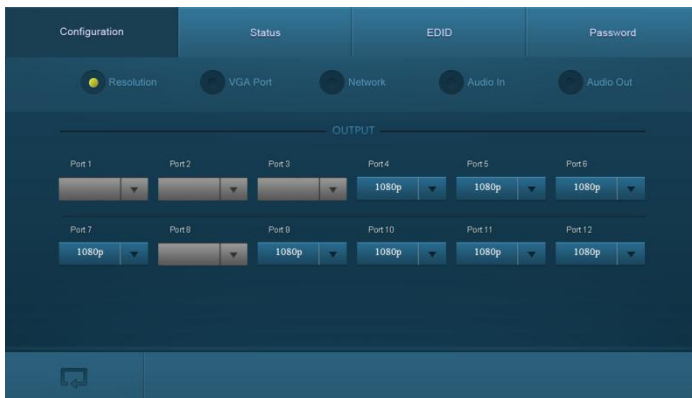

Figure 4- 5 Configuration Interface

In these interfaces, you can:

- ➢ Configure output resolution

    O-DV, O-TP& O-HD: Auto, 800*600, 1024*768, 720p, 1280x1024, 1080i, 1080p, 1920x1200

O-VG (options vary according to different signal format):

- Ø VGA: 800x600, 1024x768, 720p, 1280x1024, 1080i, 1080p, 1920x1200;
- Ø YPbPr: 720p, 1080i, 1080p;
- Ø CVBS: 480i, 576i;

➤ Set signal format for VGA port(s): including VGA, YPBPR, CVBS

➤ Configure network: set IP to DHCP (automatically assign IP by router) or static IP (manually set IP)

➤ Switch on/ off audio input/ output

➤ Switch to switch control interfaces by pressing 🔁 at the left-bottom corner

📖 Operations in Audio IN/ Out configuration interface:

Icon Status	Description
ON ◉	**Audio IN**: select HDMI embeded audio as input source
	Audio OUT: enable analog audio output
◉ OFF	**Audio IN**: select HDMI embeded audio as input source
	Audio OUT: disable analog audio output

Press the button to switch between the 2 states.

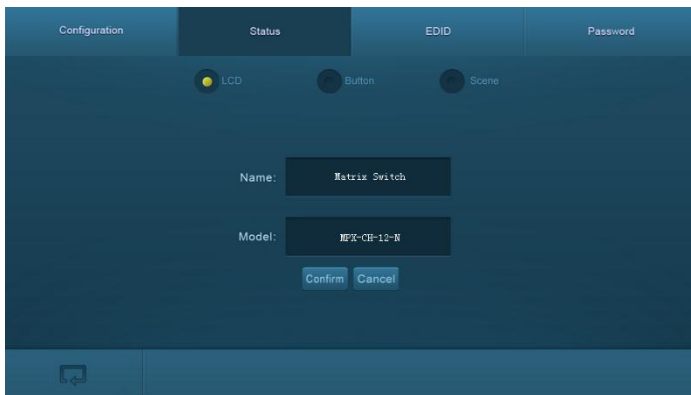**Status:** 3 submenu items in total, including LCD, Button, and Scene

Figure 4- 6 Display information configuration

In these interfaces, you can:

➤ Configure LCD display information: max at 16 numbers/ letters

➤ Set button lables: max at 7 numbers/ letters/ Chinese characters

➤ Name scenes: max at 7 numbers/ letters/ Chinese characters

29

Remember to click **Confirm** to save the settings.

EDID: EDID management interface, enable 1/all input(s) capture and learn the EDID data from 1 output

Figure 4- 7 EDID Management

In these interfaces, you can:

- ➢ 1 input learns EDID from 1 output: **Output** + **Input** + **Confirm**
- ➢ All inputs learn EDID from 1 output: **Output** + T**o All Inputs**
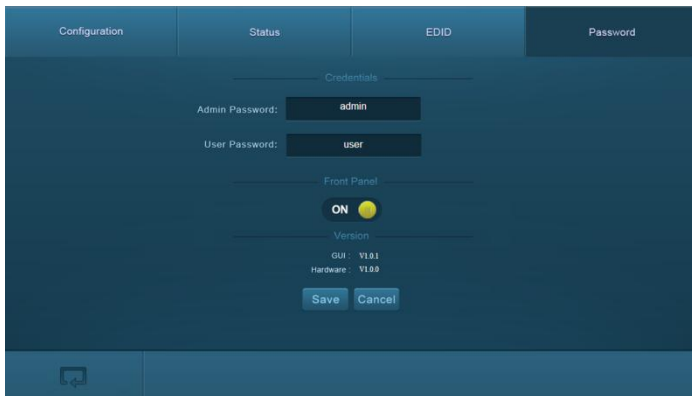- ➢ Undo the previous input: click **Cancel**

Password:

Figure 4- 8 Password Setting

In these interfaces, you can:

- ➢ Set password: max at 10 numbers/ letters

> ➢ Configure front panel lock status

> ➢ Inquire GUI& Hardware versions

Remember to click **Save** to save the settings.

📖 Notes on the front panel icon:

Icon Status	Description
ON	Front panel button unlock
OFF	Front panel button locked

Press the button to switch between the 2 states.

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

4.4.4 Port Management

Type the designed website 192.168.0.178:100 (Default, changeable via GUI) in your browser. Enter correct username and password (same with GUI name and password) to log in the WebServer:

Here is the main configuration interface of the WebServer:
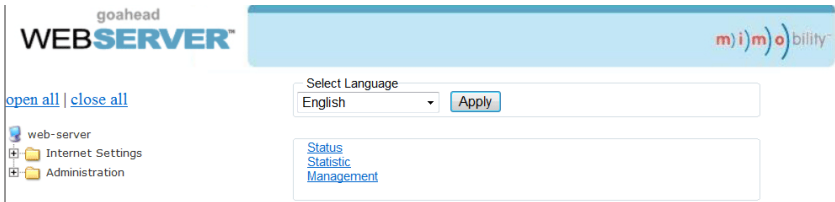
In this interface, you can:

➢ Change website display language

➢ Modify network settings: Go to Internet Settings -> WAN

➢ Upgrade TCP/IP module: Go to Administration -> Upload Program -> Select program file -> Start upgrading

Reboot the device after upgrading.

5. Firmware Upgrade

The switcher boasts a USB port for online firmware upgrade on the front panel. Follow these steps to upgrade firmware:

Step1. Copy the upgrade software and the latest upgrade file (.bin) to PC.

Step2. Connect the USB ports of the switcher and the PC via USB cable.

Step3. Double-click the update software icon (see as below).

It will enter the upgrade interface shown as below:
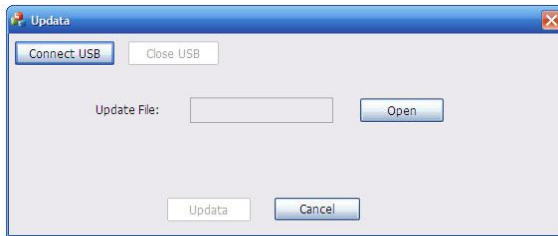
Step4. Click **Connect USB**.

Step5. Click **Open** to load the upgrade file, then click **Updata** to start firmware upgrading.

Note:

1. To ensure available control, the COM number of the PC should be 1~9.

2. If the update progress bar can't go on, please cut off power, and then restart this machine to update firmware again.

6. Specification

6.1 Main Unit

Connectors			
Control	1 IR EYE, 1 RS232, 1 TCP/IP	Card Slot	12 PCI-E
Control Connectors	1 3.5mm mini jack, 1 3-pin pluggable terminal block, 1 RJ45		
General			
Standards	HDMI 1.4 & HDCP1.3	Resolution	1080p (max)
Power Supply	100~240V AC	Power Consumption	181.5w
Temperature	0~50℃	Reference Humility	10%~90%
Dimension (W*H*D)	437x 88x 380mm	Weight	5.2 kg

6.2 Signal Cards

6.2.1 MPX-OU-HT

MPX-OU-HT			
Output	1 HDBT, 1 Audio	Output Connector	1 Female RJ45 1 3-pin pluggable terminal block
Power Consumption	14w		
General			
Transmission Distance	(1080p)≤70m	Switching Speed	＜100ns
Working Temperature	0~50℃	Reference Humility	10%~90%
Standard	HDMI1.3, DVI1.0 & HDCP1.3		
Audio	PCM		
EDID	Supports EDID Management		
Output Resolution	Auto, 800x600, 1024x768, 720p, 1280x1024, 1080i, 1080p, 1920x1200		

6.2.2 MPX-IN-SDI

Input		Output	
Input	1 SDI	Output	1 SDI LOOP
Connector	Female BNC	Output Connector	Female BNC
General			
Signal	3G-SDI/HD-SDI/SDI	Resolution	1080p (max)
Transmission Distance	(1080p)≤160m	Data Type	8 & 10 & 12bit
Working Temperature	0~50℃	Reference Humility	10%~90%
Power Consumption	6.1w		

6.2.3 MPX-IN-VG& MPX-OU-VG

MPX-IN-VG		MPX-OU-VG	
Input	1 VGA, 1 Audio	Output	1 VGA, 1 Audio
Input Connector	Female 15 pin HD 1 3-pin pluggable terminal block	Output Connector	Female 15 pin HD 1 3-pin pluggable terminal block
Power Consumption	4.6w	Power Consumption	4w
General			
Video Signal	VGA, CVBS, YPbPr	Switching Speed	＜100ns
Output Resolution	**VGA:** 800x600, 1024x768, 720p, 1280x1024, 1080i, 1080p, 1920x1200 **YPbPr**: 720p, 1080i, 1080p **CVBS**: 480i, 576i		
Working Temperature	0~50℃	Reference Humility	10%～90%

6.2.4 MPX-IN-DVI & MPX-OU-DVI

MPX-IN-DVI		MPX-OU-DVI	
Input	1 DVI, 1 Audio	Output	1 DVI, 1 Audio
Input Connector	Female DB24+5/ HDMI 1 3-pin pluggable terminal block	Output Connector	Female DB24+5/ HDMI 1 3-pin pluggable terminal block
Power Consumption	4.5w	Power Consumption	3.5w
General			
Working	0~50℃	Reference	10%～90%

Temperature		Humility	
Switching Speed	＜100ns	Standard	HDMI1.3 & HDCP
EDID	Supports EDID Management		
Output Resolution	Auto, 800x600, 1024x768, 720p, 1280x1024, 1080i, 1080p, 1920x1200		

6.2.5 MPX-IN-HD& MPX-OU-HD

MPX-IN-HD		**MPX-OU-HD**	
Input	1 HDMI, 1 Analog audio	Output	1 HDMI, 1 Analog audio
Input Connector	19-pin Type A Female HDMI 3-pin pluggable terminal block	Output Connector	19-pin Type A Female HDMI 3-pin pluggable terminal block
Power Consumption	5w	Power Consumption	2.7w
General			
Audio	PCM	Bandwidth	6.75 Gbps
Switching Speed	＜100ns	Standard	HDMI1.3 & HDCP1.3
Working Temperature	0~50℃	Reference Humility	10%～90%
EDID	Supports EDID Management		
Output Resolution	Auto, 800x600, 1024x768, 720p, 1280x1024, 1080i, 1080p, 1920x1200		

7. Panel Drawing
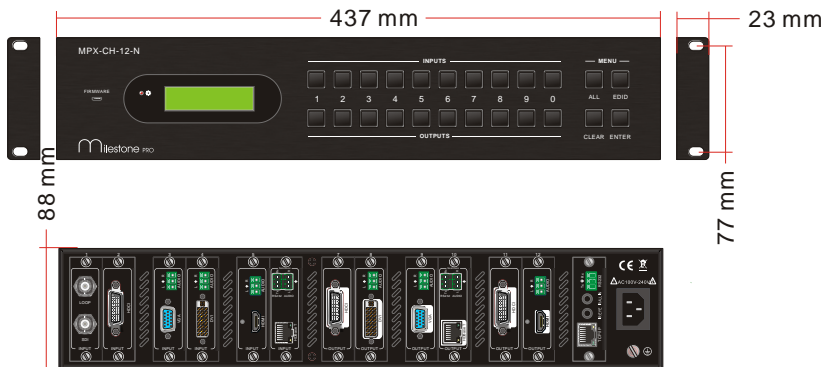
8. Troubleshooting & Maintenance

Problems	Causes	Solutions
Color losing or no video signal output in HDMI display	The connecting cables may not be connected correctly or it may be broken.	Check whether the cables are connected correctly and in working condition.
No HDMI signal output in display while local input is working normally	Loose cable connection	Reconnect the devices and make sure they're well contacted.
	The display doesn't support the resolution	Set output resolution to other supportive ones or Auto.
Splash screen in output devices	Poor quality of the connecting cable	Change for another cable of good quality.
	Poor contact at the input/ output end	Reconnect the devices and make sure they're well contacted.
Cannot control the device via front panel buttons	Front panel buttons are locked	Send "/%Unlock;" to unlock.
Cannot control MPX-CH-12-N by control device (e.g. a PC) through RS232 port	Wrong RS232 communication parameters	Make sure the RS232 communication parameters are correct.
	MPX-CH-12-N is broken	Send it to authorized dealer for repairing.
Static becomes stronger when connecting the video connectors	Bad grounding	Check the grounding and make sure it is connected well.

If your problem persists after following the above troubleshooting steps, seek further help from authorized dealer or our technical support.

9. After-sales Service

If there appear some problems when running the device, please check and deal with the problems reference to this user manual.

1) Product Limited Warranty: We warrant that our products will be free from defects in materials and workmanship for **three years,** which starts from the first day the product leaves warehouse (check the SN mark on the product).
Proof of purchase in the form of a bill of sale or receipted invoice must be presented to obtain warranty service.

2) What the warranty does not cover:
- Warranty expiration.
- Factory applied serial number has been altered or removed from the product.
- Damage, deterioration or malfunction caused by:
  - Normal wear and tear
  - Use of supplies or parts not meeting our specifications
  - No certificate or invoice as the proof of warranty.
  - The product model showed on the warranty card does not match with the model of the product for repairing or had been altered.
  - Damage caused by force majeure.
  - Servicing not authorized
  - Other causes which does not relate to a product defect
- Delivery, installation or labor charges for installation or setup of the product

3) Technical Support: Email to our after-sales department or make a call, please inform us the following information about your cases.
- Product version and name.
- Detailed failure situations.
- The formation of the cases.

Remarks: For any questions or problems, please try to get help from your local distributor.