

# BRIDGE

User Manual

Model Name: Bridge  
Model#: GBR1

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# 1 Overview

The Guardian Bridge is a device that can communicate to a single valve controller over Guardian RF and to a security panel over wire, or a Z-Wave hub. This allows a security panel or Z-Wave hub to open/close the valve controller and be alerted if a leak is detected.

## 1.1 Key Features

- GuardianRF, RelayLink™, Z-Wave
- USB or 12V power

## 1.2 Communication

### 1.2.1 GuardianRF

The Guardian Bridge will be able to send the following commands to the valve controller:

- Open the valve
- Close the valve

The Guardian Bridge will receive the following events from the valve controller:

- At least one sensor is wet
- All sensors are dry
- Valve opened
- Valve Closed
- Lowest temperature reported by any connected device

### 1.2.2 RelayLink™

The Guardian Bridge will be able to send the following information over RelayLink™

- At least one sensor is wet
- All sensors are dry

OR

- Valve is open
- Valve is closed

### 1.2.3 Z-Wave

The Guardian Bridge will be able to send the following information over Z-Wave:

- At least one sensor is wet
- All sensors are dry
- Valve is open
- Valve is closed
- Lowest Temperature reported by any connected device

## 2 Specifications

This section describes the requirements and scope of the Guardian Bridge

### 2.1 Environmental Specifications

Feature	Description
Operating Temperature Range	0°C to 70°C
Operating Humidity Range	5% to 90% RH Non Condensing
Storage Temperature Range	-40°C to 75°C - capable of operation after a 20 minute transition from storage to operating temperature
Storage Humidity Range	0% to 95% RH - capable of operation after a 20 minute transition from storage to operating humidity
Vibration	All axes, amplitude: 2mm, frequency: 1Hz - 20,000Hz
Mechanical Shock (Drop)	1m

### 2.2 Performance Specifications

Feature	Description
Range	1000+ ft line of sight (Guardian RF) 450+ ft line of sight (Z-Wave)
Life Expectancy	10 years
Reliability	1st year 99% 5 years 95%

### 2.3 Hardware Specifications

#### 2.3.1 Bridge Specifications

Item	Description and Specifications
Lora RF module	SX1276IMLTRT, IC RF TXRX 802.15.4 28VQFN 915Mhz
Z-Wave Module ; Range	ZM5101; 908.4Mhz, and 916.0Mhz
Input voltage	
GuardianRF Receive sensitivity	
Z-Wave Receive sensitivity	
GuardianRF TX power	
Operation current	
Maximum current	
LEDs	3x White, same as valve controller
OTA	Support remote FW upgrade (All MCUs)

### 2.4 Mechanical Specifications

The 3D CAD shall be modeled on nominal dimensions and shall be the primary source of dimensional information.

Item	Description and Specifications
Type	Plastic
Resin	Blue:3005U;
Finish	Same as valve controller

### 2.4.1 Tooling

Tooling shall be good for over 300,000 injections.

### 2.4.2 Fit and Finish

- Flash allowance shall not to exceed 0.13 mm (0.005in). Flash applies to parting lines, ejector pins, ejector blades and ejection sleeves
- Parting line mismatch shall not exceed 0.13 mm (0.005 in)
- Gate & Ejector pin scar/vestige shall be sub-flush unless otherwise specified
- Cosmetic surfaces shall be free of nicks, scratches, or tooling marks
- The finish and color shall be similar to the Guardian valve controller. Non-visible surfaces may not be textured
- Guardian logo, power, Z-Wave, and Guardian RF icons will be pad printed white

## 3 Functional Requirements

The Guardian Bridge translates communication from GuardianRF to either RelayLink™ or Z-Wave.

### 3.1 LEDs

The power and GuardianRF LEDs on the front of the Guardian Bridge will behave the same as the Guardian. The Z-Wave LED will be off when not paired to a Z-Wave hub, blinking (same pattern as WiFi light on valve controller when hotspot is on) and on when paired to the hub.

#### 3.1.1 LED Behavior

LED	Behavior	Events
1 <sup>st</sup> LED (Power)	LED is ON	Bridge is powered on
	LED is OFF	Bridge is powered off
2 <sup>nd</sup> LED (Z-Wave)	LED is ON	Bridge is included in a Z-Wave network
	LED is double-blinking	Bridge is in inclusion/exclusion mode
	LED is off	Bridge is not included in a Z-Wave network
3 <sup>rd</sup> LED (GuardianRF)	LED blinks	Bridge has sent/received a GuardianRF transmission

## 3.2 Button

The single button will on the back will be used to pair the Bridge with a valve controller or a Z-Wave hub. A single press will be used to pair the Bridge to a valve controller (like shaking the leak detector). A triple press (3 presses in under 2 seconds) will put the bridge in Z-Wave inclusion mode if it has not been included yet, or in exclusion mode if it is currently included. The button will also be used for factory reset. To factory reset, the button will be held for 10 seconds.

## 3.3 Power

The Bridge will come with a plug-in 5V adapter with a micro-USB connector. The power supply will have a non-removable wire of 4-6 feet. It will be gray and include the matching Guardian velcro strap. If sourcing a gray power supply will cause delays or too much added expense, a black power supply can be used and the Guardian velcro strap can be omitted.

## 3.4 Guardian App and Device Pairing

The Bridge can be connected to the Guardian App if the user has a valve controller. There can be only one Bridge connected to each valve controller.

### 3.4.1 Guardian App

The settings and information displayed to the user are TBD

## 3.5 Firmware Upgrades

The Bridge will be capable of OTA firmware updates. The GuardianRF MCU will be updated over GuardianRF, the Z-Wave module will be updated over Z-Wave. In case an OTW firmware update is required during development and testing the device will be designed in such a way that the firmware can be updated without complete disassembly.

## 3.6 GuardianRF

When any leak sensor is triggered the valve controller will send a message over GuardianRF to the bridge that one of the sensors is wet. Once all of the sensors are dry, the valve controller will send a message to the bridge that all sensors are dry. When the Bridge receives a command to open or close the valve from Z-Wave or RelayLink™, an open or close command will be sent to the valve controller via GuardianRF.

## 3.7 RelayLink™

RelayLink™ is an revolutionary, innovative new communication protocol developed by Alexa Consumer Products to be faster and easier to use than current standards. Please see the RelayLink™ Specification Document for more information

## 4 Z-Wave

When the Bridge receives a ‘leak detected’ message it will inform the Z-Wave hub if it is paired. It will also inform the hub when an ‘all sensors dry’ message is received. The hub will also be able to send ‘open valve’ and ‘close valve’ messages to the bridge to relay to the valve controller. When included in the Z-Wave network, the Bridge will appear as two devices:

- An On/Off Switch

- A Leak Sensor
- A temperature sensor (see §4.4.1)

#### 4.1 Z-Wave Inclusion

The Bridge will enter inclusion mode when first powered on (if not already included in a Z-Wave network) and will stay in inclusion mode for 30 seconds. After 30 seconds, if the Bridge is not included, pressing the button on the device 3 times in less than 2 seconds will put it back in inclusion mode for 30 seconds. When in inclusion mode, the Z-Wave LED will double blink. After successful inclusion the Z-Wave LED will remain solid.

#### 4.2 Z-Wave Exclusion

If the hub is in exclusion mode and the Bridge is included in the Z-Wave network, a triple press of the Bridge button will put the device in exclusion mode. Upon successful exclusion the Z-Wave LED will turn off.

#### 4.3 NWI

The Bridge will support NWI -Network Wide Inclusion

#### 4.4 Z-Wave Specifications

##### 4.4.1 Association Groups (AGs)

Association Group	Description
01	Lifeline This AG sends Binary Report when valve is opened or closed, Supports Device Reset Locally. When any leak sensor is wet, the device will send a leak notification. When all sensors are dry, the device will send a 'leak cleared' notification.
02	This AG is sent an Open/Close Basic Report
03	Sensor Multilevel Report containing the temperature information every 60 minutes

#### 4.4.2 Compatible Command Classes

Command Class	Notes
COMMAND CLASS VERSION V2 (86)	Returned Value: 03 04 3D 01 01 01 00 Z-Wave Library Type: 03 (Enhanced Slave) Protocol Version: 04 3D Protocol Sub-Version: 01 01 Application Version: 01 Application Sub-Version: 00
COMMAND CLASS BASIC V1 (20)	-
COMMAND CLASS SWITCH BINARY V1 (25)	Binary Switch commands will open/close the valve. Reports are used to communicate valve opening/closing Valve Open FF Valve Closed: 00
COMMAND CLASS SENSOR MULTILEVEL V11 (31)	The Multilevel CC is used to communicate the temperature recorded by the Valve Controller in the Guardian system. This is only reported to association group 3. Returned Value: 01 XX XX Sensor Type: 01 (Temperature) Precision/Scale/Size (Celsius): 01 (Precision = 000; Scale = 00; Size = 001) Precision/Scale/Size (Fahrenheit): 01 (Precision = 000; Scale = 00; Size = 001) Sensor Data: 00 FF (-125 125 in Degrees Fahrenheit or Celsius)
COMMAND CLASS MULTI CHANNEL V4 (60)	The Multi Channel Command Class is used to distinguish commands to/from the Valve Controller endpoint (endpoint 1) and the Leak Detector endpoint (endpoint 2).
COMMAND CLASS MULTI CHANNEL V4 (60)	The Multi Channel Command Class is used to distinguish commands to/from the Valve Controller endpoint (endpoint 1) and the Leak Detector endpoint (endpoint 2).
COMMAND CLASS ASSOCIATION V2 (85)	Group 1 Group 1 is the “Lifeline” group, which can hold five devices.
COMMAND CLASS ASSOCIATION GRP INFO V3 (59)	-
COMMAND CLASS MANUFACTURER SPECIFIC V2 (72)	Returned Value: 02 1F 01 02 03 04 Manufacturer ID: 02 1F Product Type: 01 02 Product ID: 03 04
COMMAND CLASS DEVICE RESET LOCALLY V1 (5A)	-
COMMAND CLASS POWERLEVEL V1 (73)	-
COMMAND CLASS SUPERVISION V1 (6C)	-
COMMAND CLASS FIRMWARE UPDATE MD V4 (7A)	-
COMMAND CLASS CONFIGURATION V1 (70)	See Configuration Command Class Parameters



COMMAND CLASS NOTIFICATION V8 (71)	<p>The Guardian Bridge sends a notification report to association group 1 when any Leak Detector in the system senses moisture.</p> <p>Returned Value: 00 00 00 FF 05 XX 00 00</p> <p>V1 Alarm Type 00 (Unsupported)</p> <p>V1 Alarm Level 00 (Unsupported)</p> <p>Notification Status: FF (Unsolicited Reporting is Enabled)</p> <p>Notification Type: 05 (Water Alarm)</p> <p>Leak Detected Event: 02 (Water Leak Detected, Unknown Location)</p> <p>Leak Removed Event: 00 (Event Inactive)</p> <p>Sequence/Reserved/Event Parameters: Length 00</p> <p>Notification Event Parameters: 00 (No Event Parameters)</p>
COMMAND CLASS ZWAVE PLUS INFO V2 (5E)	<p>Returned Value: 01 05 00 15 00 15 00</p> <p>Z-Wave Plus Version: 01</p> <p>Role Type: 05</p> <p>Node Type: 00</p> <p>Installer Icon Type: 15 00</p> <p>User Icon Type: 15 00</p>

## 5 RelayLink™

RelayLink™ provides power and two way communication between an ancient security panel and the Guardian Bridge, one bit at a time.

### 5.1 Pinout

Group	Power		Input		Output		
Pin Number	1	2	3	4	5	6	7
Label	+12V	GND	IN	GND	NO	COM	NC

#### 5.1.1 Power Group

Pins 1 and 2 are used to supply power from a 12V security panel.

#### 5.1.2 Input Group

Pins 3 and 4 are a configurable input. With the Guardian App the Bridge can be set to send an open or close command to the valve controller. Details are TBD

#### 5.1.3 Output Group

Pins 5, 6, and 7 are the outputs. The Guardian App can be used to configure the output to be indicate:

- Valve open
- Valve closed

OR

- At least one leak sensor is wet
- All sensors are dry

## 6 Pad Printing

Pad printing will be done in white, black, or gray (TBD).

### 6.0.1 Required Logos/Labels

The following must be printed on the Bridge:

- Guardian logo on top
- Power symbol on 1<sup>st</sup> LED
- Z-Wave symbol on 2<sup>nd</sup> LED
- GuardianRF symbol on 3<sup>rd</sup> LED
- RelayLink™ pin numbers

## 7 Packaging and Labels

## 8 Validation and Testing

## 9 Certifications

### STATEMENT OF WARRANTY : 1 Year Limited Warranty

Elexa Consumer Products will not honor the warranty if the product is purchased through an unauthorized seller.

Elexa Consumer Products, Inc. ("ECP") warrants to the original retail purchaser ("Purchaser") that the Bridge (the "Product") will be free of defects in materials or workmanship under use for one (1) year from the date of purchase (the "Warranty period").

For the Purchaser only, if the Product fails to perform as specified during the Warranty Period due to defective parts or faulty workmanship, ECP will repair or replace the defective or damaged parts of the Product. Normal wear and tear is not covered nor is abnormal use, misuse, mishandling, faulty installation, improper shipping, damage caused by disasters such as fire, flood or earthquake, neglect, accident or tampering. This warranty covers only normal use in the United States or Canada.

To obtain warranty service during the Warranty Period, call Guardian Customer Service (1-855-249-1754) or email: support@getguardian.com for instructions on sending damaged parts and documentation for a Return Merchandise Authorization (RMA). Products returned to ECP for repair or replacement without authorization will be returned at the sender's expense. All warranty claims must be accompanied by a legible copy of the original receipt showing date and details of purchase. ECP will repair or replace defective parts and return them at ECP's cost by a shipping method selected by ECP. When contacting ECP to obtain an RMA, Purchaser may request expedited return shipping at Purchaser's expense.

THIS WARRANTY IS NOT TRANSFERABLE, AND, TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW IS IN LIEU OF ALL OTHER WARRANTIES, REPRESENTATIONS AND CONDITIONS, EXPRESSED OR IMPLIED, STATUTORY OR OTHERWISE, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. NO OTHER PERSON OR REPRESENTATIVE IS AUTHORIZED TO MAKE ANY OTHER WARRANTY ON BEHALF OF ECP OR ASSUME FOR ECP ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF THIS PRODUCT. IN NO EVENT WILL ECP BE LIABLE FOR ANY DAMAGES, INCLUDING BUT NOT LIMITED TO INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PRODUCT, INCLUDING DAMAGES DUE TO ECP'S NEGLIGENCE. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE AND COUNTRY TO COUNTRY.

#### Bridge FCC and IC Statement

Bridge is used to connect Guardian Valve Controller to Z-wave network. Bridge is also used to control Valve Controller open/close.

The Guardian RF(915Mhz) is used for the communication between Bridge and Valve Controller.

The Z-wave (908.40Mhz and 916Mhz) is used for the communication between Bridge and other Z-wave Devices. These 2 frequency are switched automatically.

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

(1) This device may not cause interference; and

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

#### FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, 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.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.