Remote Host V2

User Manual

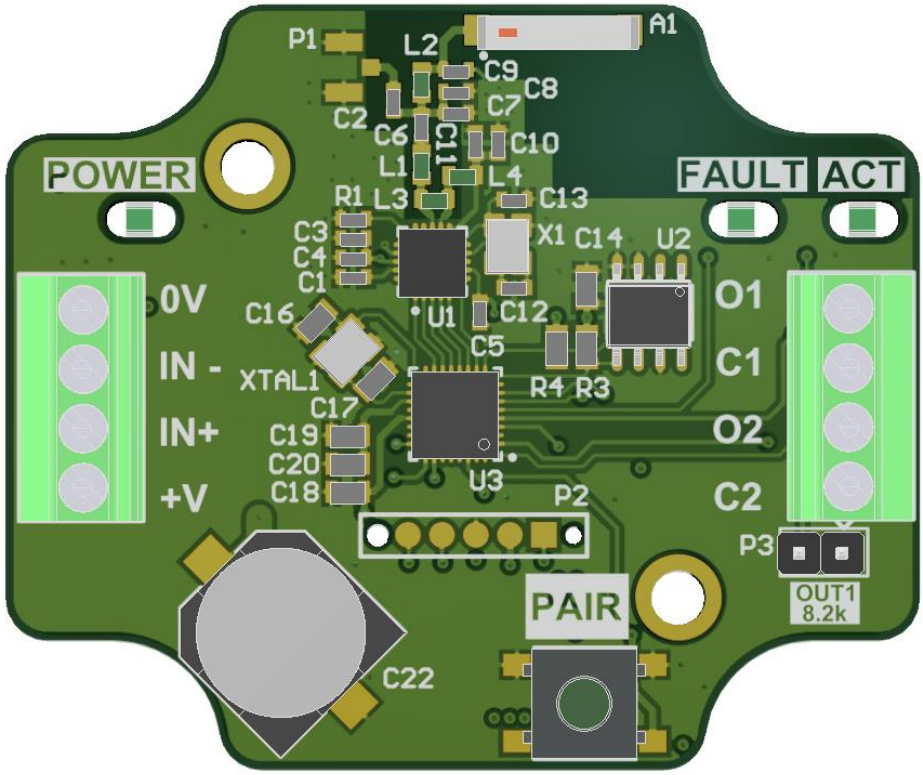


Table of Contents

CONVENTIONS USED THROUGHOUT THIS MANUAL

WARNING	Items with this label must be carefully considered to avoid any damage to system components
NOTE	Items with this label should be considered for best results

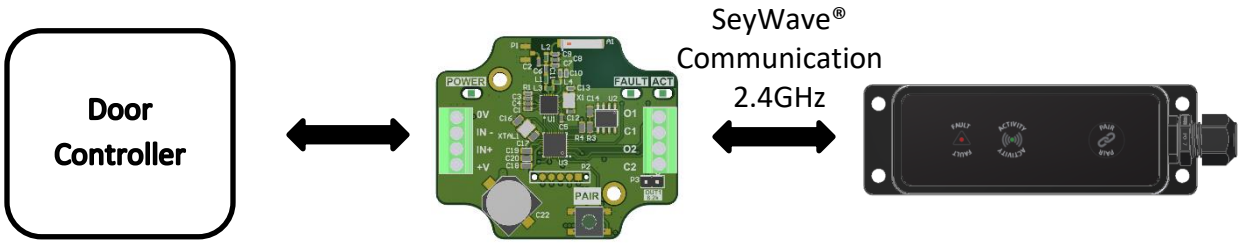
1 Device Overview

The BTR Remote Host wireless system is designed to work with industrial doors and gates for trouble free activation and safety. It is based on our proven SeyWave® Technology for low power consumption and reliable two-way RF communication.

The Remote Host connects to any new or existing door or gate control system equipped with the proper inputs and passes the functionality of a door sensor which provide reversing edge and breakaway functions.

- 12-24VAC/DC input power
- 150ft line of sight capability
- Built for harsh environments typically found in industrial facilities
- Terminal blocks provided for easy connection
- One Door Sensor per Remote Host at a time
- Easy one button pairing
- LED fault and activity indication

1.1 Basic Interface Diagram



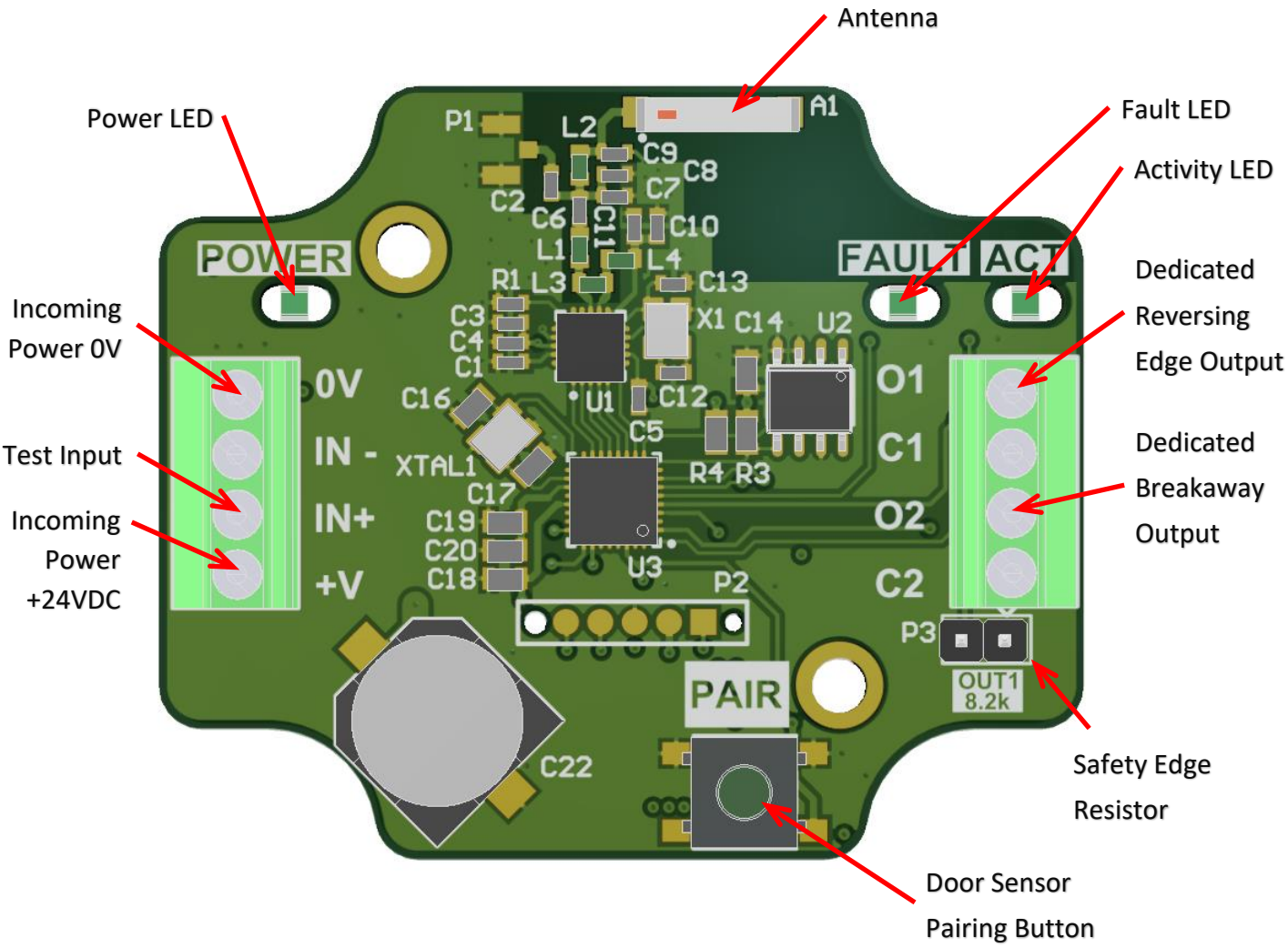
1.2 Operating Characteristics

	Standard Operating Conditions (unless otherwise stated) Operating Temperature: -20°C to 80°C			
Characteristic	**Min**	**Typical**	**Max**	**Units**
Supply Voltage	12	24	30	VAC/DC
Operating Current	30	32-34	36	mA
Test Input Voltage	12	24	30	VAC/DC
Test Input Current		10		mA
RF Frequency		2.4		GHz
Range			150[1]	ft
Output Voltage	12	24	30	VAC/DC
Output Current			50	mA

[1] Range between the Remote Host and Door Sensor is specified as Line of Sight. Therefore, any solid objects within the direct path between the two devices will can diminish the range and may cause potential connection issues.

WARNING	Operating the Remote Host outside of these specified limits may cause damage and will VOID the Warranty

1.3 Device Functions



Power LED	Turns on when power to the Remote Host is supplied, indicating the incoming power is sufficient to operate the Remote Host.
Incoming Power 0V	Incoming supply 0VDC power, should be provided from same source as the incoming 24VDC.
Test Input	The test input is used to communicate between the door controller and the Remote Host to indicate that the door is starting to move. When this signal goes high, the Remote Host starts to look for a signal from the Door Sensor indicating that the door is physically moving. If the Remote Host does not receive a signal within a certain amount of time then the

	Reversing Edge output will be held high, indicating that the door did not move.
Incoming Power +24VDC	Incoming supply +24VDC power.
Door Sensor Pairing Button	Button used to pair a new Door Sensor with the Remote Host. Press this button momentarily to pair a new Door Sensor.
Safety Edge Resistor	Used to provide indication to the door controller that the safety edge has a built in 8.2kΩ resistor. A jumper should be installed in this location if the safety edge on the door has a built-in resistor. If the door does not have a safety edge or a built-in resistor then the jumper should be left out.
Breakaway Output	Output used to communicate to the door controller that the breakaway fault is present.
Reversing Edge Output	Output used to communicate to the door controller that the door sensor or the safety edge have encountered an error and the door should stop/reverse.
Activity LED	This LED will blink each time there is communication received/transmitted between the door sensor over the SeyWave® Module.
Fault LED	This LED will blink at different rates and different times when a fault with the door sensor or safety edge is detected. See section 4.2 on page 15 for details on faults.
Antenna	Antenna used to communicate with the door sensor, this area of the Remote Host should not be obstructed in any way and should not contain any electronics as this may cause interference in communication.

1.4 Compatible Devices

SeyWave® Wireless Door Sensor	
 	• Only one (1) Door Sensor can be paired at a time with a Remote Host. • The Door Sensor Remote is monitored by the Remote Host at a specific time interval to ensure link integrity. If the link integrity is compromised, the Remote Host signals a fault. • When a closing input is activated on the door controller, a motion event from the Door Sensor must be detected and received by the Remote Host within a specific window of time. If there is no verification, the Remote Host will signal an error and keep the reversing edge function to the controller high. This sequence verifies that the Door Sensor's monitored input is valid for every closing cycle. • The Door Sensor battery voltage is monitored periodically. If a low battery condition is detected, the Remote Host will signal a fault. • The Door Sensor provides 2 inputs. Input 1 is assigned to the Remote Host's REVERSING EDGE Output 1 and Input 2 is assigned to the Remote Host's BREAKAWAY Output 2. • If the Safety Edge is activated on the Door, then the Reversing Edge output on the Remote Host will be activated. • If the Door Sensor detects an impact, it will activate the Breakaway output on the Remote Host.

See Door Sensor data sheet for additional information

NOTE	Use only SeyWave® compatible devices manufactured by BTR Controls.

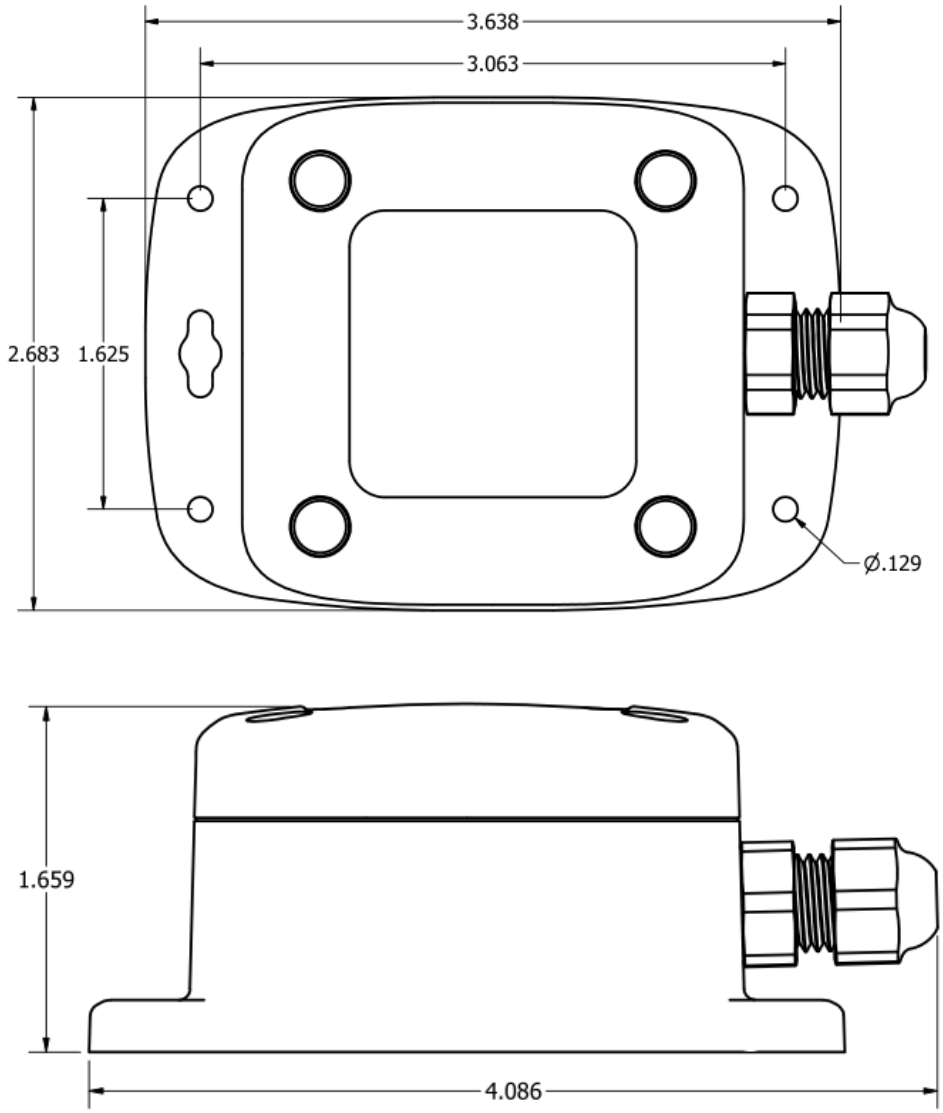
2 Installation

This section covers the Remote Host installation.

- Section 2.1 Mounting
- Section 2.2 Wiring
- Section 2.3 Power Up

WARNING	• Turn power OFF before making any connections to the Remote Host. • Stay within specified operating conditions as shown in section 1.2 on page 5. • Failure to follow the above may cause damage to the Remote Host.

2.1 Mounting

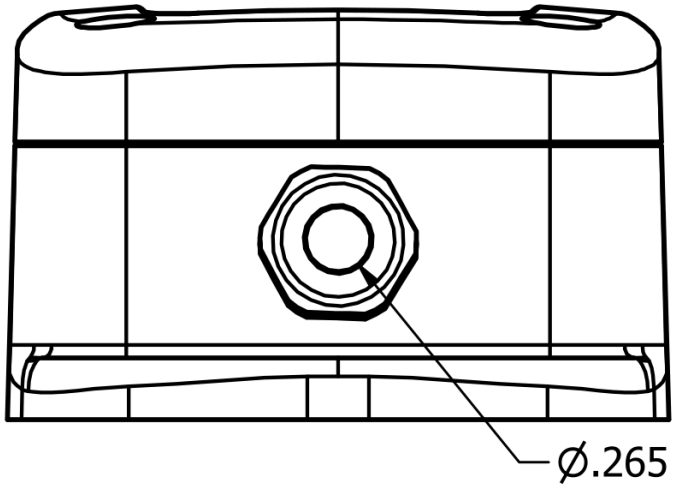


Additional 1.0" minimum should be allowed for the exiting cable.

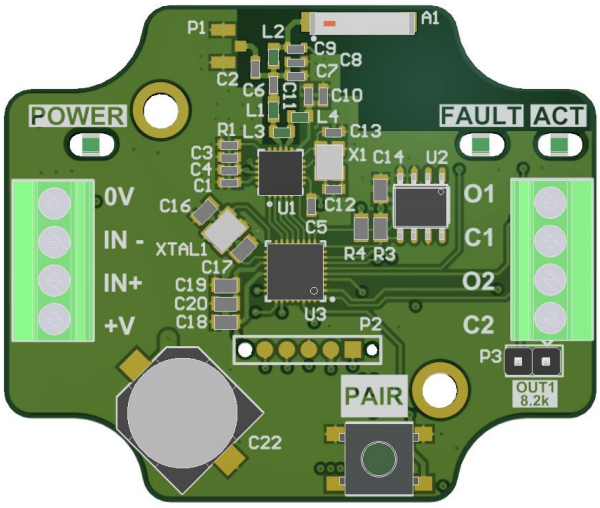
A maximum size #4 mounting screw or equivalent should be used to mount the Remote Host Enclosure. Maximum screw shaft diameter should not exceed 7/64" or 0.11".

NOTE	• Do not mount the Remote Host in close proximity to other 2.4 GHz devices such as Wi-Fi routers or cordless telephones. • The internal antenna must have a path for the signal to radiate. • Contact BTR Controls if you are unsure of your installation environment.

2.2 Wiring



- The cable diameter should be 0.1” – 0.25”



NOTE	DO NOT OVER TIGHTEN TERMINAL BLOCK SCREWS, screws should be tightened **0.16 - 0.18 ft-lbs or 0.22Nm – 0.25Nm.**

- Connect +24VDC power to the **+V** terminal (BTR cable - brown wire)
- Connect 0VDC power to the **0V** terminal (BTR cable - blue wire)
- Connect the controllers door moving output signal (test input) to the **IN+** terminal (BTR cable - black wire)
- Connect a jumper wire from the **IN-** to the **0V** terminal (BTR cable - red wire)
- Connect the controllers Reversing Edge input signal to the **O1** terminal (BTR cable - white wire)
- Connect a jumper wire from the **C1** terminal to the **0V** or the **+V** terminal depending if the output is sinking or sourcing current (BTR cable - red wire)
- Connect the controllers Breakaway input signal to the **O2** terminal (BTR cable - gray wire)
- Connect a jumper wire from the **C2** terminal to the **+V** terminal (BTR cable - red wire)
- If the door is pre-installed with a safety edge 8.2kΩ resistor, install the supplied jumper in the **OUT 1 8.2k** header

2.3 Power Up

WARNING	Ensure that all connections have been made according to section 2.2 before applying power.
NOTE	The Remote Host has been shipped from the factory without any Door Sensors paired.

1) Check all connections to and from the Remote Host.
2) Apply power to the Remote Host.
3) Once the Remote Host starts-up, the POWER LED should illuminate green.
4) The Fault LED will start flashing until a connection has been established with the Door Sensor. If this is the first start-up then the LED will continue to flash until a Door Sensor is paired.
5) Once the Fault LED stops flashing (typically within a couple of seconds), then the Remote Host is ready to operate. If the Fault LED continues to flash after a few seconds see section 4.2 on page 15 for further details on faults.

3 Programming

This section provides the following information on programming the Remote Host

- Section 3.1 Resetting Communication Parameters
- Section 3.2 Pairing Door Sensor

3.1 Resetting Communication Parameters

WARNING	• Performing this operation will cause the Remote Host to clear pairing with the Door Sensor. • The Door Sensor must then be paired again for normal communications to be re-established.
NOTE	Clearing any paired Door Sensors and pairing them again causes the Remote Host to change channels. Performing this step may fix issues with poor RF signals or loss of communication issues.

1. With power applied to the Remote Host, press and hold the **PAIR** button.
2. The **Activity LED** will illuminate. Keep holding the button for about 15 seconds until the **Activity LED** turns OFF.
3. Once the **Activity LED** is off you may release the **PAIR** button. The door sensor has been cleared.

3.2 Pairing Door Sensor

1. Begin by having the Door Sensor wired to the Safety Edge. See the individual data sheet for detailed instructions.
2. The Door Sensor must be in “Sleep Mode” in order to pair the senor to the Remote Host. (applicable to the molded sensor only)
3. Locate the pairing button on the Door Sensor.
4. With power applied to the Remote Host, locate the pairing (**PAIR**) button.
5. Momentarily press the pair button on the Remote Host. The **Activity LED** will illuminate and flash once a second to indicate that the Remote Host is now in pairing mode.
6. Press the pairing button on the Door Sensor momentarily.
   NOTE: Make sure that the proper reversing edge is connected.

7. When the Door Sensor has been discovered and correctly paired (a process that should only take a couple seconds), the Remote Host will automatically reset.
8. If the Remote Host was unable to discover and pair with the Remote, the **Activity LED** will continue to blink once a second until the timeout period of 60 seconds. Refer to the Faults & Troubleshooting section on page 15 for issues with pairing to a door sensor.
9. To test the Remote for correct pairing, activate the Door Sensor by shaking it or activating the Safety Edge. If the **Activity LED** on the Remote Host does not flash, the pairing process was not successful and should be attempted again. Refer to the Faults & Troubleshooting section on page 15 for issues with pairing to a door sensor.

4 Faults & Troubleshooting

This section provides troubleshooting information as well as possible corrective actions for the SeyWave® Remote Host.

4.1 Error Signals

Power-up Error

On power up, for normal operation, the **Fault LED** will indicate Door Sensor Resistor Connection fault (2 blinks) until a valid connection signal from the Door Sensor is received.

Operational Error (System has been setup and operating)

Operational errors will be indicated by a blinking **Fault LED**. The Reversing Edge output (OUT 1) will be held high (except low battery fault) while a fault is present.

4.2 Faults

When a fault occurs within the Door Sensor or a Safety Edge, the Remote Host **Fault LED** will blink at a certain rate and a certain amount of times to indicate a specific fault. See table below for details on faults.

Number of Blinks	Description
1 Momentary	Motion check failed during close cycle – when the door begins to move, the Remote Host will wait for a very short amount of time for the Door Sensor to indicate that the door is physically moving. If the Remote Host does not receive that signal then the Reversing Output signal will be held high.
1 per second	Door sensor low battery – when the Door Sensor battery becomes low, **this fault does not hold the Reversing Edge output high**.
2 per second	Door sensor resistor connection – doors equipped with safety edge 8.2kΩ resistors will receive this fault if the Door Sensor is not able to detect the safety resistor.
3 per second	Door sensor timeout – if the Remote Host does not receive a signal from the Door Sensor when the door is supposed to be moving.

4.3 Possible Troubleshooting

Reported Operating Errors		
Issue	**Cause**	**Possible Solutions**
Communication Loss	The Door Sensor has not reported to the Remote Host within a set time allotment	• Ensure the Door Sensor is powered and the battery level is within range • Bring the Door Sensor closer to the Remote Host to check for range issues • Reset communication parameters by performing the procedure outline in section 3.1 on page 13 and then pair the Door Sensor again
	Battery dead	Replace battery or Door Sensor
	Door Sensor is no longer paired with the Remote Host	Perform procedure outline in section 3.2 Pairing Door Sensor on page 13
	An external RF device operating on 2.4 GHz is causing intermittent operation	Clear the Door Sensor pairing between the Remote Host and the Door Sensor and pair it again by following the procedure outline in section 3.1 and 3.2 on page 13. Clearing sensors forces the Remote Host to change channels and possibly fix any interference issues
Battery Low	The Door Sensor has reported a low battery	• Replace the battery in the Door Sensor or replace the Door Sensor • Reset communication parameters by performing the procedure outline in section 3.1 on page 13 and then pair the Door Sensor again
Experiencing Limited or Degraded RF Range	The Remote Host is not mounted properly	Ensure that the Remote Host has been mounted according to section 2.1 on page 10
	Too many solid objects are interfering with the RF signal	Try to minimize the number of solid objects that the RF signal must pass through. Each intersection diminishes the RF signal communication.
	One or more external devices using 2.4GHz communication bandwidth within close proximity to the controller/door sensor are interfering with the RF signal	• Try to clear or move any devices that could possibly be interfering with the RF signal • Follow section 3.1 and then 3.2 in order to re-pair the Door Sensor. Clearing any paired devices and re-pairing them causes the Remote Host to change channels which could possibly fix RF signal issues

NOTE	When the Remote Host Fault LED indicates an error, check the Door Sensor for the following: • Blinking LED indicates low battery • No LED indicates problem with connected edge

4.4 Technical Assistance

Contact:

BTR Controls, Inc.
1570 Todd Farm Dr.
Elgin, IL 60123
(847)608-9500

"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."*