

## GUARDIAN RELAY BOARD INSTALLATION GUIDE



# Contents

**Introduction.....3**

**Tools Needed for Installation.....4**

**Recommendations for Wire.....4**

**Wiring Requirements .....4**

**Relay Board Installation.....5**

**Relay Board Diagram.....8**

**Unit Alarm Sirens.....9**

**Adding your relay board in GCP.....9**

**Elevator Control.....10**

**Relay Module (lighting control, etc).....12**

**Final Hardware Check List.....13**

**Trouble Shooting.....14**

**Relay Board Warranty Activation.....15**

**Technical Support Department.....17**



## **Please Read this Introduction before Starting Install**

Please take a moment to read through this introduction before installing your new QuikStor Guardian Series Relay Board products. This has been designed to save the installer time in the pre-planning and installation stages. This outline will cover all possible questions regarding minimum system requirements, materials, standards, installation, and trouble shooting tools in order to achieve a fully functional QuikStor access control system.

Please keep in mind that we have a fully trained and staffed Technical Support Department at your disposal that can assist you with questions or concerns during the entire installation process.

To reach the Technical Support Department please call (800)321-1987 8am to 5pm PST Monday through Friday



## **Tools Needed for Installation**

- Phillips-head screw driver
- Small Flat-head screw driver
- Wire strippers
- Cordless screw gun
- Phillips-head drill bit
- Fish tape (to pull siren wiring if necessary)



## **QuikStor Recommends the Following Wire**

- 18/2 for 12VDC power – relay board
- 18/2 for wiring sirens to relay board
- 18/2 (OAS) – relay board data wiring to the UltraConverter



## Wiring Requirements

- 12 VDC runs should be no longer than **200ft**
- Splices made on 18/2 should always be done with wire nuts or using a suitable termination/splice block
- Any splices made in underground junction boxes or in an area where water or other foreign materials could short the wires, they must have a wire nut (or similar connector) filled with silicone or like material



## Guardian Series Relay Board Installation

### Relay Board Introduction:

The Guardian Series Relay Board is the hub of all QuikStor controlled auxiliary devices. There are 10 individually controlled relays on the board that can be used to control sirens, elevator floor restriction, lighting, door locks, etc. Each relay is rated at 10amps and either 277VAC or 30VDC.

In a typical self storage facility the relay board is used to control sirens that sound when a unit door sensor sends an unauthorized open event to the office. However we will touch on each of the above possibilities for the relay board so that you can connect devices as needed for your facility.

There can be a total of 254 devices (in addition to the UltraConverter) at any given facility. Any mixture of relay boards and/or keypads can be used to reach that number.

### Relay Board Communication:

The relay board communicates to the UltraConverter (see the **Guardian Series Access Control System – Installation Manual** for more on the UltraConverter) on the same RS-485 data network as the keypad system. You can run a dedicated 18/2 OAS wire from the Surge Board on the relay board to the UltraConverter or daisy-chain the data wiring with a nearby keypad.

Note that the relay board can also communicate to the UltraConverter wirelessly. For more information on how to set this up, please read the **Guardian Series Access Control System – Installation Manual**.

**IMPORTANT:** The relay board, even though likely mounted in an electrical room or office, should still have the Earth Ground wire on the Surge Board connected to a nearby grounding rod or other adequate grounding source to dissipate any surges that may travel in from nearby keypads.

### Relay Board Jumpers & Dip Switches:

There are several banks of dip switches and jumpers on the relay board. Each one serves a separate purpose to allow for greater flexibility and ease of installation. Below is a breakdown of each one:

- ADDRESS – this bank of dip switches allow you to ID the relay board so that it can be recognized on the RS-485 data network. Please note that all relay boards must be ID 60 or higher to prevent any conflict with keypad ID numbers. The ID schema is based on binary numbers (i.e., 1,2,4,8,16,32...) So if you want the ID to be 60 you would have dip switches 3,4,5, and 6 up equaling 60. Contact QuikStor Support if you have any questions on addressing your relay board, however by default your relay board will come pre-configured as ID #60
- RELAY - NO or NC – this bank of dip switches allows you to dictate if a relay is power up as normally open (NO) or normally closed (NC). This is a useful feature if you are dealing with elevator restriction or other devices that you would want to default to a fail-safe state in case of power failure. The majority of installations would default to NO though.
- RELAY – WET or DRY – this set of jumpers allows you to dictate whether a relay will serve as a dry contact (like for elevator controls or externally powered devices) or supply 12VDC power out of the relay terminals when tripped. Please note that no more than THREE sirens may be powered off of a single relay board due to voltage drop potential. If additional sirens are to be used it will be necessary to power those sirens externally.

### Relay Board Wiring Terminals:

For each relay there is a 4-position removable terminal block with the following designations:

- Normally Open (NO) – use this terminal when connecting to a gate motor, door strike or other device that does not require the relay board to supply a constantly closed loop.
- Normally Closed (NC) – use this terminal when connecting to a magnetic lock or elevator controller.
- COM – this is your common terminal for a dry contact.
- GROUND – use this terminal to power a device with 12VDC in conjunction with the NO or NC terminals.

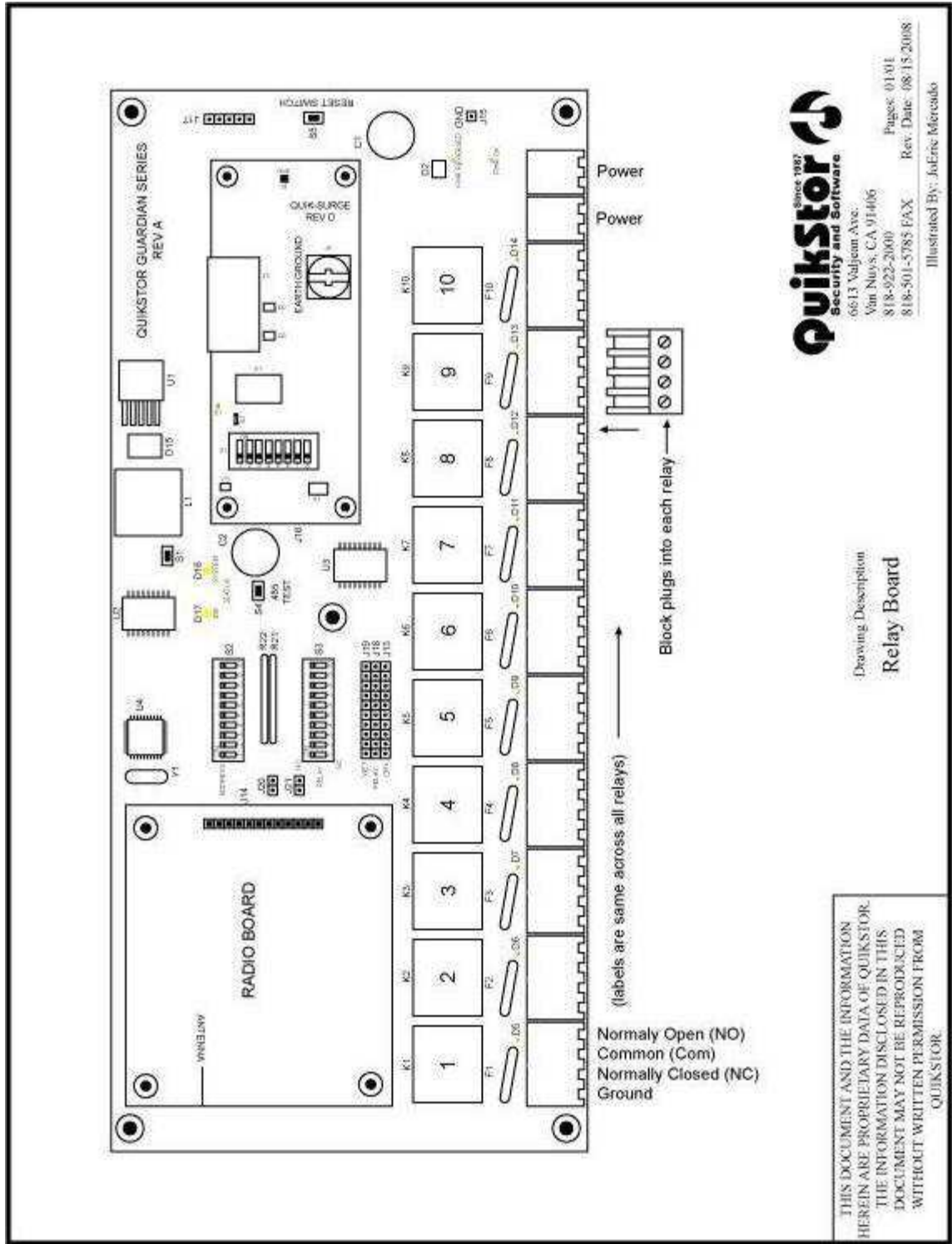
Note that the above descriptions are based on typical configurations. Your facility or device may use different variations of these terminals to properly power or control your devices.

In addition to the actual relay terminals there are also two power blocks. Either power block can be used to power the relay board with the other one available to supply auxiliary power to a nearby 12VDC device.

#### Relay Board LEDs:

- Each relay has one red LED associated with it and will come on when the relay is triggered or in a closed state.
- PWR OK – this a green LED located near the power terminal block to indicate if 12VDC power is being supplied to the relay board.
- PWR REVERSED – this is a red LED located near the power terminal block to indicate that you have crossed the polarity of the 12VDC power wiring. If you see this light immediately power down your relay board and correct the wiring.
- 5V – this is a red LED that indicates that the board is properly converting the received 12VDC power to 5VDC
- 485 SYSTEM STATUS – there are two separate LEDs here. One is red and the other is green. When operating properly they should both flash in varying frequency to indicate healthy two-way communication with the UltraConverter. If both lights are not flashing, or if they are on solid, please go to the Trouble Shooting section for help.

**(See Diagram Below for Relay Board Wiring)**



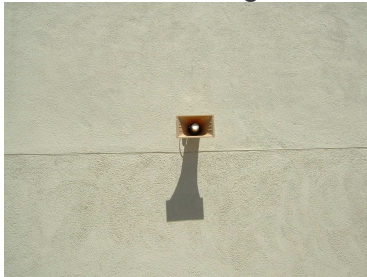




## Unit Alarm Sirens

When installing wireless unit alarms you will typically want to install local sirens throughout the facility to notify the manager and neighbors of a problem, as well as scare off the intruder.

Sirens provided by QuikStor typically have two settings – Steady or Yelp. QuikStor recommends the use of Yelp at most facilities as it has been found to be the most recognizable and deterrent alarm sound.

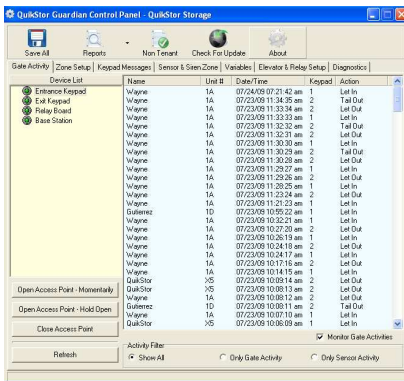


There are three wires coming off the back of the siren, labeled COM, YELP, and STEADY. Simply connect your 18/2 wire to the COM and YELP pigtail and cap off the STEADY wire as it will not be used.

On the relay board connect the first siren to relay #1 using the GROUND and NO terminals. This will supply power to the siren when the relay is tripped without the need for external power. Repeat this step for each additional siren required. Remember that any sirens past #3 will require their own external power supply. In that case simply use the relay as a dry contact to break the power to the siren.



## Adding your relay board into the Guardian Control Panel

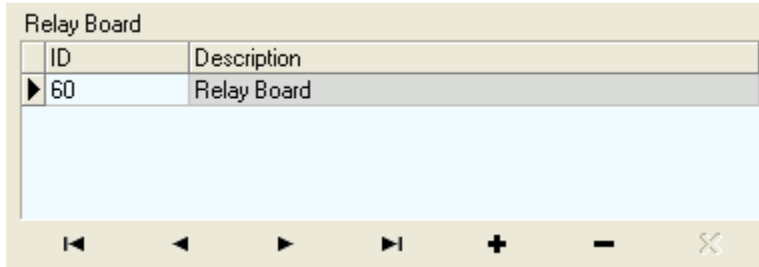


Your daily operations with the gate and wireless alarm system will be done solely within QSX, including reviewing real-time door activity and running activity reports.

However you will need to use the Guardian Control Panel to setup your initial relay board configuration settings.

There are several functions that your new relay board can perform in conjunction with your Guardian Access Control system.

Once your relay board is installed and powered, you must add it into the Guardian Control Panel so that the system will recognize it. In the Guardian Control Panel go to the, “Elevator & Relay Setup” tab. In the middle left of the screen you will see a small box called, “Relay Board”. Click the “+” button and enter in the ID of your first relay board. Most facilities only require a single relay board and they come programmed as ID number 60. You can then enter a description for your relay board such as, “Elevator Relay” or “Siren Relay” to help differentiate them in the software. That is it. Your relay board(s) is now enrolled into the Guardian system.



## Elevator Control

You can use your new QuikStor Guardian Series system to restrict elevator access to only those floors where the tenant has a unit. There are two methods for this – have a keypad on the outside of each elevator car or have the keypad inside of the elevator car. There are benefits and cons to each method and you will need to decide what is best for your own facility.



We will discuss each method below and how to install and wire the keypads, controllers and relay board:

1. Inside the car – mounting the keypad inside the car allows you to enter the car, punch in your code and then select your floor button. Any floor button pressed that is not associated with a unit that you lease will not light up and will not allow access. To have the keypad inside the elevator car it is necessary to have the “traveler” wiring inside of the elevator shaft installed by your

elevator company. This is usually only cost effective during initial construction.

2. Outside the car – with this method you will mount one keypad per elevator car on the outside of the elevator doors. For maximum security you do not want to mount a single keypad for two elevator cars as it will cause each elevator car to allow floor access based on the code entered at the single keypad. This is the preferred method when retrofitting an existing elevator with access control.

No wiring is connected to the keypad’s relay terminals. The keypad only accepts the code and transfers the information to the relay board to trip the appropriate relay and light up the appropriate floor button.

Regardless of whether the keypad is mounted inside or outside of the elevator car, the wiring will be the same from the relay board to the elevator controller. Please note that most security technicians are NOT licensed or authorized to make connections or in any way alter the wiring inside of an elevator controller. The most you can do is make your connections onto the relay board and run the necessary 18/2 wiring (one pair per floor, per car) into the elevator control room to an approved demarcation point designated by your elevator control company. Be sure to leave enough wire to extend down into the controllers and label each pair of wires for the appropriate car and floor.

On the relay end you will need to connect to the appropriate relays based on how your specific elevator controller is configured. Obtain this information by talking to your elevator company. Some are setup as normally open and others are setup as normally closed.

## Configuring Elevators in the Guardian Control Panel

In the Guardian Control Panel go to the, “Elevator & Relay Setup” tab. On the bottom left you will see the Elevator module where you can configure how your Guardian keypads control relays on the relay board. Floor 1 never needs a relay assigned to it because the elevator car will always return that floor without the need for a code.

In this example there is a three story building with two elevator cars. Keypad ID #3 is assigned to one car and keypad ID #4 is assigned to the second. Each floor above floor one requires its own relay on the relay board to restrict floor access. So in this scenario there are two floors being restricted per car, for a total of four relays on the relay board being used.

Floor	Keypad ID	Relay
	2	3 64
	3	3 65
	2	4 66
▶	3	4 67



## Relay Module (Lighting Control, Perimeter Beam Control, etc)

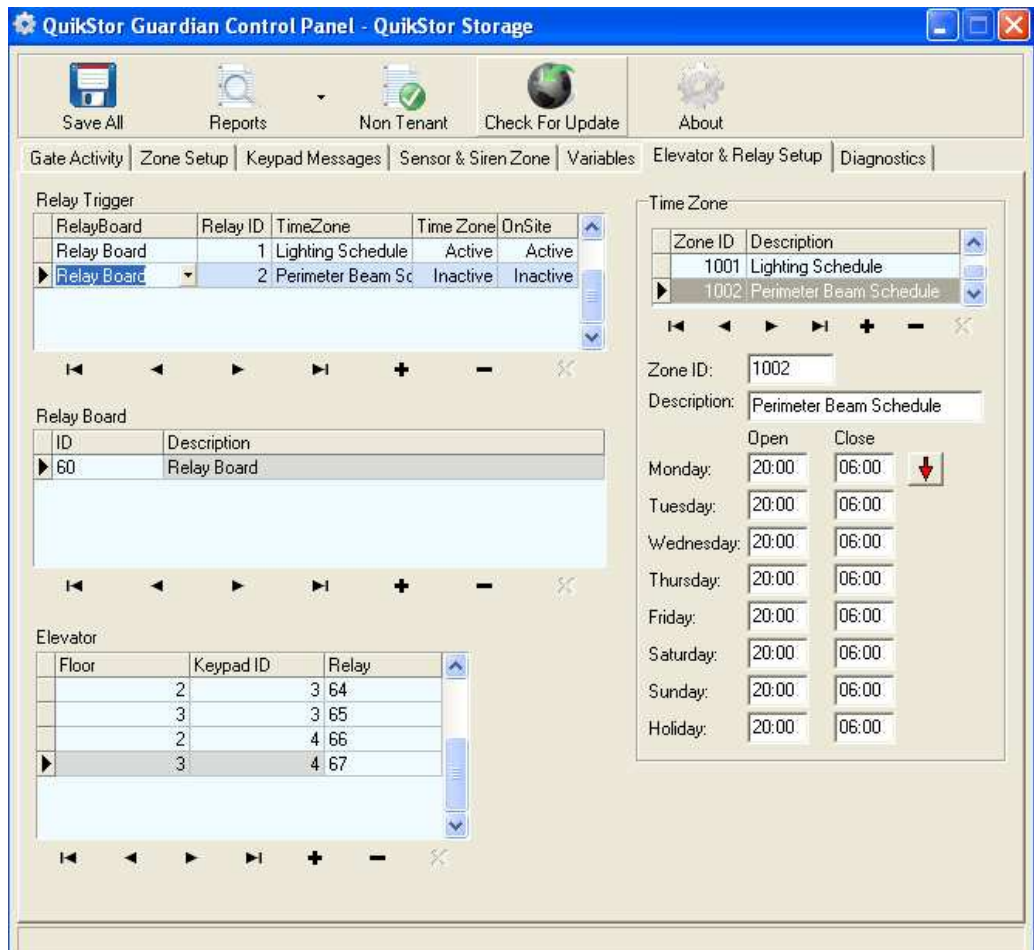
You can use your new QuikStor Guardian Series system to control property lighting, perimeter beams, access door hold open devices, etc. Basically any device that is 277VAC or less can be controlled via dry contact through the Guardian Series relay board. However you should never exceed 10Amps!

Simply break the power connection to the device through one of the relay board relays using the COM and NO or NC terminals. You then need to go into the Guardian Control Panel to configure the hours of operation for each relay/device.

In addition to setting hours for the device to operate under, you can also set up the system to only trigger a relay when someone is onsite. This option is a great way to save on energy by only turning on lighting when someone keys in their code at the gate!

As the screen below shows there is a tab in the Guardian Control Panel called, "Elevator & Relay Setup".

This is where you will add relay boards into the system, create time zones to control your devices, configure elevator control, and designate triggers (i.e. time zone & onsite) to be Active or Inactive





## Final hardware check list

Before going into the software section of the relay board setup let's confirm that all hardware is installed properly.

Below is a basic checklist that will aid you. Please check off each item as it is completed:

- Relay board is installed and powered with a 12VDC power supply. The red power OK LED should be lit.
- Relay board surge board is properly wired to the UltraConverter and you are seeing alternating red and green RS-485 LEDs.
- Relay board surge board's EARTH GROUND is properly grounded within **6 feet** of the board.
- Each siren is installed and properly wired to the relay board relay designated in the software.
- If you are using the relay board for auxiliary devices, such as elevator control or lighting, then you should now have the devices wired per the device manufacturer's recommendations.



## Trouble Shooting

If you have attempted to establish communication with the relay board or sirens and have failed, your best course of action is to check the system one component at a time. Here are some easy steps to verifying that the hardware is setup properly.

### Relay Board

- Does the Relay Board have the red LED power light on?
- Is the “Power Reversed” light on? If so, swap your power wires.
- Is the “RS-485 Communication” LEDs flashing red and green? If not, confirm that the relay board is being found by the software and that no wiring is loose or crossed.
- Are the data communication wires firmly fastened to the terminal blocks and unbroken

### Sirens

- Check the voltage at each siren. Each repeater should have a minimum of 12 volts DC and no more than 18 volts DC when the relay is in a tripped state.
- If there are any wire splices make sure that they are not broken or grounded which can cause power problems to the sirens
- Are the power leads properly terminated to the “COM” and “YELP” terminals? If not, correct that now.

### Elevator Control

- The QuikStor system can only provide a relay to control floor or call button access. Any problems or troubleshooting beyond testing the relay for proper operation and confirming that the wiring is connected to the proper terminals, should be done with your elevator company.



## **Guardian Relay Board Warranty Activation**

Each new Guardian relay board comes with a one year warranty. This warranty includes damage that may occur from strong electrical surges, such as from lightning. To take advantage of this lightning/surge warranty you **MUST** fill out and return the following activation form for **EACH** Guardian relay board that is installed. QuikStor will **NOT** replace under warranty any relay board damaged due to lightning that has not completed this activation!

PLEASE NOTE: The Surge Boards are meant to act as fuses for severe electrical surges and are **NOT** covered under warranty.

### **Guardian Activation Form**

Following is a Guardian Activation Form to complete and return to your QuikStor Account Representative for activation. If you have more than one Guardian relay board to activate you may make a photo copy of this form or contact your QuikStor Account Representative for additional copies via email (PDF) or USPS.

### **Required Guardian Installation Pictures**

To complete the activation of your Guardian warranty, you must not only complete the following activation form but also submit pictures showing the following:

- The relay board powered and wired in its installed location
- A clear picture showing the grounding wire connected to the surge board's Earth Ground screw.
- The grounding method for each keypad, such as the termination of the grounding wire to a ground rod or other acceptable grounding source.

**QUIKSTOR'S GUARDIAN SERIES - ONE YEAR RELAY BOARD WARRANTY**

Every QuikStor Guardian Series relay board that is verified as operational and properly connected per QuikStor's documentation (requirements below) will be covered by a one year warranty including lightning damage. Should such a QuikStor relay board ever fail during the activated warranty period, a replacement unit of comparable age and condition will be shipped via FedEx Ground at QuikStor's expense. The client may have the replacement relay board shipped at a faster rate at their expense.

To activate your new warranty simply complete a separate copy of this page for each relay board you wish to be warranted. This warranty becomes void if the warranted relay board, or its components, are ever attached to equipment, or wired in a manner, that was not pre-approved in writing by QuikStor management.

The client will be responsible for all warranty related installation, servicing, shipping, and handling charges. The client will be billed for this replacement until the damaged unit is returned to QuikStor. If the defective equipment is not returned within 14 days the client understands that they will be billed in full for the replacement parts. QuikStor shall have the sole and final determination if a relay board failure is covered under this warranty.

- ✓ List the 1-10 digit serial number of ONE QuikStor Guardian Series relay board that you would like to activate under this warranty agreement. This number is printed on a small white sticker located on the top of the circuit board near relay #1. **Relay Board serial #** \_\_\_\_\_
- ✓ For this relay board, initial every step that you have personally witnessed to be true. This warranty is not in effect if any step has been skipped, not initialed, or was done incorrectly.
- ✓ The surge board's "Earth Ground" connection has a securely installed grounding wire of gauge 12 AWG or larger and is connected to a grounding source not more than 6' from the relay board circuit board. An approved grounding source is a properly installed grounding rod or building steel that provides adequate grounding. **Initials:** \_\_\_\_\_
- ✓ The relay board has the GND drain wire properly connected to the relay board Surge Board but does NOT have the GND wire connected to another keypad, relay board, or to the UltraConverter  
**Initials:** \_\_\_\_\_

What is not covered under this warranty? – this warranty does not cover physical abuse, vandalism or damage caused by vehicles. The warranty only covers the actual relay board circuit board. The Surge Board is NOT covered under warranty as it is designed to act like a fuse to protect your relay board investment from severe surges. In no way will QuikStor be held responsible for any damage or injury to person or property. QuikStor's sole responsibility under this warranty is to provide a replacement relay board circuit board. The one year warranty begins at the time of activation as described in this agreement. The warranty period does not start over after a replacement keypad is provided by QuikStor and is only in effect from the activation date.

**Provide printed (or digitally emailed) photographs detailing every wire connection noted above and label each picture with your facility name and relay board serial number. Your relay board warranty is activated once these pictures and a signed copy of this agreement are delivered to, and signed-off by, senior QuikStor management.**

**By signing and dating this page, you agree to all the above terms listed herein**

**Facility Name:** \_\_\_\_\_ **Facility Address:** \_\_\_\_\_

\_\_\_\_\_  
**Client - Printed Name**

\_\_\_\_\_  
**Today's Date**

\_\_\_\_\_  
**Client - Signature**

\_\_\_\_\_  
**QuikStor - Printed Name**

\_\_\_\_\_  
**Today's Date**

\_\_\_\_\_  
**QuikStor - Signature**



**Still have questions? Call us!**



**QuikStor Technical Support Department**

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