CARDINAL CLiC WC-101 GLASS CONTROLLER INSTALLATION MANUAL

On-demand Privacy Glass

Rev. D

DISCLAIMERS

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 and installation instructions. Failure to follow these instructions may damage the product or void the warranty.

Heat: Maintain adequate ventilation while keeping the device away from heat sources such as radiators, heat registers, stoves, etc.

Power Sources: Use only the UL Listed Class 2 power supply provided with the device. Connecting to an unapproved power source may result in damage or safety hazards.

Power Cord Protection: Route power supply cords to avoid being stepped on or pinched, especially at plugs, receptacles, and the point where they connect to the device.

Water and Moisture: Do not use the device in environments where water may be present (e.g. 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 spill into the enclosure through openings.

Indoor Use Only: The device is intended for indoor use in a climate-controlled environment only. Do not use the device outdoors.

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

Damage: Discontinue use of the controller if any of the following have occurred:

- Objects have fallen or liquid has been spilled on 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 WC-101 GLASS CONTROLLER TO RAIN OR MOISTURE.

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

FCC INFORMATION

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

Warning: Changes or modifications not expressly approved by Cardinal IG Company could void the user's authority to operate the equipment.

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INTRODUCTION

OVERVIEW

This guide is for the Cardinal CLiC WC-101 Glass Controller. This device and the associated CLiC Glass Panel(s) have been designed as a NEC Class-3 electrical system. The document provides guidance on setting up and installing the device in commercial, industrial, or residential environments. It includes installation site requirements, wiring requirements, system connection instructions, and basic troubleshooting.

IMPORTANT NOTES

Please read these important notes about the CLiC WC-101 Glass Controller:

- Install the WC-101 in a dry, well-ventilated area with temperatures between -40°C to 60°C.
- Avoid installing the WC-101 in direct sunlight.
- Do not let the WC-101 get wet. Handle it with dry hands and keep away from water.
- All wiring and installation must comply 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.
- Disconnect glass wiring from the device before removing protective films from CLiC glass panels.
- Use the provided UL Listed Class 2 power supply. Using the wrong power supply may result in damage to the controller or the CLiC glass panel.

COMPATIBILITY

This device is designed for use only with CLiC Glass panels. Use it only 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. Cardinal IG Company is not responsible for any damage caused by inappropriate usage.

INCLUDED IN THE BOX

The following items are included with the CLiC WC-101 Glass Controller:

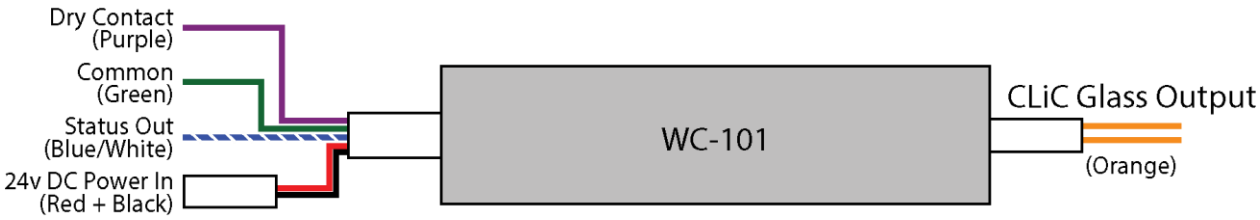
- Quick Start Guide
- Power Supply (WC-101-K only): Mean Well OWA-60U-24 (24VDC 60-Watt UL1310 Class 2 Power Limited)

UNPACKING AND INSPECTION

After opening the WC-101 package, save all packaging material in case you need to ship the unit. Inspect the device thoroughly to ensure it is in good condition with no visible damage. If you have any doubt about the product's integrity, please contact your reseller or an authorized support center immediately.

CONTROLLER WIRES

CONTROLLER CONNECTIONS



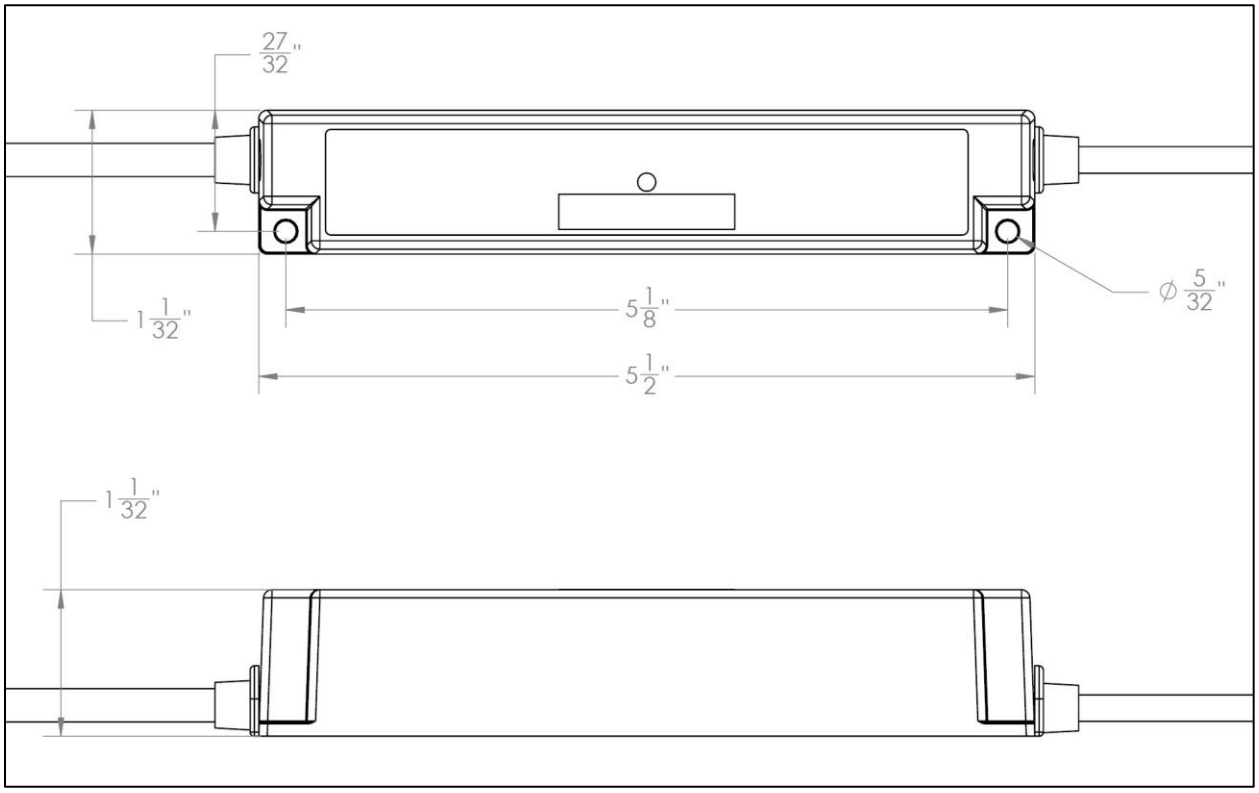
- **Purple Wire: Dry Contact**
  Allows external devices to control the CLiC Glass panel state. Connect to a switch or relay output tied to the Green Wire (Common). The panel switches to the clear state when the contact is closed, and to the private state when the contact is open.
- **Green Wire: Common**
  Serves as the common connection for both the Dry Contact (Purple Wire) and Status Out (Blue/White Wire).
- **Blue/White Wire: Status Out (Optional)**
  Outputs +3.3VDC when the CLiC Glass panel is in the clear (powered) state. Use with the Green Wire to monitor the controller's output status.
- **Red + Black: 24VDC Power In**
  Connect to the provided 24VDC power supply to deliver continuous power to the controller.
- **Orange Wires: CLiC Glass Output**
  Connect both wires to each CLiC Glass panel. Polarity is not required.
  - **Avoid shorting these wires while powered, as it may damage the controller.**
  - **Disconnect these wires before removing protective films from the glass.**
  - **See *Combining Glass Panels* for instructions when connecting more than one CLiC glass panel.**

INSTALLATION AND OPERATION

CONTROLLER MOUNTING

The CLiC WC-101 Glass Controller must be mounted in an accessible location. Example locations include mechanical rooms and closets. The CLiC Glass Output, Dry Contact, Common, and Status Out can be extended up to 100 meters (328 feet).

Mounting Pattern Drawings



**Mounting hole requires #6 Screw*

***Not to scale*

POWER SUPPLY

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

Use the provided UL Listed Class 2 power supply to connect to the 24 VDC Power In barrel connector on the WC-101 controller. Ensure all wiring and installation comply with the NEC, CEC, or applicable local electrical codes. Do not connect more than one WC-101 controller to the included power supply.

CONTROLLER DRY CONTACT CONNECTIONS

The WC-101 supports a wide range of installation scenarios through its flexible Dry Contact Input Circuit. This circuit allows various switch devices, relays, contact closures, or automation controllers to control the CLiC Glass panel.

The triggering device should use a dry contact or relay-type output. To control multiple glass panels simultaneously, wire all Purple Wires (Dry Contact) together and all Green Wires (Common) together to form a parallel circuit.

IMPORTANT: Do not apply power directly to the dry contact connection.

Compatible Devices Include:

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

SITE WIRING AND PREPARATION

Wiring from the WC-101 to the CLiC Glass panel 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 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 WC-101.

Placement

Install the WC-101 in an accessible location near a standard 120VAC outlet to ensure proper connection of the power supply. Allow sufficient space around the device for ventilation and heat dissipation.

NOTE: IF THESE DEVICES ARE USED IN A COMMERCIAL APPLICATION AND INSTALLED WITHIN AN AIR-EXCHANGE SPACE (PLENUM AIRSPACE) THEY SHALL BE MOUNTED WITHIN AN APPROPRIATE CERTIFIED PLENUM-SAFE ENCLOSURE.

Wire Size and Maximum Length

Use stranded 18 AWG CL3 wire for all dry contact and glass connections to the WC-101 Glass Controller. This ensures proper voltage and signal delivery to the CLiC Glass panel.

The maximum wire length between the controller and the glass panel is 328 feet (100 meters). If wiring passes through a plenum airspace, CL3P-rated wire may be required. Always consult local building codes for compliance.

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 WC-101 Controller. Polarity is not important, and both wires must be connected.

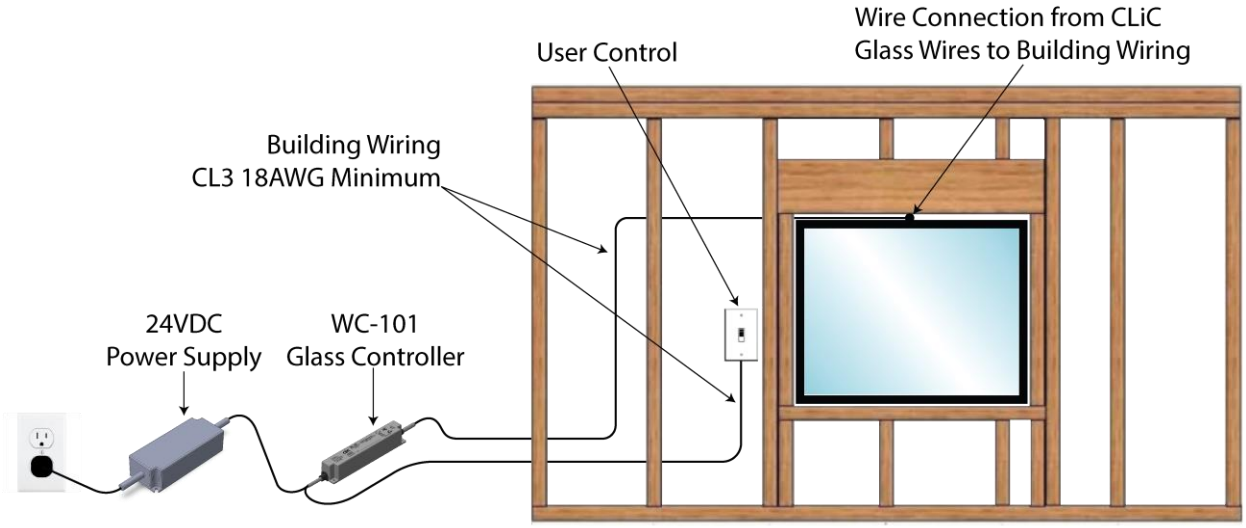


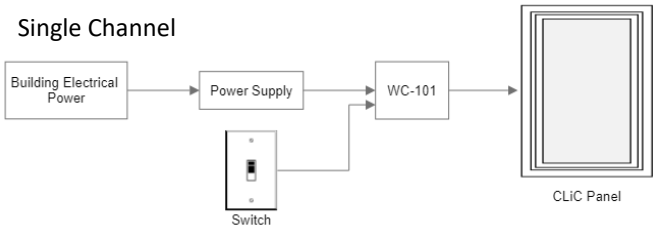
*Diagram not to scale

IMPORTANT: REMOVAL OF PROTECTIVE FILMS CAN PRODUCE ELECTRIC SHOCKS AND SPARKS WHICH COULD DAMAGE CONNECTED ELECTRONICS! ALL PROTECTIVE FILMS MUST BE REMOVED FROM THE CLIC GLASS PANEL WITH CLIC WIRING DISCONNECTED FROM THE DEVICE!

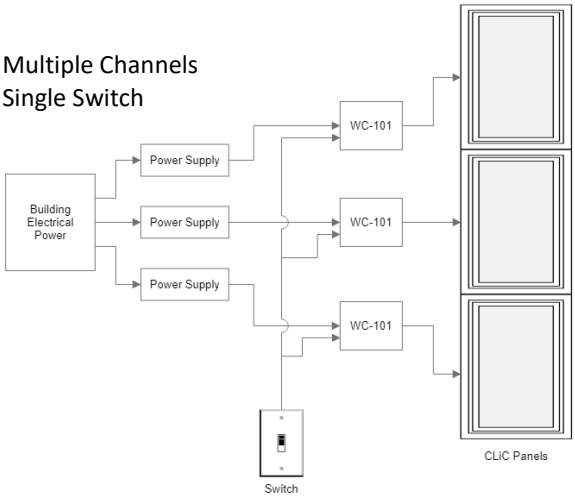
SYSTEM LAYOUT EXAMPLES

Please review the following diagrams for example wiring scenarios:

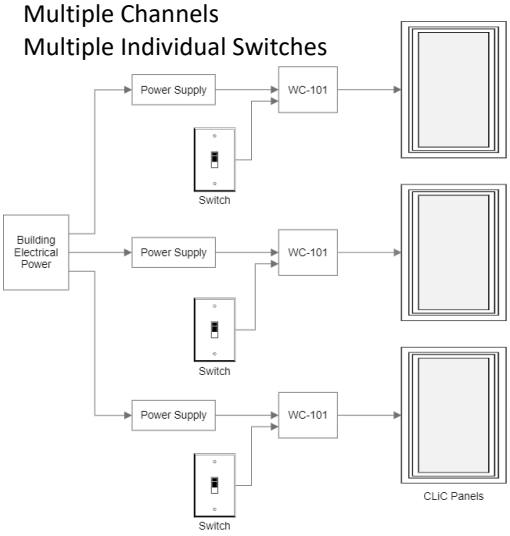
Single Channel



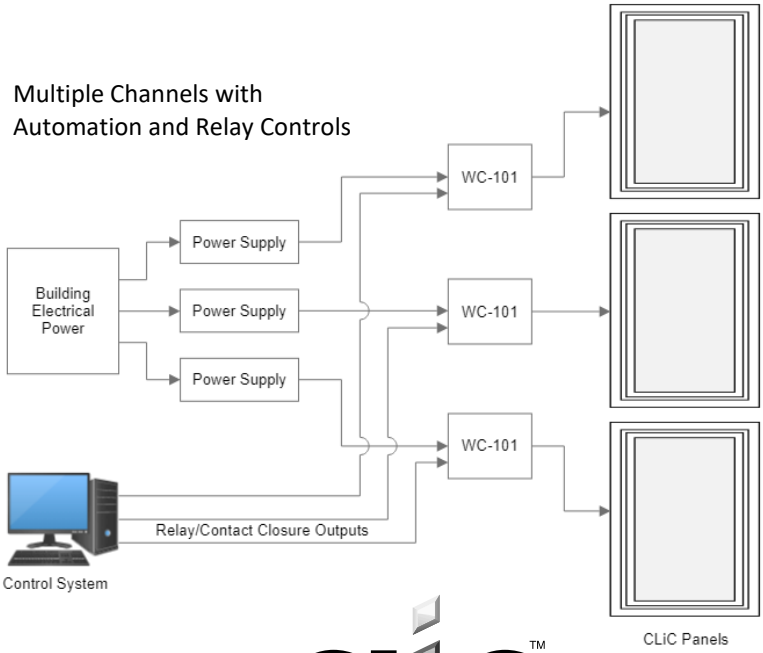
Multiple Channels
Single Switch



Multiple Channels
Multiple Individual Switches



Multiple Channels with
Automation and Relay Controls



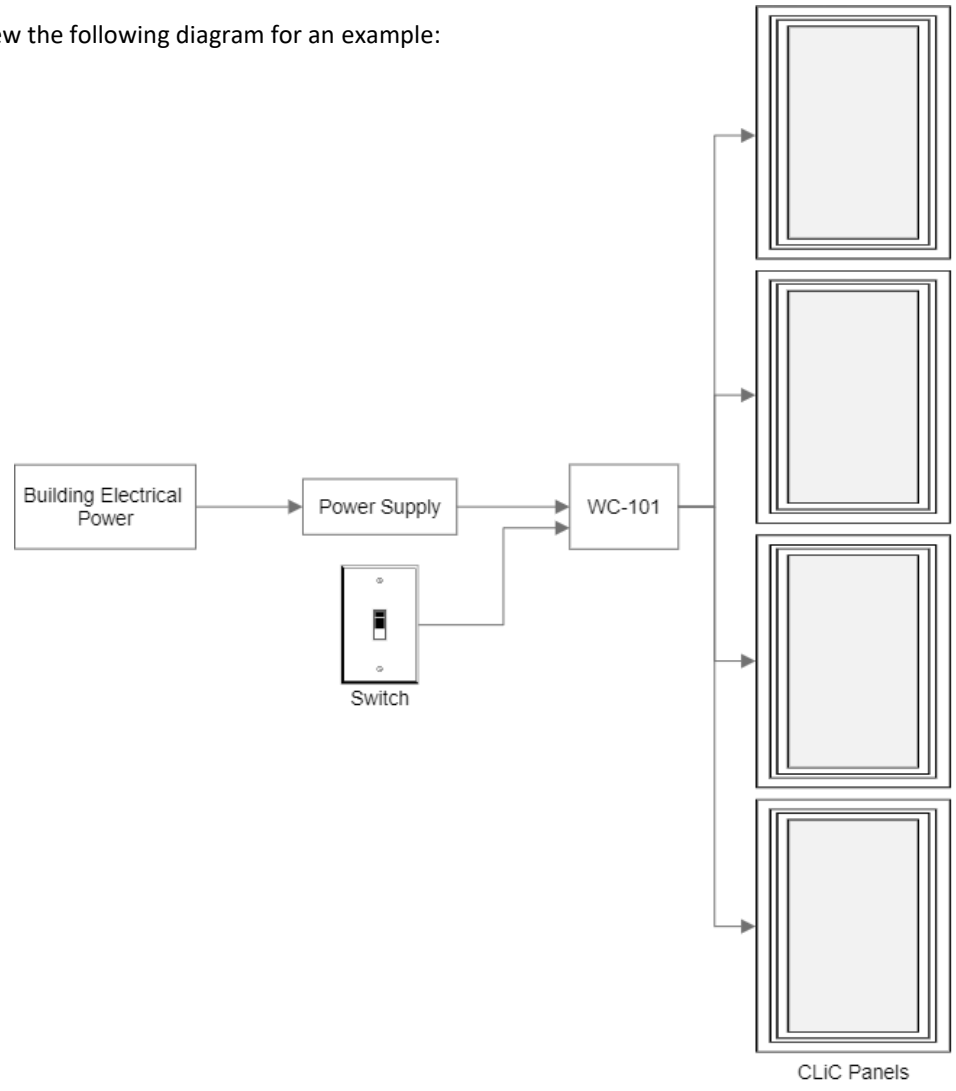
COMBINING GLASS PANELS

The WC-101 Glass Controller supports up to four (4) CLiC Glass panels, with a combined maximum area of 40 square feet. Exceeding either limit may cause damage and will void the warranty.

CLiC Glass panels must be wired in parallel when wiring more than one CLiC Glass panel to the same WC-101. It is recommended to run separate wires from the glass panels to the controller location and then combine them in parallel to the glass output. This allows for more flexible troubleshooting of the installation. Do not wire the panels in series. Wiring multiple CLiC Glass panels in series can cause damage and will void the warranty.

When multiple CLiC Glass panels are connected to a single controller they will only be controllable as a single group. This means every panel connected to that output will be in the same state (clear or private). You will not be able to control any of the panels individually from the group.

Please review the following diagram for an example:



SPECIFICATIONS

Power Supply Requirements	OWA-60U-24 (24VDC 60-Watt UL1310 Class 2 Power Limited)
CLiC Control Output	75VAC Max, 1.1 Amps, Capacitive Load, Class 3 AC Voltage
Power Output Circuit	Note that the output of this controller is considered a power limited Class 3 circuit, in accordance with Article 725 of the National Electrical Code NFPA 70.
Input Trigger Type	Open Collector; Shunt to Ground
WC-101 Dimensions (W x H x D)	1” x 1” x 5.5”
Included Power Supply Dimensions (W x H x D)	5.1” x 1.4” x 2.1” (130mm x 35mm x 53mm)
Weight (without included power supply)	0.42 lbs. (190g)
Weight (with included power supply)	1.32 lbs. (600g)
WC-101 Glass Controller Operating Temperature	-40°F to 140°F (-40°C to 60°C)
OWA-60U-24 Power Supply Operating Temperature	-13°F to 140°F (-25°C to 60°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; RoHS Compliant

TROUBLESHOOTING

COMMON SYMPTOMS AND SOLUTIONS

If you are experiencing problems with your WC-101 Glass Controller or CLiC Glass panel, please read the information below before contacting technical support. If you continue to experience problems, see the next chapter for more information on contacting Cardinal IG Company technical support.

Symptom	Troubleshooting Steps
Glass stuck in Clear State (It will not change state)	1. Verify wiring from the switching device to the Glass Controller. 2. Verify the switching device is functioning properly and opening the circuit. 3. Check for any loose connections or damaged wires.
Glass stuck in Private State (It will not change state)	1. Verify wiring from the Glass Controller to the CLiC Glass panel. 2. Verify wiring from the switching device to the Glass Controller. 3. Verify the switching device is functioning properly and closing the circuit. 4. Verify presence of 24VDC at the barrel connector on the Glass Controller. 5. Verify presence of +3.3VDC at WC-101 Status Output. 6. Verify wiring and connections from the Glass Controller to the CLiC Glass panel. 7. See *No Power to Glass Controller* below.
No power at Glass Controller	1. Verify the power supply is plugged into a wall outlet. 2. Verify the wall outlet has power. 3. Verify the wiring from the power supply to the Glass Controller and ensure that the connector is fully inserted.
Clear state unstable	1. Verify wiring and connections from the Glass Controller to CLiC glass panel. 2. Contact technical support if the issue persists.
Intermittent operation	1. Check for any loose or damaged wires. 2. Verify that all connections are secure and properly insulated.
Device overheating	1. Ensure the device is installed in a well-ventilated area. 2. Check for any obstructions blocking the ventilation. 3. Verify that the device is not exposed to direct sunlight or other heat sources.

SERVICE AND SUPPORT

CONTACTING US

Contacting Cardinal IG Company

For general information, you can contact Cardinal IG Company at:

Cardinal IG Company
7201 W Lake St
Minneapolis, MN 55426
(952) 314-4757

Contacting Technical Support

At Cardinal IG Company, customer service and satisfaction are two of our core missions. If you have any questions, concerns, or issues related to the window or framing systems, please contact the window manufacturer directly.

For any problems or questions regarding your CLiC products, please contact our technical support department by email at: ***CLiCsupport@cardinalcorp.com***
Please include the following information within your email:

- Your Name
- Company Name
- Window or Door Manufacturer
- Telephone Number
- Email address
- Product models and serial numbers
- Detailed description of your question or the problems you are experiencing

We appreciate your purchase of Cardinal CLiC products, and we strive to provide a long-lasting and trouble-free customer experience. Our goal is to respond to your email in a timely manner and to expediently resolve any issues you are experiencing.

Visit our Website for the Latest Information

You can find the latest revision of this manual, as well as a list of frequently asked questions, and an easy way to contact us. ***www.clicglass.com***

GLOSSARY

CEC (Canadian Electrical Code): A set of standards for the safe installation of electrical wiring and equipment in Canada.

Class 2 Power Supply: A power supply that limits the output power to a safe level, reducing the risk of fire or electric shock.

CLiC Glass Panel: A type of switchable privacy smart glass controlled by the WC-101 Glass Controller.

Dry Contact: An electrical contact that does not carry any voltage or current, used to control the state of the CLiC Glass panel.

Ground: A reference point in an electrical circuit from which voltages are measured, a common return path for electric current.

NEC (National Electrical Code): A set of standards for the safe installation of electrical wiring and equipment in the United States.

Plenum Airspace: The part of a building used for air circulation for heating, ventilation, and air-conditioning (HVAC), often above a suspended ceiling or below a raised floor.

Protective Films: Temporary films applied to CLiC Glass panels during shipping and installation. These must be removed with the panel disconnected from the controller.

Relay: An electrically operated switch used to control a circuit by a separate low-power signal.

Switching Device: A device that opens or closes an electrical circuit, used to control the CLiC Glass panel's state.