HC-108 Multi Channel Controller

Supplemental Instructions

ABSTRACT: These instructions are intended to provide an electrician or a smart home integrator an overview of the HC-108 Multi Channel Controller for use with Cardinal's CLiC switchable privacy glass, the setup and wiring instructions, and how to connect to the Marvin Home app.

Usage Dates: December 16, 2025 to present.

CLiC™

On-demand Privacy Glass

Table of Contents

Precautions

Important Safety Instructions

Read Instructions: Read all safety and operating instructions before using the device.

Retain Instructions: Keep safety and operating instructions for future reference.

Heed Warnings: Adhere to all warnings on the device and in the operating instructions.

Follow Instructions: Follow operating instructions and installation instructions. Failure to follow these instructions may damage the product or void the limited warranty.

Heat: Keep the device away from heat sources such as radiators, heat registers, stoves, etc.

Power Sources: Connect only to a standard 120V outlet.

Power Cord Protection: Route power supply cords so that they are not likely to be stepped on or pinched by items placed on or against them. Paying particular attention to the cords at plugs, receptacles, and at the point at which they connect to the device.

Water and Moisture: Do not use the device in an environment where water may be present; for example, near a sink, in a wet basement, near a swimming pool, near an open window, in a damp mechanical room, etc.

Object and Liquid Entry: Do not allow objects to fall or liquids to be spilled into the enclosure through openings.

Indoor Use Only: The device is intended to be installed and used indoors in a climate-controlled environment only. Do not use the device outdoors.

Servicing: There are no user serviceable parts inside of the device. Do not attempt to open the enclosure or perform any service beyond that described in the operating instructions. Refer all other service needs to qualified service personnel.

⚠WARNING!

RISK OF ELECTRIC SHOCK – CONNECT THIS FURNISHING TO A PROPERLY GROUNDED BUILDING SUPPLY ONLY, OR THE EQUIVALENT. FAILURE TO DO SO MAY RESULT IN ELECTRIC SHOCK OR OTHER HAZARDS.

Damage: Discontinue use of the device if any of these have occurred:

- Objects have fallen or liquid has been spilled into the device.
- The power supply cord or the plug has been damaged.
- The device does not appear to operate normally or exhibits a marked change in performance.
- The device has been dropped or the enclosure has been damaged.

⚠WARNING!

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THE NETWORK CONTROLLER TO RAIN OR MOISTURE.

⚠CAUTION!

ALL PROTECTIVE FILMS MUST BE REMOVED FROM THE CLiC GLASS PANEL WITH CLiC WIRING DISCONNECTED FROM THE DEVICE!

Disclaimer

FCC Information To Users

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 Subpart B of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in commercial, industrial, and residential installations. This equipment generates, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

ATTENTION

Changes or modifications not expressly approved by Marvin could void the user's authority to operate the equipment.

Introduction

Overview

This guide pertains to the HC-108 Multi Channel Controller. This device and the associated CLiC Glass panel(s) have been designed as a NEC Class-3 electrical system. The purpose of this document is to provide guidance on how to set up and install the device in a residential, commercial, or industrial environment. This document includes installation site requirements, wiring requirements, system connection instructions, and basic troubleshooting.

Important Notes

⚠WARNING!

Please read these important notes about the 8-Channel CLiC Network Controller:

- The device must be installed within a dry, ventilated area that maintains a normal room temperature between 50°F (10°C) to 104°F (40°C).
- Avoid installing the device in a location where it will have exposure to prolonged direct sunlight.
- Do not let the device get wet. It should not be handled with wet hands or placed in an area where it could get wet.
- All wiring and installation shall be in accordance with the National Electrical Code (NEC), Canadian Electrical Code (CEC) or applicable local codes.
- Do not disassemble the device. Only authorized personnel should perform service.
- Completely disconnect glass wiring from device before removing protective films from glass panels.

Compatibility

The HC-108 Multi Channel Controller is specifically designed for use only with CLiC Glass panels. Use this device only for its intended use as described in these instructions. Do not use unauthorized attachments. Connecting the output to products other than CLiC Glass panels may damage the device or the unauthorized products. Marvin will not be responsible for any damage caused by inappropriate usage of this device.

What's In The Box

The following items are included with the HC-108 Multi Channel Controller:

- Quick Start Guide
- 7' Power Cord
- 6' CAT 5e Ethernet Cable
- 4x 10-32 Rack Mount Screws

The following items are pre-attached to the HC-108 Multi Channel Controller:

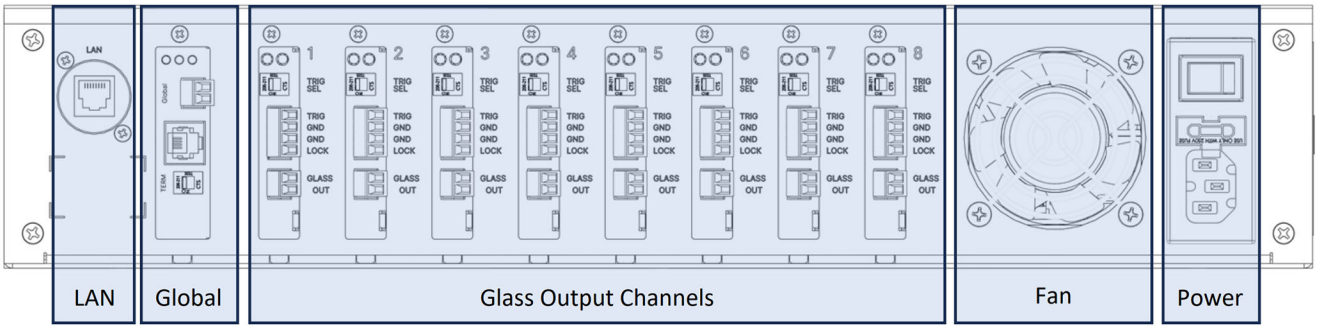
- 8x 4-Position Connectors
- 9x 2-Position Connectors
- 125V 6A 5mm x 20mm Bussmann Fuse
- Rack Ears

Unpacking and Inspection

After opening the HC-108 Multi Channel Controller package, save all the packaging material in case you ever need to ship the unit. Thoroughly inspect and make sure the device is in good condition and there is no visible damage. If you have any doubt about the product's integrity, please contact Marvin support.

Features

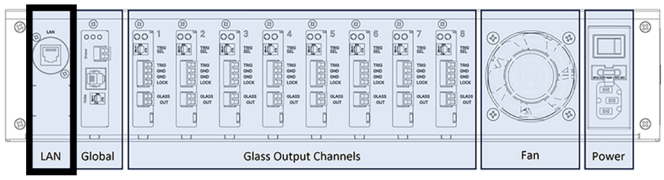
HC-108 Multi Channel Controller Layout



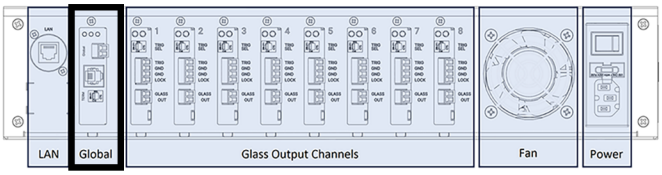
Network Connection Terminals

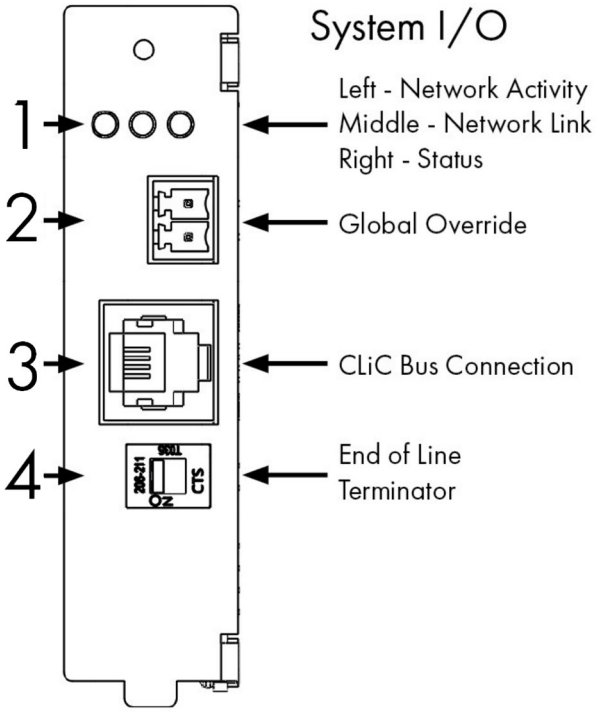
Local Area Network (LAN)

Connection to the network for web browser control, setting the global override functionality and connection to other systems via the API.



Global System I/O





1 - Network and Device Status LEDs

Left	Network Activity	This LED flashes when the device is actively transmitting or receiving data.
Middle	Network Link	This LED is lit when the device is connected to the LAN.
Right	Device Status	This LED conveys the status/error state of the device. Slow blinking green means there are no errors.

2 - Global (Override)

Dry Contact Input. See Global Override section for more information.

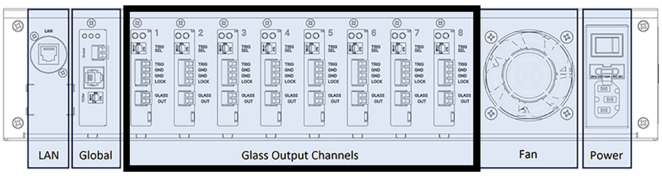
3 - CLiC Bus Connection

For future use.

4 - TERM (End of Line Terminator)

For future use.

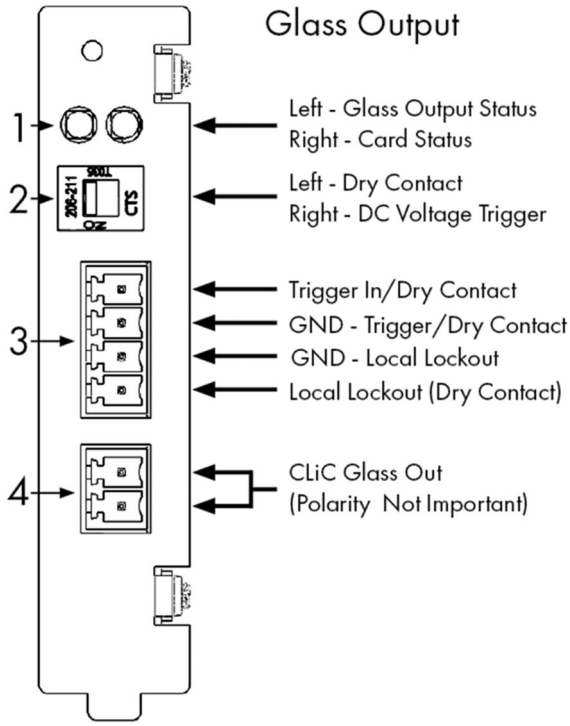
Glass Output Channels



NOTE: Each Glass Out operates independently. The global override will transition all panels together.

1 - Channel Output Status LEDs

Red LED (Left)	Green LED (Right)	Description
On	On	Glass State is Clear, as determined by Local Lockout, Trigger, or Network Command
Off	On	Glass State is Private, as determined by Local Lockout, Trigger, or Network Command
On	Flashing	Glass State is Clear, as determined by Global Override
Off	Flashing	Glass State is Private, as determined by Global Override
Flashing	Flashing	Error condition. See *Troubleshooting*.



2 - TRIG SEL (Trigger Mode Select)

– see Trigger Input for details.

Left (On) – Dry Contact Trigger Mode

Right (Off) – DC Voltage Trigger Mode

3 - Trigger Input and Local Lockout Input

These inputs control the Glass Output

TRIG: Trigger input that is used to allow external devices to control the state of the CLiC Glass panel. See *Trigger Input*.

GND: Common ground connection. Use this ground reference for Trigger ground connections.

GND: Common ground connection. Use this ground reference for Lockout ground connections.

LOCK: Lockout input disables switching the glass to the clear state with the trigger input. This input only accepts a dry contact input.

4 - CLiC GLASS OUT

This is the Class 3 output used to directly connect the CLiC Glass panel. Both connections on the glass out must be connected to the CLiC Glass panel. There is no polarity in these connections.

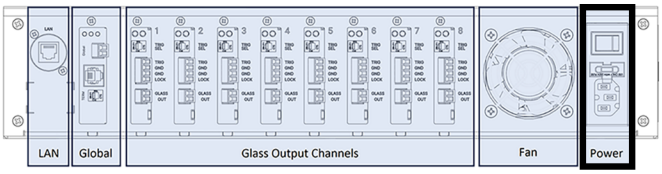
⚠ CAUTION!

Only change the TRIG SEL mode when the HC-108 Multi Channel Controller is powered off.

⚠ CAUTION!

Do not short the outputs or add/remove CLiC Glass while powered on. Removing the protective film on the glass with these outputs connected may damage the HC-108 Multi Channel Controller and must be avoided.

Power



⚠ CAUTION!

Ensure power switch is toggled OFF during wire termination and connection.

Power Switch

Toggle incoming power for the HC-108 Multi Channel Controller.

Power Inlet

Power input connection for an IEC Cord (IEC-60320 C13) to a 120V receptacle. Contains a Bussmann GMA-6A fuse.

Trigger Input

The HC-108 Multi Channel Controller has been designed to accommodate many installation configurations and scenarios by utilizing a custom engineered Trigger Input Circuit. This circuit allows a wide variety of switch devices, relays, contact closures, or other automation controllers to provide end user control of the CLiC Glass panel. There is a separate input for each Glass Out for a total of 8 trigger inputs. The triggering device can be configured to as either a dry contact or a direct current (DC) voltage trigger.

The trigger circuit supports wiring the trigger input of multiple channels together in a parallel circuit to allow a single switch device to control multiple glass outputs.

IMPORTANT

Only daisy chain channels that are set to the same trigger mode.

The CLiC Glass panel will go to the private state when the dry contact is open, or the voltage trigger is below +2.4VDC. The CLiC Glass panel will go to the clear state when the dry contact is either shorted to the common ground pin, or when the voltage trigger is above +2.8VDC.

⚠ CAUTION!

Do not exceed a maximum input voltage of +25VDC when set to voltage trigger.

⚠ CAUTION!

Do not apply voltage to the trigger input when the Trigger Select is set to dry contact mode.

Contact Closure devices can include, but are not limited to:

- Standard light switches ***NOTE: USED FOR LOW-VOLTAGE CONTACT CLOSURE ONLY AND NOT CONNECTED TO AC POWER***
- Occupancy Sensors
- Relays, Switch outputs, or voltage triggers from automation controllers or remote-control systems
- Doorjamb Plunger Switches
- Magnetic Security Style Door Switches
- Home Automation or Building Management Systems

Global Override

The Global Override input accepts a **dry contact** switching device. When the circuit is closed, the Global Override will be activated. This will override every trigger input and force the CLiC Glass panels to the state configured on the Local Web Portal. The default state is private. See Local Web Portal on page 14 for more information.

Tip

This input can be used in conjunction with another control system, such as an alarm system. The alarm system could trigger the HC-108 Multi Channel Controller to turn all the windows private in the event of an emergency.

Display

The HC-108 Multi Channel Controller includes a front panel display that allows quick access to several functions. Once the device has finished its boot sequence, it will display the following.

Main Tab

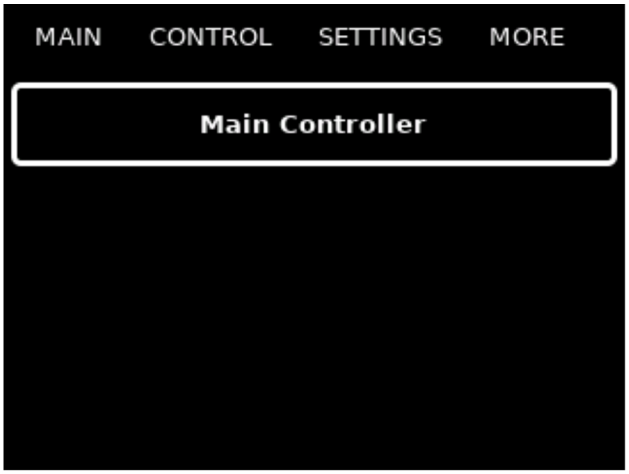
The ‘Main’ screen displays the system status and the firmware version.

Main Tab with Errors Present

If an error is present, an ‘Errors Present’ button is shown. Press this button to view error codes present on the system.

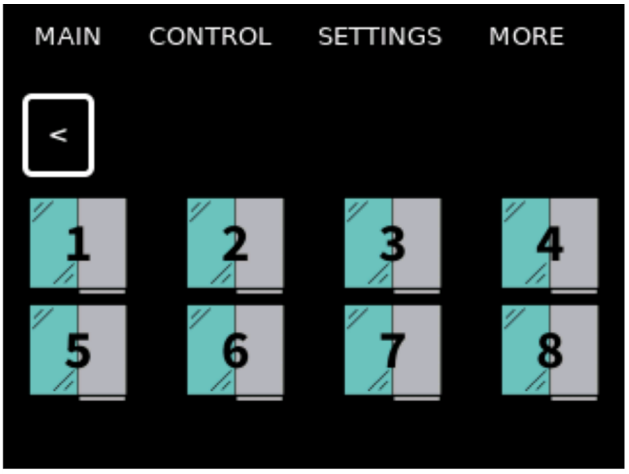
Error Screen

The ‘Error Screen’ displays details about errors present on the system. See *Troubleshooting* section for more information about these errors.



Control Tab

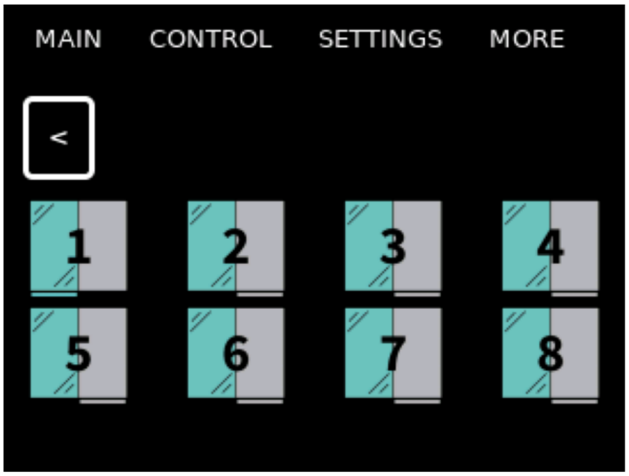
Pressing the ‘Control’ tab allows you to change the glass states. Always select ‘Main Controller’ from this screen. The rest of this screen is reserved for future use.



Control Tab – All Channels Private

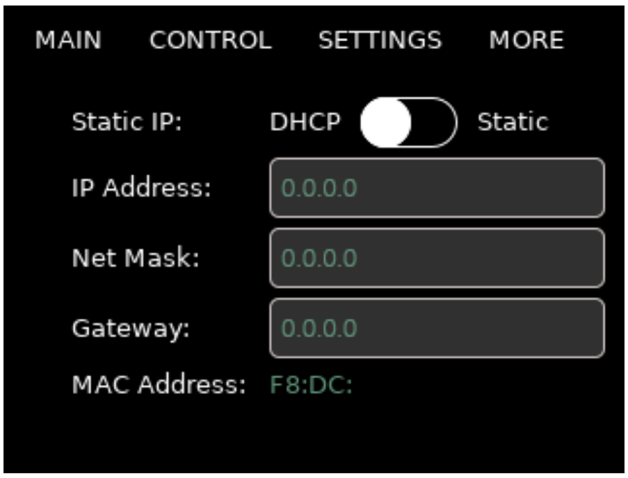
The ‘Control’ screen allows you to control each CLiC output directly from the front panel. The blank grey box is the private state and the teal box with angled lines is the clear state.

NOTE: Activating an output without a CLiC Glass panel connected will result in an error state for that channel. To clear this error, connect a CLiC Glass panel to the errored channel, then reboot device. The system will verify the error state of each channel during initial startup. You may then return the CLiC Glass panel to its original channel.



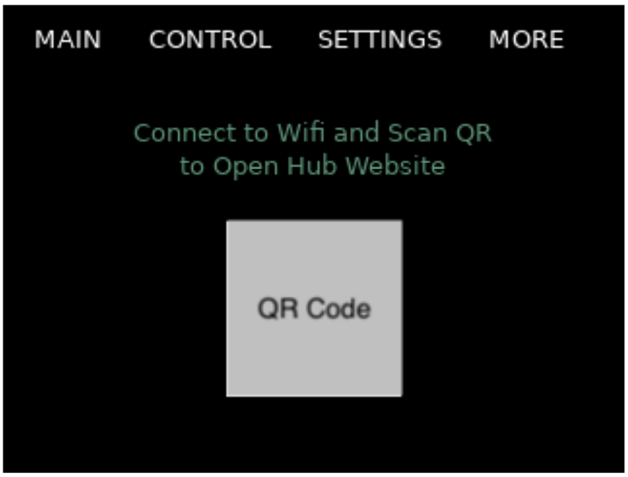
Control Tab – Channel 1 in Clear State

The small rectangles under the boxes indicate the state of each CLiC Glass output. In this example, Channel 1 has been switched to the clear state.



Settings Tab

The ‘Settings’ tab allows you to change the network settings between dynamic (DHCP) and Static IP modes. The screen will display the IP address, Network Mask, Gateway IP, and the MAC address of the device when connected to a local area network (LAN).



More Tab

The ‘More’ screen displays a QR code that will open the Local Web Portal on a mobile tablet or phone when it is connected to the same network as the HC-108 Multi Channel Controller.

Local Web Portal

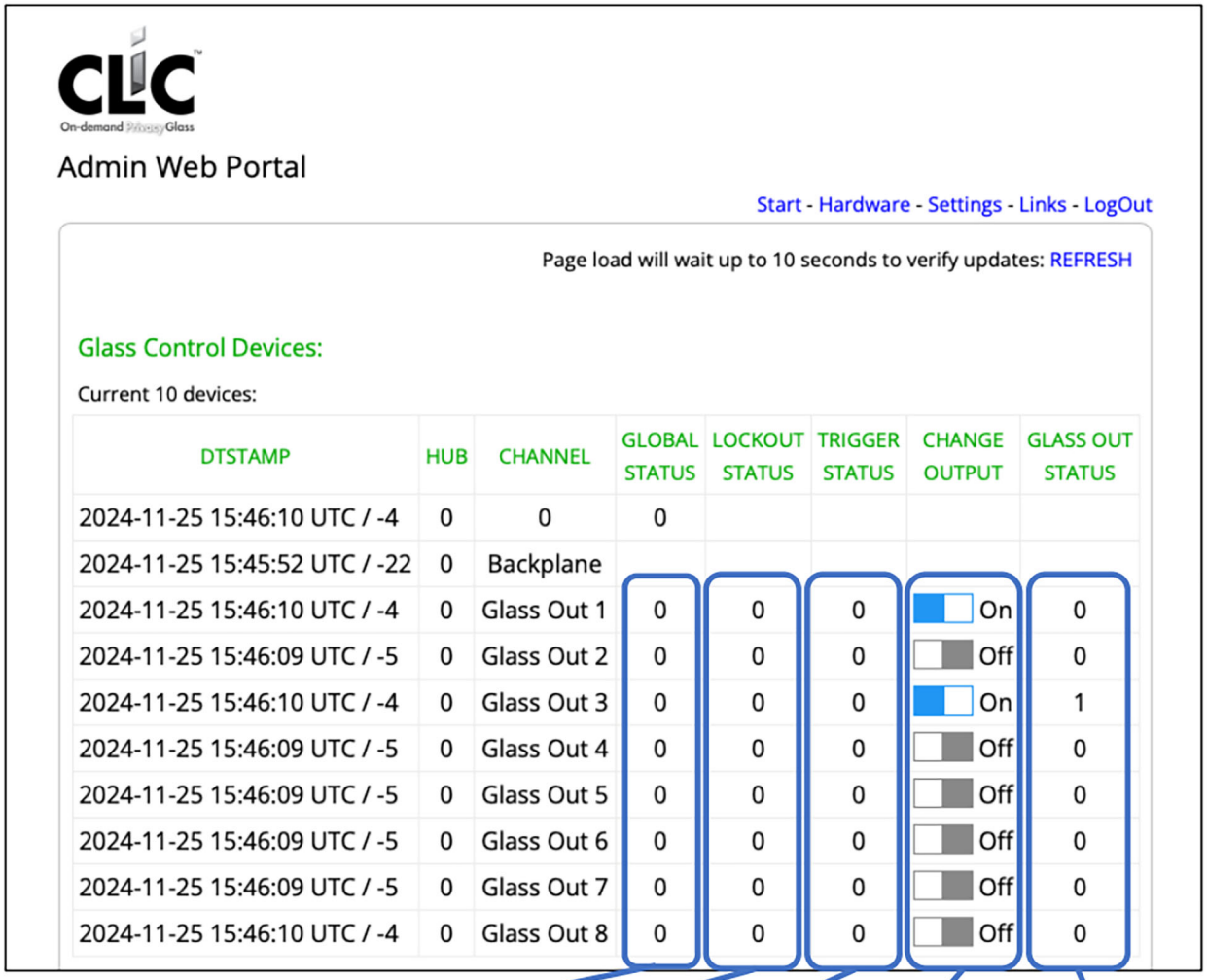
To access the Local Web Portal, connect the HC-108 Multi Channel Controller to the local area network (LAN) and navigate to the IP Address shown in the ‘Settings’ tab on the front display. You can also scan the QR Code on the front display, provided both devices are on the same local area network (LAN).

NOTE: The login credentials are unique for each controller. The credentials are listed on a label mounted to the left side of the controller.

Start Page

NOTE: Every page includes the Firmware Version at the bottom of the page.

The ‘Hardware’ page allows you to see the status of each part of the device. You can see the status of the various triggers and output for each individual output, as well as being able to set the CLiC Glass output directly.



Indicates the status of the Global Override input; 0 is off and 1 is enabled.

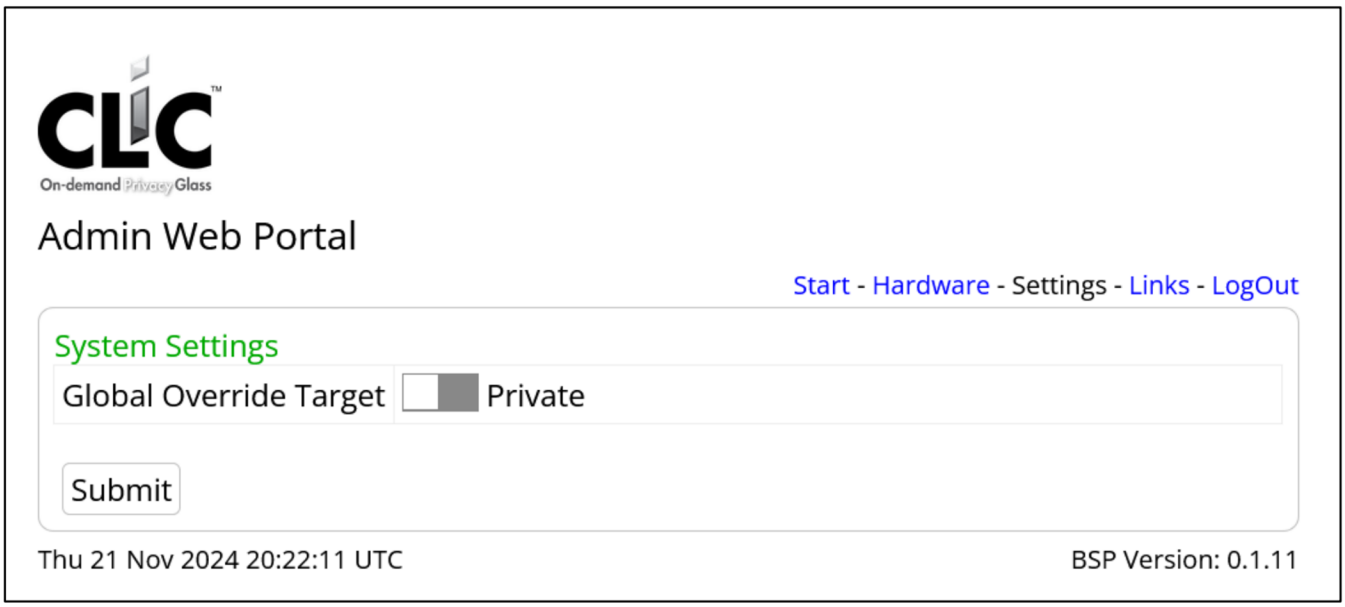
Indicates the status of the Local Lockout input for each channel; 0 is off and 1 is enabled.

Indicates the status of the Trigger input for each channel; 0 is off and 1 is enabled.

This column shows the requested state of the CLiC Glass output; Off is private and On is clear.
The toggle is also used to directly control the state of the CLiC Glass.

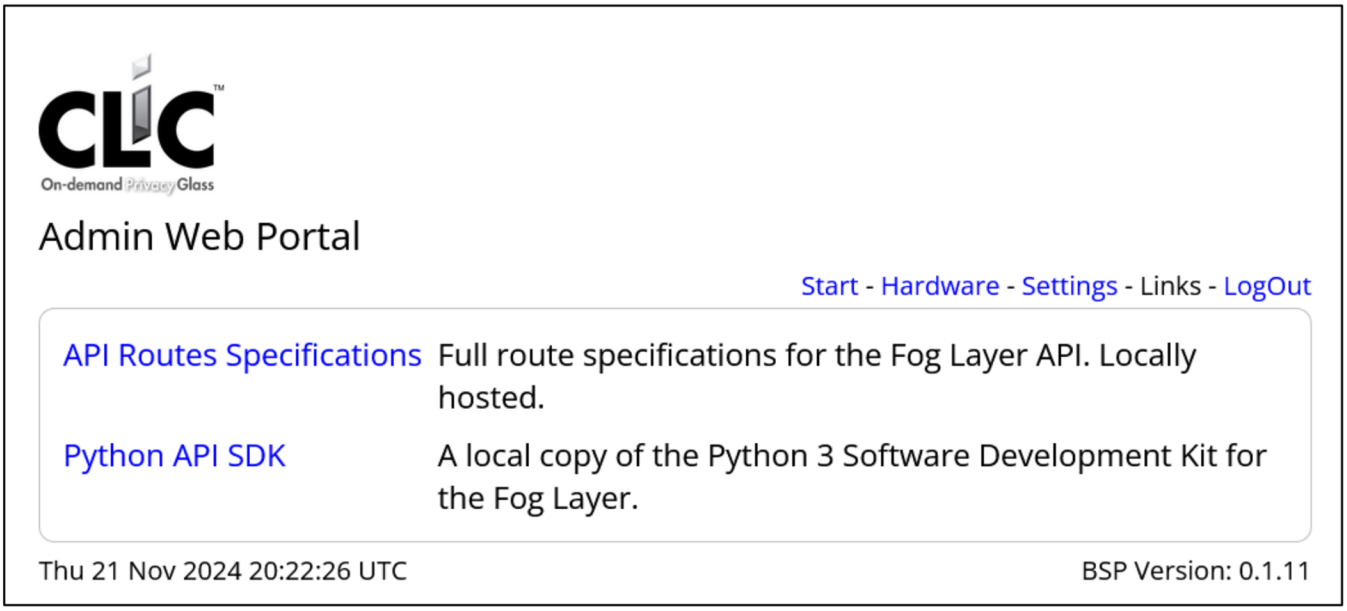
Indicates the actual output for the CLiC Glass output; 0 is private and 1 is clear.
This can also indicate an error if the Glass Out Status doesn’t match the Change Output column; as shown for Channel 1

The ‘Settings’ page allows you to set the desired state for the Global Override trigger. This indicates the state every CLiC Glass output will transition to when the Global Override Input is active.



Settings Page

The ‘Links’ page allows you to access the documentation for the API access of the device. The `API Routes Specifications` link opens an interactive page documenting the Rest API endpoints that are available to interface from your external programs. The ‘Python API SDK’ link opens a plain-text Python 3 script that illustrates how to communicate with the HC-108 Multi Channel Controller from an external Python program.



Links Page

Marvin Home App

As of December 2025, HC-108 Multi Channel Controller is supported in the Marvin Home app. If connected, the Marvin Home app allows the glass state to be viewed and controlled remotely.

It is not required to connect the HC-108 Multi Channel Controller to the internet or to the Marvin Home app, but it is highly recommended.

For more information on how to use or connect the HC-108 Multi Channel Controller to the Marvin Home app, please reference the Marvin Connected Home User Guide.

ATTENTION

The HC-108 Multi Channel Controller will not receive firmware updates if not connected to the Marvin Home app

NOTE: Controllers ordered prior to December 16th, 2025 will not be compatible with the Marvin Home app. For questions, please contact Marvin support.

Installation

Site Wiring and Preparation

Wiring from the HC-108 Multi Channel Controller to the CLiC Glass panel(s) should be run prior to the CLiC Glass panel installation. All wiring must be performed in accordance with the applicable building codes and electrical wiring requirements as denoted for Class 3 systems of the National Electric Code (NEC), Canadian Electrical Code (CEC), or applicable local codes. All wiring should be completed by a qualified and experienced technician. Protective films must be removed from CLiC Glass panels with the glass panel wiring disconnected from the HC-108 Multi Channel Controller.

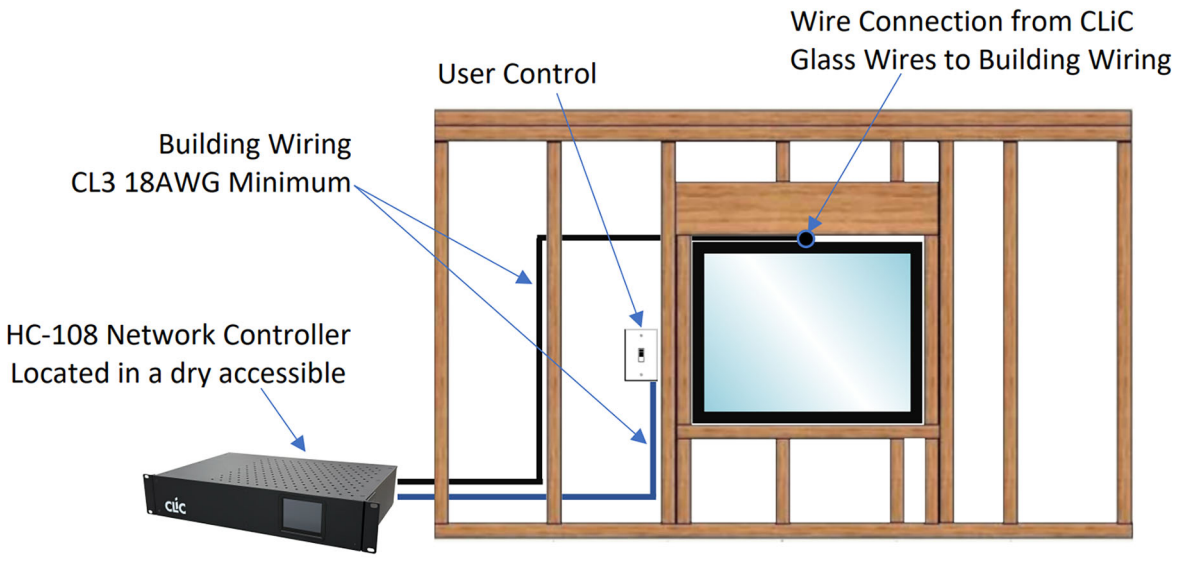
Placement

The HC-108 Multi Channel Controller has detachable rack ears that can be used to mount it within a standard 19-inch audio/video rack. The device does not need to be mounted near the CLiC Glass panel. The CLiC Glass outputs and the trigger inputs can be extended up to 328 feet (100 meters). Use the provided power cord to connect the HC-108 Multi Channel Controller to a standard 120V receptacle.

Wire Size and Maximum Length

The wire utilized for trigger inputs and glass connections on the HC-108 Multi Channel Controller shall be stranded 18 AWG CL3 wiring. It is important that the correct gauge wire is used to ensure the correct voltage and signal reaches the CLiC Glass panel. The maximum wire distance between the device and the CLiC Glass panel is 328 feet (100 meters). Wiring with CL3P wire may be required if it passes through a plenum airspace. Consult your local building codes for details.

NOTE: CLiC Glass panels can arrive in a Window or Door frame, or as a standalone panel. There will be 2 wires to connect to the building wiring going to the Glass Output of the HC-108 Multi Channel Controller. Polarity is not important, and both wires must be connected.



⚠WARNING!

REMOVAL OF PROTECTIVE FILMS CAN PRODUCE ELECTRIC SHOCKS AND SPARKS WHICH COULD CAUSE DAMAGE TO THE CONNECTED ELECTRONICS! ALL PROTECTIVE FILMS MUST BE REMOVED WITH WIRING DISCONNECTED FROM THE GLASS CONTROLLER!

DO NOT APPLY POWER PRIOR TO COMPLETING ALL WIRING CONNECTIONS AND TERMINATIONS!

Glass Output Load Limits

For ease of use, Marvin recommends only connecting one CLiC Glass panel to a single glass output channel. If multiple connections to a single output channel are desired, please contact Marvin support.

Tip

When multiple CLiC Glass panels are connected on a single output they will only be controllable as a group. This means every panel connected to that output will be in the same state (clear or private). Panels cannot be controlled individually from the group.

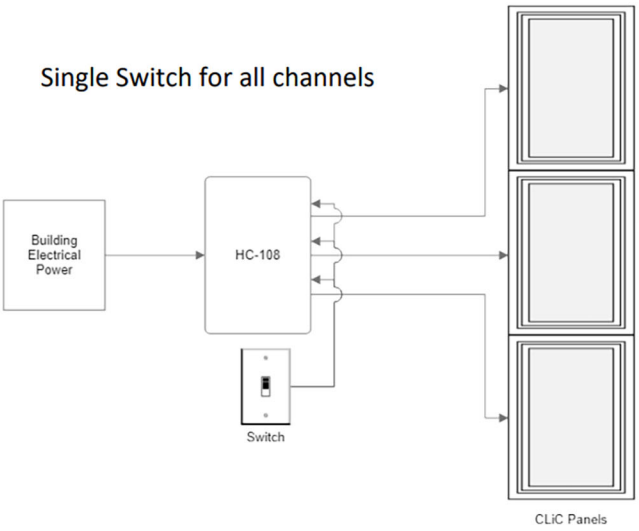
CAUTION!

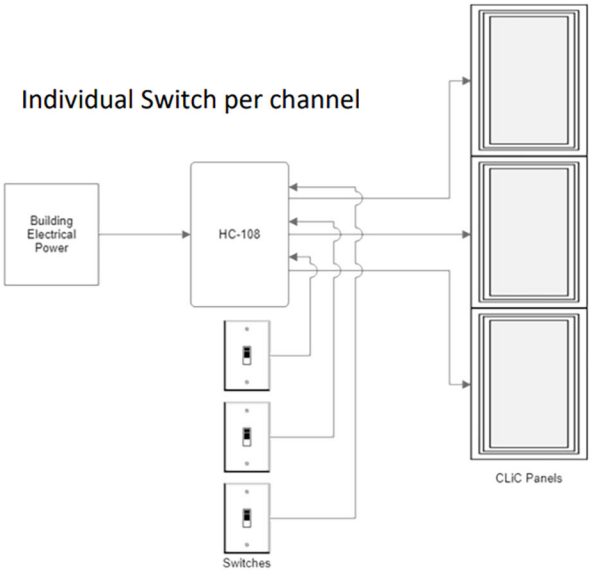
Exceeding Glass Output load limit restrictions can cause damage and will void the limited warranty. Contact Marvin support for specific load limits.

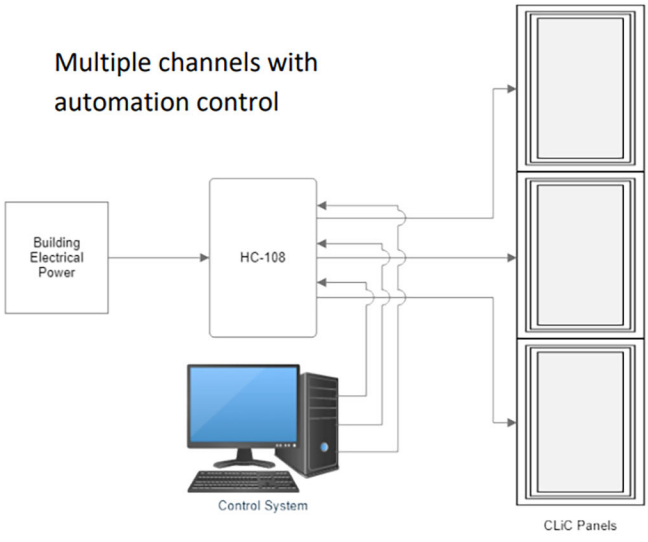
System Layout Examples

Please review the following diagrams for example wiring scenarios:

NOTE: The following diagrams demonstrate the usage of three (3) channels being used to connect three (3) separate CLiC Glass panels, but the same principles apply to all channels on the HC-108 Multi Channel Controller.







⚠ CAUTION!

Do not apply voltage to the trigger input when the Trigger Select is set to dry contact mode.

IMPORTANT

Only daisy chain channels that are set to the same trigger mode.

Specifications

CLiC Glass Output	75VAC Max, 1.1 Amps, Capacitive Load, NEC Class 3 AC Voltage
Wiring Connector Ratings	Solid Core: 0.08 – 1.5 mm2 / AWG 28 – 16 Stranded Wire: 0.08 – 1.5 mm2 / AWG 22 – 16
Power Output Circuit	Note that the outputs of this Controller are considered a power limited circuit, Class 3 circuit, in accordance with Article 725 of the National Electrical Code NFPA 70.
Input Trigger Type	Open Collector; Shunt to Ground or DC Voltage
HC-108 Multi Channel Controller Dimensions with Mounting Ears (without)	19.0” x 3.4” x 11.6” (17.0” x 3.4” x 11.6”)
Weight	12.2 LBs
Operating Temperatures	+50°F to +104°F (+10°C to +40°C)
Storage and Transportation	-40°F to 140°F (-40°C to 60°C)
Certifications	NEC Class 3, FCC Part 15 Subpart B Class B
Purpose of Control	Operating Control, Electronic Window Controller
Construction of Control	Independently Mounted
Pollution Degree	2
Rated Impulse Voltage	1500V
Overvoltage Category	II
Protection Against Electric Shock	Class I

Troubleshooting

Common Symptoms and Solutions

If you are experiencing problems with your HC-108 Multi Channel Controller or CLiC Glass panel(s), please read the information below before contacting Marvin support. If you continue to experience problems, see the next chapter for more information on contacting Marvin support.

Symptoms	Troubleshooting Steps
Glass stuck in Clear State (Powered) It will not change state	1. Check the display for any error codes. 2. Verify the switch and the CLiC Glass panel are wired to the correct channel. 3. Verify global override is not being triggered. 4. Verify wiring from the switching device to the HC-108 Multi Channel Controller. 5. Verify the position of the trigger select switch. 6. Verify switching device is functioning properly and opening the circuit. 7. Verify the absence of voltage if using a voltage trigger. 8. Disconnect the network cable to verify that an external program or device is not using the API to direct the output to the clear state.
Glass stuck in Private State (Unpowered) It will not change state	1. Check the display for any error codes. 2. Verify proper function of LEDs on the corresponding output channel. 3. Verify the switch and the CLiC Glass panel are wired to the correct channel. 4. Verify the local lockout is not being triggered. 5. Verify the position of the trigger mode select switch. 6. Disconnect the network cable to verify that an external program or device is not using the API to direct the output to the private state. 7. Verify wiring from the HC-108 Multi Channel Controller to the CLiC Glass panel. 8. Verify wiring from the switching device to the HC-108 Multi Channel Controller. 9. Verify the switching device is functioning properly and is activating the circuit. 10. Reboot the device. 11. See below *"HC-108 Multi Channel Controller does not power on"*
HC-108 Multi Channel Controller does not power on	1. Verify the HC-108 Multi Channel Controller is plugged into a working wall outlet. 2. Verify the power switch is turned on. 3. Verify the Device Status light is on. 4. Verify the fuse in the power inlet is functional. 5. Contact Marvin support.
Clear state unstable	1. Check the display for any error codes. 2. Verify wiring and connections from the HC-108 Multi Channel Controller to the CLiC Glass panel. 3. Contact Marvin support.
Glass triggered to the clear state when not triggered through the corresponding trigger input	1. Verify global override is not being triggered. 2. Verify the control screen is not activating the glass. 3. Verify the Local Web Portal is not activating the glass. 4. Verify trigger select switch is set correctly on all trigger inputs connected in parallel. 5. Verify that an external program or network device is not using the API to transition the output. 6. Contact Marvin support.

Symptoms	Troubleshooting Steps
Global Override is not functioning as expected	1. Verify global override is being triggered by testing for a shorted circuit at the Global Override input on the device. 2. Verify wiring from the switching device to the HC-108 Multi Channel Controller. 3. Verify the switching device is wired to the correct contact closure input. 4. Verify the desired clear/private state was configured in the HC-108 Multi Channel Controller Local Web Portal. 5. Reboot the device. 6. Contact Marvin support.
Local Lockout is not functioning as expected	1. Verify the switching device and the CLiC Glass panel are wired to the correct channel. 2. Verify the correct local lockout is being triggered by testing for a shorted circuit at the local lockout input on the device. 3. Verify wiring from the switching device to the HC-108 Multi Channel Controller. 4. Verify the switching device is wired to the correct contact closure input. 5. Contact Marvin support.
Front Panel Display is not functioning as expected	1. Verify the HC-108 Multi Channel Controller is plugged into a working wall outlet. 2. Verify the power switch is turned on. 3. Verify the Device Status light is on. 4. Verify the fuse in the power inlet is functional. 5. Reboot the device. 6. Contact Marvin support.
Unable to connect to the HC108 Network Controller Local Web Portal	1. Verify the HC-108 Multi Channel Controller is powered on and fully booted up. 2. Verify the network cable is wired correctly and fully inserted into the network jack on the device. 3. Verify the Network Activity and Network Link LEDs are lit and/or flashing correctly. 4. Verify the IP Address of the device by checking the `Settings` Tab on the front panel display. 5. Verify the computer or mobile device is on the same network with an IP address in the same subnet as the device. 6. Reboot the device. 7. Contact Marvin support.

Error Codes

The HC-108 Multi Channel Controller can detect different errors that may be present in the system. Below is a list of the error codes and the troubleshooting process for each:

Error Message	Troubleshooting Steps
Over Temperature Error	1. Remove the HC-108 Multi Channel Controller from the hot environment. 2. Ensure the fan is not blocked. 3. Contact Marvin support
No Network	1. Check Network Settings on front display. 2. Ensure the connected ethernet cable is fully seated and connected to a working network port. 3. Contact Marvin support
External Wiring Error (individual channel only)	1. Verify wiring from the HC-108 Multi Channel Controller to the CLiC Glass panel. 2. Reboot the device. 3. Move wiring for the switching devices and CLiC Glass panel(s) to a different channel to test if the problem persists. 4. Contact Marvin support
All Other Errors	1. Contact Marvin support.

Service and Support

Contact your Marvin support representative

For questions or service regarding the HC-108 Multi Channel Controller, CLiC Glass panel or Marvin Home app please contact:

Marvin Connected Home Support

1-888-323-7107

support@connectedhome.marvin.com

For questions, concerns or issues related to the window or framing systems, please contact:

Marvin Technical Support

1-888-537-7828

https://www.marvin.com/support/contact-us