CR-CS2

IP to Relay, IR, & RS-232 Controller

OPERATION MANUAL

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SAFETY PRECAUTIONS

Please read all instructions before attempting to unpack, install or operate this equipment and before connecting the power supply.

Please keep the following in mind as you unpack and install this equipment:

- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Never spill liquid of any kind on or into this product.
- Never push an object of any kind into this product through any openings or empty slots in the unit, as you may damage parts inside the unit.
- Do not attach the power supply cabling to building surfaces.
- Use only the supplied power supply unit (PSU). Do not use the PSU if it is damaged.
- Do not allow anything to rest on the power cabling or allow any weight to be placed upon it or any person walk on it.
- To protect the unit from overheating, do not block any vents or openings in the unit housing that provide ventilation and allow for sufficient space for air to circulate around the unit.

REVISION HISTORY

VERSION NO.	DATE	SUMMARY OF CHANGE
v1.00	08/11/2016	First release
v1.01	11/05/2018	Amended note about DHCP

CONTENTS

1. INTRODUCTION

The CR-CS2 is a simple Control System for a wide variety of connected devices. It has 16 user defined macro events stored within the unit activated via the WebGUI or by telnet, eight of which can also be activated by the external trigger connections. User defined macros can send commands to remote devices via Ethernet, IR (x4), relay trigger (x4), or RS-232/422/485 (x1) allowing for the control of a wide array of devices at the push of a button.

An integrated IR code learning function is also available, allowing the user to store and re-transmit the IR codes sent by nearly any standard IR remote. Comprehensive user control interfaces are available including WebGUI, telnet and console (RS-232 in). Last but not least, the CR-CS2 supports Power over Ethernet (PoE) allowing it to be powered directly from a standard PoE network switch, without the need for an external power adapter, allowing for simple installation.

2. APPLICATIONS

- Smart Home Control
- Control Center
- Function Room
- Product Showroom
- Ballroom

3. PACKAGE CONTENTS

1 x Auxiliary Control System

1 x IR Receiver

1 x IR Blaster

1 x Remote Control (CR-157)

2 x 5pin Terminal Block

4 x 2pin Terminal Block

1 x 5V DC Power adaptor

1 x Operational Manual

4. SYSTEM REQUIREMENTS

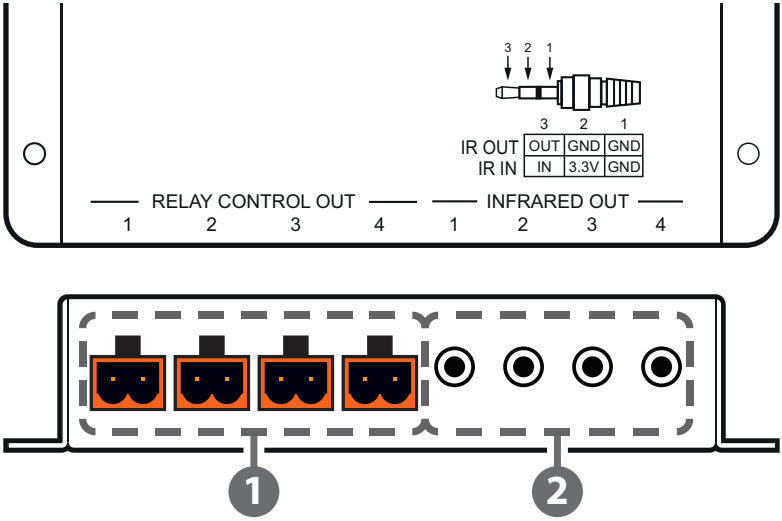
- Relay trigger controllable equipment such as projection screens, blinds, power switches, etc. or equipment which can be controlled by IR remote.
- An active internet connection from a switch or router for control of Ethernet devices.

5. FEATURES

- 16 user defined macro events stored within the device
- 8 trigger inputs linked directly to 8 user macros allowing for instant control activation
- 4 relay trigger outputs to control devices such as projector screens, lighting, blinds etc.
- 4 IR outputs to control devices such as sources and displays
- Integrated IR code learning feature
- Multiple control interfaces including WebGUI, telnet and RS-232
- Simple configuration of macros, triggers and relay settings via the WebGUI
- PoE (Power over Ethernet) support - no PSU required

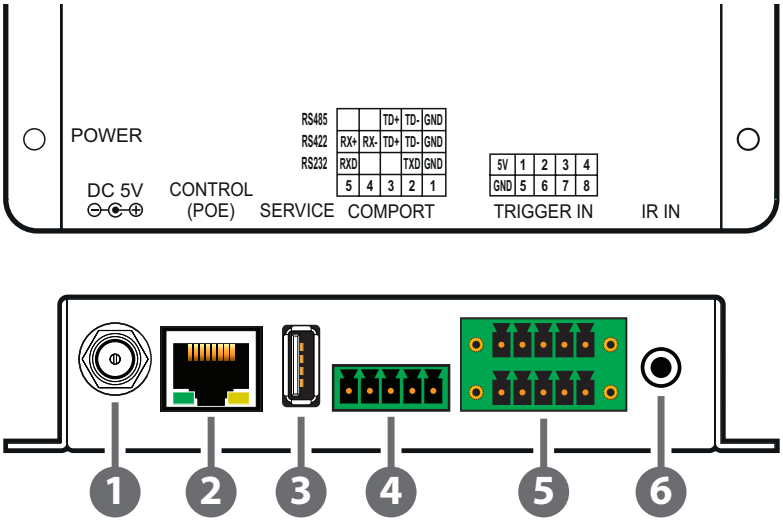
6. OPERATION CONTROLS AND FUNCTIONS

6.1 Front Panel



1. **RELAY CONTROL OUT 1~4:** Connect to devices that support relay triggered power (0~30VDC/10A or 0~250VAC/10A) activation to control them via macro commands.
2. **INFRARED OUT 1~4:** Connect to the provided IR Blaster to transmit IR signals to devices within direct line-of-sight of the IR Blaster.

6.2 Rear Panel



1. **DC 5V:** Plug the 5V DC power adapter into the unit and connect it to an AC wall outlet for power.

   Note: *If the unit is being powered by PoE then this connection is optional.*

2. **CONTROL (PoE):** Connect directly, or through a network switch, to your PC/laptop to control the unit via telnet/WebGUI.

3. **USB:** This slot is reserved for firmware update use only.

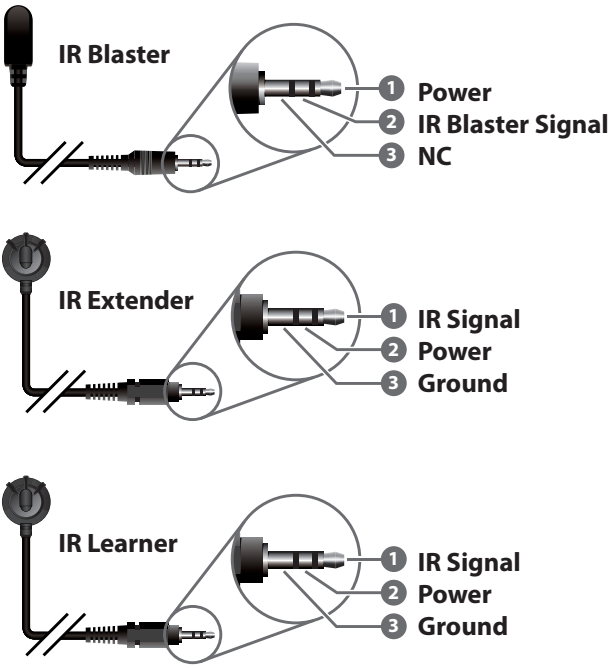
4. **COMPORT:** Connect to the device you wish to control via a 3(or 5)-pin adapter cable to send RS-232/422/485 commands from the unit. Baud rates up to 115200 are supported. For pin connection details please refer to the graphic above.

5. **TRIGGER IN:** Connect to any device with trigger or switch functionality such as window security alarms, motion detectors, door switches, etc. Each of the 8 trigger inputs will activate the associated macro when triggered. A minimum of 5V DC is required to activate the trigger. For pin connection details please refer to the graphic above.

6. **IR IN:** Connect to the provided IR Extender to allow IR control of the unit or for learning IR commands. Ensure that the remote being used is within direct line-of-sight of the IR Extender.

   Note: *For additional IR learning details please refer to section 6.7.3.*

6.3 IR Pin Definition



6.4 RS-232/Telnet Command List

Command Name	Description	Parameter
IPCONFIG	Display The current IP	NONE
configuration	NONE	XXX=0~255
SIPADDR XXX.XXX.XXX.XXX	Set Ethernet IP address	XXX= 0~255
SNETMASK XXX.XXX.XXX.XXX	Set Ethernet netmask	XXX= 0~255
SGATEWAY XXX.XXX.XXX.XXX	Set Ethernet gateway	XXX= 0~255
SIPMODE N	Set Ethernet mode	N= STATIC or DHCP
VER	Display the firmware version	NONE
FADEFAULT	Reset the unit to	NONE
factory defaults	NONE	NONE
ETH_FADEFAULT	Reset the Ethernet settings to the factory defaults	NONE
REBOOT	System reboot	NONE
HELP (?)	Show command list	NONE
HELP N	Show a description of commands	N= [Command name]
RELAY N N1	Relay control	N= 1~4 [Port #] N1= OPEN/CLOSE/ TOGGLE
IREMIT N N1	Send IR control code	N= IR1~IR4 [Port #] N1= [IR data] Ex: IREMIT IR1 9333,0-157,AF,14,40,14,18

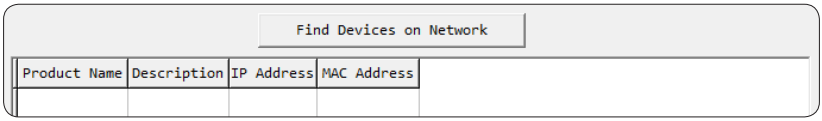
Command Name	Description	Parameter
IRLEARN N	Initiate IR learning	N= 0 [Native format] Note: Will display the IR data when an IR signal (30~50KHz) is received.
COMCONF N N1 N2 N3 N4	COM port configuration	N= RS232/RS422/RS485 N1= 4800, 9600, 19200, 38400, 57600, 115200, 250000, 1000000 [Bitrate] N2= 7~8 [Data bits] N3= NONE, ODD, EVEN [Parity] N4 = 1 [Stop bits]
COMSEND N	COM data send	N= [Data to send (1-512 characters)]
TELNET_TIMEOUT N	Turn the telnet timeout on or off	N= ON/OFF
MACRO N N1	Start or stop a macro	N= RUN/STOP N1= 1~16 [Macro ID] or NONE Ex: MACRO RUN 1 or MACRO STOP

6.5 Software Application

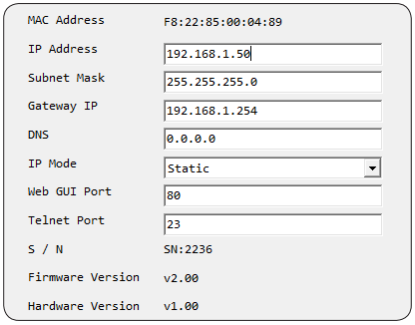
Please obtain the Device Discovery software from your authorised dealer and save it in a directory where you can easily find it.

Note: *By default the unit is set to automatically obtain an IP address via DHCP.*

Connect the unit and your PC/Laptop to the same active network and run the Device Discovery software. Click on "Find Devices on Network" and a list of devices connected to the local network will show up indicating their current IP address.



By clicking on one of the listed devices you will be presented with the network details of that particular device. If you choose, you can alter the DHCP IP network settings for the device, or switch the unit into Static mode to fix the devices IP address. To switch to Static mode, please select Static from the IP mode drop-down, apply associated IP credentials then click "Save" followed by "Reboot"



Once you are satisfied with the network settings, you may use them to connect via telnet or WebGUI. The network information window provides a convenient link to launch the WebGUI directly.

6.6 Telnet Control

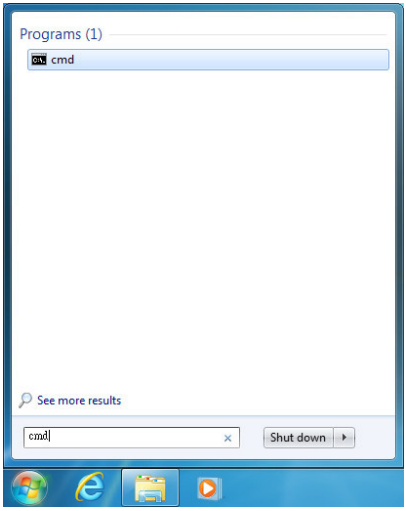
Before attempting to use telnet control, please ensure that both the unit and the PC/Laptop are connected to the same active networks.

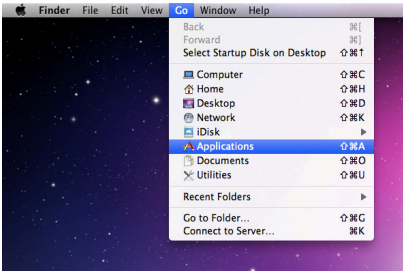
To access Telnet in Windows 7, click on the "Start" menu and type "cmd" in the search field, then press "Enter".

Under Windows XP go to the "Start" menu, click on "Run", type "cmd" then press "Enter".

Under Mac OS X, go to Go→Applications→Utilities→Terminal

See below for reference.





Once in the CLI (Command Line Interface) type "telnet" followed by the IP address of the unit, the port number "23" and then hit "Enter".

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation.  All rights reserved.

C:\Users\Administrator>telnet 192.168.5.80 23
```

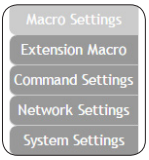
This will connect us to the unit we wish to control. Type "help" to list the available commands.

```
Welcome to TELNET.
>?
HELP            : SHOW DESCRIPT OF COMMAND
                  USE <HELP N, N=COMMAND NAME> TO SHOW DESCRIPT OF COMMAND
?               : SHOW DESCRIPT OF COMMAND
                  USE <? N, N=COMMAND NAME> TO SHOW DESCRIPT OF COMMAND
IPCONFIG        : DISPLAY THE CURRENT IPCONFIG
SIPADDR         : SET ETHERNET IP ADDRESS
SNETMASK        : SET ETHERNET NETMASK
SGATEWAY        : SET ETHERNET GATEWAY
SIPMODE         : SET ETHERNET IP MODE
VER             : SHOW UNIT FIRMWARE VERSION
FADEFAULT       : ALL CONFIGURE SET TO FACTORY DEFAULT
ETH_FADEFAULT   : ALL ETHERNET CONFIGURE SET TO FACTORY DEFAULT
REBOOT          : SYSTEM REBOOT
IREMIT          : SEND IR CONTENET
IRLEARN         : LEARNING IR CODE
TRIGGER         : TRIGGER SETTING
RELAY           : RELAY CONTROL
COMCONF         : DRIVER RS232 CONFIG
COMSEND         : SEND DATA VIA COM PORT
MACRO           : MACRO CONTROL
```

Note: *Commands will not be executed unless followed by a carriage return. Commands are not case-sensitive. If the IP address is changed then the IP address required for telnet access will also change accordingly.*

6.7 WebGUI Control

Open a web browser on a PC/Laptop that is connected to an active network and type the device's IP address into the web address entry bar. The login screen will appear and ask for a Username and Password. The default username and password is "admin". Please enter the information and then click "Submit" to log in.



On the left side of the browser you will see the following menu tabs: Extension Macro Settings, Extension Macro, Command Settings, Network Settings, and System Settings.

6.7.1 Macro Settings

Click on the "Macro Settings" tab to execute/edit the settings for the physical macro buttons. These macros can be executed by activating the 8 input triggers on the back of the unit as well as via the WebGUI or telnet.

There are 5 macros defined by default for testing the unit's functionality. Click on macros 1~5 to demonstrate various testing functions:

Macro 1: Sequentially close relays 1 through 8 with a 100ms delay

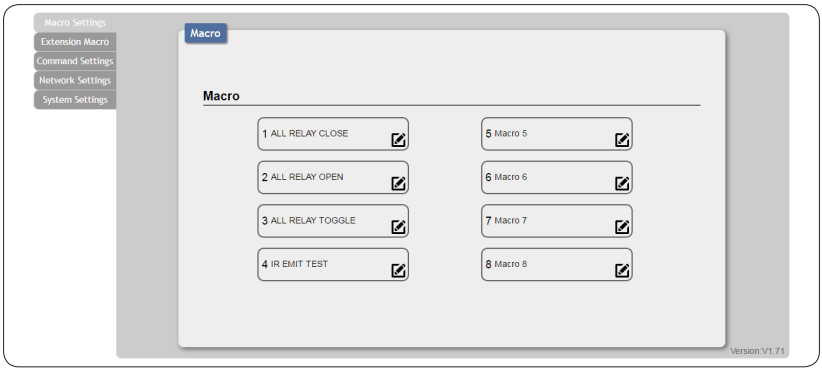
Macro 2: Sequentially open relays 1 through 8 with a 100ms delay

Macro 3: Sequentially toggle the state of relays 1 through 8 with a 100ms delay

Macro 4: Sequentially send IR signals from emitters 1 through 8 with a 100ms delay. The IR LED will flash on the front panel.

Macro 5: Send the command "Hello World" over COM ports 1 and 2 with a 100ms delay between commands.

Macros 1~8 align with Trigger IN 1~8. When a trigger signal is activated the unit will execute the associated macro command.

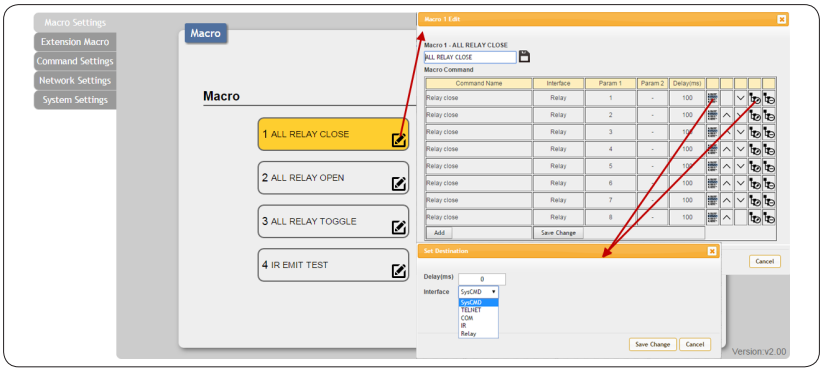


Click on the icon to edit each button's macro.

Click on the mark to edit the command settings. Up/down arrows are to move the command up or down and button is to delete the command.

Click on Insert button/Add to insert commands. Command can be set to control the Control System/SysCMD, other devices connected within the same Telnet system/Internet area, RS-232 COM ports, IR and Relay devices connected through the Relay outputs of Control System with delay time. It is suggested the delay time is >100ms once the setting is confimed, double click on Save Change.

Command set to control the devices within the same telent system or internet area require to set its IP and Port number and it is strongly recommand to set the delay time >500ms in order to secure a successful command sending. Command set to control the Relay devices require to set the Port number. Click on Save Change to confirm the setting.



At the top of the Macro edit window is a text field where you can edit the name of the macro. Type your new macro name into the box and then click the icon to save it.

Within the edit window the up/down arrows will change the command's execution order. The icon allows you to edit the delay and interface for the command. The icon will delete the command.

Click on the icon to insert a new command before the current one. Select one of the pre-defined commands from the list. (Details on how to create these pre-defined commands are later in this section)

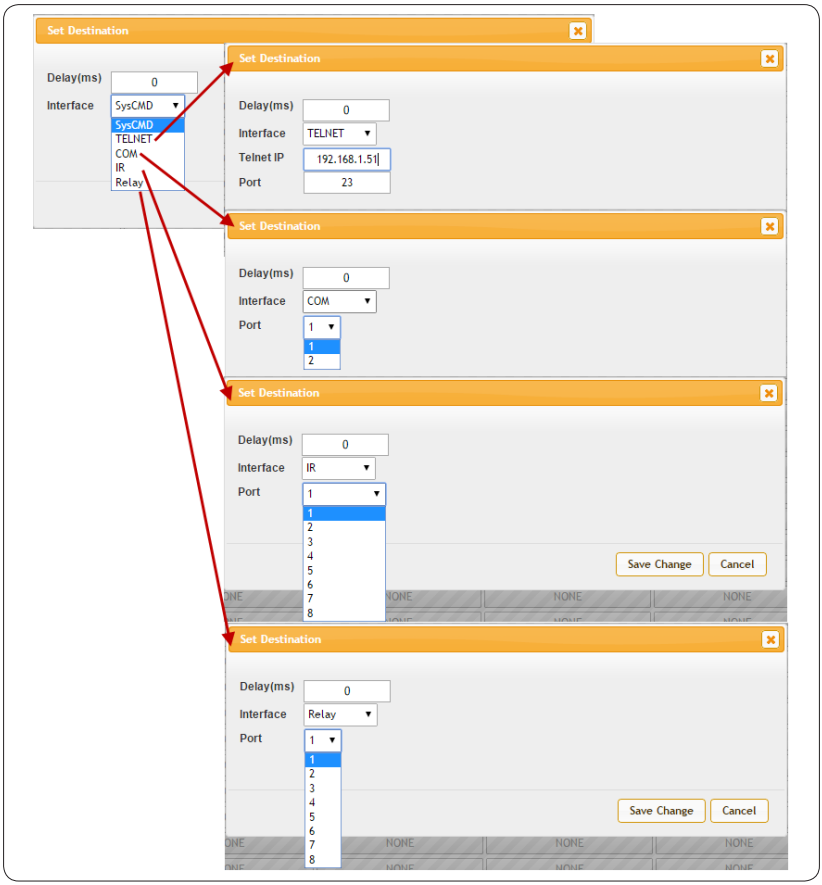
After selecting a command, you will need to choose the delay and interface for the command.

The "Delay(ms)" setting is the length of time to wait before sending the next command and is set in milliseconds. The interface for sending commands can be set to the unit itself (SysCMD), to a specified IP address (TELNET), to the RS-232 port (COM), to a specified IR port (IR) or to trigger a relay port (Relay). Click on "Save Change" to confirm the settings.

Sending commands to devices on the local network, or across the internet requires the IP address and network port number of the destination device. Once the destination information is complete please click on "Save Changes".

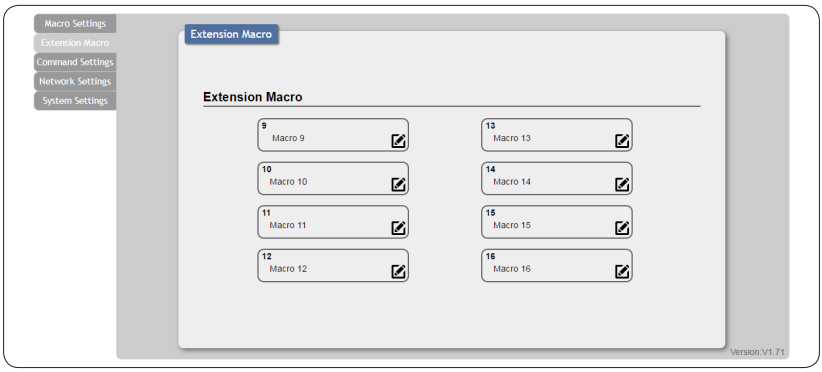
Note: *It is strongly suggested to not set a delay time less than 100ms for system, RS-232, IR, and relay commands or less than 500ms for telnet commands to ensure that the command is properly received and executed before the next command is sent.*

When you have finished editing the macro click on "Save Change".


Set Destination
Delay(ms)
0
Interface
SysCMD
SysCMD
TELNET
COM
IR
Relay
Set Destination
Delay(ms)
0
Interface
TELNET
Telnet IP
192.168.1.51
Port
23
Set Destination
Delay(ms)
0
Interface
COM
Port
1
1
2
Set Destination
Delay(ms)
0
Interface
IR
Port
1
1
2
3
4
5
6
7
8
Save Change
Cancel
Set Destination
Delay(ms)
0
Interface
Relay
Port
1
1
2
3
4
5
6
7
8
Save Change
Cancel

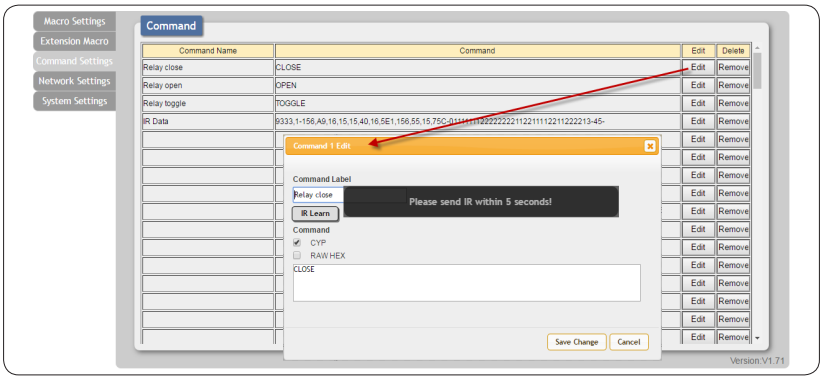
6.7.2 Extension Macro

Click on the "Extension Macro" tab to execute/edit the additional software-only macro buttons. These macros can only be executed via the WebGUI or telnet. Macro editing in this tab is identical to editing the prior tab's macros.



6.7.3 Command Settings

Click on the "Command Settings" tab to create, edit or delete commands. The number of commands that can be stored in the unit is limited by memory. It is generally recommended that commands be under 128 characters long (including spaces). However, if longer commands are needed there is limited support for commands up to 512 characters long. In this case the number of (up to) 512 character commands is limited to 32 and the remaining 96 commands must be under 128 characters. Click on "Save Change" to save the command.



For plain text commands, simply enter the text command into the entry window. Click on "Save Change" to save the command.

To learn an IR command, first make sure the included IR Receiver is connected to the unit's IR IN port, then press "IR Learn" within the command edit window. After doing this a notice will appear in the WebGUI to send the IR signal within 5 seconds. When you see this, point your remote control at the IR receiver and press the button that contains the command you wish to learn. A command string will then appear in the text entry window containing the information captured from the IR remote. Click on "Save Change" to save the command.

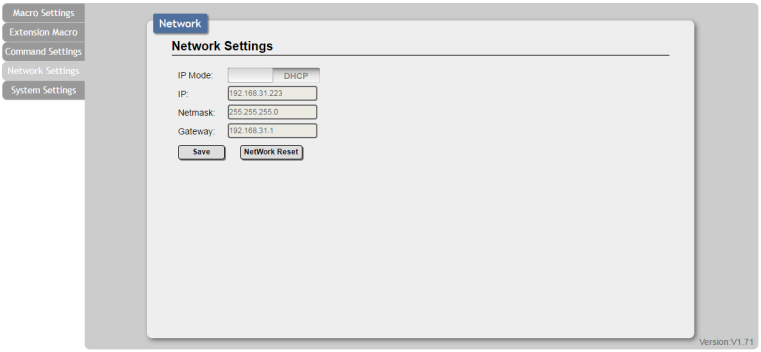
Note: *Some commands may require a carriage return (e.g. \r or \x0D) at the end to be accepted by the destination device.*

For IR command saving, insert the command on the bottom column and click on CYP/RAW HEX which indicate the IR command type and click on Save changes to store the command. Under uncertainty of the IR command type click on RAW HEX to ensure a successful command saving.

Command under 128 characters including space can be build up to 128 commands, command over 128 characters and under 512 characters including space can be build up to 32 command in addition with 96 commands of 128 characters under. Click on Save Change to save the command inserted.

6.7.4 Network Settings

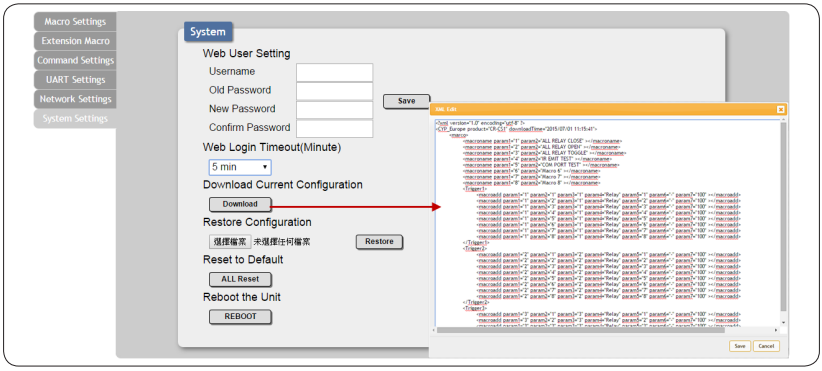
Click on the "Network Settings" tab to change the network settings for the unit. You can manually set the IP address, netmask and gateway address in "Static IP" mode, or you can obtain an IP address automatically by enabling DHCP.



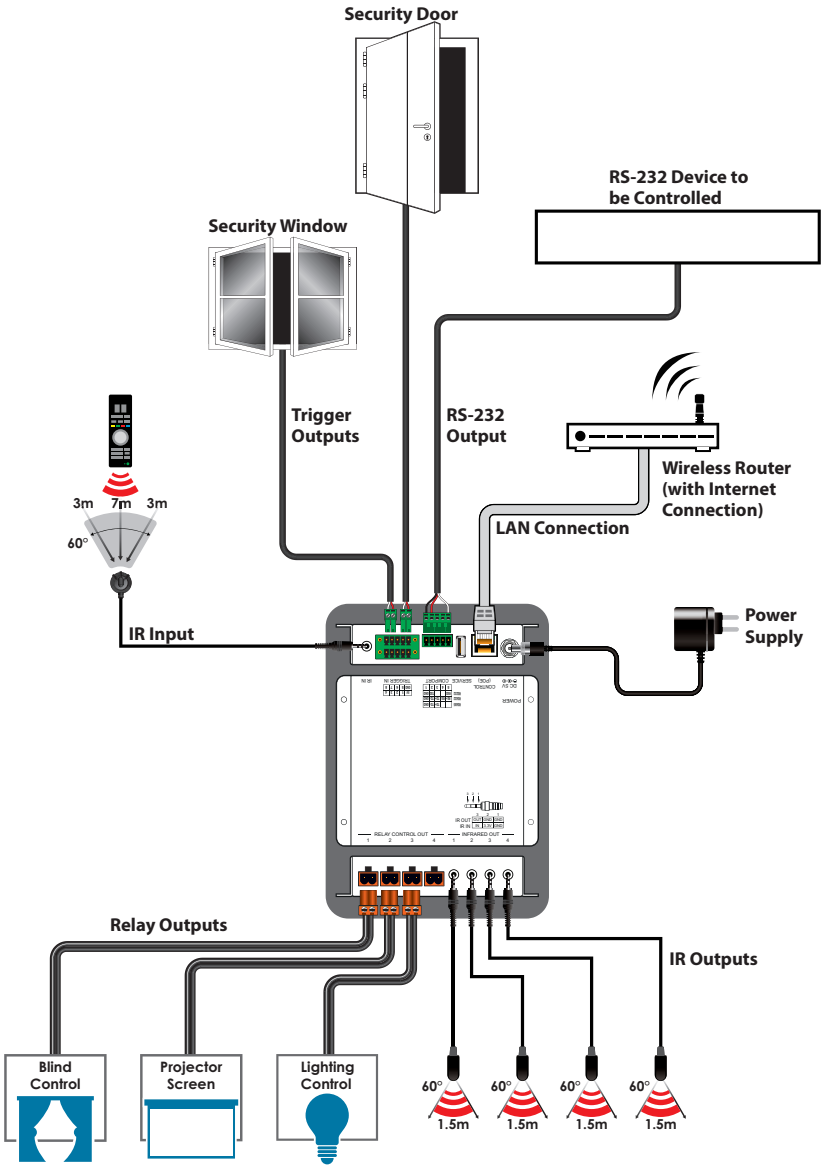
System Settings

Click on the "System Settings" tab to make changes to various system settings. From this tab you can change the WebGUI login password and login timeout settings. You may also save the full system configuration including all macros to your connected PC/Laptop or restore them from a previously saved configuration. Finally, this tab provides buttons to reset the unit to factory defaults and to reboot the unit.

Note: *Please ensure that all commands and settings have been backed up before performing an "ALL Reset" as the procedure will return all settings back to the factory default.*



7. CONNECTION DIAGRAM



8. SPECIFICATIONS

Input Ports	8 x Trigger (0~15V) 1 x IR (with IR learning support) 1 x USB (Service only)
Output ports	4 x IR 4 x Relay (0~30VDC/10A or 0~250VAC/10A)
Control Interface	1 x COM port 1 x Ethernet (with PoE support)
IR Frequency	30~50kHz
Baud Rate	Up to 115200bps
Power Supply	5VDC/2.6A (US/EU standards, CE/FCC/ UL certified)
ESD Protection	Human Body model: ±8kV (air-gap discharge) ±4kV (contact discharge)
Dimensions	128mm x 25mm x 108mm (W×H×D) [Case Only] 128mm x 25mm x 118mm (W×H×D) [All Inclusive]
Chassis Material	Metal
Silkscreen Colour	Black
Operating Temperature	0 ˚C~40 ˚C / 32 ˚F ~ 104˚F
Storage Temperature	–20 ˚C~60 ˚C / –4 ˚F ~ 140 ˚F
Relative Humidity	20~90 % RH (no condensation)
Power Consumption	5 W

CYP (UK) Ltd., Unit 7, Shepperton Business Park, Govett Avenue, Shepperton, Middlesex, TW17 8BA

Tel: +44 (0) 20 3137 9180 | Fax: +44 (0) 20 3137 6279

Email: sales@cypeurope.com

www.cypeurope.com

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