

# Configurable AV Matrix over IP with Video Wall 4K/60Hz 4:4:4



## User Manual Version 2.0

## Thank you for purchasing this product

For optimum performance and safety, please read these instructions carefully before connecting, operating or adjusting this product. Please keep this manual for future reference.

## Surge protection device recommended

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lightning strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

## Table of Contents

1. Introduction.....	2
2. Features.....	2
3. Package Contents.....	2
4. Specifications.....	3
5. Transmitter Panel Description.....	4
6. Receiver Panel Description.....	5
7. Connecting the Transmitter.....	6
8. Connecting the Receiver.....	6
9. Preparing your PC.....	7
9.1. Setting PC for DHCP.....	7
9.2. Setting PC for Static IP Address.....	8
10. Setting Device IP Addresses.....	9
10.1. Setting Transmitter IP Address.....	9
10.2. Setting Receiver IP Address.....	11
11. Application Drawing.....	13
12. Maintenance.....	14
12.1. Servicing.....	14
12.2. Warranty.....	14
12.3. Returning a Product.....	14
12.4. Warranty Limits and Exclusions.....	15

## Software and Control

For software and control you need to download the SC08.CTL100 LAN Controller user manual.

## 1. Introduction

The SC08.MX650 is an IP solution for distributing and switching HDMI signals over industry standard 1G networks, just like any conventional matrix without restricting the number of inputs and outputs. These encoders and decoders enable signal management of 4K/60Hz (4:4:4) signals with low latency, bi-directional infra-red, full duplex RS232, USB and embedded audio are also supported.

The video wall mode allows a single video source to be stretched across multiple displays, each receiver crops and scales the region of interest according to its position in the wall. Furthermore, the system is capable of splitting the wall to create a multi-view environment.

The SC08.MX650 is managed and controlled using RS232 or TCP/IP over the network with an integrated web browser or from virtually any third party controller, including those from AMX, Crestron, Control4.

## 2. Features

- Uses H.264 and H.265 Encoding
- 4K/60Hz, 4:4:4
- Point-to-Point, Point-to-Multipoint & Multipoint-to-Multipoint
- Video Wall and Multi-View
- Uses 1G Ethernet
- Matrix Routes - IR, RS232, USB
- PoE (Power over Ethernet)
- Control: RS232, TCP/IP, Web Interface

## 3. Package contents

### Transmitter

1. 1 x Main Unit (SC08.MX650T)
2. 1 x IR Blaster Cable
3. 1 x IR Receiver Cable
4. 1 x 12V/1A Power Adaptor
5. 1 x User Manual

### Receiver

1. 1 x Main Unit (SC08.MX650R)
2. 1 x IR Blaster Cable
3. 1 x IR Receiver Cable
4. 1 x 12V/1A Power Adaptor
5. 1 x User Manual

## 4. Specifications

Technical	
HDMI Standards	HDMI 2.0, HDCP 2.2
Bandwidth	10.2Gbps
Video Resolutions	Up to 4K/60Hz
Colour Space	RGB / YCbCr 4:4:4, YCbCr 4:2:2, YUV 4:2:0
Colour Depth	8-bit
HDMI Audio Formats	LPCM 7.1CH, Dolby True HD™, Dolby Digital Plus™ and DTS HD Master Audio™.
Analogue Audio	L/R Stereo Audio 20KHz, 0dB, 10K ohms
Infra-Red	Wide Bandwidth 30KHz to 56KHz (940nm)
End to End Latency	Less than 100ms
Transmission Distance	100m @ 4K point-to-point or greater using 1G switches (LAN)

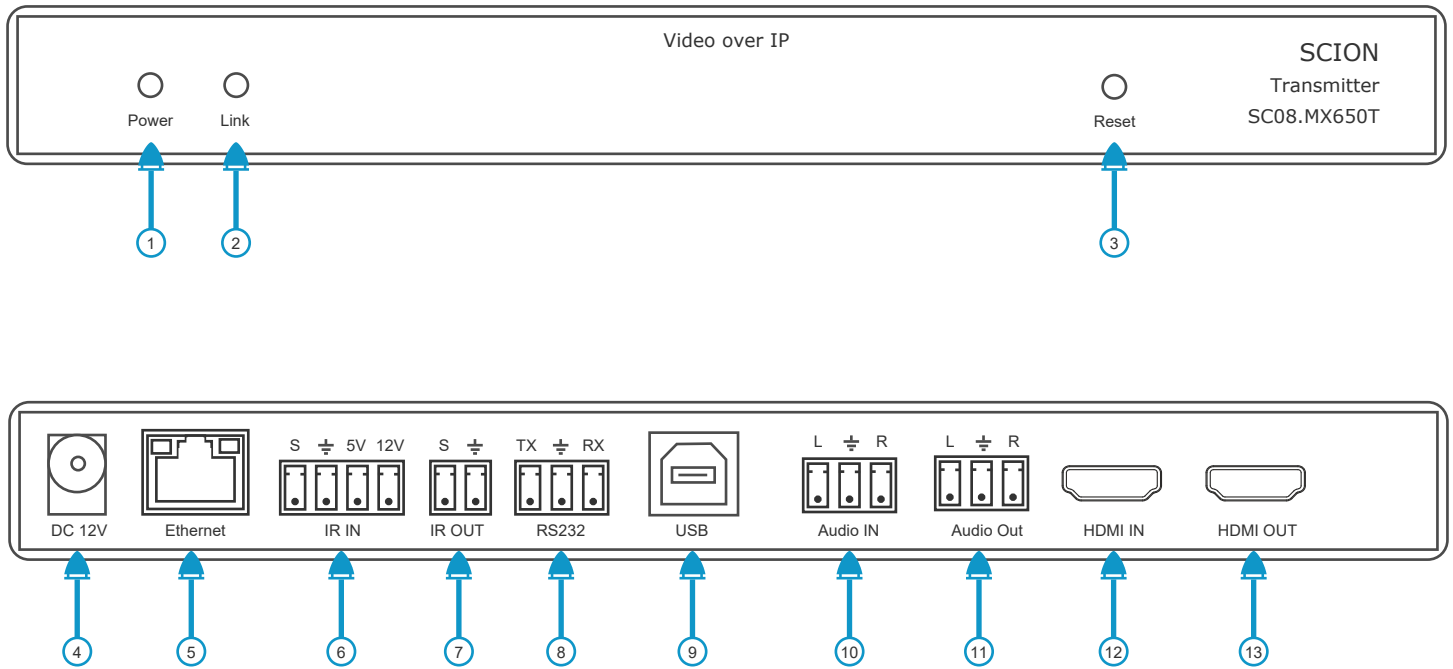
Transmitter Connections		
Inputs	HDMI	1 x HDMI Type A, 19-Pin
	Infra-Red	1 x 4-Pin Phoenix Terminal
	Stereo Audio	1 x 3-Pin Phoenix Terminal
	Ethernet	1 x RJ45 Data Socket
	RS232	1 x 3-Pin Phoenix Terminal
	USB	1 x USB Type B (Host)
	Power	1 x 2.1mm Jack Socket
Outputs	HDMI (Looped)	1 x HDMI Type A, 19-Pin
	Stereo Audio	1 x 3-Pin Jack Socket
	Infra-Red	1 x 2-Pin Phoenix Terminal

Receiver Connections		
Inputs	Ethernet	1 x RJ45 Data Socket
	Infra-Red	1 x 4-Pin Phoenix Terminal
	RS232	1 x 3-Pin Phoenix Terminal
	Power	1 x 2.1mm Jack Socket
Outputs	HDMI	1 x HDMI Type A, 19-Pin
	Infra-Red	1 x 2-Pin Phoenix Terminal
	Stereo Audio	1 x 3-Pin Phoenix Terminal
	USB	2 x USB Type A (Devices)

Power	Transmitter	Receiver
Type	AC to DC Mains Adaptor	AC to DC Mains Adaptor
Input	100 ~ 240V AC 50/60Hz	100 ~ 240V AC 50/60Hz
Output	DC 12V	DC 12V
Consumption	2.4 Watt	2 Watt

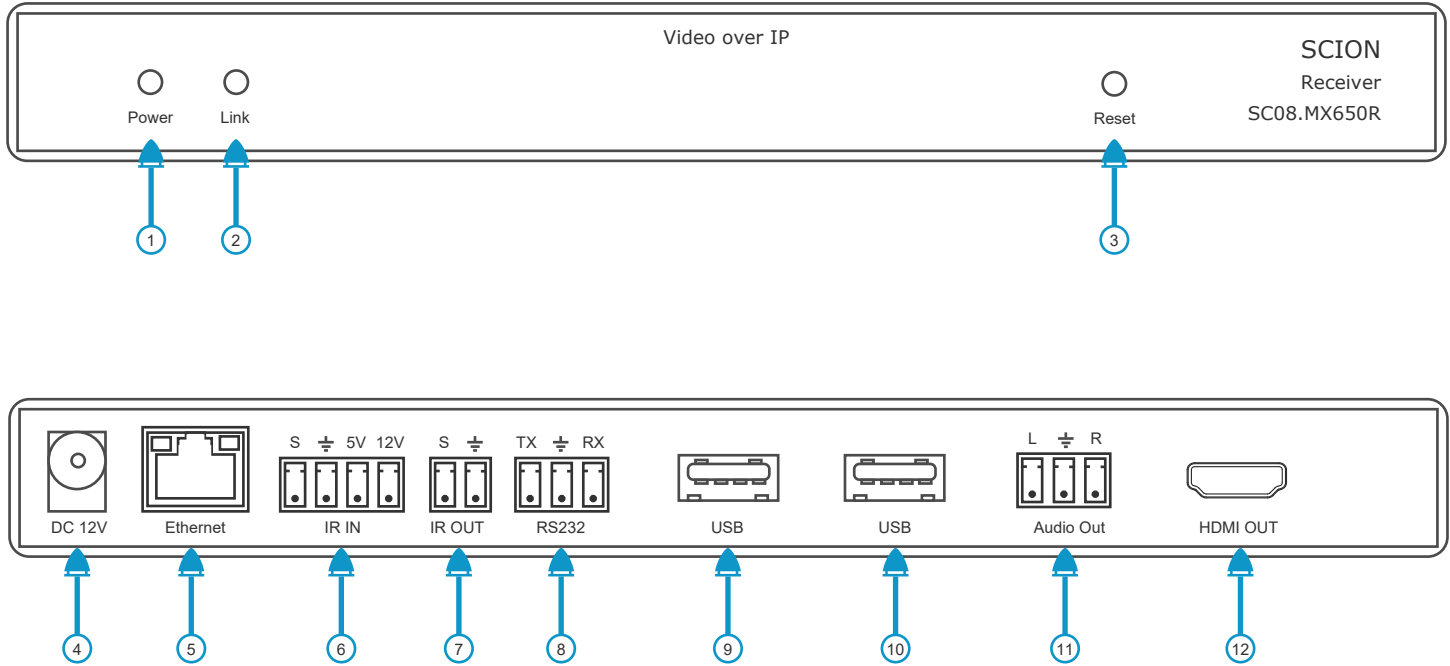
Environment	Transmitter	Receiver
Storage Temperature	-20° to 60°C	
Operating Temperature	0° to 40°C	
Operating Humidity	20% to 90% RH (No Condensation)	
Dimensions	(W) 200 x (D) 100 x (H) 20mm	(W) 200 x (D) 100 x (H) 20mm
Weight	470g	475g
ESD	Human Body: +/-8Kv (air gap discharge), +/-4Kv (contact discharge)	
Safety & Emissions	CE, FCC, RoHS	

5. Transmitter Panel Description



Number	Name	Function
1	Power LED	System power status LED. The red LED will illuminate when the transmitter is powered.
2	Link LED	Data transfer LED. The blue flashing LED indicates normal operation. Always on indicates connection failure. Unit requires re-booting.
3	Reset Button	Press and hold for 5 seconds to re-boot the unit.
4	DC 12V	12 volt 1 amp power input (unless using PoE switch).
5	Ethernet	Connect to Ethernet switch using CAT5e/6/7 cable.
6	IR IN	Connect IR receiver cable. The IR is routed with the HDMI signal to the receiver. Unit operates on both +5V and +12V devices.
7	IR Out	Connect the IR emitter and attach the other end to the source device.
8	RS232	Full duplex RS232 routed with HDMI signal.
9	USB	USB routed with HDMI signal.
10	Audio In	Embedded analogue stereo audio.
11	Audio Out	De-Embedded analogue stereo audio from HDMI input.
12	HDMI In	HDMI input from source device.
13	HDMI Out	HDMI output looped from input

6. Receiver Panel Description



Number	Name	Function
1	Power LED	System power status LED. The red LED will illuminate when the transmitter is powered.
2	Link LED	Data transfer LED. The blue flashing LED indicates normal operation. Always on indicates connection failure. Unit requires re-booting.
3	Reset Button	Press and hold for 5 seconds to re-boot the unit.
4	DC 12V	12 volt 1 amp power input (unless using PoE switch).
5	Ethernet	Connect to Ethernet switch using CAT5e/6/7 cable.
6	IR IN	Connect IR receiver cable. The IR is routed with the HDMI signal to the receiver. Unit operates on both +5V and +12V devices.
7	IR Out	Connect the IR emitter and attach the other end to the display IR window.
8	RS232	Full duplex RS232 routed with HDMI signal.
9	USB	USB routed with HDMI signal.
10	USB	USB routed with HDMI signal.
11	Audio Out	De-Embedded analogue stereo audio from HDMI or analogue input of transmitter.
12	HDMI Out	HDMI output looped from input

## 7. Connecting the Transmitter

1. Place the transmitter on a non-heat emitting surface such as a shelf. Do not place the transmitter on a third party product as this may cause overheating and damage the unit.
2. Ensure all cables are snag free and not laying across the transmitters housing as this may damage the cables.
3. Connect the HDMI cable to the **HDMI IN** and to your source device output.
4. Optional - Connect the HDMI cable to the **HDMI OUT** and the local sink device.
5. Optional - Connect the IR receiver cable to the **IR IN** and place the other end of the cable in line sight of the display IR remote control.
6. Optional - Connect the IR emitter (blaster) cable to the **IR OUT** and position the emitter over the source device IR window. Use a IR cover or blocker to prevent light bleeding to other devices.
7. Connect a CAT5e/6/7 patch cable to the **LAN/Ethernet** port and the 1G network switch.
8. Optional - Connect a host USB cable to the **USB** port and the PC.
9. Optional - Connect a 3-Pin Phoenix Terminal to the **Audio IN** and the audio source device. This audio is software selectable on the receiver.
10. Optional - Connect a 3-Pin Phoenix Terminal to the **Audio OUT** and the sound distribution system. The audio is software selectable between the HDMI input and the analogue Audio IN.
11. Connect the power supply unless you are using PoE network switches.

## 8. Connecting the Receiver

1. Place the receiver on a non-heat emitting surface such as a shelf or mount vertically behind the display. Do not place the transmitter directly on the display as this may cause overheating and damage the unit.
2. Ensure all cables are snag free and not laying across the transmitters housing as this may damage the cables.
3. Connect the HDMI cable to the **HDMI OUT** and to your display input.
4. Optional - Connect the IR receiver cable to the **IR IN** and place the other end of the cable in line sight of the source device IR remote control.
5. Optional - Connect the IR emitter (blaster) cable to the **IR OUT** and position the emitter over displays IR window.
6. Connect a CAT5e/6/7 patch cable to the **LAN/Ethernet** port and the 1G network switch.
7. Optional - Connect a keyboard to the **USB** port.
8. Optional - Connect a mouse to the **USB** port.
9. Optional - Connect a 3-Pin Phoenix Terminal to the **Audio OUT** and the display or sound amplifier. The audio is software selectable between the HDMI input and the analogue Audio IN of the transmitter.
10. Connect the power supply unless you are using PoE network switches.

## Software and Control

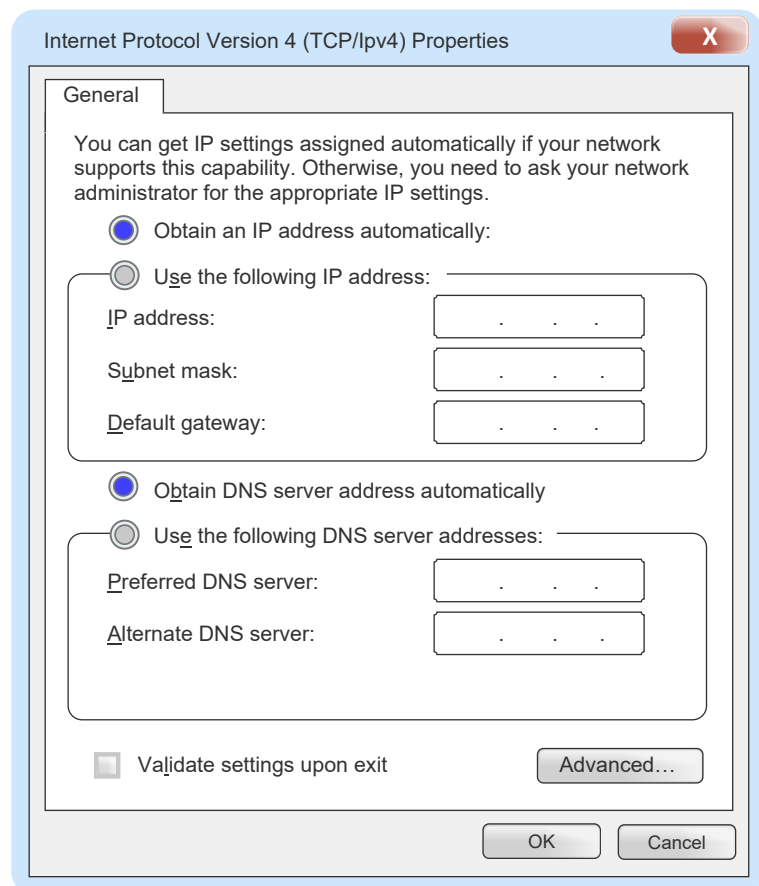
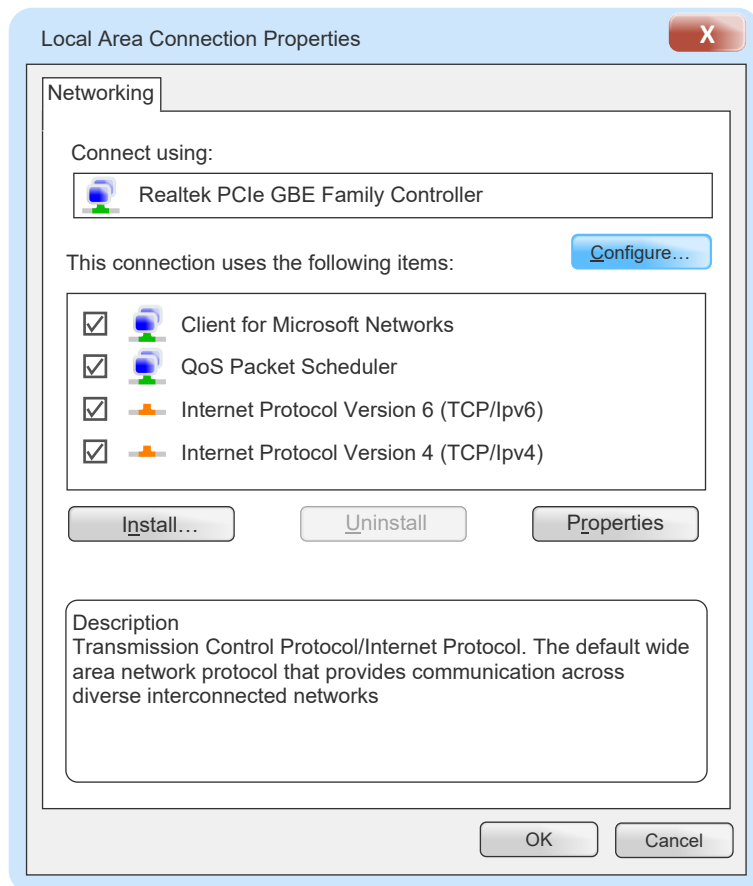
For software and control you need to download the SC08.CTL100 LAN Controller user manual.

## 9. Preparing your PC

- a. If your network includes a router or DHCP server, IP addresses will be issued automatically and therefore your PC settings should be set to “Obtain an IP address automatically”.
- b. If no router or DHCP server is used, all the devices including the PC will need individual static IP addresses.

### 9.1. Setting PC for DHCP

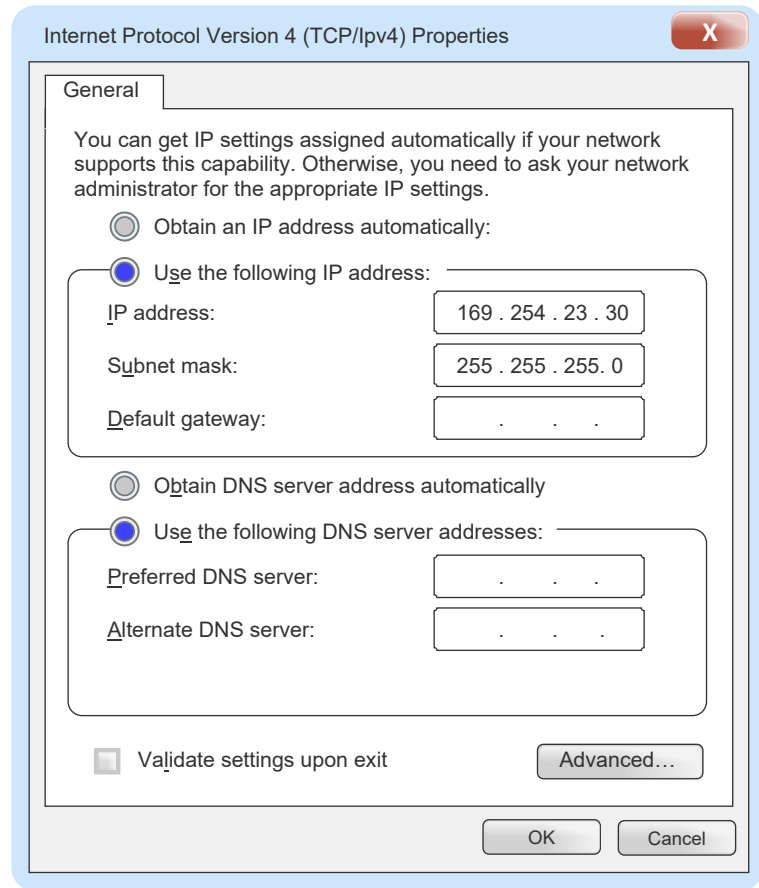
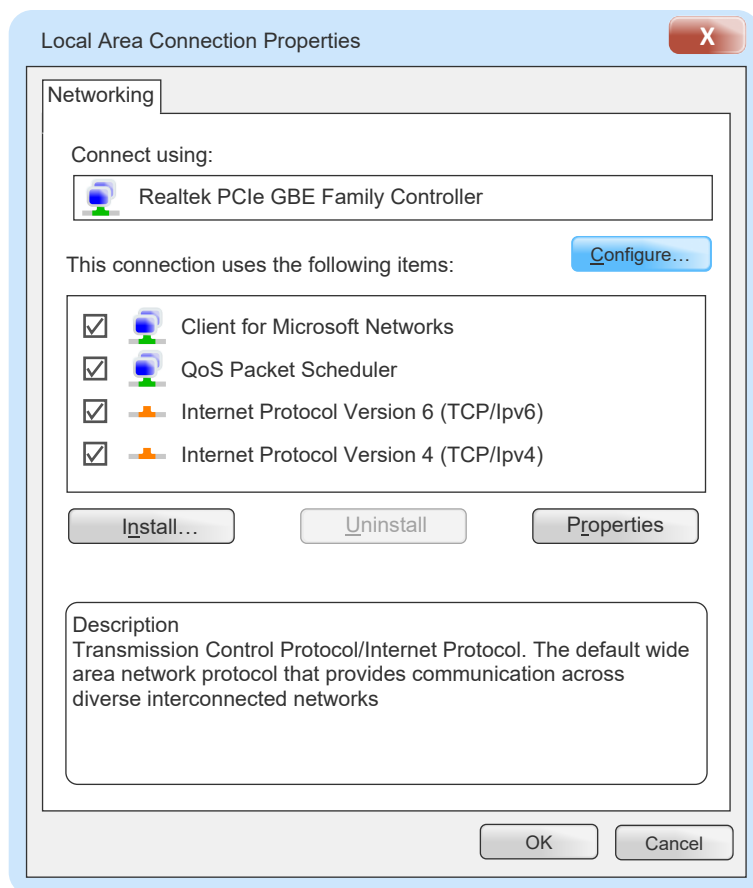
1. On your PC, go to **Control Panel > Network and Internet > Network Connections > Local Area Connections**, right click on it and choose **Properties**.
2. In the “Local Area Connections Properties” dialogue box, double click Internet Protocol Version 4 (TCP/Ipv4).
3. In the “Internet Protocol Version 4(TCP/Ipv4) Properties” dialogue box, select “Obtain an IP address automatically”.
4. Click “OK”.
5. Your PC is now ready to accept an IP address issued by the router or DHCP server.





9.2. Setting PC for Static IP Address

1. On your PC, go to **Control Panel > Network and Internet > Network Connections > Local Area Connections**, right click on it and choose **Properties**.
2. In the “Local Area Connections Properties” dialogue box, double click Internet Protocol Version 4 (TCP/Ipv4).
3. In the “Internet Protocol Version 4(TCP/Ipv4) Properties” dialogue box, select “Use the following IP address”.
4. Insert the IP address 169.254.23.30 and subnet mask 255.255.255.0
5. Click “OK”.
6. Your PC is now ready and can be connected to the transmitter or receiver.



## 10. Setting Device IP Addresses

The IP address of your PC is now set to 169.254.23.30, therefore all other products on the LAN should be in the same network segment. IP: 169.254.23.XX and Subnet: 255.255.255.0.

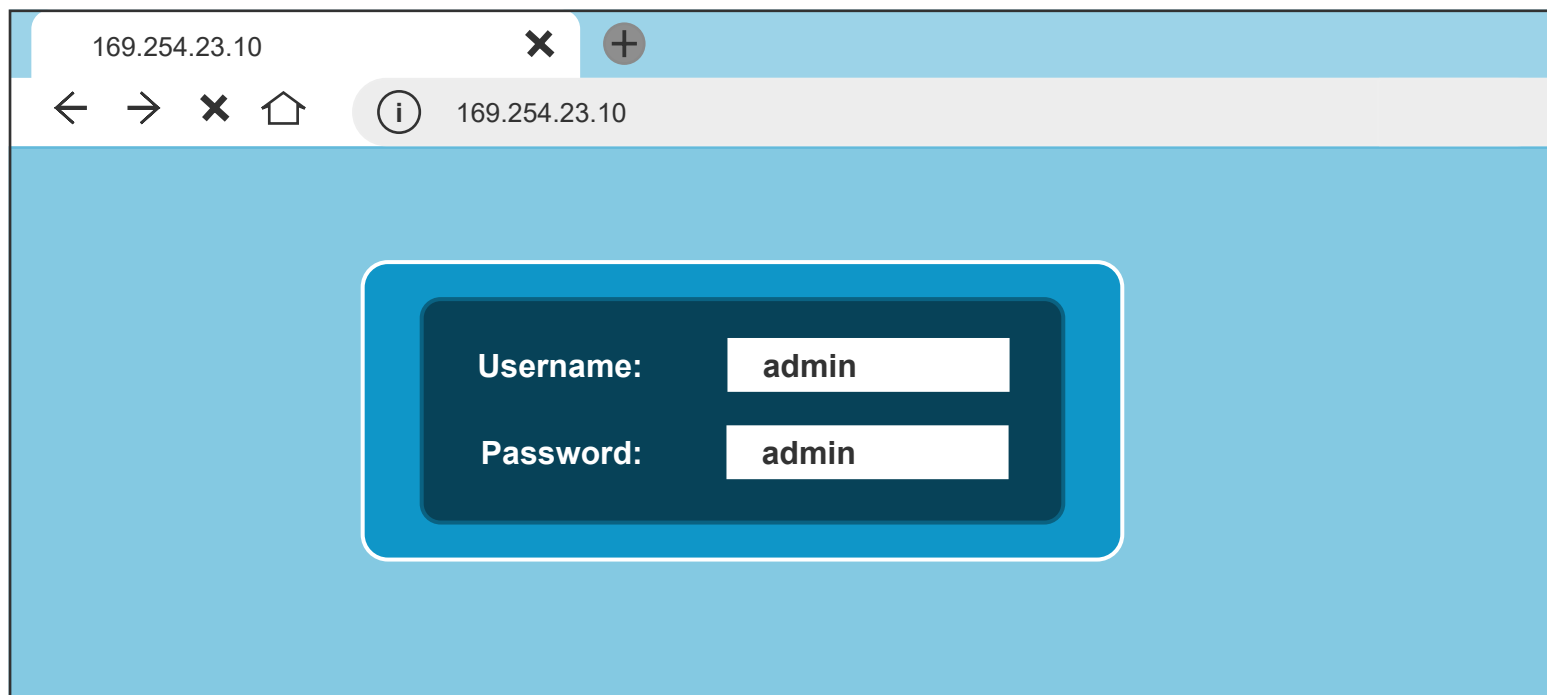
The default IP addresses for the transmitter and receiver is 169.254.23.10 and 169.254.23.11 respectively. When changing the addresses we recommend using the following IP address range.

- Transmitter 1 = 169.254.23.51
- Transmitter 2 = 169.254.23.52
- Transmitter 3 = 169.254.23.53
- Continue with 54, 55 etc.
  
- Receiver 1 = 169.254.23.101
- Receiver 1 = 169.254.23.102
- Receiver 1 = 169.254.23.103
- Continue with 104, 104 etc.

**Important:** Do not use the IP addresses assigned to the PC (169.254.23.30) or the SC08.CTL100 controller (169.254.23.100) as this will cause network problems.

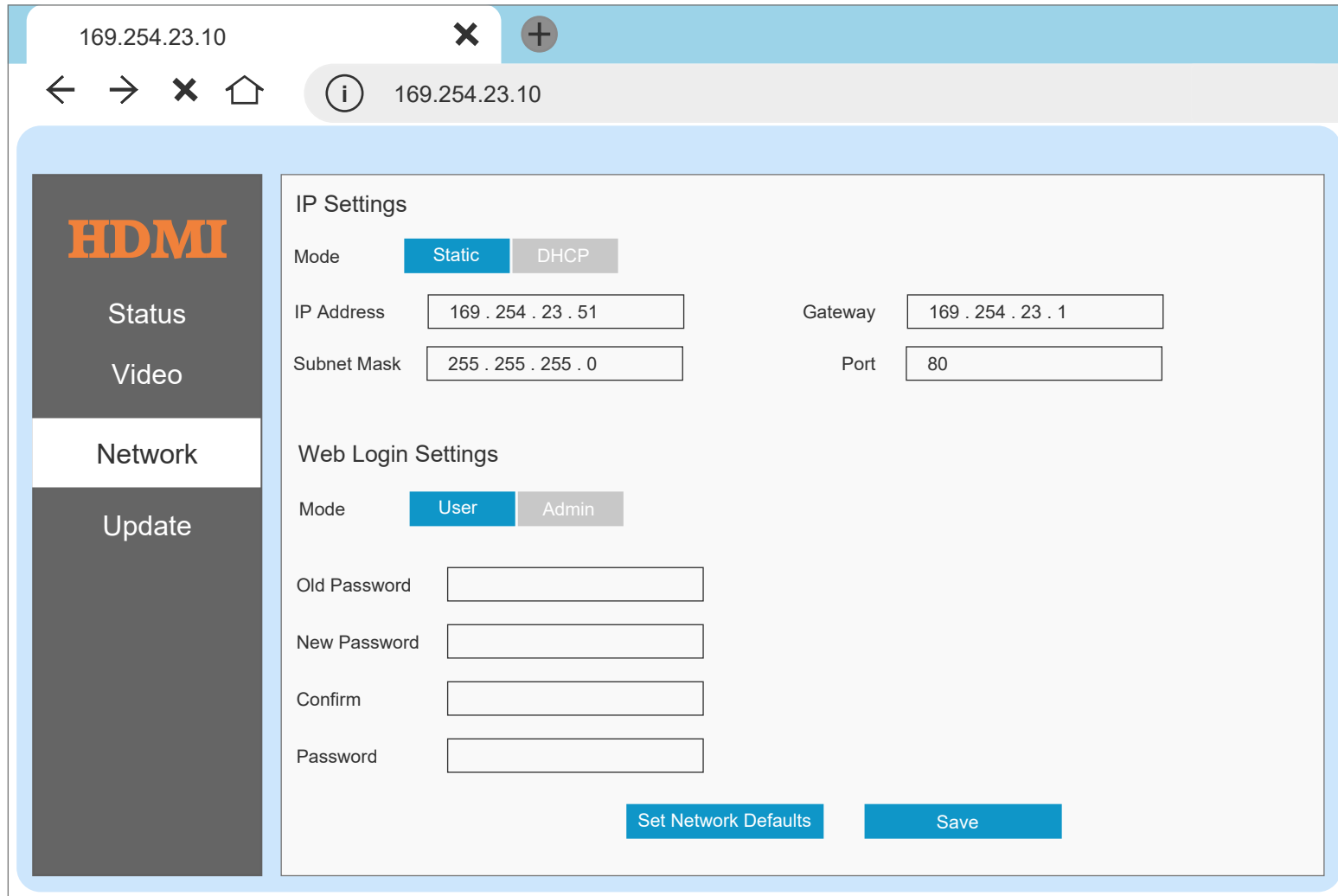
### 10.1. Setting Transmitter IP Address

1. Connect the CAT5e/6 Ethernet cable to the transmitter “LAN” port and the PC or network switch. If the switch has the facility to provide PoE the transmitter will power.
2. After initialising the blue LED will begin to flash.
3. Open your Web Browser and enter the transmitters default IP address (169.254.23.10).
4. In the Login dialogue box enter the user name “admin” and password “admin”.



5. Select “Static”.
6. Enter the IP address, subnet mask, gateway and port.
7. Click “Save” to confirm the changes.

The transmitter is now ready to connect to the system.

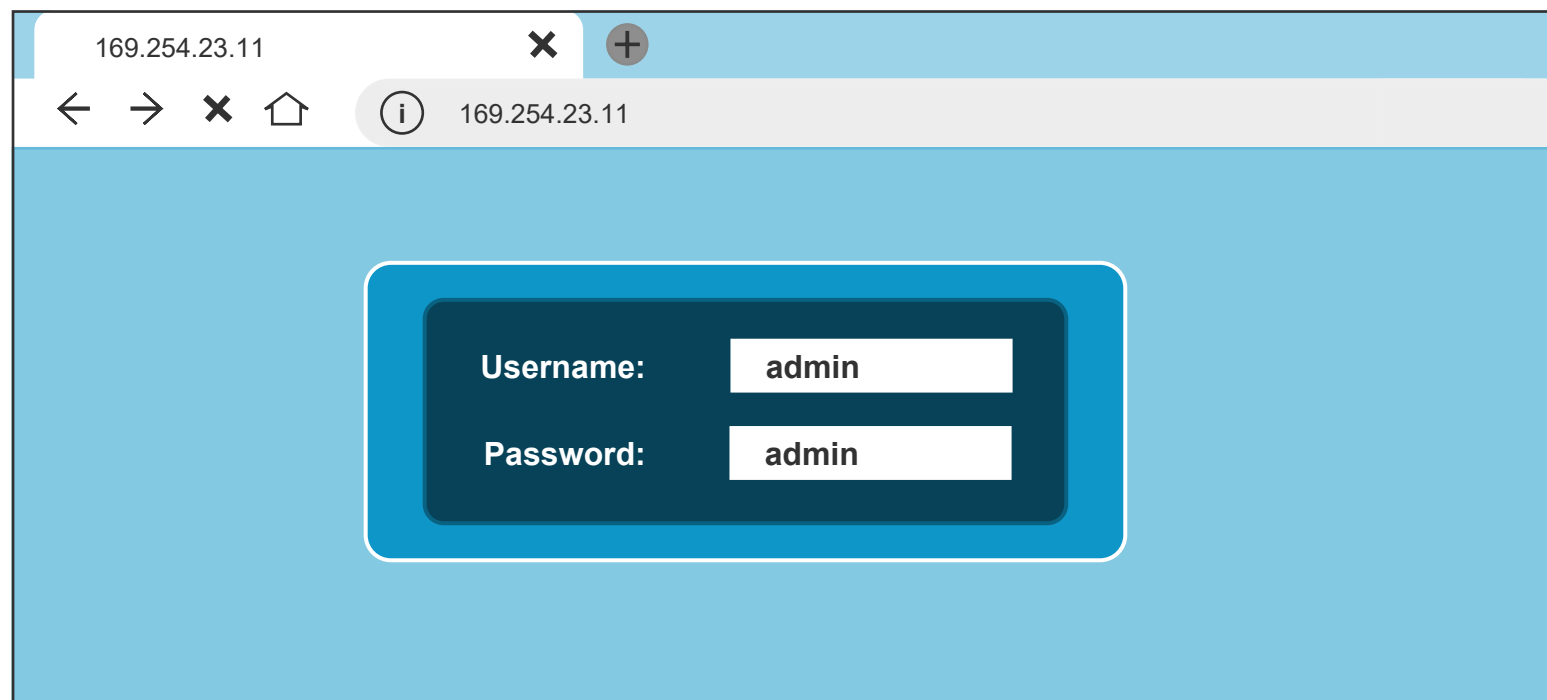


### Software and Control

For software and control you need to download the SC08.CTL100 LAN Controller user manual.

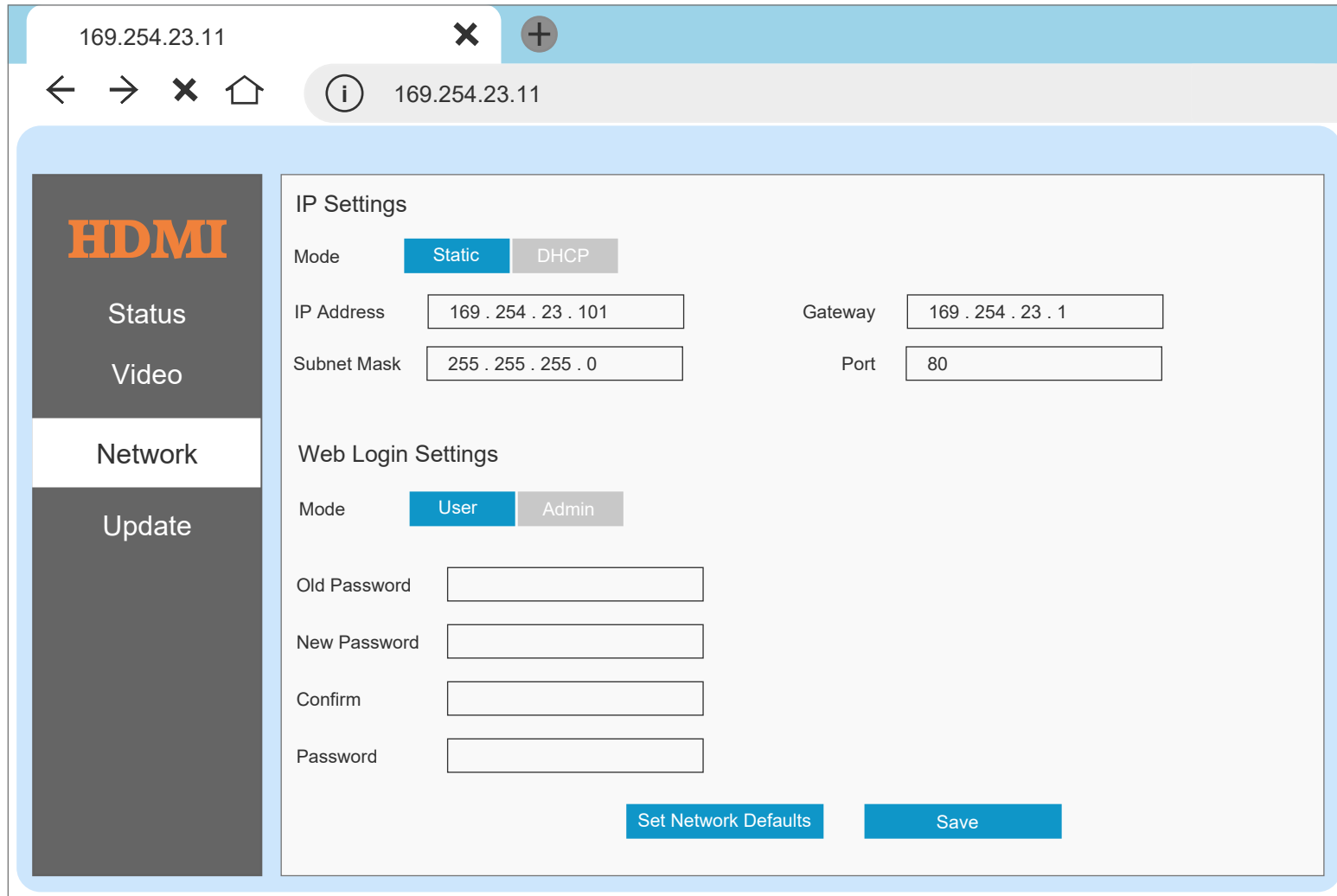
## 10.2. Setting Receiver IP Address

1. Connect the CAT5e/6 Ethernet cable to the receiver “LAN” port and the PC or network switch. If the switch has the facility to provide PoE the receiver will power.
2. After initialising the blue LED will begin to flash.
3. Open your Web Browser and enter the receivers default IP address (169.254.23.11).
4. In the Login dialogue box enter the user name “admin” and password “admin”.



- 5. Select “Static”.
- 6. Enter the IP address, subnet mask, gateway and port.
- 7. Click “Save” to confirm the changes.

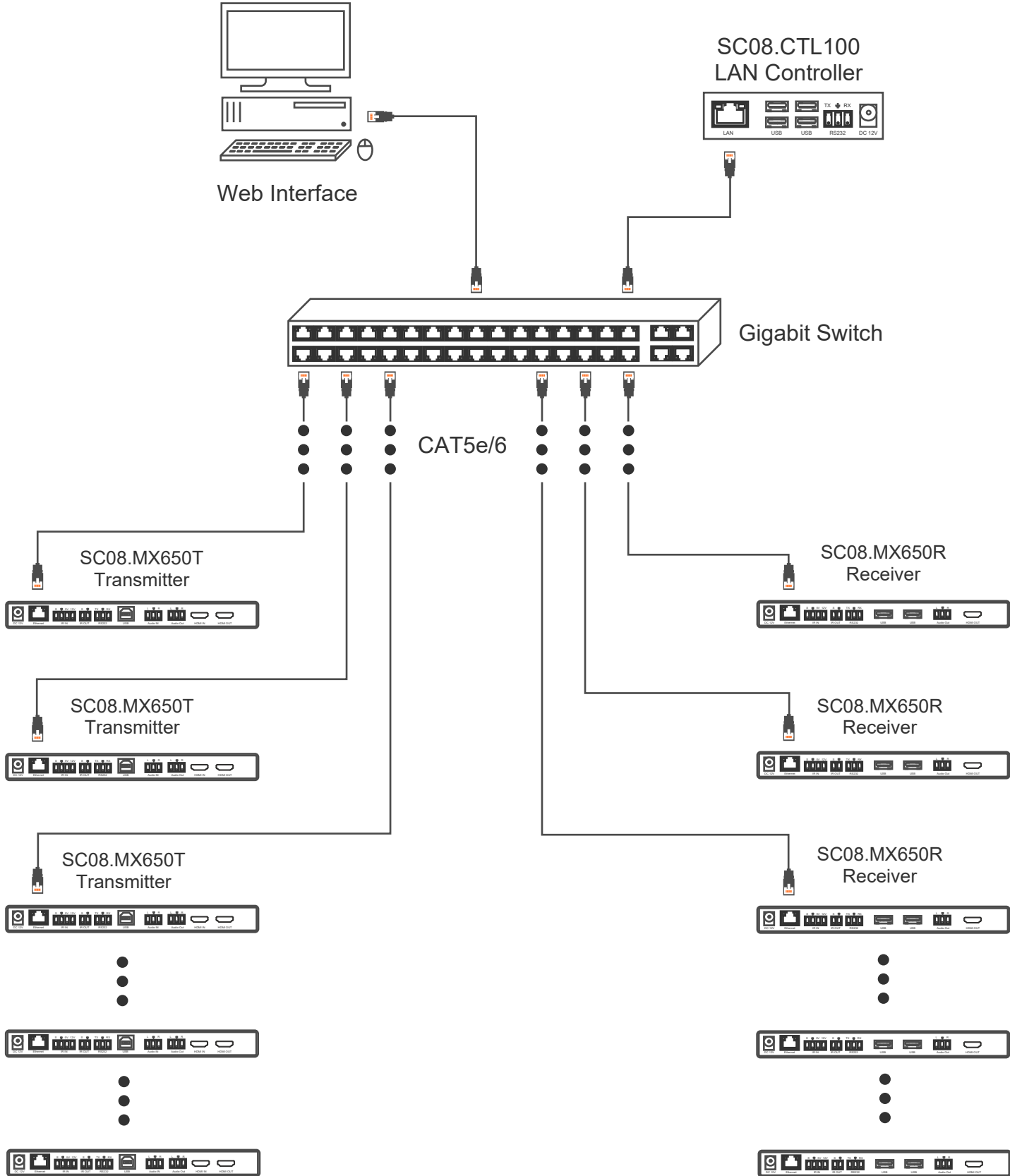
The receiver is now ready to connect to the system.



### Software and Control

For software and control you need to download the SC08.CTL100 LAN Controller user manual.

11. Application Drawing



## 12. Maintenance

Clean this unit with a soft, dry cloth. Never use alcohol, paint thinner or benzene to clean these devices.

### 12.1 Servicing

Damage requiring service: This product should be serviced by a qualified service engineer if:

- The DC power cord or AC adaptor has been damaged.
- Objects or liquids have entered the housings.
- The product has been exposed to rain.
- The product has stopped working or shows signs of significant change in operating performance or function.
- The unit has been dropped or severely damaged externally.

Servicing personnel: Do not attempt to service the product beyond that described in these instructions. Refer all other servicing to authorised serving personnel.

Replacement parts: When parts need replacing ensure the service engineer uses parts specified by the manufacture or parts that have the same characteristics as the original parts. Unauthorised substitutes may result in fire, electric shock or other hazards.

Safety check: After a repair or service, ask the engineer to perform safety checks to confirm the product is in proper working condition.

### 12.2 Warranty

If your product does not work properly because of a defect in materials or workmanship, our Company (referred to as "the warrantor" ) will , for the length of the period indicated as below, (Parts and labour 2 years) which starts with the date of original purchase ("Limited Warranty period"), at its option either (a) repair your product with new or refurbished parts, or (b) replace it with a new or a refurbished product. The decision to repair or replace will be made by the warrantor.

During the "Labour" Limited Warranty period there will be no charge for labour. During the "Parts" warranty period, there will be no charge for parts. You must mail-in your product during the warranty period. This Limited Warranty is extended only to the original purchaser and only covers product purchased as new. A purchase receipt or other proof of original purchase date is required for Limited Warranty service.

### 12.3 Returning a Product

When shipping the unit carefully pack and send it prepaid, adequately insured and preferably in the original carton. Include a letter detailing the complaint and provide a day time phone number and/or email address where you can be reached.

## 12.4 Limited warranty limits and exclusions

This Limited Warranty ONLY COVERS failures due to defects in materials or workmanship, and DOES NOT COVER normal wear and tear or cosmetic damage. The Limited Warranty ALSO DOES NOT COVER damages which occurred in shipment, or failures which are caused by products not supplied by warrantor, or failures which result from accidents, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, set-up adjustments, maladjustment of consumer controls, improper maintenance, power line surge, lightning damage, modification, or service by anyone other than a Factory Service centre or other authorized service engineer, or damage that is attributable to acts of God.

THERE ARE NO EXPRESS WARRANTIES EXCEPT AS LISTED UNDER "LIMITED WARRANTY COVERAGE". THE WARRANTOR IS NOT LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THIS PRODUCT, OR ARISING OUT OF ANY BREACH OF THIS WARRANTY. (As examples, this excludes damages for lost time, cost of having someone remove or re-install an installed unit if applicable, travel to and from the service, loss of or damage to media or images, data or other recorded content. The items listed are not exclusive, but are for illustration only).

PARTS AND SERVICE, WHICH ARE NOT COVERED BY THIS LIMITED WARRANTY, ARE YOUR RESPONSIBILITY. This returns policy does not affect your legal rights. Details of your legal rights are available from Trading Standards or Citizens Advice Consumer Service.

Scion Tech Limited  
Thatcham, Berkshire, United Kingdom