



Falcon Access Control System

Installation and Operation Manual

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WARNING: *This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.*

NOTICE TO INSTALLERS AND SYSTEM OWNERS/OPERATORS:

Reliable equipment operation is dependent upon noise free uninterrupted sources of power. The PTI Falcon battery back-up feature is provided primarily to preserve the integrity of the memory database and operation of the PTI Falcon system. This will not guarantee operation of the gate motor or door actuator for emergency ingress/egress in the event of a power loss or equipment failure. It is the sole responsibility of the purchaser to provide for and facilitate manual non-electrical emergency means of exit in the event of a power failure. Contact your local dealer/installer for options and availability.

From the President...

Dear Customer,

Thank you for choosing PTI quality and reliability for your access control needs. The PTI Falcon has been specifically designed for your needs and will provide you with years of reliable service.

Before beginning your venture into this new technological approach to customer service, please take a few moments to familiarize yourself and your staff with the contents of this manual. It will soon become quite simple for you to understand the simple operation of the Falcon system as well as the options available to you.

If you have purchased the basic Falcon package, I am pleased to tell you that all PTI options are available to you as your needs as well as your customers needs change and grow. PTI offers a full range of options including, Personal Computer Interface for operating in conjunction with Management Software, Door Alarms for each individual unit, VGA quality custom designed graphics specifically written to exemplify your facility, Keypad Intercoms as well as PTI's exclusive CodeXpress Card Access Option.

Most importantly is your choice of company. PTI has been designing and manufacturing access control and security equipment for over 20 years. Our dedication to customer support has always been our #1 concern. This is an invaluable tool to you and your installer as you move into the world of Access Control Electronics.

Once again I thank you for your choice and welcome you and your staff to our family of customers.

A handwritten signature in black ink, appearing to read "Lance Comstock", with a long horizontal flourish extending to the right.

Lance Comstock
President

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1. Introduction

The PTI Falcon is a multi-point access control system capable of hosting an unlimited number of remote keypads or door alarm controllers. Multiple building sections are supported with multiple units per section. In addition, units may be subdivided with a subsection designation. Each unit may be classified into one of eight different access zones, which allows specified entry hours and entry points. Access zone hours may be specified separately for each day of the week and holidays. Up to thirty-two preprogrammed holiday dates are also supported. Any individual unit code may be locked out with a few simple keystrokes. All access activity is logged on a standard computer style printer using standard paper. When used with the optional door alarm system, all door activity is also logged. The PTI Falcon also has built-in rechargeable batteries that allow the programming unit to remain completely operational during a power failure. The simple menu driven programming is easily mastered using the thirty- two character alphanumeric display. The PTI Falcon cassette tape backup system is unique in the industry, allowing you to retain a non-volatile copy of your customer data on a standard audio cassette tape with a standard cassette recorder. This simple concept allows total elimination of accidentally erased memories.

The PTI Falcon contains an optional RS232C serial interface that allows the unit to be completely programmed and controlled by a Personal Computer. The PTI Falcon is capable of interfacing to most major Self Storage management software packages. PTI Remote Management software allows total control of the PTI Falcon system by telephone from any remote location.

The PTI Falcon also supports a complete individual door alarm system. Unlike many competitive systems, the battery backup option allows the PTI Falcon to provide reliable alarm operation even hours after a complete power failure.

The PTI remote keypad contains a backlit silicone rubber booted keypad which is highly weather resistant and a backlit wide temperature liquid crystal display capable of displaying thirty two characters of alphanumeric data. The keypad unit can be used in total darkness with no exterior lighting required. The unique display allows the customer to be given instructions on how to use the keypad as well as a reason for denial in the case of customer lockout. Keypad options include a built-in intercom speaker, a built-in security camera, and a built-in card reader, which allows the customer to gain access by using one of his own magnetic stripe credit cards.

All exterior units are made of an all aluminum weather tight enclosure with stainless steel inserts and screws, resulting in an industrial rather than commercial grade product.

2. Getting Started

Following the checklist below will help you in incorporating the Falcon system into your business operation. Once the installation has been completed you are then able to begin programming the Falcon with the customer data either through the Falcon Base Unit keypad or through the use of your Software Management program or our windows based Falcon 2000 program. If you have purchased a Software Package for your facility, it is still highly recommended that you learn the process of programming at the Falcon Base Unit in the event your Personal Computer is not available to make important changes or transactions. Please note that in the event of a complete power failure, this checklist will be a valuable tool in re-starting the system. Keep it handy!

- [] Take a few moments and read the manual so that you will be relatively familiar with the Falcon system. It may not be completely clear at first but that is O.K., you will learn easily as you go.
- [] Complete the questionnaire in the Troubleshooting Section (Page 46).
- [] Collect your customer files with the customers building section, unit number and access code available (Door Alarm Users will also need to know which Remote Unit {Multiplexer} each user is assigned to as well as which door). If some customers have extended entry hour privileges, have that available also.
- [] Insure that the RS485 cable, printer cable and 120V power cable are plugged into the Falcon Base Unit.
- [] Users operating a Management Software Package insure that the RS232C Cable is plugged into the appropriate connector on the Falcon Base Unit as well as the serial port of your PC. (you must use the special RS-232 cable supplied by PTI)
- [] Power up your Remote Keypad Units, CodeXpress Card Readers, and Door Alarm Multiplexers.
- [] Turn on your Falcon Base Unit. Users operating Management Software may continue from this point in accordance with your Software manufacturers specifications.
- [] Set the Time and Date.
- [] Set the Access Zone Hours.
- [] Designate Holidays.
- [] Begin entering your customers.

3. Equipment Overview

3.1 The Base Unit

The Base Unit serves as the main programming console for the PTI Falcon access control system. The picture to the right shows the front view of the PTI Falcon Base Unit.



At the top of the unit there is a two line liquid crystal display. When the display is not being used for programming it will display the current date and time. The unit contains a keypad in a standard telephone arrangement. Often during programming, you will be asked a "Yes or No" question. When responding, the "*" key indicates "No" and the "#" key indicates "Yes". If you make a mistake when entering data, the "*" key can also be used to backup or rubout one character at a time. When the correct data has been keyed in, the "#" key serves as the <Enter> key to save the data.

The front of the Base Unit contains a 3.5mm standard audio cassette jack, which is used by the cassette tape memory backup system. This one plug is used for both recording and playing a tape with the Base Unit. (this cable must be a MONO cable)



This is the rear view of the PTI Falcon Base Unit. The left most connector (RS485) is a 9-pin female connector and connects to the remote keypads and other remote devices. If door alarms are in use, the alarm relay contacts are also present

on this connector. The center connector is a 9-pin male connector for the RS232C serial port. This is for connecting a computer with the PTI interface cable. The long connector on the right is a twenty-five pin female which connects a standard parallel Dot Matrix printer to the PTI Falcon. Next to the connectors are the fuse holder and power line connector.

WARNING: TO PREVENT ELECTRIC SHOCK, NEVER REMOVE OR INSERT THE FUSE WITHOUT FIRST UNPLUGGING THE PTI FALCON BASE UNIT FROM THE POWER OUTLET! ALWAYS UNPLUG THE POWER CORD FROM THE WALL OUTLET FIRST, BEFORE UNPLUGGING THE CORD FROM THE BACK OF THE FALCON. ALWAYS PLUG THE POWER CORD INTO THE BACK OF THE PTI FALCON BEFORE PLUGGING THE OTHER END INTO A WALL OUTLET.

3.2 The Remote Keypad

A PTI Falcon access control system may contain multiple remote keypads such as the one illustrated on the right. The number of remote keypads will depend on the number of entry points you wish to control at the property.

The Remote Keypad unit contains a silicon rubber booted keypad in a typical telephone style arrangement. The keypad contains LED's behind the rubber boot to light the keypad for night use. These lights are continuously on, although they are not bright enough to be seen in daylight. The Remote Keypad unit also contains a liquid crystal display (LCD). The display is fully alphanumeric which allows complete text to be displayed rather than just numbers. The LCD also contains an LED panel behind it for nighttime viewing. This light comes on when the "*" key is pressed on the keypad to begin a transaction.



3.3 The CodeXpress Card Reader

PTI CodeXpress card reader access control allows the operator to provide card access for the user without carrying the responsibility of purchasing, renting and recouping cards for the facility. PTI carries a pre-programmed magnetic stripe card for those facilities that would like to keep a stock of pre-programmed cards for their customers. PTI recommends asking the customer to select a card within their possession that has a magnetic stripe to be used as their access control card for your property. Assure the customer that the disclosure of the account number on the card is not at risk because the system software mathematically changes the account number into a code usable with the Falcon. Most cards with a magnetic stripe will work. The code corresponding to the card must be entered into the Falcon as the customer's access code.



To determine the code for a particular card, insert the card chosen for access into the card reader. The Falcon will print a code (unknown code 8476537876) that represents that card. Take the number from the printout and enter it as the access

code for the desired unit. *The customer can also use the keypad for access if they use the code produced by their card if they choose.*

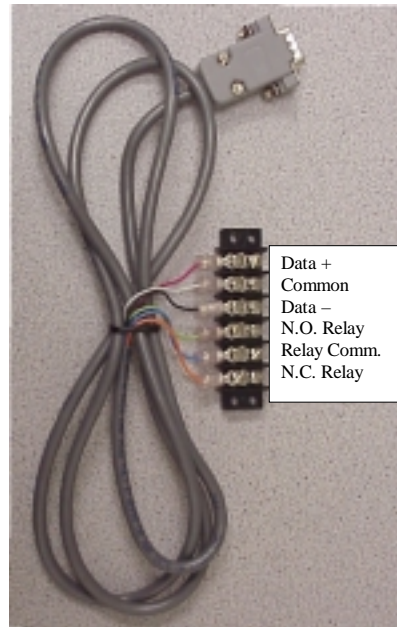
3.4 Connecting Cables

The PTI Falcon requires a few connecting cables for proper operation. When installation is complete and you are ready to turn on the system, the female end of the power cord will plug into the power outlet on the back of the PTI Falcon and the male end will plug into a 120 VAC 60Hz outlet.



WARNING: TO AVOID SHOCK HAZARD, NEVER PLUG THE MALE END OF THE POWER CORD INTO A WALL OUTLET WITH THE FEMALE END EXPOSED!

All of the remote keypads and other devices communicate with the PTI Falcon through the remote patch cord. This cord consists of a 9 pin male connector that plugs into the PTI Falcon. A six position terminal block is on the other end. The first three connectors are for the field wiring from the remote devices. The other three connectors are relay contacts for use with the PTI door alarm system.



If you have purchased a printer for the PTI Falcon, it will come with a standard computer style printer cable. The printer cable has a twenty-five pin to 36-pin male connector on each end. The 25-pin end plugs into the printer connector on the back of the base unit, and the other end plugs into the printer.

The PTI Falcon has a computer interface for transferring information. The interface cable will be similar to the one pictured to the right. The PTI Falcon end of the cable will have a nine pin female connector and will plug into the nine pin serial port connector on the back of the PTI Falcon base unit. The other end of the cable will have a 9 pin female connector for connecting to the serial port on your computer. This interface port can also be connected to an external modem for connecting to the PTI Falcon at a remote site.



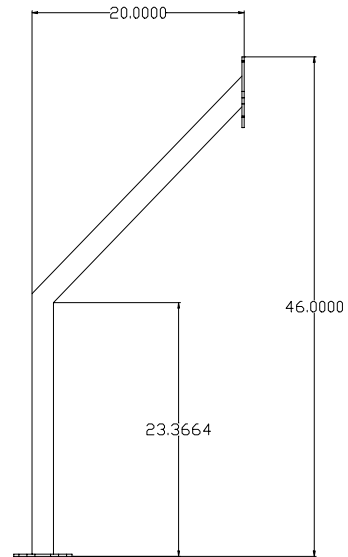
3.5 Accessories

The illustration on the right is a PTI gooseneck stand. This stand is designed for the PTI remote keypad when it is used in a drive up application. The keypad mounting plate contains a wiring hole that allows the wire to be fed up through the stand from underground conduit and three mounting holes that match the keypad back plate mounting holes. The mounting holes are tapped for an 8-32 machine screw.

The bottom plate of the gooseneck stand contains a center conduit hole and four mounting holes arranged on 4-inch centers. There is a cover plate which slides down over the bottom plate after mounting to hide the mounting plate bolts.

It is highly recommended that the gooseneck stand be electrically grounded to minimize the impact of lightning and static atmospheric charge on the keypad. It is also recommended that the installer seal the conduit hole inside the stand to prevent moisture from entering the Remote Keypad Unit.

PTI offers two versions of the gooseneck stand with 12" and 21" offsets. A wall mounted stand is also available.



3.6 Individual Door Alarms

The PTI Falcon supports the use of PTI individual door alarms. PTI door alarms require the use of door alarm multiplexer (mux) boxes, such as the one pictured to the right. A mux box contains a master circuit board capable of multiplexing up to 96 doors. Mux boxes are available to the nearest multiple of sixteen doors up to 96. Each building on the property must have its own multiplexer box or boxes. Multiplexer boxes are connected to the PTI Falcon base unit through the same 3-wire RS485 interface as the remote keypads.



Each alarmed door must have a magnetic door switch mounted on the door. The Mux box will connect to one wire from each switch in addition to a common wire that connects to all switches. 50-conductor telephone cable is often used for the individual door wiring. In addition to the door wiring and communication wiring, each master mux board requires 12V power in order for the board to operate. A single

12V power supply with battery backup is often used to power all of the multiplexer boxes from a central point. This allows the entire field wiring to be low voltage. Each mux box contains a tamper switch to detect break-ins to the mux box itself. Optional 9V battery connections allow for local battery operation of each box this is useful for testing of the system before the office is complete.

3.7 PTI Security Graphics

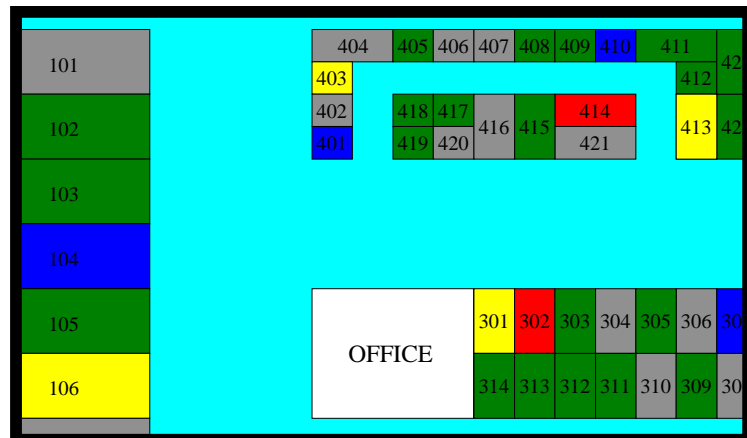
PTI Security graphics provides a full color image of your facility with rental units color-coded according to current status. The image will scan horizontally, vertically, and diagonally as required so that all areas of the property are regularly displayed on the color monitor. In addition to the moving image, the last three access events will be displayed across the lower part of the monitor screen with color-coded text. These lines of text are duplicates of the text that is logged on the printer.

There are six primary colors for rental units and three for event text as listed in the adjacent table. The **Door Open** and **Door Alarm** colors will not function unless the rental unit is wired with PTI individual door alarms.

Unit Colors	
Vacant Unit	Gray
Rented Unit	Green
On-Site Unit	Blue
Locked Out	Pink
Door Open	Yellow
Door Alarm	Red
Text Colors	
Normal events	White
Unusual Events	Yellow
Critical Alarms	Red

Individual control of the image movement is allowed if the Graphics Switch Panel is connected. When the **Auto/Manual** switch is in the manual position, the image may be moved using the **Up, Down, Left** or **Right** push buttons. The image will remain still when no button is pushed. This allows the use of the image as a property map to direct a customer to their unit.

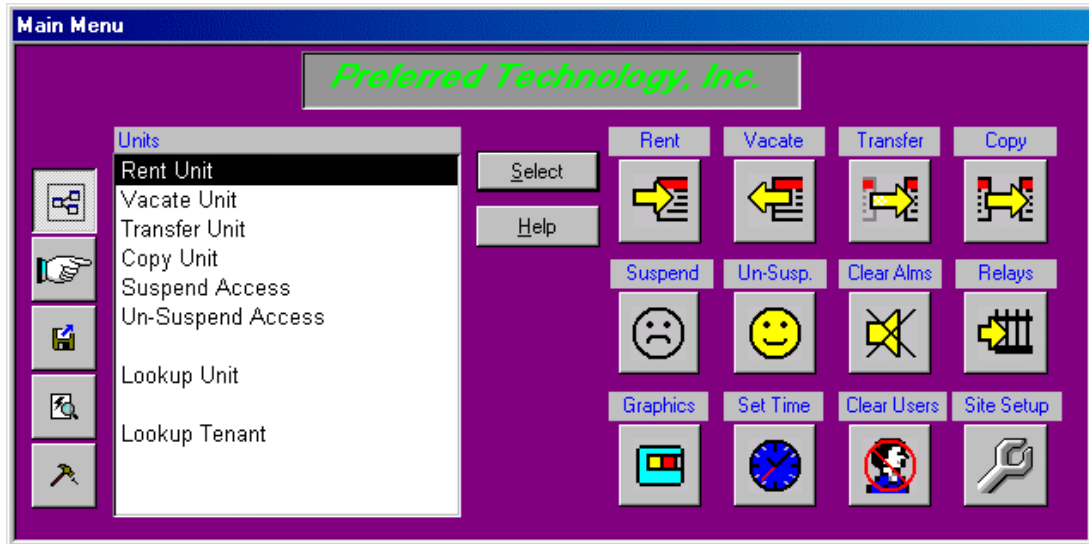
Security graphics is usually featured in a prominent position in the rental office, where it is clearly visible to both management and prospective tenants. The color display is often wall mounted behind an acrylic security panel that contains the custom name and logo for the self storage.



3.8 Falcon 2000 Access Management software

PTI Falcon 2000 Access Management Software is a true 32 bit windows 95/98/NT compatible software package that allows the control of a PTI Falcon system by a remote PC. The PC may be a direct connection in the same room as the Falcon, or may be miles away with the connection established with telephone Modems on an ordinary dial up telephone line. The Falcon 2000 Access Management Software not only allows the PTI Falcon to be programmed from a remote location, it also allows the remote location to retrieve the access record for the property from the PTI Falcon and print it (or save it on disk) at the remote office. It is even possible to open the gate remotely.

It is ideal for those facilities that cannot support a full time manager, especially when used in combination with PTI individual door alarms. Please request a demo copy of the **Falcon 2000 Access Management Software** for additional details.



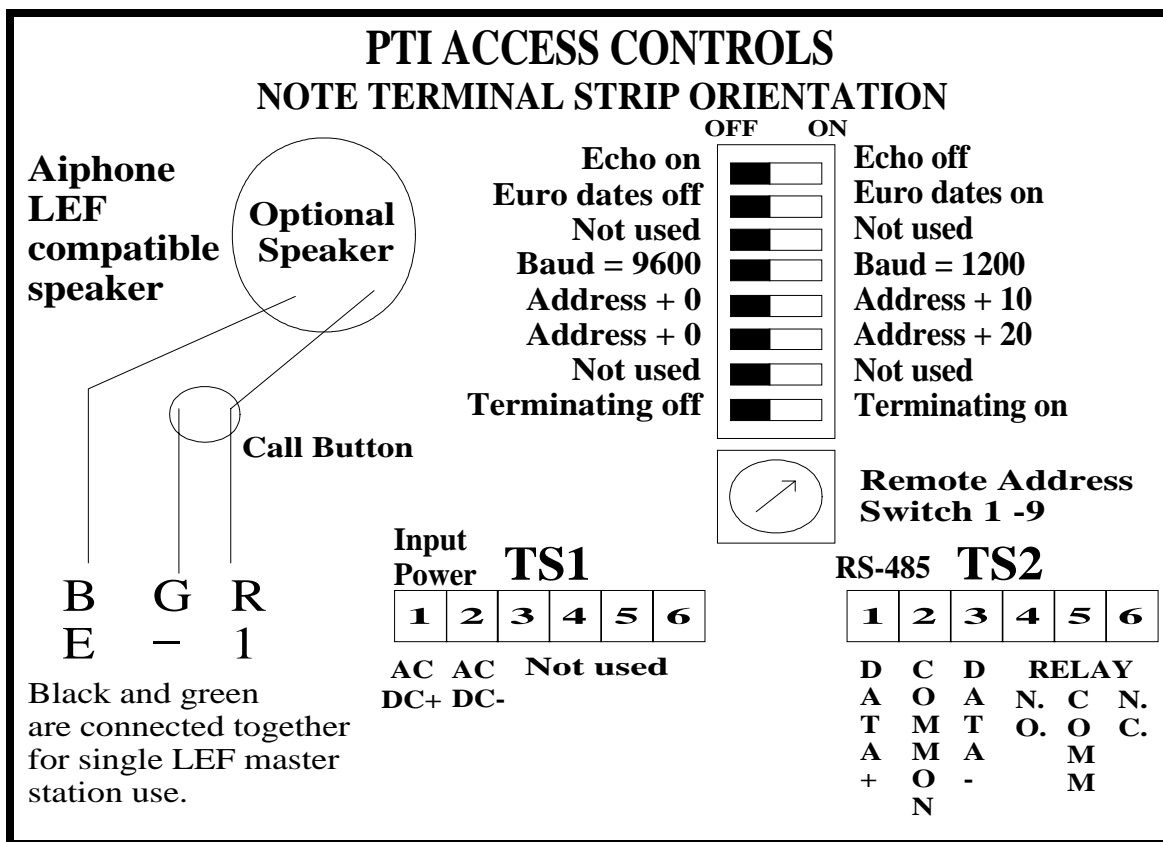
Event Log - Most Recent at Top							
Event	Data	Name	Date	Time	Rem.	Area	
Rent Unit	00363	Paul Donner	08-Jul-99	4:29:00 PM	0		
Trigger Relay	Trigger		08-Jul-99	4:27:00 PM	1	Entrance Keypad	
Clear On Site Users			08-Jul-99	4:28:00 PM	0		
Rent Unit	0008	Don Grimm	08-Jul-99	4:27:00 PM	0		
Trigger Relay	Trigger		08-Jul-99	4:12:00 PM	2	Exit Keypad	
Clear Alarms			08-Jul-99	4:13:00 PM	0		
Suspend Unit	B0031		08-Jul-99	4:12:00 PM	0		
Set Time/Date			08-Jul-99	4:07:00 PM	0		

4. Installation

4.1 Remote Keypad Installation

Open the Remote keypad by removing the four stainless steel button head machine screws on the sides of the keypad case. The front and back half will now separate. Mount the back plate to the desired keypad location using the three-keyed holes.

This is a diagram of the connections found in the Remote keypad and CodeXpress.



4.1.1 Wiring

4.1.1.1 Recommended Wire Type

18 AWG. 2 pair twisted shielded with a ground wire. The Belden wire code is 5302FE. The colors in this wire are red, black, white, green and a bare ground wire. This wire can be used to control the power for the device and also the data.

4.1.1.2 Installation and Hookup of Wiring

- (1) Connect low voltage power wires to the keypad from a low voltage power transformer to TS1 as follows:

TS1, pin 1 Red Wire - 12 VAC or DC
TS1, pin 2 Black Wire - 12 VAC or DC

- (2) Connect the Data Communication Wires to the keypad terminal TS2 next using the remaining conductors. Terminate the wires as follows:

TS2, pin 1 White Wire - to Data + on the remote patch cable
TS2, pin 2 Bare Ground - to common data on the remote patch cable
TS2, pin 3 Green Wire - to Data – on the remote patch cable

- (3) Install the relay contact wires to the device to be controlled ; both normally open and normally closed relay contacts are available on the following terminals: A separate cable of the appropriate size should be used. Consult the device manual for this.

TS2, pin 4 Normally open relay contact
TS2, pin 5 Relay common contact
TS2, pin 6 Normally closed relay contact

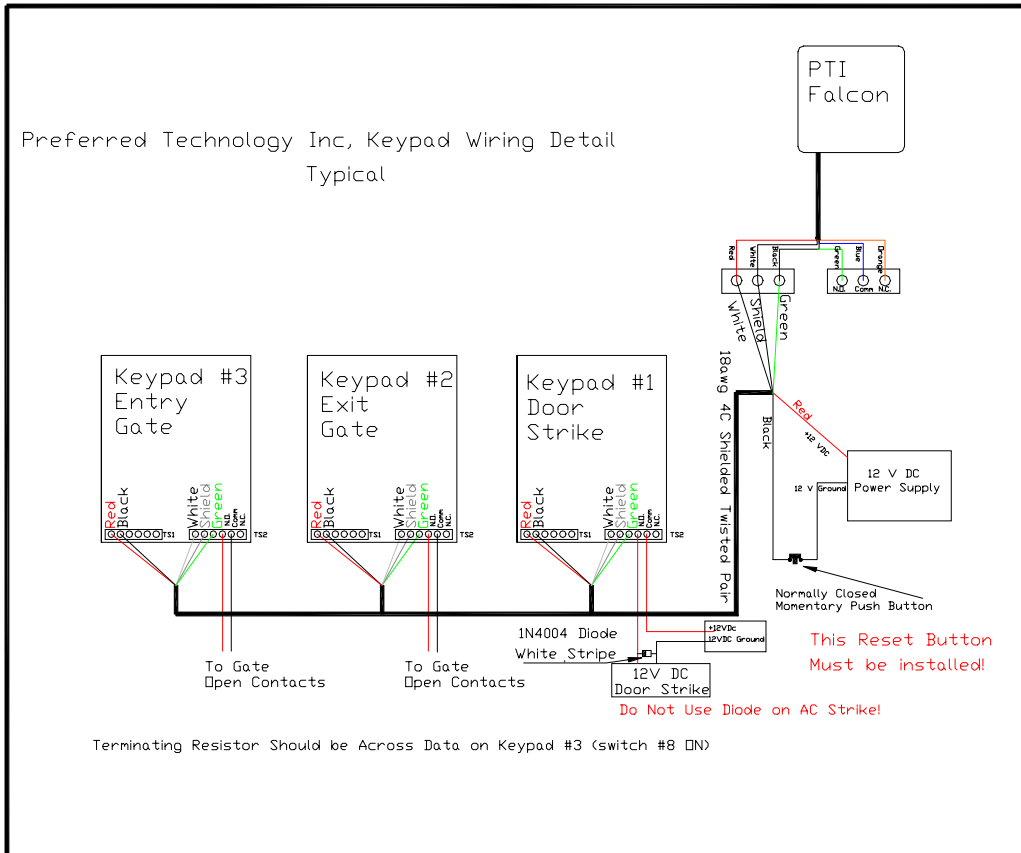
Most electric gate operators require a normally open contact (pins 4 & 5). Some electric door strikes require a normally closed contact (pins 5 & 6). IF door strikes are used it is recommended that they be 12V DC. A shunting diode must then be installed across the solenoid to prevent ground spikes from disrupting the keypad communication. **DO NOT PLACE A DIODE ACROSS AC STRIKES AS IT WILL SHORT OUT THE POWER SUPPLY FOR THE STRIKE.**

WARNING: WIRING THE RELAY TO THE OPERATING DEVICE WILL INTRODUCE THE OPERATING DEVICE CONTROL VOLTAGE INTO THE REMOTE KEYPAD HOUSING. THE INSTALLER MUST VERIFY THAT THIS

IS NOT HIGH VOLTAGE! THE PTI KEYPAD IS NOT DESIGNED FOR THE PRESENCE OF HIGH VOLTAGE WITHIN THE KEYPAD CASE.

The PTI remote keypad will operate on voltages from 12V to 18V AC or DC, however, 12 Volts is recommended for best operation.

4.1.1.3 Typical Wiring Scheme



With the RS485 communication scheme, a keypad can typically be located as far as four thousand feet from the base unit. As the wire length increases, a shielded twisted pair cable with ground wire becomes a necessity for proper operation. You must also be aware of voltage losses on the power cable. The farther the devices are from the office means the larger gage of wire to be used. **THE SYSTEM WILL NOT OPERATE PROPERLY IF NOT ENOUGH CURRENT OR VOLTAGE IS PRESENT.** Extreme care should be taken when choosing a power supply voltage and current rating. Long distance runs may require a remote power supply to be installed to ensure proper operation.

A keypad will pull its maximum current (300ma) when the relay is pulled in and the backlighting is on.

4.1.2 Keypad Switches

The keypad switches must be properly set. The default setup for the PTI Falcon system considers odd numbered keypads to be *entrance* keypads and even numbered keypads to be *exit* keypads. Using Function 18 (Setup Remotes) will allow entrance and exit keypads to be set to any unit number. The unit number for each keypad is set with the red rotary switch. For unit numbers higher than nine, DIP switch number five should be turned on which adds ten to the rotary switch number. DIP switch number six is used to add twenty to the rotary switch setting. It is possible to set the keypad unit number to any value from zero to thirty nine. Be aware that the PTI Falcon system reserves remote unit numbers 0 and 22 for its own use, and a remote set to be unit 0 or 22 will not communicate with the base unit.

Remote Number 32 is the highest number that can be assigned with out an expansion unit.

Finally, you must set the position of the eight DIP switches as needed for proper keypad operation. The switch functions are summarized in the following table:

Switch 1	OFF	= echo code on display	ON	= no echo
Switch 2	OFF	= European Dates off	ON	= European Dates on
Switch 3	OFF	= not used	ON	= not used
Switch 4	OFF	= 9600 Baud	ON	= 1200 baud
Switch 5	OFF	= add zero to unit number	ON	= add ten
Switch 6	OFF	= add zero to unit number	ON	= add twenty
Switch 7	OFF	= not used	ON	= not used
Switch 8	OFF	= high comm. Line impedance	ON	= low

When DIP switch one is turned on, an "X" will appear on the keypad display as each digit of the access code is entered, rather than the actual digit. This may be set to your individual preference.

The PTI Falcon uses either a 1200 or 9600 baud communication rate, therefore **DIP switch four should be set to match the base unit setting as well as the settings on all other remotes!** The system can only communicate at one speed thus all remotes must be set the same.

Switch eight when ON, places a communication line terminating resistor across the RS485 data leads. This switch should be turned ON if the keypad is the last keypad on the RS485 communication wire and more than 800 feet from the base unit, otherwise set it OFF. **NOTE: There should only be one remote device with the terminating resistor on!**

4.1.3 Testing the Keypad

- (1) Test the display by applying power to the keypad. A default date and time should appear on the display after power is applied. The PTI Falcon base unit transmits the date and time to the remote keypads once a minute, so within 60 seconds the base unit will cause the date and time display to change to the time that is programmed into the Falcon providing the keypad is wired correctly and all switches are set properly. Verify that the display backlight is working by pressing the "*" key. The light should come on and the display will say "Please Enter Access Code". If no keys are depressed for ten seconds, the date and time will return to the display and the backlight will shut off. The light is difficult to see in daylight, so you may have to shade the display to be certain that it is working.
- (2) Test the touch pad operation by pressing the "*" key. When the display says "Please Enter Access Code", press the digits "0-1-2-3-4-5-6-7-8-9". You should see each digit appear on the display as it is pressed (you will see an "X" for each digit if DIP switch #1 is ON). Then press the "#" key to transmit the code to the base unit. The display will say "Please Wait" after the "#" key is pressed. If your keypad is communicating with the PTI Falcon base unit, the "Please Wait" message will be replaced by a response from the base unit such as "Sorry-Access Denied".
- (3) Check proper operation of the touch pad backlights by cupping your hands around the touch pad and looking in. This should block out enough light for you to see the green lights behind the touch pad.
- (4) Test the keypad rotary switch setting (unit number) by pressing the "*" key and then the "#" key. The display will show "Unit Number = XX" where "XX" is the keypads remote unit number. The display will return to the date and time after ten seconds. **There should never be 2 remotes with the same unit number!**
- (3) Test for communications with the base unit by turning on the base unit and entering the correct date and time into the base unit. The date and time at the Falcon should be sent to the keypad and appear in the display after it is changed in the base unit. This verifies communications from the base unit to the keypad. Test communications from the keypad to the base unit by entering an access code into the keypad and pressing the "#" key. If the keypad display responds with anything other than "Please Wait" before returning to the date and time, the keypad has successfully communicated with the base unit. If you only get a display of "Please Wait" and the keypad defaults back to the power up default time of 12:00 you will need to recheck your wiring, Baud rate settings, rotary switch settings and also make sure the Falcon is set to the proper number of remotes.

4.2 Individual Door Alarm Installation

The PTI door individual door alarm system is very unique when compared to most alarm systems. Through the use of the RS-485 communication scheme we are able to control hundreds of alarm points from a single communication line. Unlike many other systems including home alarms, you have limitations which require many different expanders to handle as many doors. The PTI multiplexer (Mux) is the only multiplexer that is expandable by banks of sixteen all the way up to 96. This allows for greater flexibility when laying out a site.

There are several different ways to install and wire the individual doors and each has its own advantages and disadvantages. It is most important that time is taken to determine the best method for your application and a wiring diagram followed to ensure a proper installation for years to come. As an installer you must realize the consequences of a poor installation and the excessive labor that can develop because of it. The following will outline some of the different methods. These examples are not the only way, but are methods that have been proven over the years.

4.2.1 Multiplexer Box Installation

- (1) Find an appropriate location for the installation of each multiplexer (MUX) box required for the door alarm system. Each building should have its own mux box. Buildings with a large number of doors to alarm may have more than one mux box. Remember that although the mux boxes may look identical on the outside, some boxes may be configured to handle more doors than other boxes, so take care to match the correct box to each building. Although the box enclosures are rainproof and the boxes may be mounted outdoors, use indoor mounting if available. Above the entrance door to a building with hallway access makes an ideal location.

NEVER locate a mux box inside of a storage unit or any other location that will not be able to be serviced easily in the future.

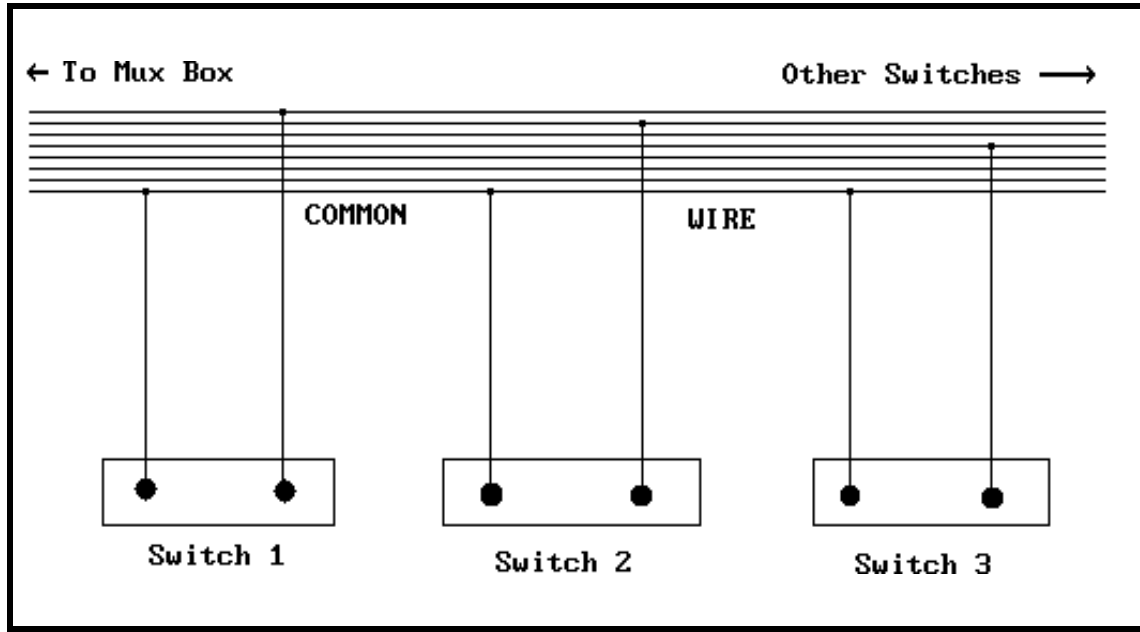
- (2) Mount each mux box by removing the door and circuit board and sinking screws or bolts through the four box mounting holes into the wall. Take care not to damage the circuit board during the mounting process. If you must drill to mount the box, do not allow any metal fragments to become lodged on the circuit board.

Knock outs have been provide at the bottom and rear of the box for multiple wiring configurations. Please be sure to install grommets or bushings or conduit on any wiring entrance.

4.2.2 Door switch Wiring Methods

There are three acceptable wiring methods for individual door alarm wiring.

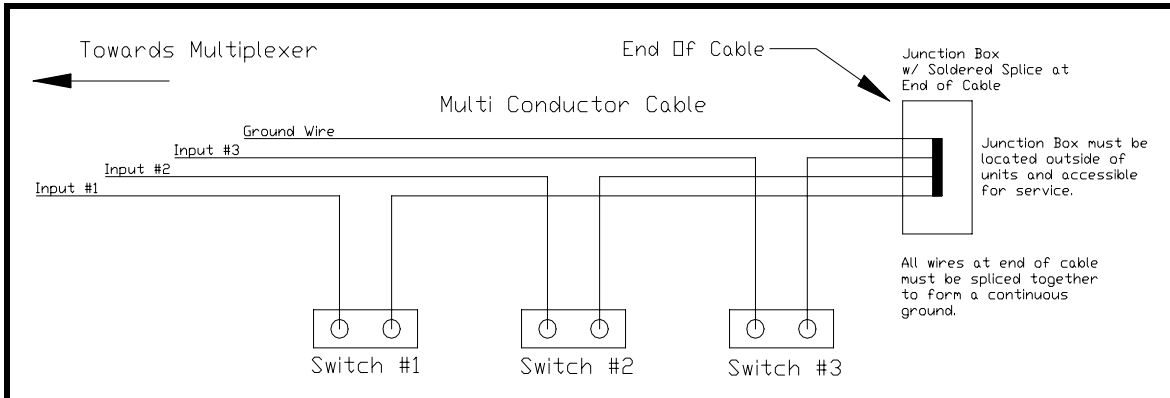
4.2.2.1 Method 1 – Common Ground



Install the door to door wiring cable and door switches. Splice the door switch wires into the main cable as indicated above. 3M UG and UY connectors are recommended and available through PTI for the wire splices. Choose a different color wire for one side of each switch which will be BUTT spliced with a 3M UY connector. Choose one wire as the common wire to the other side of all the switches on the cable, this can be connected with a 3M UG in line splice.

There are several possible cable routing schemes. You may decide to route one door to door cable from the mux box, or several depending on the number of conductors in the cable used and the box location within the building. Remember that the maximum number of switches on one cable with method #1 is equal to the number of conductors in the cable minus one. Telephone cable is commonly available in twenty-four conductor (12 pair) or fifty conductor (25 pair). One size will generally work better than the other depending on the number of doors and the mux box location.

4.2.2.2 Method 2 – End of Line Ground

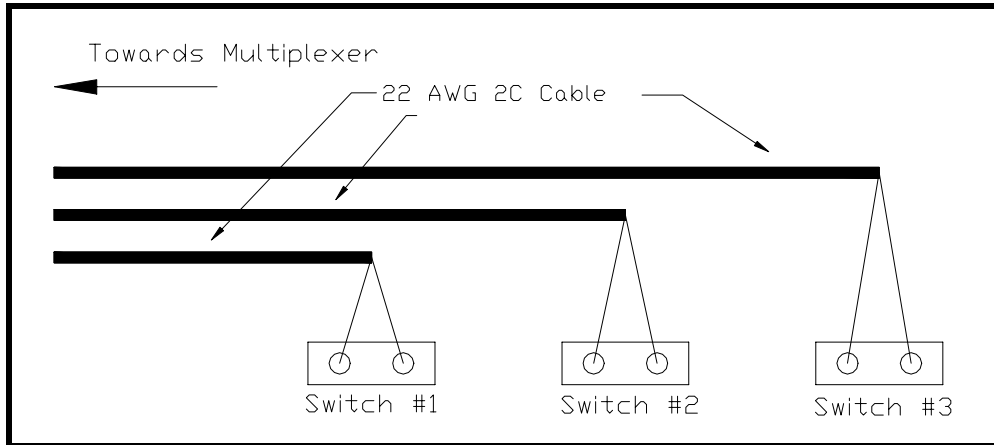


Install the multi-conductor door to door wiring cable and door switches. Splice the door switch wires into the main cable as indicated above. 3M UG connectors are recommended for splicing the door switch cable into the multiconductor cable. Choose a different color wire for each switch then cut it and splice the switch wiring into each end of the cut wire using a 3M UY connector. Any wires not used in the multiconductor cable can be used as a ground and terminated in the multiplexer on the door input ground plane.

Install a junction box outside of the units and at the end of the multiconductor and punch the wire through to the junction box. Strip all ends of the multiconductor cable and solder them together then protect the connection with a wire nut and electrical tape.

****Note -** When testing this system make sure you open all doors then close them one by one, otherwise if a wiring mistake was made and 2 switches are on the same wire the problem will not show up properly and one door channel will print for both doors.

4.2.2.3 Method 3 – Conventional Two Wire



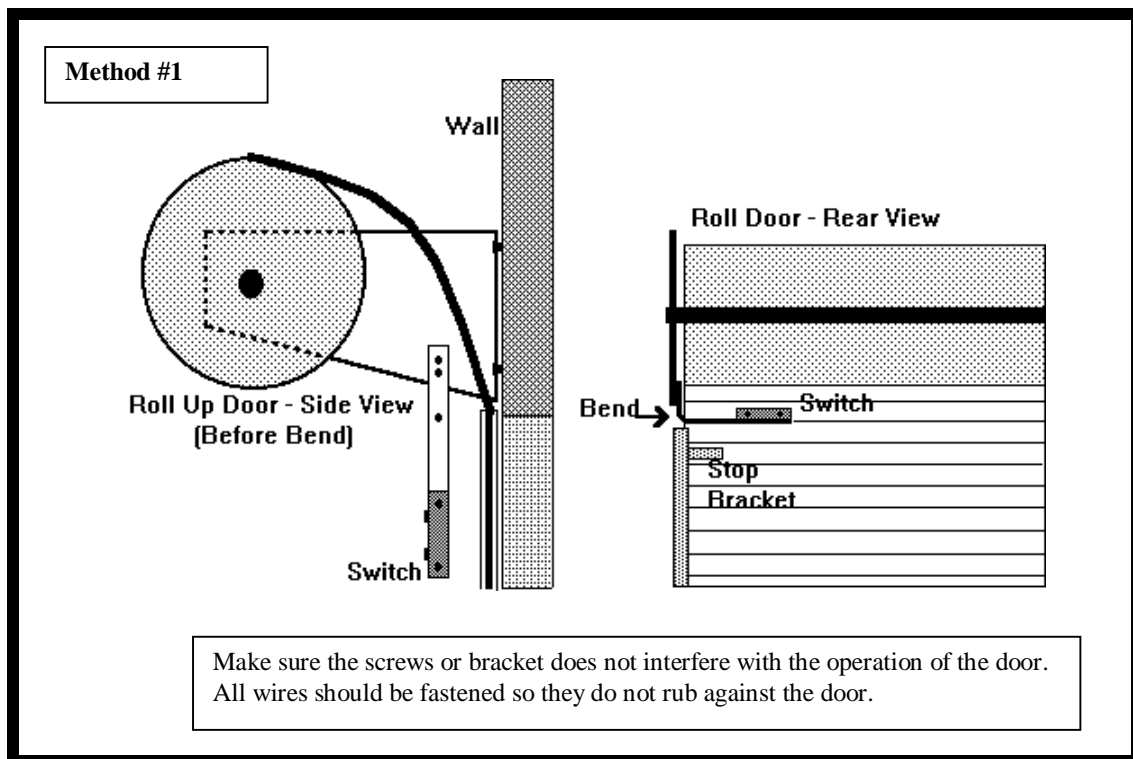
Method 3 is wired the same way a conventional alarm panel is by using 2 separate conductors for each and every door. A 22awg 2 Conductor cable is run to each door and terminated at each door switch. The opposite end in the mux is then punched down accordingly. Due to the limited number of grounds terminals available on the multiplexer it will be necessary to group some of them together then punch down a single wire.

4.2.3 Roll Up Door Magnet and Switch Installation

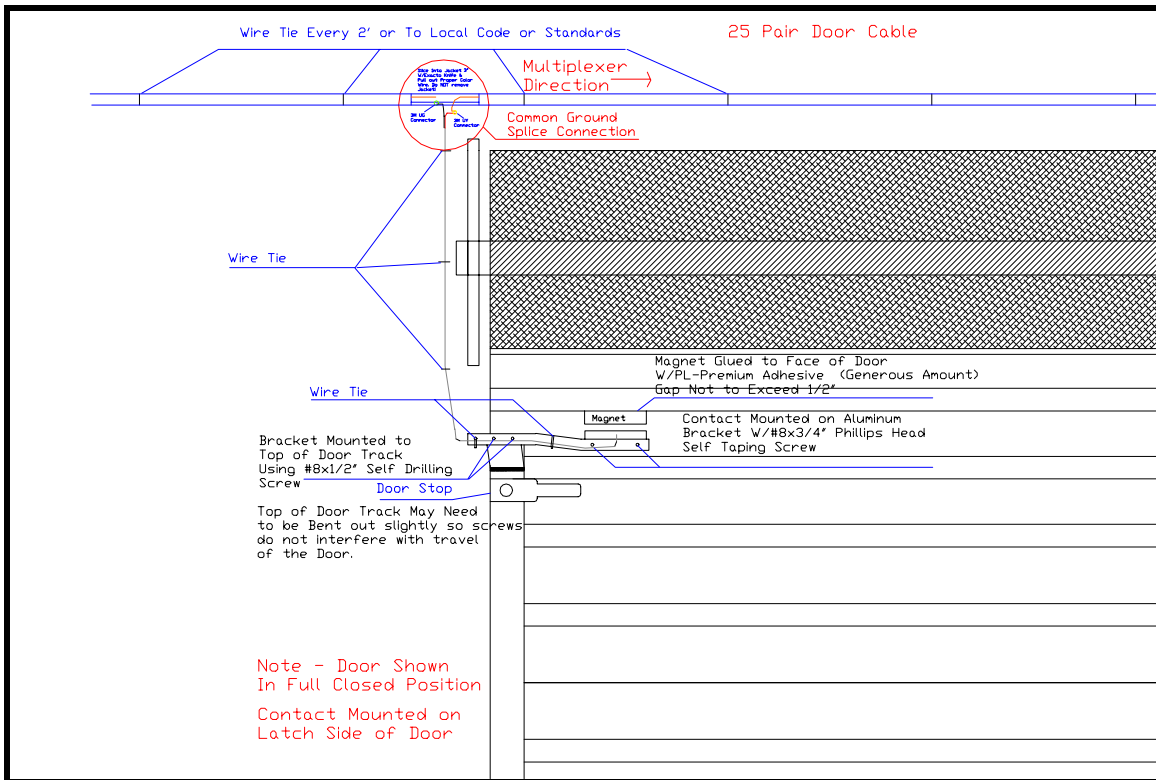
Self Storage doors are all manufactured slightly differently so care and time must be taken in the beginning to determine the best method for your application. The most important thing to keep in mind is what will happen over time. The door clearances will become larger and the door could possibly come up past the door stop. The location of the switch should be chosen based upon this. Be sure to mount your hardware so neither the bracket nor the mounting screws will interfere with the operation of the door. NEVER MOUNT THE MAGNET DIRECTLY TO THE DOOR STOP.

Only switches rated for a 2" gap or more should be used, these can be supplied by PTI if desired. If the magnet is mounted directly to a metal surface than a spacer should be used to help the magnet retain its magnetism over time. The gap between the switch and magnet should NEVER exceed ½". ALWAYS mount the magnet and switch on the latch side of the door to prevent false alarms from door movement. Roll up doors often require the use of a mounting bracket for the switch as shown below in the diagrams. The magnet may be either bolted or riveted to the door using the two mounting holes and or glued using a premium adhesive such as PL-Premium. Do NOT use liquid nails as the only adhesive device as it tends to break down and fail over time. An overhead door switch can also be used and mounted to the concrete floor as long as armor cable is used to protect the cable on the switch from damage.

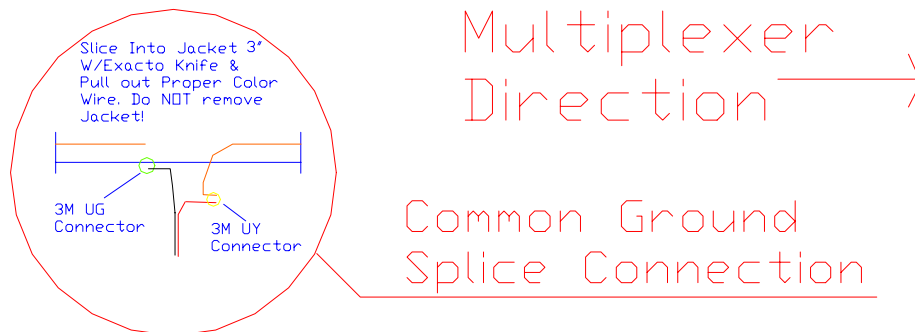
4.2.3.1 Method 1 – Brace Mounted Switch Bracket



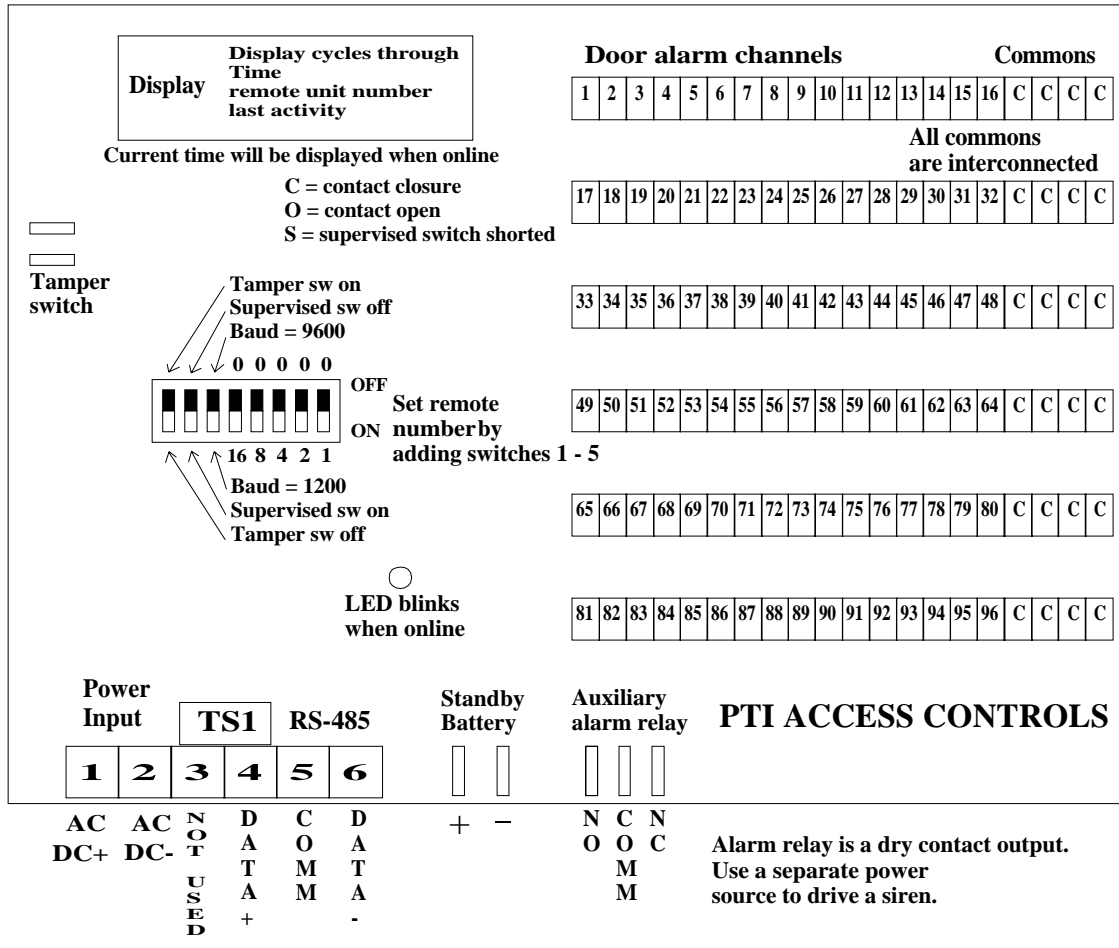
4.2.3.2 Method 2 – Track Mounted Switch Bracket



This method can be used with certain types of doors. You must make sure 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 and riveted and/or glued to the inside of the door. **DO NOT ATTACH THE BRACKET TO THE DOOR STOP!**

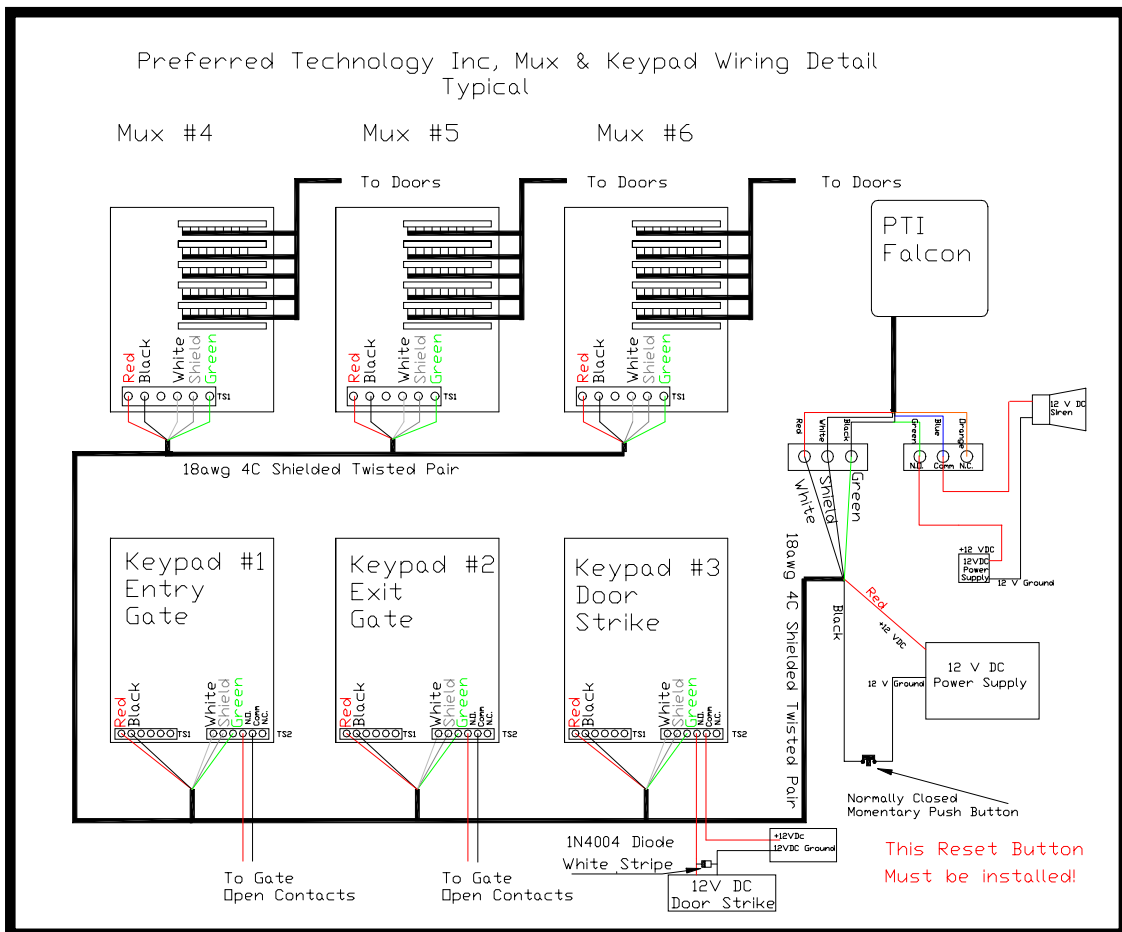


4.2.4 Door Alarm (Multiplexer) Board Layout



Install the communication and power wiring to the mux boxes. Communications and 12 VAC or DC power may be run through the same cable if a cable with two individually shielded twisted pairs is used. Take care to make sure the multiplexer receives the proper voltage and current. 18 AWG is sufficient wire gauge for most applications but may need to be increased for longer runs where voltage drops may come into effect. **Any remote device will NOT operate properly if any voltage drops below 11.5 V on the input.**

4.2.6 Typical Power and Communication Door Alarm Wiring



4.2.7 Multiplexer Box Switches

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 = 9600 Baud Communication	ON = 1200 Baud
Switch 7:	OFF = Supervised Switches Off	ON = Supervised on
Switch 8:	OFF = Tamper Switch Enabled	ON = Tamper disabled

DIP switches 1 – 5 allow you to set the Mux box unit number using a binary code. The boxes may be numbered in any order as long as each box has a unique unit number that is not the same as any other mux box or keypad. It is typical to begin numbering the mux boxes at one higher than the last remote keypad number. For example, if there are two gate access keypads numbered one and two, then the mux boxes will be numbered three, four, five, etc. Using DIP switches 1 – 5 allows the mux box unit number to be set to any number from zero to thirty one. The Mux box unit number is displayed in the four-digit display in the top right corner of the board. For example, remote unit number twenty may be selected by placing switches three and five **ON** and switches one, two, and four **OFF**. The result is then **4 + 16 = 20**.

DIP switch Six is used to select 9600 or 1200 baud as the Mux board communication rate and should be set the same as the Falcon base unit as well as all other remotes on the system.

DIP switch Seven is used to enable the Mux boards supervised switches option. When turned on the mux board looks for a 4.7K OHM supervisory resistor across the switch. This will detect any shorts in the door to door wires. If a tenant tries to bypass a door switch the alarm will go off. This option requires PTI supervised switches.

DIP switch Eight is hooked in parallel with the tamper switch connections. When DIP switch Eight is on, the tamper switch is shunted.

4.2.8 Testing the Alarm Wiring

The PTI Mux board contains a four digit LCD in the upper left corner of the circuit board. There are three different diagnostic messages displayed on a continuous basis:

- (1) The display will show the time of day in the format HH:MM. The time is transmitted to the Mux board from the PTI Falcon base unit once a minute. The time will default to 12:00 at power up. If the time display changes to match the base unit within one minute and the green LED begins to blink, communications has been established with the PTI Falcon base unit.
- (2) The display will show the unit number of the Mux box in the format Un:XX, where XX is the two digit unit address set with DIP switches 1-5 in the range 00-31.
- (3) The display will show the number of the last switch channel to Open, Close or Short in the format O-XX, C-XX or S-XX, where XX is the two digit channel number in the range 00-96. Channel 00 is the door tamper switch and channels 01-96 are normal alarm switches. Example O – 11 = channel #11 was opened, C – 11 = Close channel 11. **This is not the unit number and must be cross referenced in the Falcon programming or the Alarm.alm file to associate the proper unit number.**

NOTE – A 9 V DC battery can be connected to the Batt terminals input on the mux to check the doors before permanent power is connected. This is extremely helpful when the conduits and office are not in place yet.

4.2.9 Testing the Multiplexer Communication

To test communications with the alarm multiplexer box, your PTI Falcon base unit must be installed and operational, and your communication wiring to the alarm mux box must be in place. Test communications as follows:

- (1) Check that all wiring is in place, all switches properly set, and all cables plugged in to the back of the PTI Falcon base unit. Apply power to the alarm mux boxes.
- (2) Load the printer with paper according to the instructions in the printer manual and apply power to the printer.
- (3) Apply power to the PTI Falcon base unit. After one minute or less, the PTI Falcon will print on the printer "Comm On - Remote XX" along with the date

and time as shown on the base unit display, where "XX" is the remote unit number for which communications has been logged on. If communications is lost to a remote device after being logged on, the message "Comm Off - Remote XX" along with the date and time will be logged on the printer.

- (4) The time on the base unit will be displayed on the MUX board and the green LED will begin to blink when the unit starts communicating with the Falcon base unit.

4.2.10 Creating the alarm.alm File

Once the Door alarm system is installed the units should be opened individually to test the wiring connections and door switches. As the units are tested a list of what MUX and Channel they are connected to needs to be created. The MUX and Channel information is required for the Falcon base unit to know what unit number is being opened. The MUXs and Channels can be programmed directly into the Falcon using Function # 5. If the Falcon is going to be connected to a computer, the MUX and Channel information **MUST** be put in the Alarm.alm file in the C:\PTI directory or into the Falcon 2000 Access Management Software's MUX and Channel list.

Note that the file must be in alphanumerical order and a carriage return (enter) is required after each line. The 1 on the end of each line turns the unit alarm on. Once the file is created it can be downloaded along with rental information to the Falcon with an Accounting Software Interface.

If the alarm file is not sorted properly, the download will NOT work. Make sure all unit numbers are sorted. Preceding zeros should be used in the unit number to ensure a proper sort of the data.

The data format for the Alarm.alm is as follows in the example below.

“UNIT NUMBER, MUX NUMBER, CHANNEL NUMBER, 1”

```
0033,4,28,1
0034,4,29,1
0035,4,30,1
0035A,4,31,1
0036,4,32,1
0037,4,33,1
A0101,5,82,1
A0103,5,83,1
C1427,17,42,1
C1428,17,41,1
C1429,17,40,1
```

4.3 Remote Relay Board Installation

The PTI 8-channel relay board has 8 Form C relay outputs on it and can be used to control a variety of devices. Some examples are elevators, lights and perimeter beams. This board also has 8 door alarm channels on it. Please note the alarm grounds are configured differently on this board than the mux boards. The Power and communications hookup and settings on this device is the same as the PTI MUX board. Please refer to the section on **MUX Box Switches** or to the following page for the Relay Board layout, hookups and switch settings.

The relay board must be defined as a relay board using Function 18 on the Falcon or with Remote station setup in the *Falcon 2000 Access Management Software*.

If the relay board is used to control lights, make sure the lighting controls are turned on under Function 1000, the *Factory Setup Menu*, and the Lighting Zones are defined using Function 20. The Lighting Zone setup can also be done with the *Falcon 2000 Access Management Software*.

WARNING: THE RELAYS ON THIS BOARD ARE LOW VOLTAGE ONLY. AN AUXILIARY RELAY MUST BE USED FOR HIGH VOLTAGE APPLICATION.

The PTI 8-channel relay board contains a four digit LCD in the upper left corner of the circuit board. There are three different diagnostic messages displayed on a continuous basis:

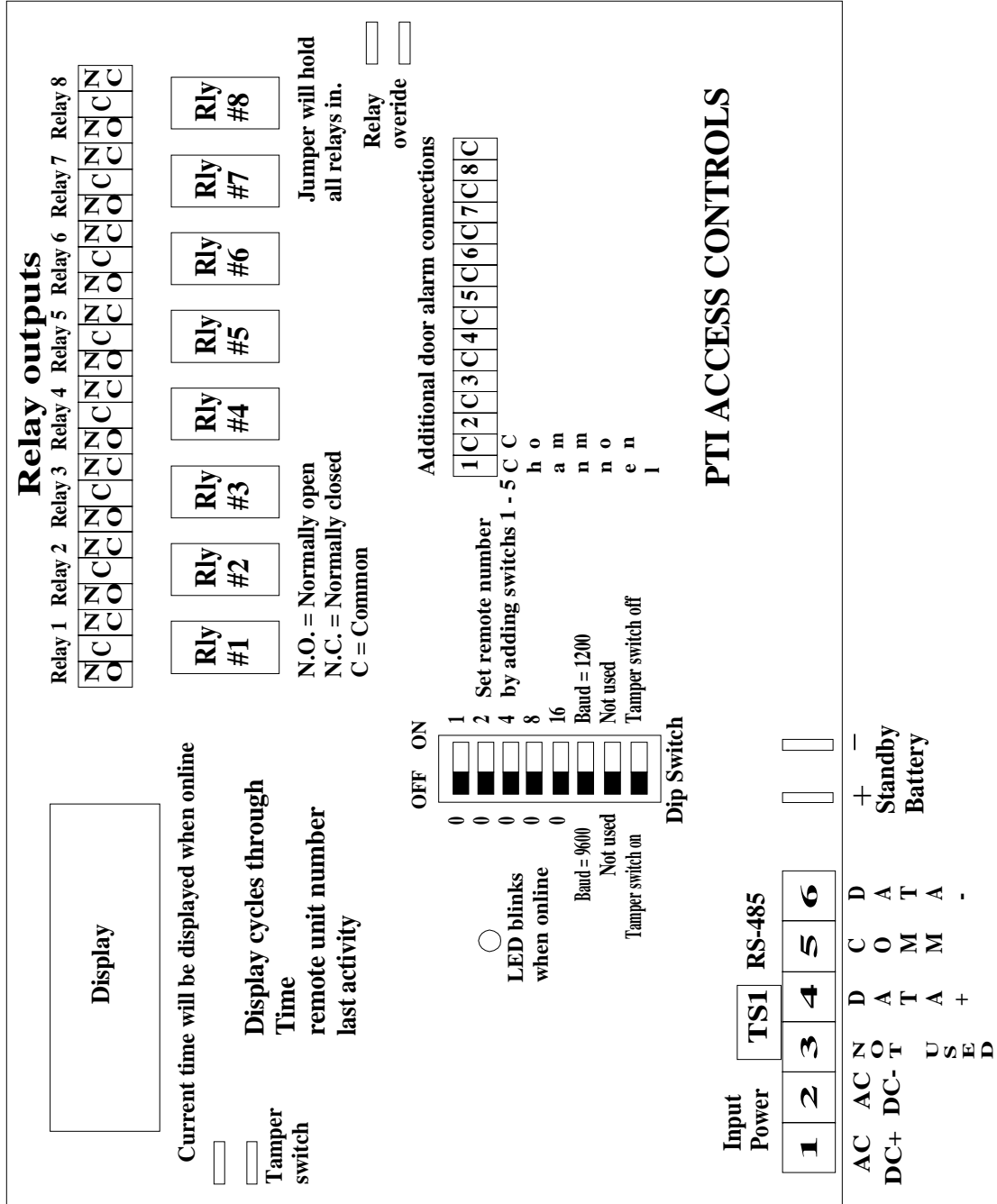
The display will show the time of day in the format HH:MM. The time is transmitted to the Mux board from the PTI Falcon base unit once a minute. The time will default to 12:00 at power up. If the time display changes to match the base unit within one minute and the green LED begins to blink, communications has been established with the PTI Falcon base unit.

The display will show the unit number of the Mux box in the format Un:XX, where XX is the two digit unit address set with DIP switches 1-5 in the range 00-31.

The display will show the number of the last switch channel to Open or Close in the format O-XX or C-XX, where XX is the two-digit channel number in the range 00-08. Channel 00 is the door tamper switch and channels 01-08 are normal alarm switches.

NOTE-PTI has a 2 channel relay board available for smaller tasks.

4.3.1 Relay Board Layout



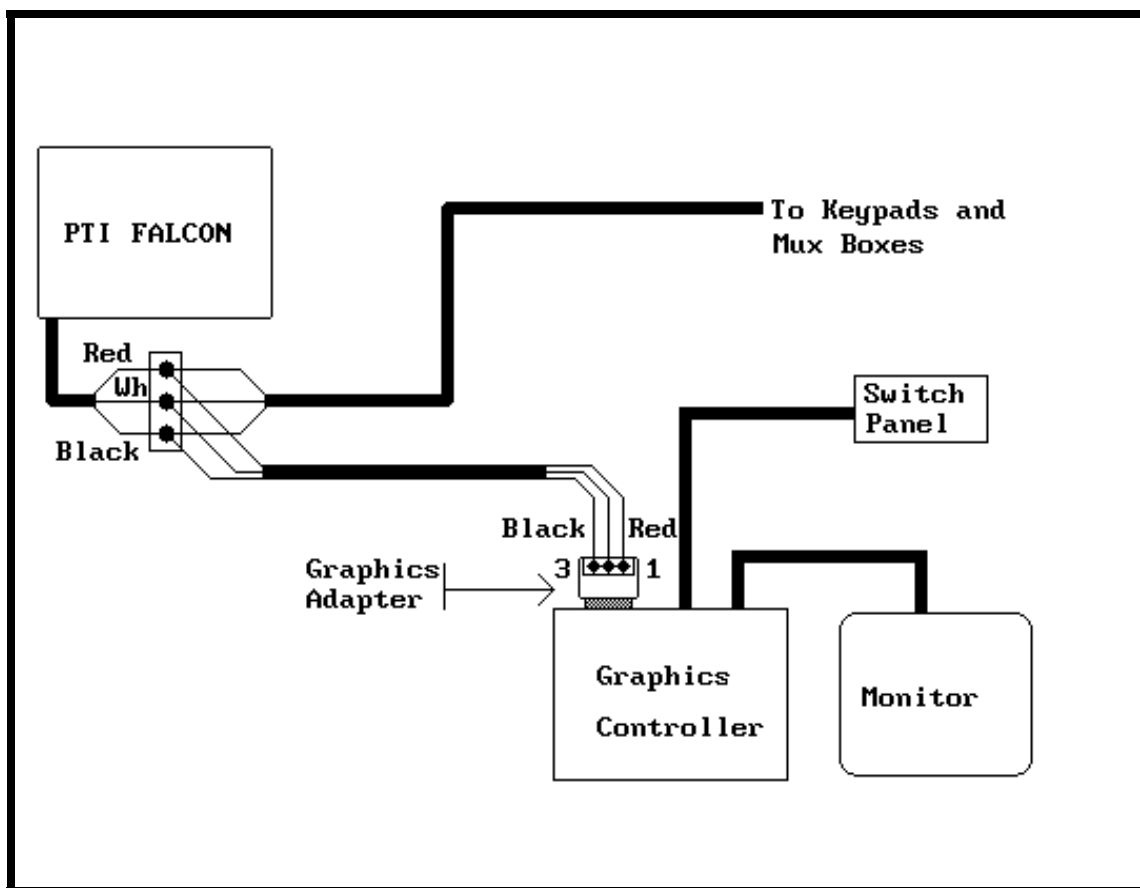
4.4 Falcon Base Unit Installation

Follow the following steps for installation of the PTI Falcon base unit:

- (1) Place the base unit in a readily accessible position where there is power available. Plug the AC power cord into the back of the base unit. **Do not plug the power cord into a wall outlet yet.**
- (2) Place the printer in a readily accessible position where there is power available. Install the printer cable between the base unit and the printer by plugging the connector in at each end. Tighten the cable retaining screws using a small screwdriver. Install the printer ribbon and paper according to the instructions in the printer manual **before plugging the printer power cord into a wall outlet.**
- (3) Make certain that the communications wiring from the remote keypads and door alarm multiplexers has been properly terminated on the remote patch cable and that the wires are in the correct order on the patch cable terminal block.
- (4) If you are using the computer interface for the PTI Falcon, install the PTI computer interface cable between the base unit and your personal computer.
- (5) Plug the base unit power cord into a properly grounded outlet. **WARNING: SHOCK HAZARD! NEVER OPERATE THE PTI FALCON BASE UNIT FROM AN UNGROUNDED OUTLET OR USE A THREE TO TWO WIRE CONVERSION ADAPTER WITH THE PTI FALCON!** If your office is not equipped with safety grounded outlets, consult a licensed electrician to have a properly grounded outlet installed.
- (6) Turn on the AC power switch on the rear of the base unit. The default date and time should appear on the display. Then install the remote patch cord in the connector on the rear of the base unit and tighten the retaining screws. This will not only complete the connection to the remote devices. The internal batteries will begin to charge. The batteries may require forty-eight hours of initial operation of the base unit before being fully charged.
- (7) Apply power to all remote keypads and door alarm boxes and begin testing.

4.5 Security Graphics Installation

Typical wiring for the PTI Security Graphics system is shown below. The small graphics adapter board allows the graphics controller to be hooked up to the PTI Falcon in the same manner as a remote keypad. Data is transmitted from the PTI Falcon base unit to the Graphics controller only (not from the Graphics controller to the Falcon), a **Remote Unit Number** is not required by the Graphics controller. Therefore, the PTI Falcon will not log "Communications On" or "Communications Off" for a Graphics Controller as it does with Remote Keypads and Door Alarm Mux boxes. If access events are logged across the bottom of the graphics screen as they occur, the system is communicating properly with the Graphics controller.



The installer should note that the Graphics Adapter is plugged into Com port #1 of the graphics computer, the Switch panel is plugged into the printer port, and the VGA monitor is plugged into the VGA port. **THE GRAPHICS CPU MUST USE COM 1 FOR INPUT.** The graphics program must be set to communicate at the same speed as the RS-485 on the Falcon. This can be changed by editing the custom graphics program RUN.BAT file. Example – STACKNSTOW /B96 will communicate only at 9600 baud. To change it to 1200 baud you must edit the RUN.BAT file with a dos editor and change the /B96 to a /B12.

5. Programming

The PTI Falcon uses a menu driven programming system that is easily mastered. Using the function number accesses the individual programming command. There are a total of twenty-four function numbers listed on the programming guide sticker on the front of the base unit. A copy of the programming guide sticker is given here for reference. When you are prompted for a Yes or No, remember * = NO and # = YES.

BASIC KEYPAD INSTRUCTIONS	
PRESS *, FUNCTION NUMBER, # KEY OR PRESS * THEN # FOR HELP	
* = NO	# = YES
1 - SET TIME/DATE	13 - ALARM CONTROL
2 - SET TIME ZONES	14 - CONTROL OPTIONS
3 - SET HOLIDAYS	15 - ADJUST CONTRAST
4 - VACATE A UNIT	16 - UPDATE GRAPHICS
5 - RENT A UNIT	17 - PROGRAM VERSION
6 - DELETE A UNIT	18 - SETUP REMOTES
7 - SET MASTER CODE	19 - SETUP ELEVATORS
8 - PRINT REPORTS	20 - SETUP LIGHTING ZONES
9 - SAVE TO TAPE	21 - CLEAR REMOTES
10 - LOAD FROM TAPE	22 - CLEAR ELEVATORS
11 - OPEN ENTRANCE	23 - CLEAR LIGHTING ZONES
12 - CLEAR ALARMS	24 - CLEAR USERS ON SITE

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To access a programming function, proceed as follows:

Press "*" (The display will read "Function? ")

Enter the Function Number

Press "# (The PTI Falcon will begin the selected Function)

If the programming guide sticker is unavailable, it is possible to scroll through the available function numbers on the PTI Falcon display. This is accomplished as follows:

Press "*" (The display will read "Function? ")

Press "# (The display will move to Function #1)

If you wish to select a Function other than Number One press the "*" to scroll through. If you scroll through all function numbers without making a selection, the display will read "Setup Done?". To scroll through the functions again, press "*" for NO, or if you are finished, press "#" for YES.

5.1 Function #1 – Set Time / Date

Function #1 -
Set Time/Date?

Function #1 - Set Time/Date is used to enter the correct time and date into the PTI Falcon. The date is entered in Month-Day-Year format (American version) or Day-Month-Year format (European/Australian version), with two digits required for each. Even though no punctuation marks (slashes) are entered from the keypad, the PTI Falcon will provide them on the display. For example, to set the date to January 9, 1991, you must enter **08/09/99**. Note that years from 85-99 refer to 1985-1999, and years from 00-84 refer to 2000-2084.

In the example at the right, the bold face type has been entered to change the date from the initial setting of 06/07/99 to 08/09/99. Press "#" to set the new date.

Enter	06/07/99
Date:	08/09/99

After entering the correct date, you may enter the correct time. The time is entered in Hour-Minute format, with two digits required for each.

For example, to set the time to 3:00 PM, you must enter **0300** from the keypad. The display will then alternate between 03:00 **AM** and 03:00 **PM**. Press the "#" key when **PM** is displayed to select 3:00 PM. The example on the right shows the screen when entering the time.

Enter	12:00 AM
Time:	03:00 PM

At times, you may wish to change only the time without affecting the date, or only the date without affecting the time. This is possible by pressing the "#" key to skip the date or time. If the "#" key is pressed, the entry will be skipped (and thus remain at its present value) and the PTI Falcon will proceed to the next entry.

The PTI Falcon display will indicate the day of the week, the correct date, and the correct time on the display when no other function is being performed. An example of the display appearance is shown at the right.

Wed,	10/09/99
	03:00 PM

5.2 Function #2 – Set Time Zone

Function #2 -
Set Time Zone?

Function #2 - Set Time Zone is used to set the **normal** access hours that you wish to allow for your customers. Business hours are specified with both an **Open Time** and a **Close Time**. Open and Close times may be specified separately for each day of the week and Holidays. The time zones are numbered from one to eight.

After selecting Function #2, the display will appear as indicated. Select the time zone number by entering a digit in the range 1 - 8 and press #.

Time Zone # =

Each time is entered a format similar to that used for setting the time with Function Number One. For example:

On Mondays, allow normal access from 8:00 AM to 5:00 PM.

Monday 12:00 AM
Open: 08:00 AM

Monday 12:00 AM
Close: 05:00 PM

24 Hr Access =12:00AM to 11:59PM

The times for Tuesday through Sunday are entered in a similar fashion, followed by the desired times for Holidays. If you wish to **completely lockout** entry for a particular day, **set both the Open time and Close time to 12:00 AM**.

As in Function One, select between AM and PM by pushing the "#" key when the desired setting appears on the screen.

After specifying the allowed access hours for each day of the week, the PTI Falcon

Keypads 00000000
(1-8): 11010000

Keypads 00000000
(9-16): 00000000

will request the authorized keypads that customers in this zone will be allowed to use. The keypads will be split into four groups for data entry purposes. Keypads 1 - 8 will be in the first group, then 9 - 16, 17- 24 and 25 - 32. Within each group enter a string of eight digits left to right. Enter a "1" if the customer is allowed to use the keypad or a "0" if they are not allowed to use the keypad. In the example above, access to keypads One, Two and Four is allowed. If a printout of Area Closed is experienced and the customer cannot enter the area then they are trying to access the property before or after the hours they were granted. If a printout of Area Denied is experienced then the customer is trying to access an area or keypad that has a 0 in front of it which disallows access for that time zone.

5.3 Function #3 – Set Holidays

Function #3 -
Set Holidays?

Function #3 - Set Holidays allows up to thirty-two holidays to be specified in advance by date. On these days, the PTI Falcon will use the holiday access hours rather than the normal weekday, Saturday, or Sunday access hours. Each holiday is assigned a consecutive holiday number in the range of one to thirty two. The holidays do not have to be assigned in any particular order.

For example, to set holiday number six to be July 4, 2000, enter **6** for the holiday number as shown. Press * 3 # to begin. At the Holiday prompt input the Holiday number, then press #.

Holiday # = **6**

Then, enter **07/04/00** for the holiday date as indicated. On July 4, 2000 the programmed holiday hours will be observed by the PTI Falcon.

Holiday 00/00/00
Date: **07/04/00**

If you need to change a holiday, follow the same procedure and simply enter a new date for the holiday. The PTI Falcon display will always indicate the present setting for the holiday date on the top line of the display. Holidays which have never been programmed will appear as **00/00/00**. It is not necessary to remove a holiday which has already passed, because the date will never occur again anyway. If you wish to cancel a holiday that has not yet occurred, you may reset the holiday date to 00/00/00 or to any date which has already passed. Remember that the two digit year for any date in the PTI Falcon refers to the twentieth century if the year is 85 or higher, and the twenty first century for years 0 through 84.

5.4 Function #4 – Vacate a Unit

Function #4 -
Vacate a Unit?

Function #4 - Vacate a Unit is used to vacate a previously rented unit. A user of the PTI Falcon is identified by a combination of Section letter and Unit number or Unit number only. If Section letters are not used, press # to skip this entry. Units may also have a final letter as part of the Unit number. Unit numbers can be up to four digits followed by an optional letter. For example, a PTI Falcon report may indicate a unit number as A-0024C. This indicates that the unit is in Section "A", number 24C.

Enter the Section letter of the unit to be vacated. Lettered sections are entered by pressing the key with the correct letter several times until the correct letter appears on the display, followed by the # key.

Section
Number: **B**

Enter the correct unit number. This can be up to four digits plus an optional letter as shown. The first four keys pressed will be taken as numeric data and the fifth character will be taken as lettered, so a number such as **23C** must be entered as **0023C**.

Unit
Number: **0350F**

If you wish to vacate more units, press # for Yes. Otherwise, press * for No.

Do More?

5.5 Function #5 – Rent a Unit

Function #5 -
Rent a Unit?

Function #5 - Rent a Unit allows you to add a new unit into the PTI Falcon memory or modify an existing unit. Units may also be placed on temporary lockout if desired. If PTI door alarms are in use, you can also specify the physical manner in which the alarm switch from the unit is wired. Proceed as follows:

Enter the Section letter for the unit that you wish to assign, then press #. If sections are not being used press # to skip this entry.

Section
Number: **C**

Enter the unit number. This can be up to four digits plus an optional letter as shown. The first four keys pressed will be taken as numeric data and the fifth character will be taken as lettered, so a number such as **23C** must be entered as **0023C**. Try not to use codes shorter than 4 digits as it will compromise your security.

Unit
Number: **0021H**

Enter the Access Code for the unit. Access codes may be up to ten digits in length. Leading zeros will be ignored. This is the number that the user must enter at the remote access keypads to gain entry.

Code: 00000000
New = **12345678**

Enter the expiration date for the passcode. If you do not wish for the code to automatically expire, the date may be left at **00/00/00**. This can be used to automatically lock persons out when the date has expired. This is good for temporary construction codes etc...

Exp 00/00/00
Date: **09/01/99**

Enter the Access/Time zone number for this unit. This will select what hours and keypad areas that this customer will be able to access the facility. The PTI Falcon supports up to eight Access/Time zones, predefined with Function #2.

Zone: 01
New = **03**

If you have door alarms, the PTI Falcon will allow you to enter the Mux box number for the unit at this time. If the Mux box number has previously been entered, press # to skip this entry. The Mux box number should be set to zero if door alarms are not in use.

The Mux box channel number for the door may also be entered. If the channel number has previously been entered, press # to skip this entry. This number should be set to zero if door alarms are not in use.

```
Channel: 0021
New = 37
```

Next you must specify if the door alarm for this unit should be turned On or Off. The present setting is displayed as indicated. Change the setting by pressing the * key. Press the # key when the correct setting is on the screen. If door alarms are not in use, skip this screen by pressing #.

```
Unit Alarm
< On >
```

Finally you must specify if the unit should be locked out from normal access permission. Press the * key to change the lockout setting as desired and then press # when the setting is correct.

```
Unit Lockout
<Off>
```

After specifying all data for a unit, the screen will indicate "**Do More?**". If you wish to immediately enter data for another unit, press "#" for YES and you will go back to the first step above, otherwise press "*" for NO.

Duplicate Access Codes

Under most circumstances, the access code for a single unit will be unique and assigned only to one unit. You may at times, however, have customers that rent multiple units and do not wish to remember a separate access code for each unit. This is of little consequence since you can always assign an access code to only his first unit, unless a door alarm system is in operation. In this case, the PTI Falcon must be able to recognize all units that belong to a single customer so that when they enter the property, the alarms on all of their units can be disarmed.

This is accomplished by allowing the same access code to be assigned to multiple units. To do this, enter data for the first unit normally, and then enter data for the second unit. Upon entering the same access code for the second unit, a warning message will be displayed as illustrated to tell you that you are duplicating an access code. The screen will indicate the section and unit number that already use the code. After displaying the warning for a few seconds,

```
Warning-Used By:
Sc/Unit A-0002C
```

```
Save Anyway?
```

the screen will change and ask you if you wish to save the code anyway. Press "#" for YES to assign the duplicate code to a second unit, or press "*" for NO if you do not wish to assign the duplicate code. If you press "*", you will return to the access code entry screen so that you may assign the unit a different access code.

The above procedure may be repeated as many times as necessary to assign the same access code to all units which are assigned to a single tenant.

Multiple Codes per Unit

There will be occasions where you may want several different codes for the same unit. The Falcon can handle these by assigning an Alpha character to the end of the unit number. Example = unit 100 has 3 additional codes needed, Assign 0100A, 0100B, 0100C the different codes and if the unit has an alarm enter the same mux and channel information and the alarm will be disabled once any of the codes are entered.

Duplicate Mux/Channels

Under most circumstances, the door alarm Mux/Channel number assigned to a particular unit is unique. If you have, however, a common alarm sensor such as an RV parking area motion sensor photo beam, it is necessary to assign this one alarm sensor to multiple rental units. When this is done, the beam will be disarmed whenever any tenant in the area is on the property and will be armed only when all tenants from the area have left the property. When the Mux/Channel is assigned to the second and subsequent units, a duplication warning will appear as indicated. If the duplication is not an error, Press # to save the Mux/Channel setting. Otherwise press * to return and select a different Mux/Channel number.

Warning-Used By:
Sc/Unit B-0003A

Save Anyway?

The above procedure may be repeated as many times as necessary to assign the same Mux/Channel number to all units which are assigned the same alarm sensor.

5.6 Function #6 – Delete a Unit

Function #6 -
Delete a Unit?

Function #6 - Delete a Unit is used to permanently remove a unit which does not physically exist. This could be from a unit that has been previously entered in error, or that facility remodeling has removed a unit. **This command should not be used to vacate a unit. It is primarily intended to allow the correction of data entry errors and as such should rarely be needed.**

Enter the Section letter of the unit that you wish to delete.

Section
Number: **D**

Enter the Unit number of the unit that you wish to delete.

Unit
Number: **0150B**

If the unit is found and successfully deleted, the screen will verify the deletion as indicated.

Sc/Unit: A-0005C
-Deleted-

Otherwise you will be informed that the unit was not found and cannot be deleted.

Sc/Unit: A-0005C
-Not Found-

The screen will then say "**Do More?**" If there are other units you wish to delete press # for **YES**. If not, press * for **NO**.

5.7 Function #7 – Set Contrast Code

Function #7 -
Set Contrast Code?

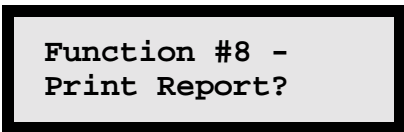
Function #7 - Set Contrast Code is used to enter a contrast adjustment code into the PTI Falcon base unit. The contrast code will not open any entrance and must be unique; it cannot be assigned to a customer, as it will not allow access. When the contrast code is entered into a remote keypad, the keypad display will enter the contrast adjustment mode. Press * for a darker contrast or # for lighter, on the remote keypad.

After selecting Function #7, the display will appear as shown. Enter the contrast code of your choice and press "#". The PTI Falcon will save the contrast code and return to the date and time display. The contrast code may be up to ten digits in length like any other access code. Verify operation of the contrast code by entering the code at a remote keypad. The remote keypad display will go into the contrast adjustment mode.

Enter Contrast
Code: **87654321**

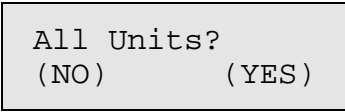
Entry of the contrast code at a remote keypad will be logged on the printer as part of the access log, but the entrance cannot be opened with the contrast code.

5.8 Function #8 – Print Reports



Function #8 - Print Reports is used to generate reports on the printer with the PTI Falcon. The report types are:

- All Units-** A report of all customers and their access codes and time zones. Systems with PTI door alarms will also print the MUX unit number and Channel number for each unit. Units may have a letter code in the far right column. See *Status Codes* below for details.
- Suspended -** A report similar to *All Units* except only units with Locked Out (suspended) access are printed.
- Vacant -** A report of all units that no access code has been assigned to.
- Open -** A report similar to *All Units* except only units with open doors are printed; this report is available only on systems with PTI door alarms.
- On Site -** A report that shows any tenant that is currently on the property or did not log out when they left.
- System Setup -** This report shows the configuration of all setup options. PTI tech. support may request a copy of this report for troubleshooting. It is a good idea to print a copy of the setup after the initial install and after any changes to the system and place it in a safe location for future reference.
- Status Report -** This report shows the online status of all remotes on the system. This report will show the Units in alarm condition, the open doors, the remotes on line but not configured and the remotes configured but not on line. This report can be automatically generated at midnight by configuring it in the advanced setup commands (*1000#). **It is highly recommended this report is run daily to ensure all problems with the system are identified and corrected.**
- Cancel -** Selecting this report type stops a report already in progress from further printing.



Status Codes:

V – Vacant, Indicates this unit is programmed into the system but does not have an access code associated to it.

S – On Site, Indicates this customer has currently keyed on site but not off site yet. An inspection of the site may indicate that the customer is actually not on site but has “tailgated” off the property and not used the exit keypad or his auto-arming door time has not expired if door alarms are present and an auto rearm time is entered. ALL customers can be marked off site by using the *24# command (clear users on site).

L – Lockout , Indicated that this customer is locked off the site. If a code is entered at any keypad the customer will get a message of Access Denied. This code will not be allowed access until the status is changed under Rent Unit (*5#).

Door Alarm Systems Only:

A – Alarm , Indicates this unit is currently in alarm condition and should be checked. If swinger shut down is on, this door will **NOT** alarm again until alarm are cleared using the *12# command.

O – Open Door, Indicated that a customer has entered the site and has opened his door. If the customer’s door is not open and this display still shows an inspection of the door contact and wiring should be performed.

P – Unit Alarm Off, Indicated this alarm is turned off under *5# for this unit and will not go into alarm condition nor will it print open or close. Alarms should only be turned off if there is a problem. This should only be temporary and the door should be repaired as soon a possible.

After selecting Function #8, press # (YES) to print the report being displayed. Press * (NO) to display the next report to be printed. The PTI Falcon will begin printing the selected report and the Falcons display will return to the date and time. After a report is in progress, selecting cancel will cause the PTI Falcon to stop sending characters to the printer and return to displaying the date and time. Even though the PTI Falcon has stopped sending data to the printer, the printer will continue to print until all data previously sent has been printed. This may make it appear as if the report was not canceled, but if you wait a few seconds the printer should stop.

5.9 Function #9 – Save to Tape

Function #9 -
Save on Tape?

Function #9 - Save on Tape allows you to record the contents of the system memory on a standard audio cassette recorder for memory backup purposes. This unique feature allows you to separate your customer data from the machine as well as make multiple backup copies for enhanced reliability. Backup tapes can be made even after the AC power has failed while operating from internal battery power. Backup tapes should be made on a regular basis, anytime significant changes have been made to the customer data in the machine.

Important: A mono tape recorder and mono patch cable is required for proper operation. If the tape is used to many times, it will become worn and not save or reload correctly. Always verify the saved information by using Function # 10 to reload it.

Prior to selecting Function #9, plug the mono audio patch cord into the jack on the front of the PTI Falcon. Plug the other end into the **microphone** jack of the tape recorder. After selecting Function #9, the display will instruct you to "**Start Tape, Hit #**". Push the **record** button and then press the "#" key.

Start Tape,
Hit #

The display will then indicate "**** Saving ****". This display will stay on for about ten seconds and then will begin to blink on and off. When the tape is almost complete, the display will stop blinking and will be on constantly again for a few seconds. The display will then return to the current date and time.

** Saving **

When the date and time has returned to the display, the tape is complete and you may stop the recorder, rewind the tape, and remove it for safe keeping. Before storing the tape, it is suggested that you verify the tape contents by loading the tape back to the PTI Falcon using Function #10. The PTI Falcon verifies the integrity of each section of the tape before loading it, so you cannot alter the contents of memory if your tape did not properly record.

You may wish to listen to the sound of a good tape out loud and become accustomed to the sound. This will help you to identify any future problems with tape quality.

5.10 Function #10 – Load From Tape

Function #10 -
Load from Tape?

Function #10 - Load from Tape allows you to load the data from a previously saved backup tape into the PTI Falcon memory. This will restore the memory to the exact condition it was in when the tape was made. Any changes made to the memory after the backup tape was made will not be restored and must be made again by hand.

Before beginning Function #10, plug the mono audio patch cord into the jack on the front of the PTI Falcon. Plug the other end of the cord into the **Earphone** jack of the tape recorder. Insert the backup tape and make certain that it is fully rewound. Make certain that the volume control is set from mid to three quarter range. After selecting Function #10, the display will read "**Start Tape, Hit #**". Press the "#" key and then push the **Play** button on the tape recorder.

Start Tape,
Hit #

The display will now read "*** **Loading** ***". This will remain on constantly for about ten seconds and then will begin to blink on and off as the tape data is loaded into memory. Near the end of the recording, the display will come on constantly for a few seconds and then will indicate "**Load Done**" and return to the date and time. The tape is now fully loaded, so stop the recorder, rewind the tape, and return it to safe keeping.

** Loading **

If the "*** **Loading** ***" display does not begin to blink on and off as described, your tape is not being read. This can happen if the tape is not fully rewound before playing or if you start playing the tape too long before pushing the "#" key and miss the first part of the tape. The PTI Falcon must synchronize itself to the tape at the very beginning of the tape or it cannot read any of the tape.

If while reading a tape, The PTI Falcon encounters an area of the tape it cannot read, it will display "**Tape Read Error**" for a few seconds and then return to the date and time. A defective tape, over used tape or a tape that gets wrinkled can cause this. Low batteries in the recorder can also cause tape read errors, even when a tape is perfectly good.

Tape Read Error

5.11 Function #11 – Open Entrance

Function #11 - Open Entrance

Function #11 - Open Entrance can be used to manually open your gate or entrance from the PTI Falcon base unit. Each PTI Falcon remote keypad contains a relay that the installer has wired to the entrance motor or lock. This Function allows you to manually trigger the relay in any remote device in order to open the entrance to which the remote device is wired.

After selecting Function #11, the display will ask you for the number of the remote device that you wish to trigger. Enter the number and press "#". Your installer should tell you the remote number and relay number that will trigger each entrance or exit device that you have on the property.

```
Trigger Remote  
Number: 1
```

After you select the remote number, you must specify the relay on that remote. On standard keypads this number will always be 1. If you are triggering a relay board it could be a number 1 – 8.

```
Trigger Remote  
01,Relay: 1
```

After you select the relay, you must specify if you want to hold the entrance open. If you press * (NO) the remote relay will be triggered and the PTI Falcon will return to the date and time display. If you press # (YES) to hold the entrance open, the remote relay will be triggered and will not release until you trigger it again with Function #11 and press * to not hold open.

```
Hold Open (N/Y)?
```

Note-if the relay is held open using the *11# command and the keypad is used. The hold open function will release and the gate or lock will no longer be held open. You will need to go back into the function *11# to hold it open again. It is recommended that a separate mechanical switch be installed for operation which will require holding the device open for extended periods of time. Use of Function #11 to trigger a relay is logged on the printer and becomes a part of the access log for the property. If you have PTI door alarms in use, you also have a relay installed in the PTI Falcon base unit. This relay is typically used to trigger your alarm siren. Remote number "0" refers to the relay within the PTI Falcon base unit. This relay triggers your alarm siren in the event of a break in. Triggering Remote #0 with Function #11 is useful for testing the siren. The siren may be silenced again with Function #12 - Clear Alarms.

5.12 Function #12 – Clear Alarms

Function #12 -
Clear Alarms

Function #12 - Clear Alarms is functional only on systems with PTI door alarms. Whenever a unit enters the alarm condition, the alarm is logged on the printer and the siren relay is triggered. **Further alarms for the unit are then disabled until this function is executed to clear the alarm condition unless swinger shutdown is turned off under the advanced program function (*1000#).** This prevents a single unit from setting off the alarm multiple times without intervention by the manager to investigate the alarm. Function #12 clears **ALL** units on the property from the alarm condition, so if multiple units have alarmed, it is only necessary to execute Function #12 one time. **Note that if you forget to execute Function #12 after an alarm, the units that alarmed will be left in the off condition and will not print door activity until Function #12 is executed.**

After selecting Function #12, the display will indicate "**Clearing Alarms...**" for several seconds while the PTI Falcon searches for all units in the alarm condition and clears them. The display will then return to the date and time.

Clearing
Alarms...

Function #12 is also used for shutting off the alarm siren prior to its programmed alarm time.

5.13 Function #13 – Alarm Controls

Function #13 -
Alarm Control?

Function #13 - Alarm control is used to set and control a number of features in the PTI individual door alarm system.

The entire alarm system may be turned **On** or **Off**. Press * to toggle the setting from **On** to **Off**. When the setting appears as desired on the screen, press # to accept. **DO NOT TURN YOUR ENTIRE SYSTEM OFF UNLESS ABSOLUTELY NECESSARY.** The problems should then be corrected immediately.

Alarm System
<On>

Alarms for vacant units may be turned **On** or **Off**. Press * to toggle the setting from **On** to **Off**. When the setting appears as desired on the screen, press # to accept. Turning on vacant alarms can be useful in demonstrating the alarm system capabilities to potential customers or preventing unwanted openings to units.

Vacant Alarms
<On>

Remote Communication Alarms may be set **On** or **Off**. If Remote Communication Alarms are **On**, any failure in communication between the Falcon base unit and any remote will cause the alarm siren to sound. It is recommended that Remote Communication Alarms be turned on.

Rem Comm Alarms
<On>

Tamper switch alarms may also be turned **On** or **Off**. Tamper alarms will normally be **On** and will only be turned **Off** when you need to open an alarm mux box for maintenance.

Tamper Alarms
<On>

Unknown Channels may be turned **On** or **Off**. If a mux box reports an alarm switch opening or closing on a channel that has not been assigned to a section/unit number, it is considered an "Unknown Channel". If you do not wish Unknown Channels to become a part of the site event log, they may be turned **Off**. It is highly recommended that unknown Channels Be turned on. This will bring non-programmed units to the attention of the Manager.

Unknown Channels
<On>

Auxiliary sirens may be turned **On** or **Off**. Auxiliary sirens are those that are triggered from relays in the Mux boxes rather than from the relay in the PTI Falcon base unit. **If there are any remote sirens wired into the system from a multiplexer then this option must be turned ON in order for them to work.**

```
Auxiliary Sirens
<On>
```

Day Siren:

You may specify the length of time that the siren should sound during normal business hours in seconds. A setting of **60** is equal to sixty seconds or one minute. The siren will automatically shut down after sounding for this length of time. **Note that normal business hours are considered to be those specified in Time zone number One.**

```
Day Siren = 0060
New Value = 300
```

Night Siren:

You may also specify the length of time that the siren should sound after normal business hours (other than time zone #1) in seconds. A setting of **300** is equal to three hundred seconds or five minutes.

```
Nite Siren = 0300
New Value = 400
```

The automatic rearm time is specified in minutes. If automatic alarm rearming is not desired, set the rearm time to zero. When the rearm time is non-zero, an alarm door will automatically rearm the specified number of minutes after the door is closed. Automatic rearming is useful if the site does not allow the use of an exit keypad to rearm the unit alarm as the tenant leaves, or as a fail safe for tenants who tailgate out of the property. The rearm time must be set reasonably long to prevent doors from rearming when the tenant has momentarily shut the door and then opened it again.

```
Rearm Time = 000
New Value = 30
```

You will then be asked if you wish to save the present setup. If you press **#** for **YES**, the present alarm control options will be saved in the PTI Falcons EEPROM memory. The Falcon will then be able to automatically return to the desired settings even after power failures.

```
Save Setup?
<No>          <Yes>
```

5.14 Function #14 – Control Options

Function #14 - Control Options?

Function #14 - Control Options is used to set various control features of the PTI Falcon system. They are as follows:

The Falcon allows for a Functions Password. If a password is entered, **ALL** Functions on the PTI Falcon base unit will require this password to be entered **before** the Function can be used. This is useful for locking out unauthorized data entry. If this option is not wanted the password should be 0.

```
Pswd: 0000000000  
New   =
```

When Printer Logging is turned on, the PTI Falcon will send transaction data to a standard parallel printer connected directly to the Falcon. If the printer logging is turned off, the Falcon will store several transactions in its memory. Once a printer is connected, the printer logging can be turned on and the Falcon will print the stored information. If a printer is connected to the system and turned off and printer logging is ON all transaction data will be lost. If printer logging is OFF then the transaction data will be saved and printed when turned back ON.

```
Printer Logging  
( ON )
```

The relay time is specified in seconds. It controls how long a remote relay is triggered when a valid access code is entered in the entry keypad providing no remotes have been configured under Remote Setup *18#. A setting of 2 seconds is adequate for most gate operators.

```
Relay Time = 01  
New Value = 2
```

This value should be set to the maximum number of remote devices that are connected to the PTI Falcon. This includes both keypads, door alarm Mux boxes and relay boards. Setting this number properly saves the PTI Falcon from wasting time attempting to communicate with remote devices that are not present. It is based on the address of the unit. If you have 3 units on site but the highest address of the last device is 4 then the max remotes must be set to 4. If the value is set to 15 and the highest address of a remote device is 10 the value should be set to 10 to prevent any communication problems.

```
Max Remotes = 15  
New Value   = 2
```

The baud rate for the RS232C port on the rear of the PTI Falcon base unit may be set to either **12** (1200), **24** (2400), **96** (9600) or **192** (19200) baud. The RS232C port is used by the PTI Falcon to communicate with a host computer or a modem. The baud rate must be set to match that of the host computer for communication to be possible. The normal setting is 9600 baud. . An incorrect value will cause an interface with a CPU not to work.

```
RS232 Baud = 96
New Value  = 24
```

If the Falcon is at a remote location and connected to a modem, reentering the baud rate will initialize the modem. This sets the modem for the proper speed and auto answer.

Note that the modem controls under Function #1000 must be turned on when the Falcon is connected to a modem.

The baud rate for the RS485 port on the rear of the PTI Falcon base unit may be set to either **12** (1200) or **96** (9600) baud. The RS485 port is used to communicate with all remote keypads and Mux boxes, and should be set to match the baud rate of the keypads and Mux boxes. A setting of **96**(9600) is generally the best speed for communications. If problems in communication occur it is advised to try setting the Baud Rate to 12 (1200).

```
RS485 Baud = 12
New Value  = 96
```

NOTE- if changing the Baud rate on the Falcon ALL remotes must be changed also!

You will then be asked if you wish to save the present setup. If you press # for **YES**, the present control options will be saved in the PTI Falcon memory. The Falcon will then be able to automatically return to the desired settings even after power failures.

```
Save Setup?
<No>       <Yes>
```

5.15 Function #15 – Adjust Contrast

Function #15 -
Adjust Contrast?

Function #15 - Adjust Contrast allows you to adjust the contrast of the Liquid Crystal Display (LCD) on the PTI Falcon base unit. You can either darken or lighten the display contrast.

After selecting Function #15, the PTI Falcon display will appear as illustrated. Each press of the "1" key will darken the contrast by one step; each press of the "3" key will lighten the contrast by one step. Set the contrast to your personal taste and then press the # key on the keyboard.

<1> =darker
<3> =lighter

You will then be asked if you wish to save the present setup. If you press # for **YES**, the present contrast setting will be saved in the PTI Falcon memory. The Falcon will then be able to automatically return to the desired contrast even after power failures.

Save Setup?
<No> <Yes>

A similar adjustment is available for the displays on the remote keypads; see Function #7 for details.

5.16 Function #16 – Update Graphics

Function #16 -
Update Graphics?

Function #16 - Update Graphics is used only by customers with PTI security graphics. It is useful when the graphics control computer has been shut off and then restarted. Update Graphics will cause the PTI Falcon base unit to update the correct colors for every rental unit on the graphics image.

The PTI Falcon will indicate on the screen that the update is taking place for a few seconds. The update process will continue to occur even after the indication screen has disappeared and may in fact take several minutes to complete on a large property.

Updating
Graphics...

5.17 Function #17 – Program Version

Function #17 -
Program Version

Function #17 – Program Version displays the current program that is in the Falcon base unit. This program is updated and new features are added from time to time. Updates are available on the PTI web page at no charge to our customers. If the base unit is sent in for the update, there will be only a minimal charge. PTI Falcon program updates are not mandatory for continued operation.

Program Version:
02.12 08/23/1999

Web site www.ptiaccess.com

5.18 Function #18 – Set Up Remotes

Function #18 -
Setup Remotes
Passcode = 8898

Function #18 – Setup Remotes is used to change the default setting for all remotes on the PTI Falcon system. The default settings use odd numbered remotes as entrance and even ones as exit. If the keypads are defaulted and not defined they will trip the relay on their unit only when a proper access code is entered. If you define them under the *18# command you can trip any keypads relay with any other. This will eliminate the fact of having a separate wire run to a gate operator from both enter and exit keypads providing they both are controlling the same device. If you are using remote relay boards for controlling elevators, lighting zones, perimeter beams, opening gates or other relay controlled devices they must be defined in this function. **Be sure to define ALL devices if the default is not used.**

See the Setup Remotes Flow Chart on the following page.

Four different remote device types can be defined:

- Standard Keypads – Any keypad with or without an intercom
- Card Readers – CodeXpress Keypads or Wiegand Readers
- Relay Boards – 8 or 2 channel relay boards
- Multiplexers – Door alarm muxes 16, 32, 48, 64, 80 or 96 channel

When you define Keypads or Card Readers you will be asked if you want the Remote to **Log Users On/Off Site**. Only the Main entry and exit devices should be logging users on and off the site. If you have a Keypad at a building door or at an elevator it should not log the user on the site again. When used with a PTI Door Alarm and Lighting Control System, once a user is logged on the site there unit door alarm will be disarmed and any lighting controls will be turned on. When the user logs off the site the system rearms the door and turns out the lights.

You will be asked if the device is used for entry or for exit. If you answer yes to both questions the device becomes a Toggling Unit. The first time a user puts in their code it will be an entrance, the next time it will be an exit. This is useful for logging in and out of the property from one device.

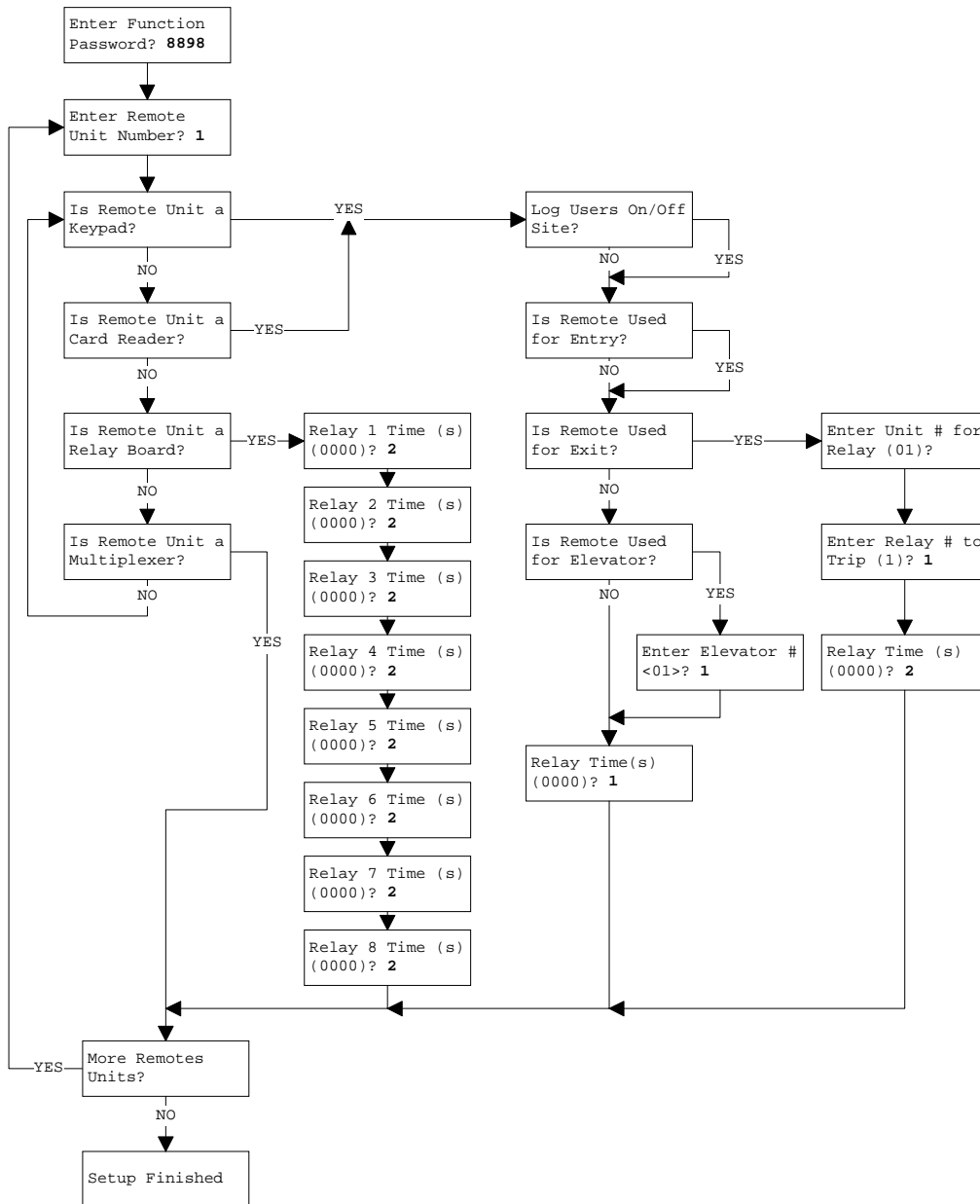
The system will also ask for a remote unit and relay to activate when a valid code is entered. The entrance device can be set to trip an exit device connected to the

same gate motor for additional security or even a relay board located securely on the property.

When setting up a **Relay Board**, the amount of time that the relays on that board are activated for must be defined. The holding times are in seconds.

This Setup is made much easier with the Falcon 2000 Access Management Software.

5.18.1 Set Up Remotes Flow Chart



5.19 Function #19 – Set Up Elevators

Function #19 -
Setup Elevators
Passcode = 8898

Function #19 – Setup Elevators is used for multi story buildings with elevators that are controlled by the PTI 8 or 2 channel Relay Board. The Relay Board and a Remote Keypad used for Elevator control must be defined in Function 18 – Setup Remotes. Function 18 will determine the amount of time the relay will hold for. Function 19 will determine the relay board and relay on that board that will be tripped based on a users unit number.

Multiple elevators can be setup, so the Function will first ask which elevator you are setting up and how many floors the elevator has. The current setting is show in parentheses.

Elevator 1, # of
Floors (0)? **7**

The Falcon will then ask what Relay Board and which relay on that board to trip for floor one. It will ask this question for each of the floors that are being controlled by the Relay Board.

#1, Floor 1, Rly
Board # (00)? **10**

The starting and ending section and unit numbers for the first floor must be entered. When a user logs in within the range the system will know what floor to take the user to. It will ask this question for each of the floors that are being controlled by the Relay Board.

#1, Floor 1, Rly
Number # (0)? **1**

#1, Floor 1,
Start Section? **A**

A typical application would be to install a keypad inside the elevator cab. This will require a traveling cable from the elevator company to be installed. The relay box can be located in the vicinity of the elevator room or the cab of the elevator itself. Many local codes will not allow it to be installed directly in the elevator room. You will need to coordinate with the elevator company to determine the best location. The elevator will have to be equipped with a floor specific lockout control which will accept either a N.O or N.C. momentary dry contact to activate the floor button once a proper code is entered. Unit ranges will now be entered for allowed access.

#1, Floor 1,
Start Unit? **100**

#1, Floor 1,
End Section? **A**

#1, Floor 1,
End Unit? **199**

5.20 Function #20 – Set Up Lighting Zones

Function #20 -
Setup Lighting Zones

Function #20 – Setup Lighting Zones is used for turning on and off interior lights in buildings, motion detectors in an RV lot, perimeter beams and many other applications. The PTI Relay Board controls the devices. The Relay Board must be defined in Function 18 – Setup Remotes. Function 20 will determine the relay board and relay on that board that will be tripped based on a users unit number. The relay will remain activated until the user has logged out.

The PTI Falcon can control up to sixteen Lighting Zones. The system will ask what Lighting Zone you want to setup first. The Falcon will then ask what Relay Board and which relay on that board to activate for a section and unit number range. It will ask this question for each of the Lighting Zones that are being controlled by the Relay Board. The current setting is show in parentheses.

Lighting Zone 01
Rly Brd (00)? **9**

Lighting Zone 01
Relay # (0)? **1**

Light Starting
Section? **A**

Note that Lighting Controls must be turned on in Function 1000. A lights off delay time may also be set.

Light Starting
Unit? **100**

Light Ending
Section? **A**

Light Ending
Unit? **199**

5.21 Function #21 – Clear Remotes

Function #21 -
Clear Remotes

Function #21 – Clear Remotes will remove all user defined remote settings and restore the system default settings.

5.22 Function #22 – Clear Elevators

Function #22 -
Clear Elevators

Function #22 – Clear Elevators will remove all user defined Elevator settings and disable all Elevator controls.

5.23 Function #23 – Clear Lighting Zones

Function #23 -
Clear Lighting Zones

Function #23 – Clear Lighting Zones will remove all user defined Lighting Zone settings and disable all Lighting controls.

5.24 Function #24 – Clear Users On Site

Function #24 -
Clear Users On Site

Function #24 – Clear Users On Site will log any users off the site. This will rearm the doors and deactivate all relays. This is useful for logging user off the site if they tailgated out. The rearm timer for the door alarm system will also do this after the time has expired.

6. Function 1000 - Factory Setup Menu

It is strongly advised that any programming in this section be performed by a qualified technician. If you do not fully understand the functions in this section you can create unnecessary problems with the proper operation of the system. Therefore you must contact a service representative of PTI to obtain the KEY number for access into this area.

The PTI Factory Setup menu is accessed by entering *1000# on the Falcon keypad. The PTI Falcon will then display a four-digit *seed* number. If the appropriate *key* number is then entered followed by the # key, the Factory Setup Menu will be entered. The following selections can then be edited in Factory Setup menu.

1) Password: nn

Default: 0

If a password is set under function 14, **ALL** functions will require the password to be entered before gaining access to the function. If the user does not know what the password is, this is where it can be found. Setting the password to 0 will turn this option off.

2) Clock Adj.=nnn

Default: 000

If the Falcon is losing time input a number 1 through 30. This will increase the clock by 1 to 30 seconds per day. (1 = 1 second per day, 30 = 30 seconds per day)

If the Falcon is gaining time input a number 255 through 225. This will decrease the clock by 1 to 30 seconds per day. (255 = 1 second per day, 225 = 30 seconds per day)

3) Alarm System <On> <Off>

Default: On

The entire alarm system software may be enabled or disabled by hitting the * key. This should be set to reflect whether or not the customer is using PTI individual unit alarms. When the alarm system software is off, other PTI Falcon menu items regarding the alarm system will not operate on the display.

4) Graphics <On> <Off>

Default: On

This should be set to on if PTI Security Graphics is in use, otherwise set to off. When off, the PTI Falcon does not waste time transmitting graphic update data to a nonexistent graphics system.

5) Modem Enable <On> <Off> Default: Off

Set to on if the PTI Falcon is to be remotely programmed via telephone Modem through the Falcon serial port (Falcon 2000 management software will be necessary) . Set to off if there is a direct connect cable from the Falcon serial port to the customer PC. When Modem Enable is on, the PTI Falcon will transmit a modem setup string to the modem 3 seconds after power up to place the modem into auto answer mode at 9600 baud. The modem setup string can also be resent to the modem by reentering the RS232 baud in function 14.

6) Section Letters <On> <Off> Default: On

If the customer prefers numerical section numbers in the range of 1-32 rather than alphabetical section letters in the range A-Z (or blank), set section letters off. Example = A8888 (on) or 18888 (off)

7) European Dates <On> <Off> Default: Off

Set to on for dates in the format DD/MM/YY, Off for MM/DD/YY.

8) Free Exit <On> <Off> Default: Off

If on, exit keypads will always allow exit regardless of programmed time zone hours. If off, exit keypads will allow after hours exit only one time for customers that entered the property within allowed hours. Free exit lowers the chance of trapping some one in the facility at the risk of granting customers with valid pass codes the ability to jump the fence and use an exit keypad to open the gate after hours.

9) Anti-Passback <On> <Off> Default: Off

When Anti-passback is on, exit keypads will allow exit only if the user has previously keyed in at an entrance keypad. Entrance keypads will allow entrance only if the user has previously keyed out at an exit keypad. This limits access to only one user at a time and makes tailgating difficult. The exit keypad limitations will function only if free exit is turned off.

10) Relay/Lighting Controls <On> <Off> Default: Off

When on, the PTI Relay controls will be enabled. This also gives you an option for a relay release delay. When a number is set for the off delay, the system will wait for the specified number of seconds to pass after the user has logged out, before releasing any relays being held. This feature can be used for lighting controls, shunting IR perimeter beams and many other relay-controlled devices.

11) Event Flagging <On> <Off> Default: Off

This causes the transmission of a single ASCII character out of the PTI Falcon serial port whenever a new event is added to the PTI Falcon access log. PC software can use this flag character to know when there is something to read out of the access log. **This Feature has been discontinued and should not be used.**

12) Check In Pad <= nn Default: 00

If nn is 00 this feature is turned off. If a number is entered, all remote keypads numbered "nn" and lower will be treated as Check In/Out stations. A Check In station functions as an entry station the first time the customer uses it and exit station the second time, etc. A different message is displayed for entries and exits so the customer can tell them apart. If a Check In/Out station is in use, any other remote keypads will not allow access unless the customer has first checked in at a Check In/Out keypad. Also any customer that leaves without checking out of the facility at a Check In/Out station will have his access suspended at midnight of that day until it is enabled again by management.

13) Exempt Zone >nn Default: 09

If nn is 09 this feature is turned off. If a number is entered, customers in time zones numbered nn and higher will be exempt from the check in/check out process described above. Typically employee pass codes will be placed in an exempt zone so that employees do not have to check in before using other keypads on the property. Exempt zone employees will also not have their code suspended at midnight if they fail to key out when they exit the property. Exempt zone can also be used to activate ALL relays on a relay board if an exempt code is entered. This is useful so a manager will not have to enter a separate code for each floor or to turn on specific lights.

14) Counter Rdr = nn**Default: 00**

Allows one remote keypad (number “nn”) to be set as a counter reader rather than a normal remote keypad. This overrides any other setting for this remote keypad. A counter reader is a remote keypad (or card reader) unit that is used by management to program pass codes into the PTI Falcon. If the PTI Falcon is at the point of entering a pass code, rather than entering the code through the keypad on the Falcon, it can be transmitted to the Falcon from the remote unit designated as the Counter Reader. Facilities using preprogrammed magnetic stripe cards for access often do not know what code is on a particular card. By swiping the card through the designated Counter Reader at the proper time, the code will be echoed on the screen of the Falcon as if they had entered it by hand. The normal programming process can then continue. A unit designated as a counter reader cannot be used for any other purpose (It is strongly suggested that the remote devices be operated at 9600 baud if a counter reader is used, or the response of the reader appears too slow).

15) Comm Count = nnn**Default: 10**

This specifies the number of consecutive communication failures that must occur with a remote device before it will be considered an error and Communications off logged in the access record. The minimum allowed value is three and the maximum is two hundred and fifty five. The factory default setting is ten. If a property is experiencing comm on/off problems it is not recommended to increase this delay time. There is generally a wiring or component problem causing the printout and increasing this delay only masks the problem and does not correct it.

16) Midnight log out <On> <Off>**Default: Off**

When turned on, the system will mark all users offsite at midnight. This will arm all previously onsite doors and release any relays being held if used with the PTI door alarm system or relay/lighting controls. This is useful to clear “tailgaters” from the site but can also accidentally mark tenants off site if they happen to have access after midnight and are currently on site.

17) Swinger shutdown <On> <Off>**Default: On**

When this feature is turned on, the PTI door alarm system will report a door violation and sound the siren only one time even if the door is reopened. The system will not set off the siren and report the violated door again until

manually cleared by using function 12 on the Falcon base unit. If the feature is turned off, the system will report a door violation and sound the siren every time a violated door is reopened. Turning this feature off can cause nuisance alarms to continually go off many times creating problems with local residences and authorities.

18) Ignore onsite doors <On> <Off> Default: Off

The PTI door alarm system will not report normal door open and door closed activity from onsite users when this feature is turned on. A door violation will still sound the siren normally. This feature is commonly used if motion sensors are installed in the units to prevent the printer from reporting open/close every time movement is detected

19) Daily status report <On> <Off> Default: Off

If turned on, the system will print the communication status of all remotes, Open Doors and Doors in Alarm Condition at midnight providing a printer is connected to the Falcon and turned on. It is recommended this feature is turned on to provide a status of the property to the manager.

20) French Keypads? <On> <Off> Default: Off

This feature is used if messages sent from the Falcon to the keypad or CodeXpress are to be displayed in French. The keypad must also have a custom chip installed which also has the French translation installed.

21) Limit code size <On> <Off> Default: Off, 10 digits

This feature is used with the PTI CodeXpress card access system. Normally cards are read as 10 digit codes. If the accounting software has a code length limit the system can be set to match it. When turned on, the system will ask for the length of code to read off a card. This feature must be set before codes are assigned.

7. Function 1002 - Communications Loop Back Test

The comm port loop back test is used to check the Falcons interface cable and its own comm port. To perform this test, plug one end of the interface cable into the Falcon and put a jumper into holes 2 and 3 on the other end. A metal paper clip may be used. Then press *1002#. The Falcon will now send out information through the cable then back. It will display if the test passed or failed. If the process fails the Falcon will need to be serviced by PTI.

New features are routinely added to the Factory Setup menu, as circumstances require. Please call PTI if you encounter an item not described here or if you are unclear about any factory setting.

8. Index

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9. Troubleshooting

Consult with your installer and fill in the items below to assist you in the future if you should have questions or problems.

Installation Company _____

Installation Date _____

Contact _____

Address _____

Phone () _____ Pager () _____

Mobile() _____

My Gate motor power is supplied from breaker panel located _____

My Falcon Base unit power is supplied from breaker panel located _____

My Remote Keypads are powered from _____

My Management Software Package is manufactured by: _____

Entrance Keypad is/are Remote Number(s) _____

Exit keypad is/are Remote Number(s) _____

Relay board is/are Remote Number(s) _____

(For Door Alarm Users) Multiplexer Boxes is/are as follows:

Building _____ has _____ units alarmed with Multiplexer number(s): _____

Building _____ has _____ units alarmed with Multiplexer number(s): _____

Building _____ has _____ units alarmed with Multiplexer number(s): _____

Building _____ has _____ units alarmed with Multiplexer number(s): _____

Building _____ has _____ units alarmed with Multiplexer number(s): _____

Building _____ has _____ units alarmed with Multiplexer number(s): _____

Building _____ has _____ units alarmed with Multiplexer number(s): _____

Building _____ has _____ units alarmed with Multiplexer number(s): _____

Building _____ has _____ units alarmed with Multiplexer number(s): _____

Building _____ has _____ units alarmed with Multiplexer number(s): _____

Building _____ has _____ units alarmed with Multiplexer number(s): _____

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Building _____ has _____ units alarmed with Multiplexer number(s): _____

Building _____ has _____ units alarmed with Multiplexer number(s): _____

Building _____ has _____ units alarmed with Multiplexer number(s): _____

Building _____ has _____ units alarmed with Multiplexer number(s): _____

Building _____ has _____ units alarmed with Multiplexer number(s): _____

Building _____ has _____ units alarmed with Multiplexer number(s): _____

Building _____ has _____ units alarmed with Multiplexer number(s): _____

Building _____ has _____ units alarmed with Multiplexer number(s): _____

In cases where the PTI Falcon system seems to be malfunctioning, it is important to be able to isolate the problem before contacting your local installation company or PTI. This will help keep the repair cost as low as possible for you. The following examples of malfunctions will help you in isolating malfunctioning components of the system. Normally you should not have to shut down the Falcon unless the malfunction appears to be within the Falcon. In either case it is highly recommended that a source of memory back-up be obtained (Audio Cassette or computer disk back-up through you management software package or Falcon 2000 windows program) prior to conducting any troubleshooting procedures.

Important- With the exception of cold booting the system hardware, Do not conduct any troubleshooting procedures within the system without first removing all sources of power. The Falcon induces small amounts of voltage into the Remote Keypads in addition to the 12 volt power supply. Failure to follow these recommendations can result in personal injury and damage to system.

Scenario 1- Codes entered into the Remote Keypad Units will not open gate, display reads "Please Wait".

-This means the keypad is not communicating with the Falcon. The best solution for any electronic malfunction such as this is to reset the keypad. To reset the keypad, disconnect the power from the keypad and the communication by disconnecting the RS485 cable from the back of the Falcon Base Unit and shutting off the breaker for the power source to the keypads. Once both power sources are disconnected, reconnect the RS485 Cable to the back of the Falcon and turn the breaker on for the Remote Keypad Unit power. Within 60 seconds of restoring power the current date and time should transmit from the Falcon base unit to the keypad(s) and access codes should open the gate with an "Access Granted" message appearing on the display. If this does not clear up the problem, the Remote Keypad Unit may need servicing by the PTI repair office. Call you local dealer or PTI at this point.

-Scenario 2- Codes entered into the Remote Keypad Units will not open gate, display reads "Access Granted".

-This malfunction could be in the Remote keypad unit or in the Gate Motor circuitry. If all of the Remote Keypad Units give an "Access Granted" message with an authorized code but the gate will not open, it is likely that there is a malfunction occurring in the Gate Motor. If this occurs with only one keypad, the relay inside the Remote Keypad Unit may be defective. This is most assuredly determined by connecting an ohmmeter to pins 4 & 5 (for normally open circuits) or pins 5 & 6 (for normally closed circuits). Upon entering an authorized code into the keypad, the meter should deflect in the opposite direction indicating continuity in the relay. A layman's method of this is to simply listen closely to the keypad for 2 quiet clicks upon entering the code, which is representative of the relay cycling.

-Scenario 3- Codes entered into the Remote Keypad Unit will not open gate, display reads "Access Denied".

-This indicates that the Falcon does not recognize the code. Often times the user has forgotten the correct sequence of numbers. The Falcon will print the incorrect code for your use.

-Scenario 4- Codes entered into the Remote Keypad Unit will not open gate, display reads "Access Suspended".

-This indicates that the user assigned to this code has been locked out from the property (Function 5).

-Scenario 5- Codes entered into the Remote Keypad Unit will not open gate, display reads "Sorry, Area Closed".

-This indicates that the user is not a 24-hour user and attempted to enter the property during the closed hours of the property for his time zone that are set in Function 2. The business hours can be easily programmed incorrectly if the programmer does not enter the hours of operation in terms of AM for opening and PM for closing.

-Scenario 6- Falcon is printing "Comm Off" and "Comm On" repeatedly for one or more remotes.

-This is an indication that one or more of the remotes (keypads or door alarm multiplexers) have suffered possible damage to the communication circuitry, or the system is reacting to an outside interference such as radio frequencies, mercury vapor light interference, or power line radiation for example. In such a case, reset the system in accordance with scenario 1. If the condition continues, disconnect one remote unit from the system at a time to eliminate the possibility of one malfunctioning unit causing all units to appear faulty.

-Scenario 7- Printer will not print.

- Check all cables for tightness.
- Ensure that the printer is not jammed with paper.
- Ensure the printer is on-line/ready and powered up.
- Disconnect printer cable from printer, shut power off/on and reconnect cable.
- Attempt printing a report from the Falcon (Function 8)
- If all other attempts fail, shut off printer and Falcon. Turn Falcon and printer back on, re-program Falcon or load back up from memory source. Re-attempt report printing again.

-Scenario 8- The Falcon will not receive information downloaded from my Property Management software package.

-This is an indication of an interface malfunction between the Falcon Base Unit and the PC.

-Ensure that the serial interface cable is securely connected at both ends.

-If using telephone modems, there is a possibility that one of them is malfunctioning.

-Ensuring there is a current back up available, shut off Falcon and PC and restart both in accordance with the operation installation instructions.

-Under Function #14 on the Falcon Base Unit, ensure that the RS232 baud rate is set in accordance with the Software specifications and modem specifications. Note, if the baud rate is not set properly the PC will not communicate with the Falcon.

10. Notes

11. Specifications

11.1 Base Unit Specifications

Voltage: 115 VAC U.S. model
230 VAC Euro model
Battery: 9 VDC Ni-Cad Pack

Current: 250 ma
Current: 500 ma
Fuse: 1 amp

Remote Connector:
Pin 1: RS485 Data Positive
Pin 2: RS485 Ground
Pin 3: RS485 Data Negative
Pin 4: Not Used
Pin 5: Not Used
Pin 6: Alarm Relay Normally Open
Pin 7: Alarm Relay Common
Pin 8: Alarm Relay Normally Closed

Serial Connector:
Pin 1: RS232 Carrier Detect
Pin 2: RS232 Receive Data
Pin 3: RS232 Transmit Data
Pin 4: RS232 Data Term. Ready
Pin 5: RS232 Ground
Pin 6: Not Used
Pin 7: RS232 Request to Send
Pin 8: RS232 Clear to Send

11.2 Remote Keypad Specifications

Voltage: 12 - 18 V, AC or DC
Relay Contacts: 1 amp, 24V

Current: 300 ma
Power Fuse: Solid State
Relay Fuse: Solid State

Term Strip 1:
Pin 1: 12 VAC or DC Power
Pin 2: 12 VAC or DC Power
Pin 3: Not Used
Pin 4: Not Used
Pin 5: Not Used
Pin 6: Not Used

Term Strip 2:
Pin 1: RS485 Data Positive
Pin 2: RS485 Ground
Pin 3: RS485 Data Negative
Pin 4: Relay Normally Open
Pin 5: Relay Common
Pin 6: Relay Normally Closed

11.3 Alarm Multiplexer / Relay Board Specifications

Voltage: 12 - 18 V, AC or DC
Battery: 9 VDC

Current: 300 ma
Fuse: Solid State

Term Strip 1:
Pin 1: 12 VAC Power
Pin 2: 12 VAC Power
Pin 3: Not Used

Term Strip 2:
Pin 1: RS485 Data Positive
Pin 2: RS485 Ground
Pin 3: RS485 Data Negative

12. Warranty

PTI Falcon Access Control System

Preferred Technology Inc. (PTI) warrants equipment manufactured by PTI to the original purchaser against defects in materials and workmanship, under normal use and service, for a period of one year from the date of shipment, provided recommended installation and maintenance procedures are followed, **and provided that the warranty registration card is promptly completed and returned to Preferred Technology Inc.**

In case of failure due to defective material or workmanship during the warranty period, components found to be defective upon examination by PTI in its sole discretion, will be repaired or replaced with new or factory rebuilt components at the option of PTI. Replacement parts are warranted only for the remaining portion of the original warranty period or 90 days which ever is longer. Equipment requiring warranty work shall be returned freight prepaid to PTI. Before Equipment is returned for repair a **Return Material Authorization (RMA)** number must be obtained from PTI.

This warranty does not extend to normal maintenance, which the customer is expected to provide. Further, this warranty does not extend to equipment or component systems manufactured by others and sold by PTI. In such cases, the original manufacturer's warranty shall apply.

This warranty is in lieu of and excludes all other warranties, expressed or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. This warranty shall not extend to damage due to improper installation, maintenance, or use, connection to improper power sources, or to damage caused by fire, flood, lightning, power surge, or other acts of nature. In no event shall Preferred Technology Inc. be liable for any incidental or consequential damages due to any defect or failure of the equipment.

**PREFERRED TECHNOLOGY INC.
8271 East Gelding Dr. Scottsdale, AZ 85260
(480) 991-1259**

13. Return Material Authorization Policy

When returning equipment to Preferred Technology, Inc. you must first call for a Return Material Authorization (RMA) number. This number must be visible on the outside of the package as well as on the product inside the package.

Equipment requiring a RMA number includes, but is not limited to:

- product returned for advance replacement
- product returned for repair (in and out of warranty)
- product returned for credit

PTI has implemented this policy in order to improve service to our customers. RMA numbers help us to track receipt of packages, identify reasons for returns, insure prompt repair and return, insure proper replacement of damaged or faulty equipment, and insure proper credit. We appreciate your cooperation in helping us serve you better.

Should you have any questions or concerns, do not hesitate to call us at 480-991-1259.

Warranty Registration Card	
Company: _____	Serial numbers
Contact: _____	Falcon: _____
Address: _____	Keypads: _____
Address: _____	_____
City: _____ State: ____ Zip: _____	Muxs: _____
Phone: _____	_____
Fax: _____	_____
E-Mail: _____	Relay board: _____
Equipment purchased through: _____	_____

14. Service / Maintenance Log

Date	Report	Action Taken	Technician

