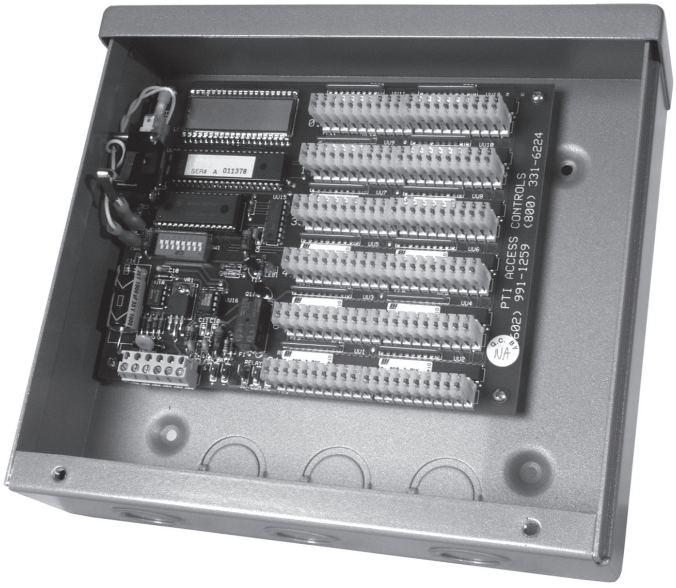
PTI SECURITY SYSTEMS

Wired Door Alarm Multiplexer

Installation Manual



www.ptisecurity.com *800.331.6224*

S E C U R I T Y , A C C E S S : C O N T R O L

Revised April 2012

c ETL LISTED US

Thank you for purchasing the Wired Door Alarm Multiplexer. While every effort has been made to ensure the accuracy of the information in this document, PTI Security Systems assumes no liability for any inaccuracies contained herein. We reserve the right to change the information contained herein without notice.

NOTICE: To comply with FCC and or Industry Canada rules (IC), adjustment or modifications of this receiver and/or transmitter are prohibited, except for changing the code setting or replacing the battery. THERE ARE NO OTHER USER SERVICEABLE PARTS.

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 operations.

114A3880

CONTENTS

This installation guide is for use in setting up a Wired Door Alarm Multiplexer. Please read this entire document before proceeding and follow all steps in order.

We strongly recommend that installation and setup of any PTI Security Systems equipment be done by a certified, licensed, qualified, and competent person. PTI Security Systems can recommend local dealers and installers, but it is up to the customer to verify their qualifications and negotiate any pricing or contracts unless PTI Security Systems has been specifically contracted in writing to do so for the customer. These guidelines are subject to change without notice. With any setup or configuration, some troubleshooting and adjustment of the configuration may be required. This will differ with every installation depending on many outside and site-specific variables. This troubleshooting and configuration may include purchasing additional equipment. In no circumstances will PTI Security Systems be responsible for any damages either incidental or consequential based on these recommendations. All installation of electronics and electrical systems must be in compliance with local, municipal, and state codes and the National Electrical Code.

Warning: Incorrect installation of electrical components can result in damage to electronics as well as personal injury.

Warning: Cross-wiring the AC power with DC power will damage the electronics.

Warning: Cross-wiring the Power wires with the Data wires will damage the electronics.

Warning: Cross-wiring the positive and negative on the DC part of the system will damage the electronics.

Warning: Do not run low voltage system wires in the same conduit as high voltage wiring.

Warning: The User should follow all installation, operation, and maintenance instructions. The User is strongly advised to conduct product and systems tests at least once each week. Changes in environmental conditions, electric or electronic disruptions and tampering may cause the product to not perform as expected.

Warning: PTI Security Systems warrants its Product to the User. The User is responsible for exercising all due prudence and taking necessary precautions for the safety and protection of lives and property wherever PTI Security Systems products are installed. PTI Security Systems does not authorize the use of its products in applications affecting life safety.

Initial Installation Instructions

These steps must be followed for installation of the wired door alarm multiplexer.

The multiplexer should be installed high on a wall in an interior hallway or office. The unit is weather-resistant and can be used on exterior installations, if necessary. Multiplexers should generally be mounted near the end of a hallway so that trunk line can be run in one direction to the doors and alarm areas that are connected to it.

The multiplexer should never be mounted in a rentable unit or other location that will be inaccessible for future maintenance and service. Once it has been determined where to install the device, the location and purpose of the device should be noted on a site security wiring plan that is kept in a safe location for future maintenance and service purposes.

1. Open the multiplexer by removing the two stainless steel button head machine screws on the front of the housing using the hex key provided with the unit. The front faceplate will slide down and off the housing.
2. For convenience, the wiring diagram on the inside of the faceplate is positioned so that the faceplate can be screwed back onto the housing upside down. This keeps the faceplate secure while the wiring is being done and allows the wiring diagram to be easily read during this process. See Figure 1.
3. Mount the case to the desired location using the four holes. If mounting the multiplexer in an exterior installation, be sure to seal around the back of each screw hole with an outdoor silicone sealant.
4. Wire in conduit can be run into the housing through one of two conduit knockouts in the back of the box or one of the eight knockouts around the top, bottom, and sides of the housing. These knockouts allow for installation of ¾ inch or 1 inch conduit with compression fittings. If a larger size conduit is needed, drill the correct size hole in the housing in the bottom or lower back of the housing.
5. Once the conduit locations are determined, place the housing against the wall and mark the wall through the four mounting holes on the rear of the housing using a pencil. Use a torpedo level to verify that the housing will be mounted level.

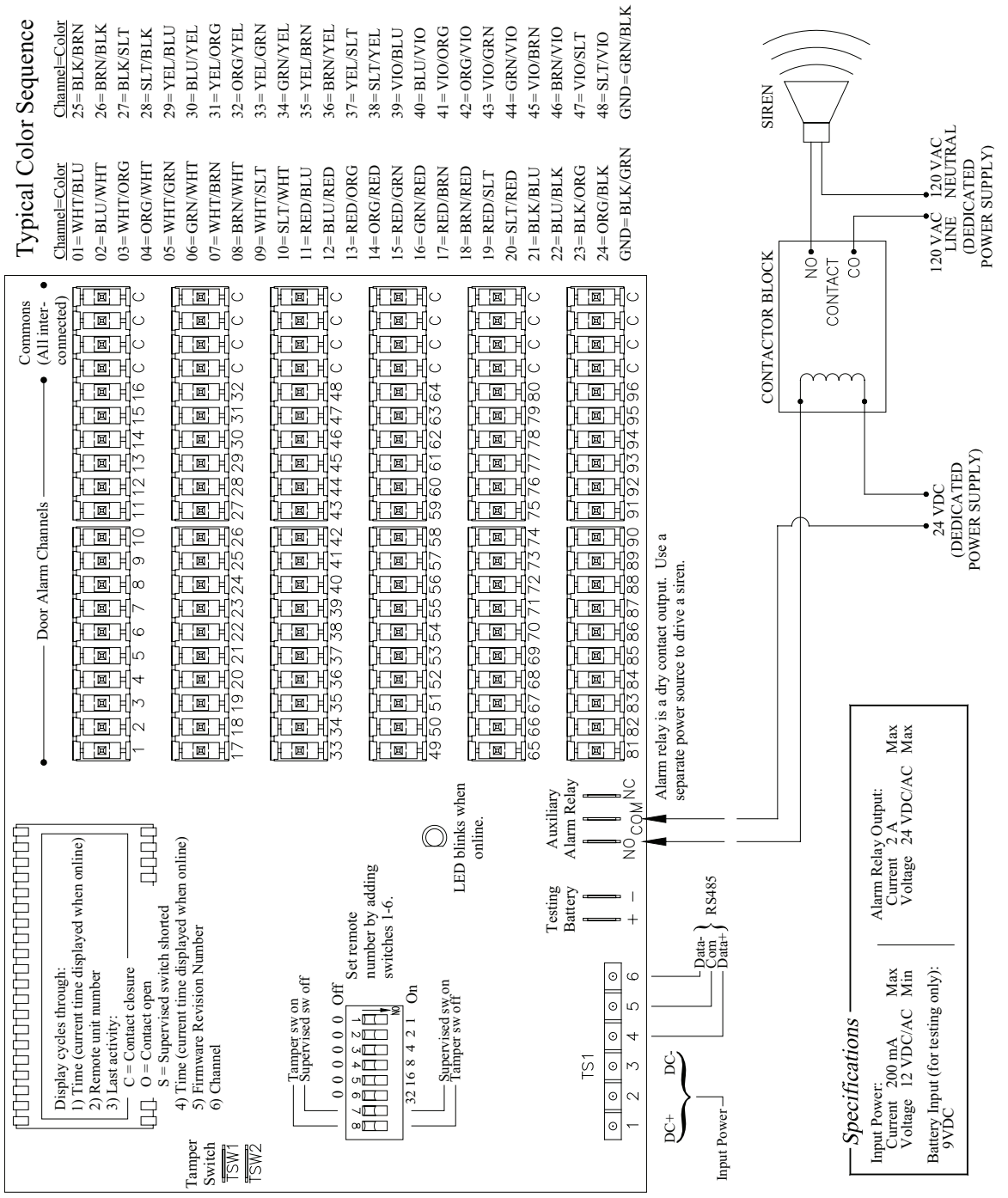


Figure 1: Hardwired Mux Wiring Diagram

6. Communications and power wires must be connected from the RS485 lines connected to the controller terminal block. The wire can be connected directly to the main terminal block or to the terminal block(s) at other remote devices (e.g., keypads, relay boards, etc.). Pull the necessary wires through conduit into the housing. Each device should have the following wires:

- One 18 AWG, 4-conductor, shielded cable coming in from the controller or from the previous AI device in line.
- One 18 AWG, 4-conductor, shielded cable going out to the next AI device in line (if there is another AI device down the line).
- One earth ground wire
- One or two, 24 AWG 50-conductor solid copper telephone trunk line cables coming from the hallway doors.
- One 18 AWG, 2-conductor cable coming from the siren if a siren is being used.

7. Power wires connect to pins 1 and 2 of terminal block 1 (PP13) in the lower left-hand corner of the circuit board. Data wires connect to pins 4, 5, and 6 of PP13. The wired door alarm mux is powered by a minimum of 12 V to a maximum of 18 V DC or AC power.
8. With the power disconnected, strip back the outer insulation and shield foil from both of the 18 AWG, 4-conductor, shielded cables (coming from the controller or previous AI device in line and going out to the next AI device in line), being careful not to cut the bare shield wire. Strip ¼ inch of insulation off the end of each of the individual colored conductor wires. Connect the DC+ or AC wire to pin 1 of PP13 by placing it in the first terminal block hole and tightening down with a precision standard screwdriver. Connect the DC– or other AC wire to pin 2 of PP13 in the same way.
9. Insert both red wires into terminal slot 1 on the terminal block. Ensure that they are both seated all the way inside the slot. Use a flathead precision screwdriver to tighten down the terminal screw. Verify that the terminal slot has tightened down on the copper wire and not on the rubber insulation. There should be no copper wire showing outside of the terminal slot. Gently tug the wires to verify that they are tightly held inside the terminal slot. Repeat this process with each of the remaining wire connections as follows.

Terminal Block PP13 (TS1)					
Pin1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6
DC + (Red)		DC - (Black)	Data + (White)	Ground (Shield)	Data - (Green)

10. Strip back 3/8" insulation from the end of the Data + and Data – wires. The Data Common Ground wire should be bare. Connect the Data + wire to pin 3 of PP13 by placing it in the third terminal block hole and tightening down with a precision standard screwdriver. Connect Data Common Ground to pin 4 and Data – to pin 5 in the same way.
11. The terminal strips along the right side of the board are the channels and grounds to which door alarm switches are connected. Multiplexers are available in 16, 32, 48, 64, 80, and 96 channels. These options allow the necessary multiplexers to be ordered for the number of doors in each building and on the site. In general, it is a good idea to plan on leaving a few unused channels in each multiplexer to allow for future expansion, unit splitting, and maintenance or service. Each strip is laid out with 16 door channels and four grounds as shown

Multiplexer Channel Layout

Ch	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Gnd*	*Gnd*	*Gnd*	*Gnd*
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				

Ch	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Gnd*	*Gnd*	*Gnd*	*Gnd*
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32				

Ch	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Gnd*	*Gnd*	*Gnd*	*Gnd*
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48				

Ch	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Gnd*	*Gnd*	*Gnd*	*Gnd*
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64				

Ch	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Gnd*	*Gnd*	*Gnd*	*Gnd*
65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80				

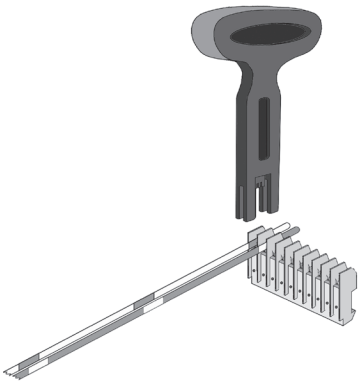
Ch	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Ch*	*Gnd*	*Gnd*	*Gnd*	*Gnd*
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96				

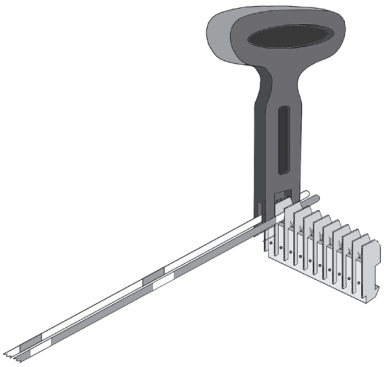
12. The wires for each door switch should be punched down on the terminal strip using the Mux Punchdown Tool (Part # TMUXPDTOOL). Do NOT use a screwdriver, knife blade, or telephone punchdown tool.

    To punch the wires down, remove the terminal strip by gently rocking it back and forth while pulling up and away from the board. Place the terminal strip on a hard surface and place the wires over the correct slots.

    CAUTION: It is highly recommended that the terminal strip be removed. DO NOT punch down the wires while the strip is still attached to the relay board as this can damage the board due to flexing.

13. Use the mux punchdown tool to firmly press the wires in place. There is usually an audible click as the wires fully seat.





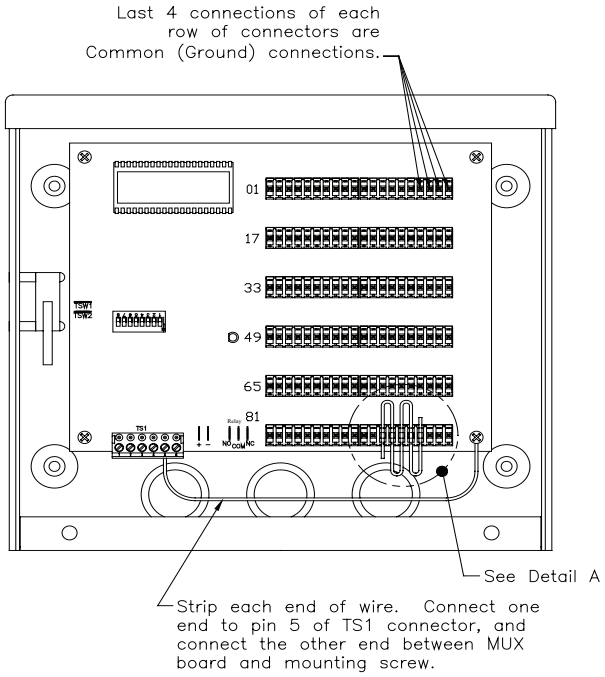
14. Once the wires are all punched down, use electrician's shears or wire cutters to trim the excess wire from the back of the terminal strip. Push the terminal strip back onto the pins.
15. Once wiring is complete and tested, slide the faceplate onto the housing and screw it back together.
16. As with all remote devices, the wired door alarm mux must be addressed with a number between 1 – 21 or 23 – 63. This number must not be a duplicate of any other device. To set the address from use a small screwdriver to turn on the dipswitches that apply, shown below in the description of the dipswitches. Never set the address to 0 or 22 as the access control system uses these for special communications.

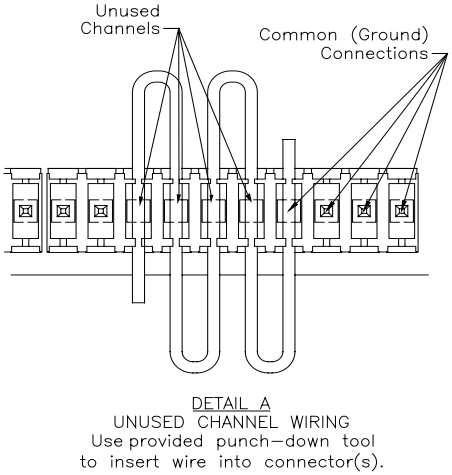
Addressing the Mux		
Switch 1:	OFF = adds zero to unit number	ON = adds one
Switch 2:	OFF = adds zero to unit number	ON = adds two
Switch 3:	OFF = adds zero to unit number	ON = adds four
Switch 4:	OFF = adds zero to unit number	ON = adds eight
Switch 5:	OFF = adds zero to unit number	ON = adds sixteen
Switch 6:	OFF = adds zero to unit number	ON = adds thirty-two
Switch 7:	OFF = Supervised Switches Off	ON = Supervised on
Switch 8:	OFF = Tamper Switch Enabled	ON = Tamper disabled

17. The RS485 communications baud rate for all devices on the site must match. The default baud rate is 9600 bits per second. For most installations, this rate should not be changed.
18. Dipswitch # 7 places a communication line terminating resistor across the RS485 data lines when turned on. This switch should only be turned on if the wired door alarm mux is the last remote device on a communication line that is more than 800 feet from the base unit.

Note: There should only be one remote device (Keypad, APEX, Wiegand, etc) in an entire access control system with a terminating resistor turned on. In all other circumstances, this should be left off.

19. When connecting the door alarms, make sure to connect the unused channels to ground and also remove the connectors from the board before punching down the wires for the alarm.





Installing the Magnets

Sites often do not want an installer to rivet magnets to doors as the rivets show through on the outside of the door. To prevent this issue, we recommend using PL Premium® polyurethane construction adhesive. PL Premium is made to hold for the life of the items being joined. To install the magnets:

1. On the latch side of the door, locate the position where the magnet will be placed. Be sure that the magnet is located within ½ inch of where the switch is to be installed and that it does not interfere with the door rolling up or swinging. See Installing the Door Switches, for locations by switch type.
2. Use isopropyl alcohol or acetone on a lint-free cloth to clean the magnet location of construction dust, grease, and other contaminants. Allow the spot to dry before proceeding.
3. Use a caulking gun to run a ¼ inch bead of PL Premium along the back of the magnet from one side to the other.
4. Press the magnet in place on the door, holding it tightly for 30 seconds. Use masking tape to hold the magnet in place until the adhesive is set. Remove the tape after 24 hours. The magnet may be repositioned for up to 20 minutes before the adhesive sets or will have to be reapplied.

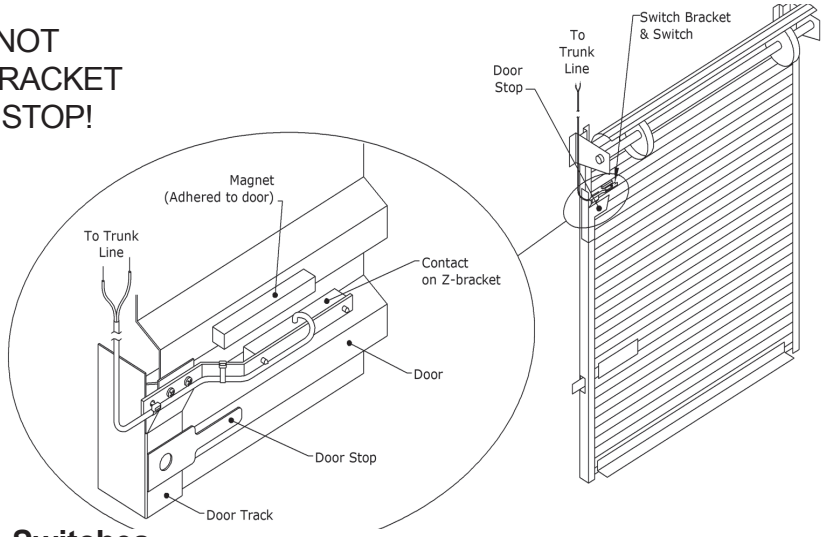
Installing the Door Switches

The following illustrations detail how to install door switches used in conjunction with the access control system. Refer to the switch manufacturer's instructions for more information.

AMS-37LG48 Switches with Z-Bracket

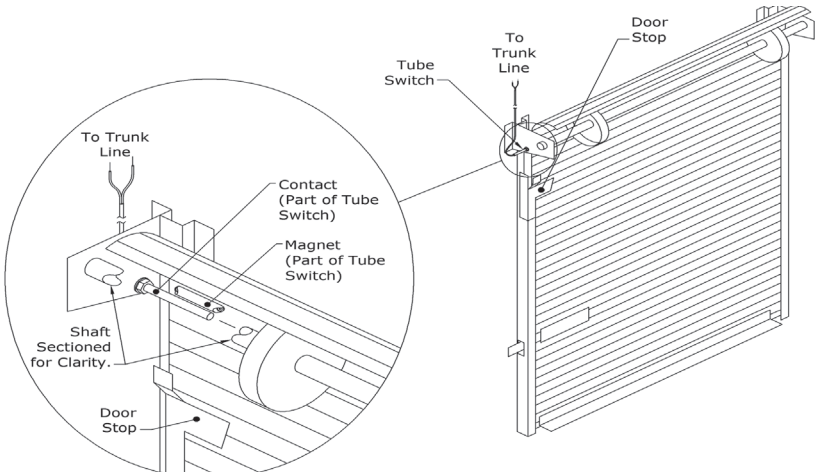
This method can be used with most types of roll-up doors using AMS-37 switches on a Z-bracket with a 48 inch lead. Ensure that the tab at the top of the door is bent out far enough to clear the screws to hold the bracket. The magnet can then be installed, riveted, and/or glued with PL Premium to the inside of the door.

CAUTION: DO NOT ATTACH THE BRACKET TO THE DOOR STOP!



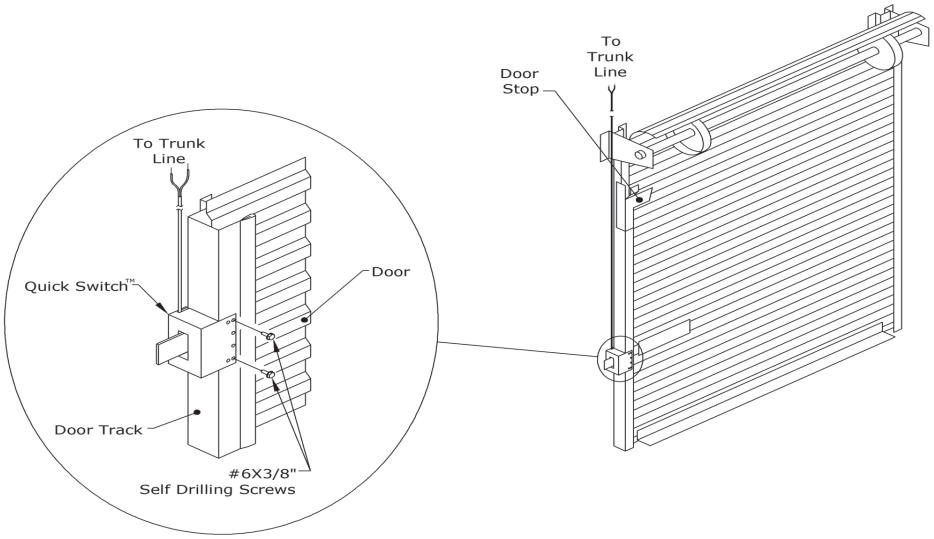
ODC-51A Tube Switches

This method can be used with most types of roll-up doors using ODC-51 tube switches with a 48-inch lead. Ensure that the contact portion of the tube switch does not interfere with door movement. Use an electric drill or metal punch to make the hole in the side of the support wings for the roller shaft. The magnet can then be installed, riveted, and/or glued with PL Premium to the inside of the door.



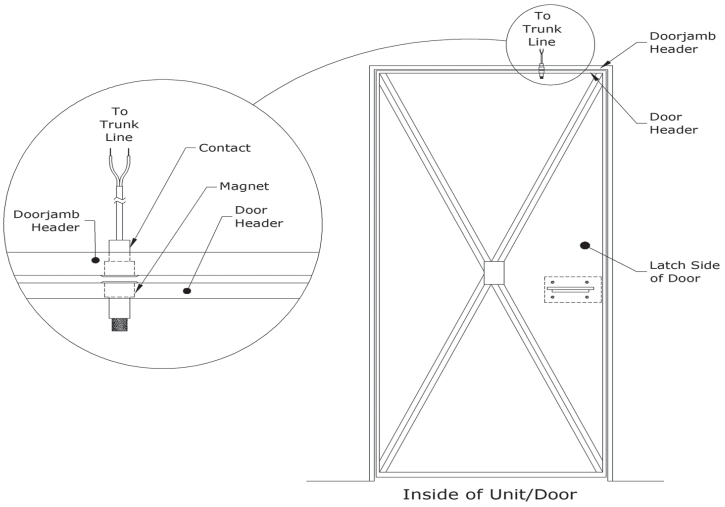
QuickSwitch®

Use this method for installing QuickSwitch door switches. Ensure that the screws used to hold the QuickSwitch to the track do not interfere with door movement. The QuickSwitch must line up with the door latch hole and allow free movement of the door latch. The door latch must be made of ferrous metal and be long enough to go all the way through the door switch. The door latch must also be wide enough and thick enough to trigger the switch.



Recessed Switches

This method is used to install recessed door switches (such as AMS-21 and AMS-26) on swing doors. Drill a hole sized to fit the switch in the top of the door jamb and in a matching position on top of the door. These must be on the latch side of the door about halfway between the middle of the door and the edge. Glue the magnet in the door and the contact in the doorjamb header using PL Premium.



Installing the Trunk Line

Following are instructions on installing the trunk line to connect the individual door alarm switches to the multiplexer. The trunk line itself should be run behind the hallway wall along the top of each door.

In most self storage applications, the trunk line sits in the red iron C-channel support and is tied down using screwhead mounting wire ties placed every 2" – 3".

If there is no red iron C-channel support installed, then tie the cable to the wall using screwhead mounting wire ties placed every 2" – 3". The trunk line should be hidden behind the wall and above the door in such a way as to be invisible or nearly invisible to the customer.

There are two recommended methods for splicing door switches into the trunk line. Each has its advantages and challenges depending on the site layout and needs. The installer and the site representative should review each method before installation begins to determine which is best for the site.

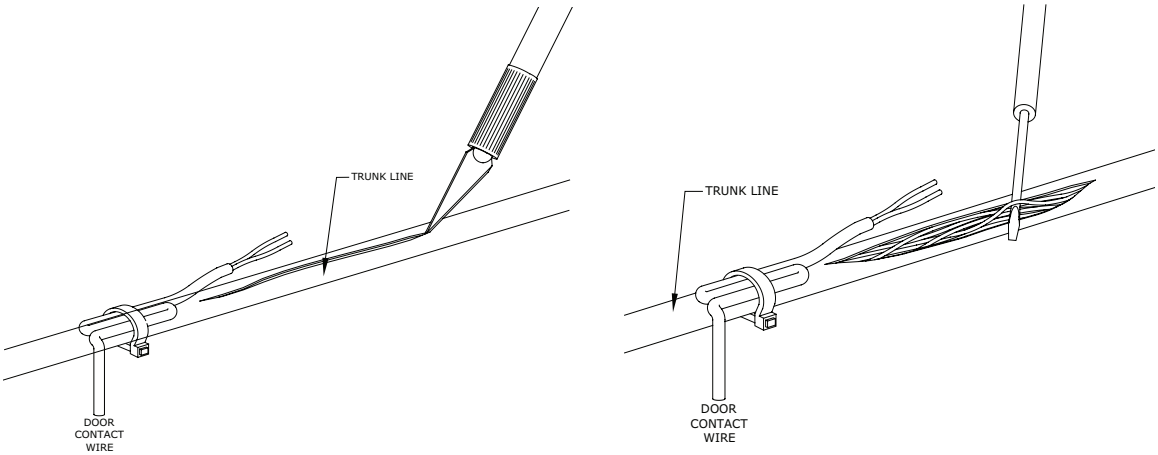
- Method # 1 – Conventional Two-Wire
- Method # 2 – End-of-Line Ground

Method # 1 – Conventional Two-wire Method

The conventional two-wire method is the most dependable splicing method. It is commonly used when there are multiple doors in many directions, but is also very effective with long hallways. The main challenge with this method is that it increases the amount of wire required. Also, it is extremely important that the grounds be stepped down correctly. Plan the site to allow for extra channels on the multiplexer and extra conductors in the trunk line for service

1. Trunk line can be used for this method if there are multiple doors along a single hallway. CAT5 network cable can be used for smaller groups of doors and individual 22 AWG or 24 AWG, 2-conductor twisted pair cables can be used to go out to individual doors. Do not use CAT5 network cable anywhere else in the system (except for an Ethernet cable where required).
2. Run the lead cable from the door switch up to the trunk line. Use wire ties to tie a small bundle of wire near the switch for future maintenance and service. Use wire ties to tie the wire bundle and the wire to the wall or to the door track every 2 feet up to the trunk line.

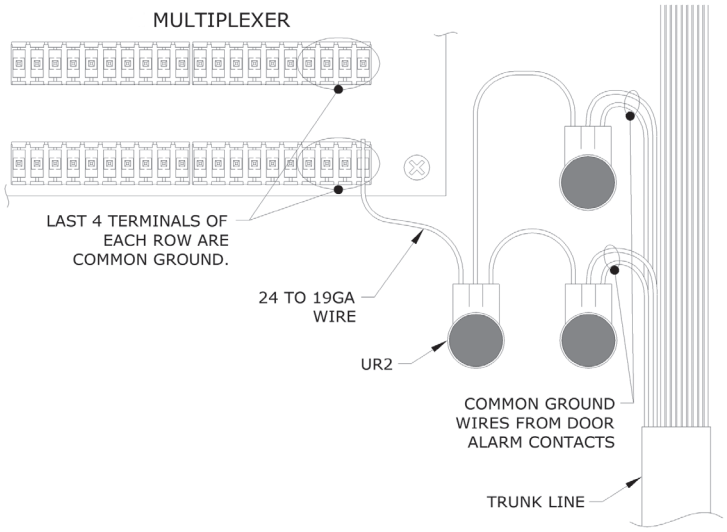
3. If using individual 22 AWG or 24 AWG, 2-conductor twisted pair cables for each door, skip to step # 7.
4. If using trunk line or network cable, use an exacto knife or other small razor knife to cut a 2 inch slit into the trunk line jacket on the switch side of the door. Be very careful only to cut the jacket and not the conductors underneath.
5. Spread the slit open and use a wire extractor or blunt precision screwdriver to sort through the wires to find the two correct wire colors for the signal and ground. The recommended wire color code order can be found on the Mux and Channel List chart on pages 18 – 19.



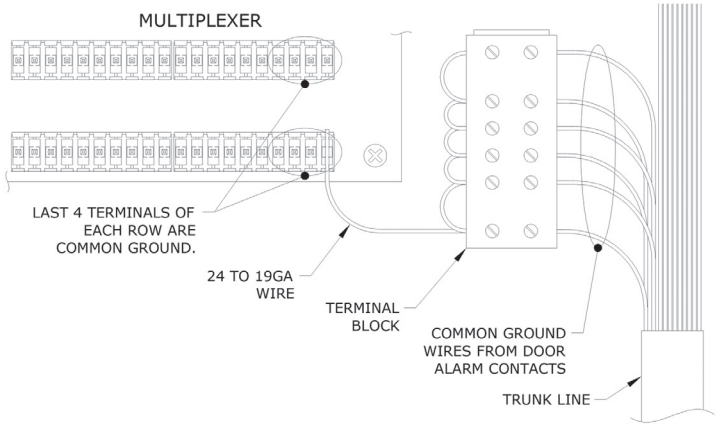
6. Use wire cutters to cut both of the wires on the side farthest from the multiplexer. When cutting in a lot of doors in a building, it can be difficult to remember which direction the multiplexer is from any given point, so be very sure before cutting the wire.
7. Connect the signal wire from the cable with signal wire from the door switch using a 3M UY2 connector. Refer to the Wire Splicing section for more information about making splices.
8. Connect the ground wire from the cable with ground wire from the door switch using a 3M UY2 connector.
9. Seal the splices and slit along the line with electrical tape. Any excess door switch lead cable should be secured to the trunk line using a wire tie. (This step can be done after all of the doors have been tested in case splices need to be fixed.)

10. Because the Multiplexer may not have enough ground input points for all of the ground wires, the ground wires will have to be stepped down. This can be done in one of two ways:

- Use 3M UR2 connectors and insert two ground wires in two of the three holes and a single ground wire coming out of the third hole. Do this as many times as necessary to step down to the number of grounds for which there are input points.

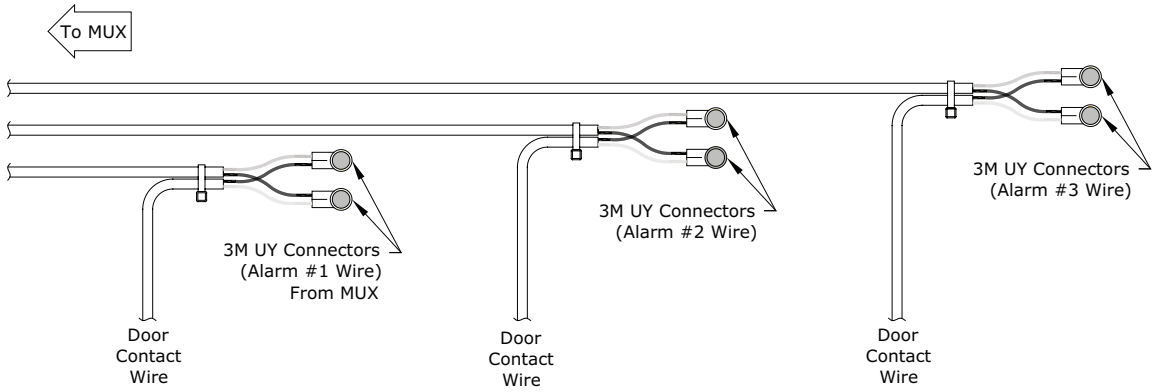


- Use a telephone terminal block and insert all of the ground wires into terminal slots and jumper all of the slots together. Then run a single ground wire out to a ground point on the multiplexer.

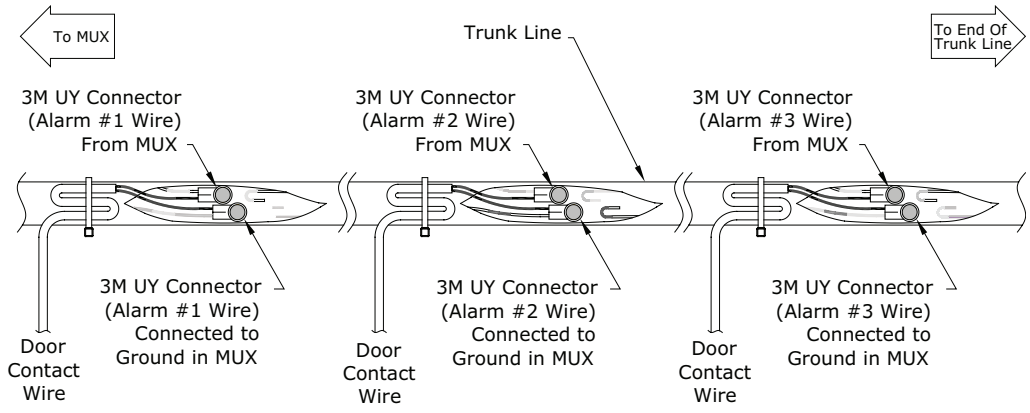


11. At the multiplexer, punch down the door channel wires in color code order at the door channel input points. Note which door channel inputs are connected to which wires.

Conventional 2-wire Method using individual 22 AWG or 24 AWG twisted pair cables



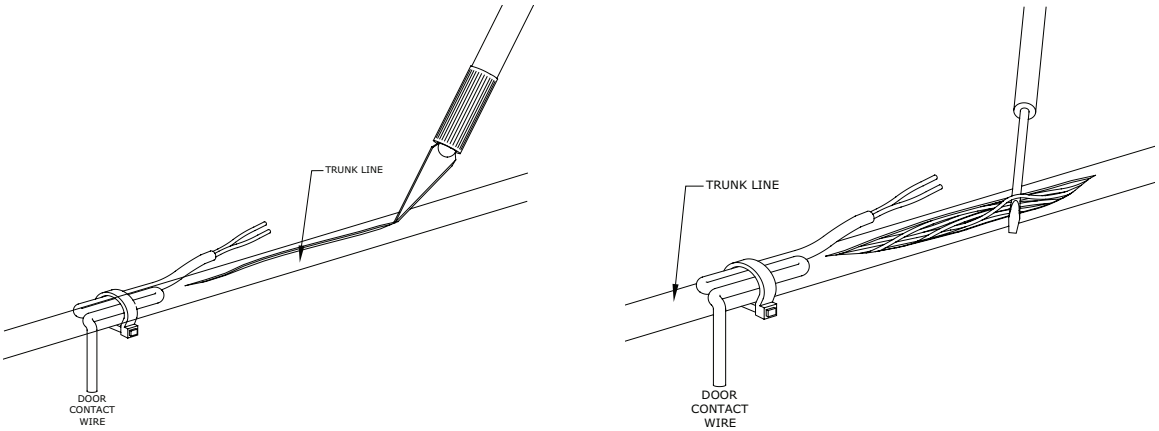
Conventional 2-wire Method using Trunk Line



Method # 2 – End-of-Line Ground Method

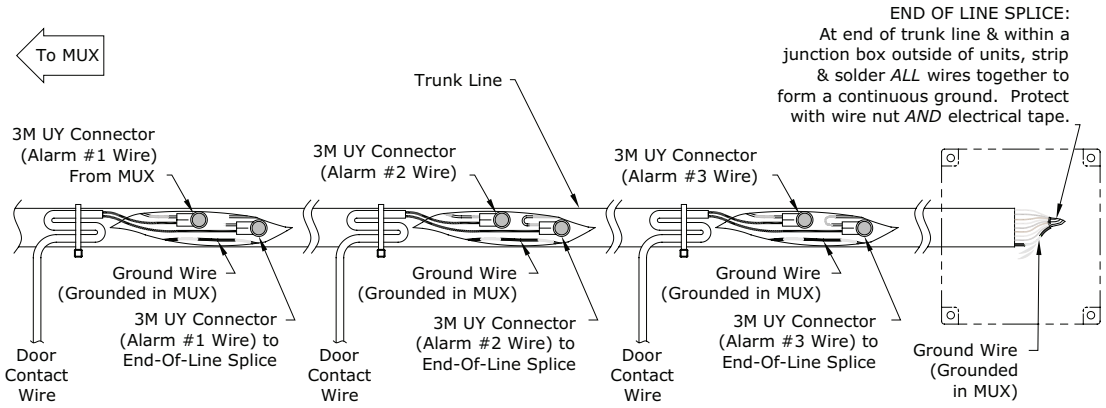
The end-of-line ground method is ideal when a site has a large number of doors that are side-by-side down a hallway, such as in an assisted living facility or a warehouse with many bay doors. It is extremely important that the end-of-line splice be made properly. Plan the site to allow for extra channels on a multiplexer and extra conductors in the trunk line for service.

1. Run the lead cable from the door switch to the trunk line. Use wire ties to tie a small bundle of wire near the switch for maintenance and service. Use wire ties to tie the wire bundle and the wire to the wall or to the door track every 2 feet to the trunk line.
2. Use an exacto knife or other small razor knife to cut a 2 inch slit into the trunk line jacket on the switch side of the door. Be very careful only to cut the jacket and not the conductors underneath.
3. Spread the slit open and use a wire extractor or blunt precision screwdriver to sort through the wires to find the two correct wire colors for the signal and ground. See the Mux and Channel List chart in the Appendix for the correct color code order.



4. Use wire cutters to cut the correct colored wire. Be sure to cut the line in the center. Connect one side of the trunk line wire with signal wire from the door switch using a 3M UY2 connector. Connect the other side of the trunk line wire to the ground wire from the door switch using a 3M UY2 connector. Refer to Wire Splicing for more information about making splices.
5. The end of the trunk line farthest from the multiplexer must be in a junction box. Pull at least 12 inches of trunk line into this box to allow extra cable for service. At this end of the line, strip back 2 inches of the outside jacket of the cable. Strip 1 inch back from the insulation on each conductor. Solder all of the conductors together, being sure to create a solid electrical connection. Twist a large wire nut down over the connection and wrap the end in electrical tape. This splice must be carefully made and properly soldered for this method to work well.

6. Seal the splices and the slit with electrical tape. Any excess door switch lead cable should be secured to the trunk line using a wire tie. (Do this step after all of the doors have been tested in case splices need to be fixed.)
7. At the multiplexer, punch down the door channel wires in color code order at the door channel input points. Connect the two ground wires to any of the ground input points. Note which door channel inputs are connected to which wires.



Troubleshooting Door Alarms

The following steps can be used for troubleshooting door alarms. Remember to keep a good set of notes as you troubleshoot. These notes can help for comparison to find problems, prevent confusion, and help speed things up if site service by a technician or telephone technical support are required. Many door alarm issues will need to be checked by a trained service technician.

Ask the following questions: “Is the problem with a single door (or alarm input) or is it with a bank of doors?” and “Are the units rented or not?” If the unit or units are rented, it may be necessary to gain access to the doors from the tenants for troubleshooting.

Check the doors in question. Are they loose, possibly moving due to wind or vibration from traffic?

Check each multiplexer on the site. The circuit boards, cases, and wiring should be checked for obvious damage (i.e., vandalism, burn marks from power surge/ lightning, corrosion on the circuit board, water marks, insects, construction debris, etc.).

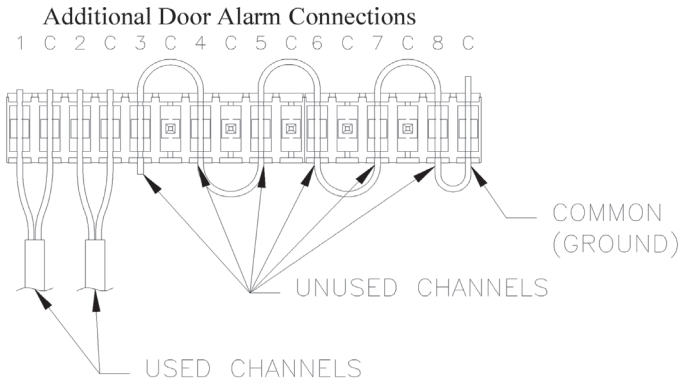
Check the voltage across the common and channel input points in the multiplexer that correspond to the door in question.

- Voltage with the door closed should be 0 VDC.
- Voltage with the door open should be 4.5 – 5 VDC.
- In case of incorrect readings, remove the punch-terminal block and reverify incorrect readings at the pins to determine whether the problem is just an improperly punched wire. If it is, repunch the wire using a multiplexer punchdown tool (part # TMUXPDTOOL). Do not use a screwdriver, knife, or other phone system punchdown tool as they will not seat the wire correctly.
- Any other incorrect readings indicate a short in the door contact wiring, loose connection, or ground loop that needs to be investigated and fixed. Depending on the problem rewiring or replacing a door switch may be required.

Note: ALL channels in the multiplexer should be checked because problems with one door or wiring may affect the entire board. Also, all multiplexers on the site should be checked as problems with one may cause problems in another.

If the problem is occurring in unused channels:

1. Tie down all unused channels to common ground.



2. Punch down a 24 AWG insulated solid wire through any unused door alarm channels and at least one common ground connection.
3. Connect a length of 24 AWG wire from pin # 5 of the power and data terminal block to one of the four screws that mount the circuit board to the metal case. The metal case of the multiplexer must also be mounted directly to a grounded metal building or tied to a ground rod or grounded metal structural element of the building such as a metal water pipe or ground rod in accordance with local code.
4. If at all possible both ends of the shield/ground wire should be tied to ground.

Verify that all wire used during installation of the system is correct to PTI Security Systems specifications. 18 AWG shielded wire should be used for power and communications. 24 AWG telephone wire should be used for the door alarms. Verify that there are no breaks in the shield, skinned or bare wire, shorts or breaks in the wire, or splices in the wiring (other than those required for the door alarm switches).

In some cases, radio frequency interference (RFI) may also be a problem. All electronic equipment is susceptible to RFI. Our equipment has protection built into it to keep it safe from most RF interference,; however, extreme levels of RF interference can cause communications problems. Radio antennas, military bases, airports, radar, power plants, certain types of lighting, cell phone towers, and communications equipment, are all examples RF generators that can cause interference problems.

Humidity, temperature, and cloud cover, as well as broadcasting strength and proximity to the RF source can all make the problem worse. Generally, extreme levels of RF will cause the system data communications to go on and off (data comm on/data comm off) or cause the system to report scattered false door activity during the times when the RF levels are highest. In these extreme cases, braided shielded telephone wire and/or RF filters on the door alarm wires may be required in addition to the recommended fixes above. Both of these products are available through PTI Security Systems and can be installed by a certified installer.

If necessary, a full site reset can be performed if there are multiple problems or ongoing issues. Generally, ongoing problems are a sign of problems in the wiring, either from bad splices, pinched or nicked wires, radio frequency interference, water in conduit, or incorrect wire type. To reset the entire site:

1. At every multiplexer and AI device with door alarm inputs, open the housings and unplug the power and data terminal blocks.
2. Once every device on the site is unplugged, add one device back in to the system at a time.
3. Allow that device to function for an hour and then add in the next device in line.

Eventually, a device will be added that causes the problem to manifest. Switch this device with one that has been previously added to verify if the problem exists in the location or in the device.

Mux and Channel List

Site Name:_____ Date _____

Mux # _____ Wire # _____ Number of Doors _____

Unit Number	Input Channel	Wire Color		Unit Number	Input Channel	Wire Color
	1	White/Blue			49	White/Blue
	2	Blue/White			50	Blue/White
	3	White/Orange			51	White/Orange
	4	Orange/White			52	Orange/White
	5	White/Green			53	White/Green
	6	Green/White			54	Green/White
	7	White/Brown			55	White/Brown
	8	Brown/White			56	Brown/White
	9	White/Slate			57	White/Slate
	10	Slate/White			58	Slate/White
	11	Red/Blue			59	Red/Blue
	12	Blue/Red			60	Blue/Red
	13	Red/Orange			61	Red/Orange
	14	Orange/Red			62	Orange/Red
	15	Red/Green			63	Red/Green
	16	Green/Red			64	Green/Red
	17	Red/Brown			65	Red/Brown
	18	Brown/Red			66	Brown/Red
	19	Red/Slate			67	Red/Slate
	20	Slate/Red			68	Slate/Red
	21	Black/Blue			69	Black/Blue
	22	Blue/Black			70	Blue/Black
	23	Black/Orange			71	Black/Orange
	24	Orange/Black			72	Orange/Black
	Ground	Black/Green			Ground	Black/Green
	25	Black/Brown			73	Black/Brown
	26	Brown/Black			74	Brown/Black
	27	Black/Slate			75	Black/Slate
	28	Slate/Black			76	Slate/Black
	29	Yellow/Blue			77	Yellow/Blue
	30	Blue/Yellow			78	Blue/Yellow
	31	Yellow/Orange			79	Yellow/Orange
	32	Orange/Yellow			80	Orange/Yellow
	33	Yellow/Green			81	Yellow/Green

Unit Number	Input Channel	Wire Color		Unit Number	Input Channel	Wire Color
	34	Green/Yellow			82	Green/Yellow
	35	Yellow/Brown			83	Yellow/Brown
	36	Brown/Yellow			84	Brown/Yellow
	37	Yellow/Slate			85	Yellow/Slate
	38	Slate/Yellow			86	Slate/Yellow
	39	Violet/Blue			87	Violet/Blue
	40	Blue/Violet			88	Blue/Violet
	41	Violet/Orange			89	Violet/Orange
	42	Orange/Violet			90	Orange/Violet
	43	Violet/Green			91	Violet/Green
	44	Green/Violet			92	Green/Violet
	45	Violet/Brown			93	Violet/Brown
	46	Brown/Violet			94	Brown/Violet
	47	Violet/Slate			95	Violet/Slate
	48	Slate/Violet			96	Slate/Violet
	Ground	Green/Black			Ground	Green/Black

Color Code Notes: The first color listed is the broad stripe. The second color listed is the narrow stripe. The first door on any mux should be spliced to the White/Blue, the second door to Blue/White and so on. Most important is that the installer be consistent throughout the site. Leave a few unused conductors in the line and a few unused channels on each mux to allow for future expansion, unit splitting, or service. Use this chart to track the door alarm wiring throughout the site. This will be used to build the alarm file.

For Technical Support, Please Visit:
support.ptisecurity.com

www.ptisecurity.com