Door Alarm Troubleshooting

This form is to help with troubleshooting alarm and door issues within the PTI Integrated Systems Individual Door Alarm System. If you have questions, please contact our Technical Support Department by creating a ticket at **http://ptisecurity.com/support/.**

When having door alarm problems, it can be challenging to determine what the cause is. The door may not be communicating because of a hardware failure or is turned off in the software. Getting familiar with the symptoms will help you efficiently maintain your systems.

The PTI individual door alarm system consists of four major components: the FalconXT, multiplexer (mux), switch & magnet set, and the wiring. Starting with the door, the switch and magnet form a closed-loop when the magnet is close enough to pull in the internal reed switch in the contact. This signal, in the form of voltage, is then sent to an input of the mux called the channel. This information is then translated in the mux to RS-485 information and sent to the FalconXT where it is determined if the door has been opened, closed, or tampered with. This method allows us to install hundreds of doors with only 3 RS-485 communication wires coming back to the FalconXT from the mux.

As simple as the system is, it can become very confusing when trying to troubleshoot a door that is not reporting. There can be many different elements that can cause a problem. This guide is designed to help you troubleshoot and repair some of the most common issues with an individual door alarm system. It is necessary to have the proper knowledge of reading a Digital Volt Meter (DVM) for this process. With a DVM, you will be able to pinpoint any issues that may occur.

The following is a list of possible problems and solutions. Please read each one thoroughly to ensure the problem has been identified.

When a door is opened, the Falcon Controller does not register an alarm

Possible Cause: Previous alarms have not been cleared in the software
Solution: Clear alarms in StorLogix

From StorLogix Software:
Click on the icon that looks like a siren with a circle around it and a line through it. You should get a quick splash screen that indicates “Clearing Alarms”.

Special Note: This feature was designed to keep the frequency of false alarms to a minimum and force the manager to continuously monitor the system and interact with the alarms as they occur. There has been a feature added to StorLogix to help troubleshoot and eliminate this issue called **Swinger Shutdown.**

This will allow the door to report an alarm and close every time the door is opened. Don’t forget to change it back on before leaving the property if the manager wants it on. This is a common mistake and is the easiest to fix. If the FalconXT is setup under StorLogix with Swinger Shutdown ON, any alarm received EVER will only alarm ONCE and not alarm again until a Clear Alarms function has been processed.

Possible Cause: Alarm system has been shut OFF
Solution: Turn on the alarm system

From StorLogix Software:
Go to the FalconXT Settings and check the box for all alarms. Send changes to the FalconXT to take effect.

Possible Cause: The alarm for that particular unit is OFF
Solution: Turn on the alarm for that unit

From StorLogix Software:
Go to "Mux and Channels" and make sure the check box for unit alarm is checked. If it is not, then check that box and it will automatically turn on that unit's alarm.

HARDWARE FAILURE

Possible Cause: Mux is NOT communicating
Solution: Do a Health Check to determine if the mux is communicating

It is possible that a particular mux is not in communication with the FalconXT. If no doors on this mux report back to the FalconXT, there is a possibility that the RS-485 connection has failed. SEE RS-485 Troubleshooting Section.

From StorLogix Software:
Run a Health Check to determine if the mux wired to the door input that is not registering is ONLINE. If it is not, you need to repair the mux. The door cannot report to the FalconXT if the mux is not communicating.

Identifying an OPEN DOOR Problem and Repairing it:

An open door that will not close can be caused by many different problems and can be challenging to locate. You will need a (Digital Volt Meter) DVM to find the problem. If a door status does not change from OPEN or ALARM to CLOSED and the software is configured properly, and the mux is communicating, then it will be necessary to open the mux box and scan the door inputs for open doors. This process is beneficial and will save you a lot of time in troubleshooting. An OPEN door is the most common type of failure and can be caused by a misaligned contact and magnet, a missing contact or magnet, an "open" contact or a broken wire. REMEMBER the mux is relatively "dumb", and all it does is send a signal to the FalconXT if the door is open or closed based upon a voltage.

PTI's standard mux's all can operate between 12 and 18 VAC or VDC, but the output voltage to the doors channels is ALWAYS 5 VDC. Place your voltmeter in the DC position and select a scale that will display in tenths or hundredths, if possible (example 5.00 VDC). Place the negative lead on a ground on the mux. This will be any of the last four-door inputs on the mux. Now scan every wire with the positive lead. You should register 0.00 VDC on all doors that are closed and working correctly and no less than 4.9 on any open doors.

Possible Cause: Door contact is NOT aligned
Solution: Re-align door contact set

Gain access to the unit and make sure there is no more than ½" gap between the magnet and the switch. It may be necessary to move the magnet or contact. This could be a simple as bending the bracket that holds the contact closer to the magnet or as complex as remounting one or both items.

Special Note: If the proper magnet and switch were used, they are rated for a 2" gap. Chances are that the magnet is mounted on a metal surface. Over time the magnet will lose some of the "pull" it once had causing the gap to not be as tolerant. This is the reason for recommending a tighter gap between the magnet and the switch.

NEVER USE A STANDARD MAGNET AND SWITCH SET THAT USES A 1" GAP OR LESS WHEN REPLACING THE CONTACT.

Possible Cause: Door magnet or contact missing
Solution: Replace door magnet or contact

A door contact or magnet, if not installed properly, can fall off over time. Gain access to the unit and inspect to make sure that a contact and a magnet are both present on the door. If not, replace with a proper replacement.

Possible Cause: Door wire between mux and contact is broken
Solution: Determine where the break is and either repair or replace

Installations are always subjected to wiring breaks in the door wiring. It can be tough to find precisely where these breaks are. It is possible that the break is at the splice point inside of the unit not working, but this is not always the case. The best way to determine if a wire is broken is to gain access to the unit. Disconnect the two-conductor wire that leads to the door switch. You may be able just to unscrew the connection, or you may have to cut the wire lead. Once the two conductors are exposed, measure the DC voltage across the two wires. You should have close to 5 VDC. Polarity does not matter. With one 5 VDC connector probe from the meter attached to a good electrical ground (sometimes you can use the building) touch the other connector probe to each wire connected to the mux, one at a time. If voltage is present on any of the cables tested, then the ground wire is broken somewhere between that door and the mux. If there is no voltage on either wire, then the Door Channel wire is broken between that door and the mux. It may be possible just to use a new wire if there are any spares or you may have to re-pull the wire.

Possible Cause: Door contact has failed open.
Solution: Replace door contact

The door contact could have experienced a lightning strike or other surge that has caused it to fail by opening up. The contact can be checked by not removing it from the system first but by slightly stripping the wire back on each wire to expose part of the copper wire core. Once the actual conductors are exposed, you can place your meter on each wire and measure for voltage. If 4.9 to 5 VDC is present, you can then place a magnet close to the switch. If the voltage goes down to 0, then the contact is working correctly. If it does not, replace the contact.

BE SURE TO CHECK THE VOLTAGES WITHOUT THE SWITCH CONNECTED TO THE WIRE AND POWER TO THE MUX; OTHERWISE, THE TEST COULD BE INVALID.

Identifying a CLOSED DOOR Contact and Repairing it:

Possible Cause: Door contact has failed closed
Solution: Replace door contact

The door contact could have experienced a lightning strike or other surge that has caused it to fail by shorting closed. This is the most challenging problem to identify. When scanning a mux for a closed-door will always report 0 volts across it when the door is closed. If you have a door that is open but still no activity and all the above steps have been followed, it could be possible that the contact is welded together and is not opening up when the magnet is removed. You will need to gain access to the unit to test the contact appropriately. Remove or cut the wire going to the contact and measure voltage across it. If voltage is present, then place your DVM into the Ohms mode and measure the resistance across the switch with no magnet near the switch. If it reads anything other than an open, the contact is shorted and will need to be replaced.

IDENTIFYING A BAD CONNECTION ON A DOOR:

A door that has a bad connection to the door or a lousy reed switch in the contact can cause a very intermittent response and can be dependent upon temperature changes or other climatic changes. It is relatively easy to identify these problem doors. First, close ALL doors on the property. Scan the mux with your voltmeter on all inputs. You should either measure 4.9 to 5 VDC or 0 VDC across all inputs. For example, if you read 2.5 or 3 VDC across an input, there is likely a bad connection to that door or a lousy reed switch. The mux will not know if that door is opened or closed and will actually float it between states and give regular reports of OPEN/CLOSED or ALARM/CLOSED. Many times this problem is located in the unit at the splice where the trunk wire meets the two-conductor switch wire. Check these splices for the proper connection. If they are ok, then replace the switch.
