

Installation Manual

LC1400 System—Base Components



800.356.2671

www.AccutechSecurity.com

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accutech
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FCC Statement of Conditions

Compliance Statement (Part 15.19)

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

- This device may not cause harmful interference.
- This device must accept any interference received—including interference that may cause undesired operation.

Warning (Part 15.21)

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

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- 'appareil ne doit pas produire de brouillage
- 'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

FCC ID/DOC for the LC1400T unit:

FCC ID: JM7-HWHY-662022

Canada IC: 2583A-662022

FCC ID/DOC for the LT/SB Tag Sensor:

FCC ID: JM7-IGWT- 662002

Canada IC: 2683A-662002

FCC/ID/Doc for the WW Sensor:

FCC ID: JM7-HWHY-662017

Canada IC: 2683A-662017

FCC ID/DOC for the IDTAD:

FCC ID: JM7-HWHY-662015

Canada IC: 2683A-662015

Important Notices

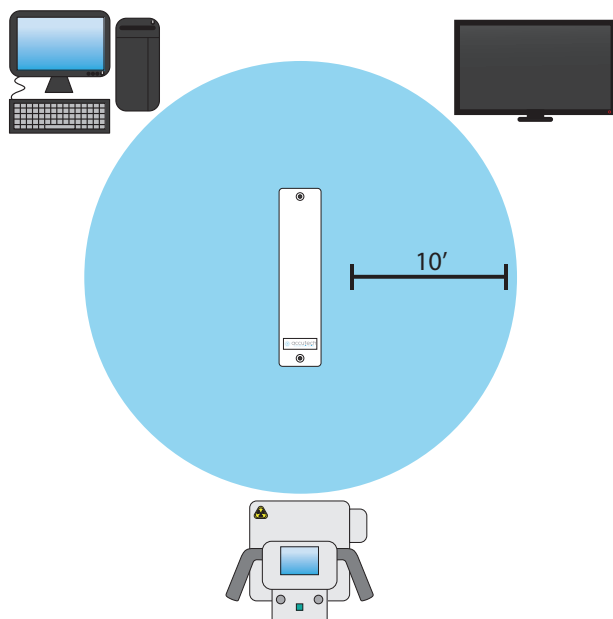
No security system can replace human vigilance.

Creating a safe environment requires the combined efforts of personnel, physicians, security, and patients. Global policies, procedures, and processes on patient care must be discussed with and circulated among staff. Staff education, communication, and coordination are crucial. No level of security can replace an informed and knowledgeable staff. Any electronic or physical security system is only a supplemental deterrent that requires human oversight to be effective.

Keep all electronics, including televisions, computers, and x-ray equipment, at least 10 feet away from the LC1400T.

This includes equipment located on the other side of walls and doors.

Picture the area around the monitored zone as a big globe with the receive antenna as the center. Keep all sources of interference outside this globe.



Do not store LC1400 sensor(s) within 3 feet of any of the sources of electrical noise listed below.

These sources can produce interference which can induce sensor activation. This activation can lead to undesirable responses from the system.

Common sources of interference include:

- Television sets
- Computer monitors
- Medical monitoring equipment
- Electric motors
- Electrical distribution panels and transformers
- Fluorescent lighting
- Some electronic washers and dryers
- X-ray and other imaging equipment
- Unshielded computer cables

This system must be connected to a primary power source that has a backup power/battery system capable of providing a minimum of 4hrs of normal operation.

Summarized levels for Accutech Egress Monitoring System Units	
Access control features	Levels
Destructive Attack Level	II
Line Security	I
Endurance Level	IV
Standby Power	I

Accutech Security Limited Warranty

Accutech Security warrants its Accutech™ equipment (Product) against defect in materials and workmanship under normal use for one (1) year from the date of product shipment.

Defective equipment will be either repaired or replaced at Accutech's discretion, free of charge to the Customer during the warranty period. Accutech will supply labor depending on contract to repair or replace defective equipment, free of charge, during the warranty period only if Accutech or an Accutech certified subcontractor hired by Accutech installed such equipment.

In addition, Accutech warrants its Accutech™ LC1200 / ES2200 / IS3200 / BR4200 / BR5200/ LS2400 / CB4200 System Tags against defects in materials and workmanship under normal use and service for a period of one (1) year from the date of shipment, (6) months for Wander Wearable / BR52 / CB52 System Tags.

If a Tag fails during the warranty period due to defects in material and workmanship, Accutech will at its sole discretion, repair or replace the Tag with like quality product free of charge, although overnight shipping charges may apply. Broken BR Tag clasps or broken LT/SB/CB Tag strap slots are not covered by warranty.

Returned merchandise will only be accepted within 30 days of shipping with a valid Return Merchandise Authorization (RMA) number that is requested for full credit towards your account (less a 25% restocking fee) if the product is returned unused, in its original packaging, and not damaged. No product will be accepted for credit after 30 days from shipment date. All Tag sales are final.

Furthermore, the express limited warranty of Accutech shall be the sole and exclusive warranty of Accutech and Accutech hereby disclaims all other warranties, express, implied or statutory, including but not limited, all

other implied warranties of merchantability or fitness for a particular purpose. In no way should Accutech be liable for special, incidental, or consequential damages. Accutech reserves the right to change such limited warranty from time to time upon thirty (30) days written notice.

Computers and monitors provided by Accutech shall not be submitted for repair to Accutech but instead shall be submitted directly to their respective manufacturer and serviced under their inherent manufacturer warranty policy present at the time of purchase. Customer shall be responsible for registering any and all warranty requirements.

Accutech assumes no responsibility if any Product shall fail to function during any warranty period by reason of any one or more of the following causes:

- Abuse or misuse of the Product or failure to operate the Product in accordance with operating instructions or specifications.
- Improper preventive maintenance of the Product.
- Alteration or modification of the Product not specifically approved in writing by Accutech.
- Improper installation, repair, modification, or servicing the Product performed by any unauthorized service personnel.
- Equipment or cabling damaged by unauthorized personnel knowingly or unknowingly.
- Use or operation of the Product in conjunction with any accessories or auxiliary equipment not specifically approved in writing by Accutech.
- Acts of God, including, but not limited to, natural disaster, fire, explosions, flood, accidents and the like.

24 hour, 7-days-a-week, 365-days-a-year over the phone technical support at 1-800-356-2671

Chapter 1

The LC1400 System

The LC1400 System

- Overview
- Features
- How the System Works
- Zone Conditioning
- Perimeter Door Application
- Internal vs. External alarms
- Alarm Types
- Zone Alarm Activation Conditions
- Addressing Alarms
- Escorting
- Typical Layouts

Overview

The LC1400 System is designed to be a turnkey patient-egress monitoring system. The function of the system is to alert facility personnel of the possible egress of a monitored resident. The system can be utilized for special care residents suffering from maladies that may cause them to stray into unauthorized areas or leave a facility.

Note

Because a facility may have multiple LC1400T controllers within an LC1400 system, each individual monitored zone with an LC1400T will be referred to as an *LC1400 zone* from this point forward.

The LC1400 system consists of:

- LC1400T Controller (Part #662066)
- LCT-TX (Part #672022)
- Keypad
(Part # 650209)
- Magnetic Switch (door applications)
(Part #650514)
- Passive Infrared Reader (hallway and elevator applications)
(Part #300302)
- LC1400 System Tags (LT/SB/WW)
(Part #77L018, 77L018-W, 77L016, & #77L017)

Additional options for the LC1400 unit:

- External Sounders
(Part #700216)
- Magnetic Locks
(Part #700218 or 700228)
- Elevator Deactivation
(Part #700027)
- Automatic Door Deactivation
(Part #700033)
- Timer (Perimeter door function)
(Part #700000)
- Staff Alert Panel
(Part #700080)
- Graphic Display Panel
(Part #700061 or #700062)
- Fire Panel Interface
(Part #700013)

Features

The LC1400 system comes with the following features:

- Door Alarm
- Supervisor
- Tag detect
- Perimeter Door Function
- Stagger Tuning
- Tamper Switch

How the System Works

The LC1400 system uses a simple but effective concept. Monitored residents wear a small, unobtrusive system tag, and LC1400 units are installed at points of egress.

When a tag enters a monitored area, the system can automatically:

- Sound alarms
- Lock doors
- Deactivate elevators
- Flash lights
- Trigger visual displays (e.g., Staff Alert Panels or Graphic Display Panels)

Because LC1400 units only react to tags, the system does not restrict the movement of other residents, staff, or visitors.

The LC1400 unit's range of coverage is determined by the size of the Tx activation field. An LC1400 unit's Tx activation field can be expanded or reduced to accommodate the environmental conditions of virtually any doorway, hallway, or elevator you wish to monitor.

An LCT-TX is added to provide an additional exciter field in a different orientation than the LC1400T to help activate a tag regardless of the orientation as it enters the TX field. Used in hallways, double doors, double or triple elevators.

Zone Conditioning

- Single Conditioning
- Double Conditioning—Door and Hallway
- Double Conditioning—Door with Lock(s)
- Double Conditioning—Elevator
- Double Conditioning—Automatic Door

Single Conditioning

Single conditioning zones react to tags in the same way as all monitored zone types (e.g., door, hallway, elevator, automatic door).

With single conditioning, if an active tag enters a monitored zone, the system will detect the tag and generate a Door alarm. To clear this alarm, remove the tag from the zone and enter a valid code into the zone's keypad.

Double Conditioning – Door and Hallway

Double conditioning zones require two events to occur before an alarm is generated.

In door zones: (1) a tag must be detected in the zone, and (2) the door must be opened or passive infrared (PIR) detection must occur.

In hallway zones: (1) a tag must be detected in the zone and (2) passive infrared (PIR) detection must occur.

To clear this alarm, remove the tag from the zone and enter a valid code into the zone's keypad.

Double Conditioning – Door with Lock(s)

Important

Although most locks can be interfaced with an LC1400 zone, the following instructions are only applicable to an Accutech-supplied 3101 magnetic lock.

If an active tag enters a monitored door zone, the system will detect the tag. The magnetic lock will then energize and lock the door (provided the door is closed, has a magnetic lock(s), and the lock is unobstructed). The lock will remain locked for as long as the tag is in the monitored zone. When the tag leaves the monitored zone, the door will unlock after an adjustable period of time.

Accutech's 3101 magnetic locks also incorporate delayed egress circuitry that complies with N.F.P.A. 101 Life Safety Codes 5-2.1.6.1. If engaged, the lock will release within 15 seconds (after a 1-3 second nuisance delay) whenever a maintained force (equal to or greater than a force set below 15lbs, as required by NFPA) is applied to the door. An audible tone signals both the countdown and the release. When the lock releases, the red LED will turn solid green and the lock alarm will sound continuously; however, if the door is not opened and the tag leaves the zone, the audible tone will cease and the lock will return to normal operation.

Warning

During a fire alarm event, or when power is lost, all locks are disengaged and cannot be reengaged until the fire alarm is cleared.

Double Conditioning - Elevator

Important

The use of elevator deactivation with the LC1400 zone will require coordination and integration with the elevator company.

Elevator deactivation circuitry restricts the wearer of a tag from using an elevator. If a tag enters a monitored elevator zone, the elevator's call button on that floor will be deactivated. Call buttons on other floors are unaffected, and no one is restricted from coming to the floor.

If the elevator car is en route to the floor when a tag enters the elevator zone, the elevator will arrive on the floor, the door(s) will open, the elevator controls will stop functioning, and the system will alarm.

If the elevator doors are open and a tag is within the elevator zone or enters the zone, the doors will remain open, the elevator controls will stop functioning, and an alarm will sound.

Double Conditioning - Automatic Door

If an active tag enters a monitored automatic door zone, the system will detect the tag and the automatic door operation (motion detector and/or push paddle) will be disabled.

If the door is manually opened while the tag is in the zone, an Egress alarm will be generated. When the tag leaves the zone, the door will return to normal operation after an adjustable period of time.

To clear this alarm, remove the tag from the zone, close the door, and enter a valid code into the zone keypad.

Perimeter Door Application

If desired, the LC1400 zone can be used as a perimeter door zone. When in this mode, the door will alarm when it is opened.

If the door has magnetic locks, the door would remain locked (lock energized) at all times and would require a valid code entered into the keypad or the activating of a PBO (Push Button Override) to open the door. Delayed egress circuitry will function normally if 3101 Series magnetic locks are used.

Internal vs. External Alarms

The LC1400T includes an internal alarm sounder (a piezo) and the capability of triggering external sounders.

An external sounder can be positioned away from the zone at a remote location, such as a hallway intersection or nurse station.

The internal piezo and an external sounder can operate simultaneously and will be silenced by a keypad reset.

A staff alert panel (SAP) or graphic display panel (GDP) is another option for remote alarm notification.

Alarm Types

- Door Alarm
- Supervisor Alarm
- Tamper Alarm

Egress

A Door Alarm can be set to occur when a tag enters a monitored zone (single conditioning) or when a tag enters a monitored zone and a door is opened or a PIR is tripped (double conditioning).

Supervisor

A Supervisor alarm occurs when the performance of the system has been altered due to tampering or inadvertent acts—such as cut wires, antenna damage, or interference.

Tamper

A Tamper alarm occurs when the tamper detect infrared sensor is triggered by the removal of the LC1400T's cover.

Zone Alarm Activation Conditions

- Double-conditioning
- Door zones
- Elevator zones
- Hallway zones

This section explains how Accutech systems react to a tag entering a monitored door, elevator, or hallway zone. It also explains alarm definitions.

Double Conditioning

Double conditioning (set during installation) helps prevent nuisance alarms. Two conditions are required to generate an alarm at these zones.

In door zones: (1) a tag must be detected in the zone and (2) the door must be opened.

In hallway zones: (1) a tag must be detected in the zone and (2) PIR detection must occur.

Door Zones

When a tag enters a monitored door zone, the system will detect the tag. At that moment (provided the door is closed, has a magnetic lock[s], and the lock is unobstructed), the magnetic lock will energize and lock the door.

The door will remain locked for as long as the tag is within the monitored zone. When the tag leaves the monitored zone, the door will unlock after an adjustable period of time (unless it is set to latch when an alarm occurs).

Egress

If a tag enters a monitored door zone, with or without a magnetic lock(s), and the door is already open, (or is opened while the tag is in the zone) the LC1400 zone will generate an alarm.

Elevator Zones

Elevator deactivation circuitry deactivates an elevator's controls so the wearer of a tag cannot use that elevator.

Egress

If a tag enters a monitored elevator zone, the elevator's call button on that floor will be deactivated (call buttons on other floors are unaffected and no one is restricted from coming to the floor).

When a tag is in the zone and the elevator doors are closed, those doors will remain closed.

When a tag is within or approaches the zone while the elevator doors are open, the doors will remain open, the elevator's controls will be deactivated, and the system will alarm.

If the elevator car is en route to the floor when a tag enters the elevator zone, the elevator will arrive on the floor, the door(s) will open, the elevator's controls will be deactivated, and the system will alarm.

Hallway Zones

Egress

If a tag enters a monitored hallway zone, the system will detect the tag and the PIRs will detect motion. The system can then sound alarms, trigger visual displays, and lock nearby doors.

Addressing Alarms

Disclaimer: The following instructions are intended only as recommendations. Each facility should review these recommendations and make changes as necessary to meet their own unique security requirements.

Warning

When an alarm occurs, always go to the alarm location to address the alarm.

Addressing Door Alarms

A Door Alarm occurs when a Tag enters a monitored zone and the door is open(ed) or a PIR (motion detector) is triggered.

When a Door Alarm occurs:

- 1) Go to the alarm location. Locate and assure the safety of the patient.
- 2) Find the tag and patient identified as alarming on the PC. Check the following:
 - Is someone loitering in that exit zone, and do they have a tag? If so, remove the person with the tag from that zone.
 - Is a tag from an adjacent room being activated by this exit zone? If so, call your service technician for an adjustment of the zone's activation field size.
- 3) After assuring the safety of the patient, clear the alarm at the zone by entering a valid code into the zone's keypad, then clear the alarm at the PC.

Addressing Supervisor Alarms

A Supervisor Alarm occurs when the performance of the system has been altered due to tampering or inadvertent acts such as cut wires, antenna damage or interference, etc. When a Supervisor Alarm occurs:

- 1) Go to the alarm location.
- 2) Look for visible damage to the Accutech equipment.
- 3) Check for and remove any objects that may be causing interference near the zone equipment—including metal carts, monitors or other medical equipment, as well as personnel using wireless communication devices.
- 4) If you locate and correct the cause, the Supervisor alarm will cease; if not, call your service technician for further assistance.

Addressing Tamper Alarms

A Tamper alarm occurs when the LS2400T cover is removed and its tamper detect infrared sensor is triggered.

If the unit is in alarm (red light on Keypad) and one or more of the following conditions has been met, then it is possible that someone has tampered with the cover of the unit by trying to remove it.

- No monitored residents have been found to be in the area while the door was opened
- The door is closed
- Power to the unit has been verified
- You have reset the zone with the Keypad

Contact maintenance or your local service provider or call 1-800-356-2671 for 24-hour telephone technical support.

Escorting

Disclaimer: The following instructions are intended only as recommendations. Each facility should review these recommendations and make changes as necessary to meet their own unique security requirements.

While escorting tags through zones, be wary of tailgating. Tailgating is the practice of tags lingering near a monitored zone (usually an exit point) until an authorized escort passes through the zone and the tag immediately follows behind.

To prevent tailgating, be aware of all traffic near a monitored zone. Once you are through the monitored zone, wait until the escort timer has timed out and the unit has reactivated.

To escort tags through a monitored zone, use the following instructions:

- 1) Enter a valid code into the zone's keypad. This will invoke the keypad's Escort function. The keypad's Escort function will allow the tag to pass through the monitored zone for the pre-set Escort time. The duration of the Escort function is adjustable from 0 to 98 seconds (factory set at 15 seconds).
- 2) Escort the tag through the zone.
Important: For slower moving residents, you may need to invoke the Escort function again; however, if this is the case, an alarm may sound. Take into consideration the Escort time duration at that zone. If the door is used to escort slow-moving residents often, consider extending the Escort time or using a wheelchair to escort residents.
- 3) Once you are through the zone, prevent tailgating by waiting until the Escort time has timed-out (the green LED will extinguish) before you proceed.

Typical Layouts

- Single Door
- Double Door
- Hallway
- Single Elevator
- Double Elevator
- Triple Elevator
- Elevator Interior
- Single Door with Outer Windows
- Double Door with Outer Windows
- Sliding Glass Doors

Use the layouts on the following pages for guidance on covering common monitored zone layouts. Make changes as necessary to suit environmental conditions and ensure proper coverage.

Typical LC1400 Configuration - Single Door

Note: If a patient room is behind latch-side wall, mount on hinge-side wall instead.

Optional Magnetic Door Lock

Part #700228

Magnetic Door Position Switch

Part #650514

15VDC/2A Plug-in Power Supply

Part #500224

Drop Ceiling

KP103 Keypad

Part #650209



22/6

LC1400T

Part #662022



~2'
from
floor

22/2

18/6

18/2

Min
3"
from
frame

LCT Single Door Kit (Part #800126):

- LC1400T (1)
- Keypad (1)
- Magnetic Switch (1)
- Cable Kit (1)
- 15VDC/2A Power Supply (1)

Important:

15VDC/2A Plug-in Power Supply

(Part #500224):

- Installed above drop ceiling

Magnetic Door Position Switch

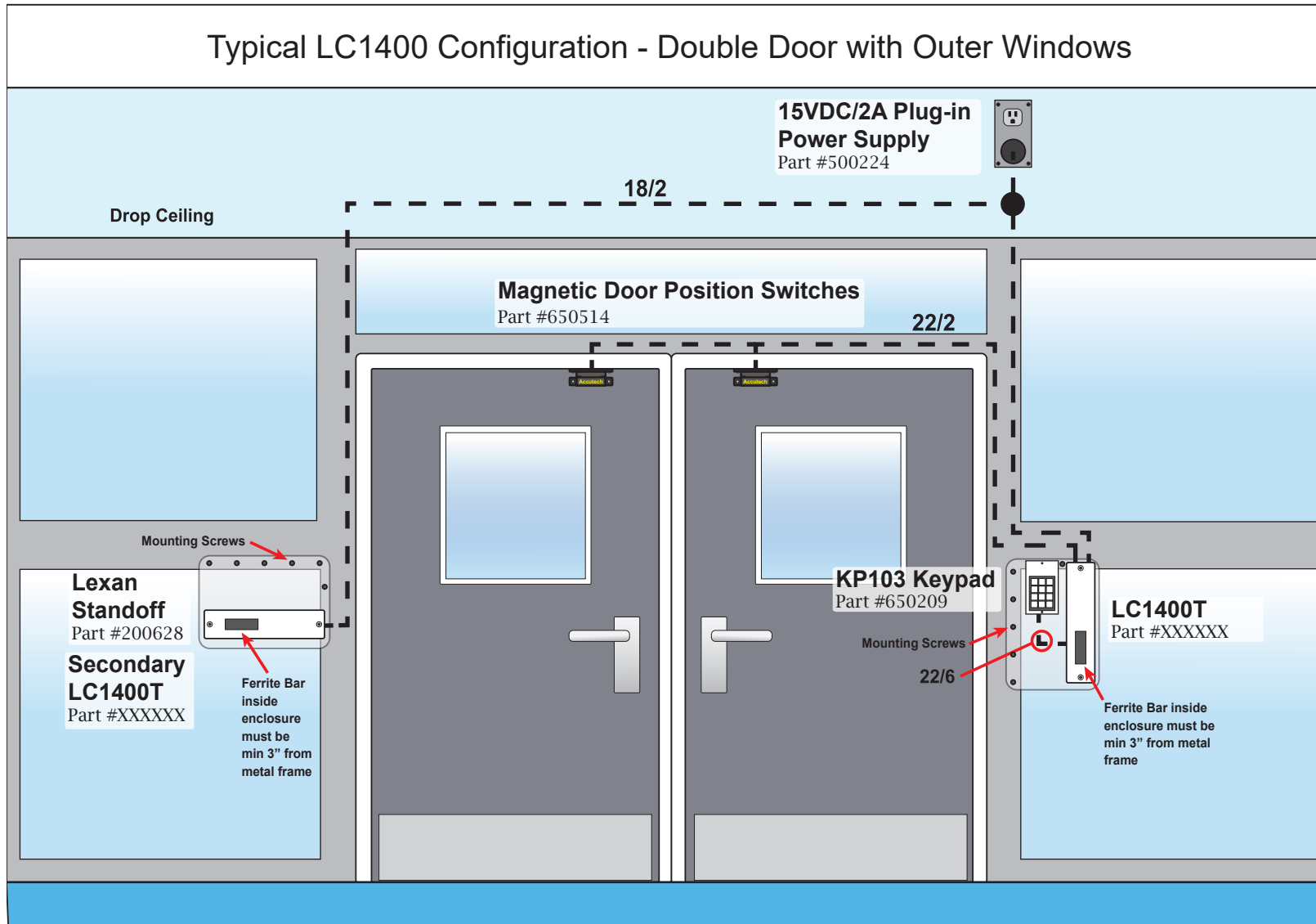
(Part #650514)

- Position on latch side of top of door

LC1400T

- Not designed for ceiling mount.
- Position at least 3" away from any metal.
- Recommended distance from door: 3" - 6" (Max. 18")

Typical LC1400 Configuration - Double Door with Outer Windows



LC Double Door Kit (Part #800127):

- LC1400T (1)
- Secondary LC1400T (1)
- Keypad (1)
- Magnetic Switch (2)
- Cable Kit (1)
- 15VDC/2A Power Supply (1)

Two Lexan Standoffs not included and must be purchased separately.

Important:

15VDC/2A Plug-in Power Supply (Part #500224):

- Installed above drop ceiling

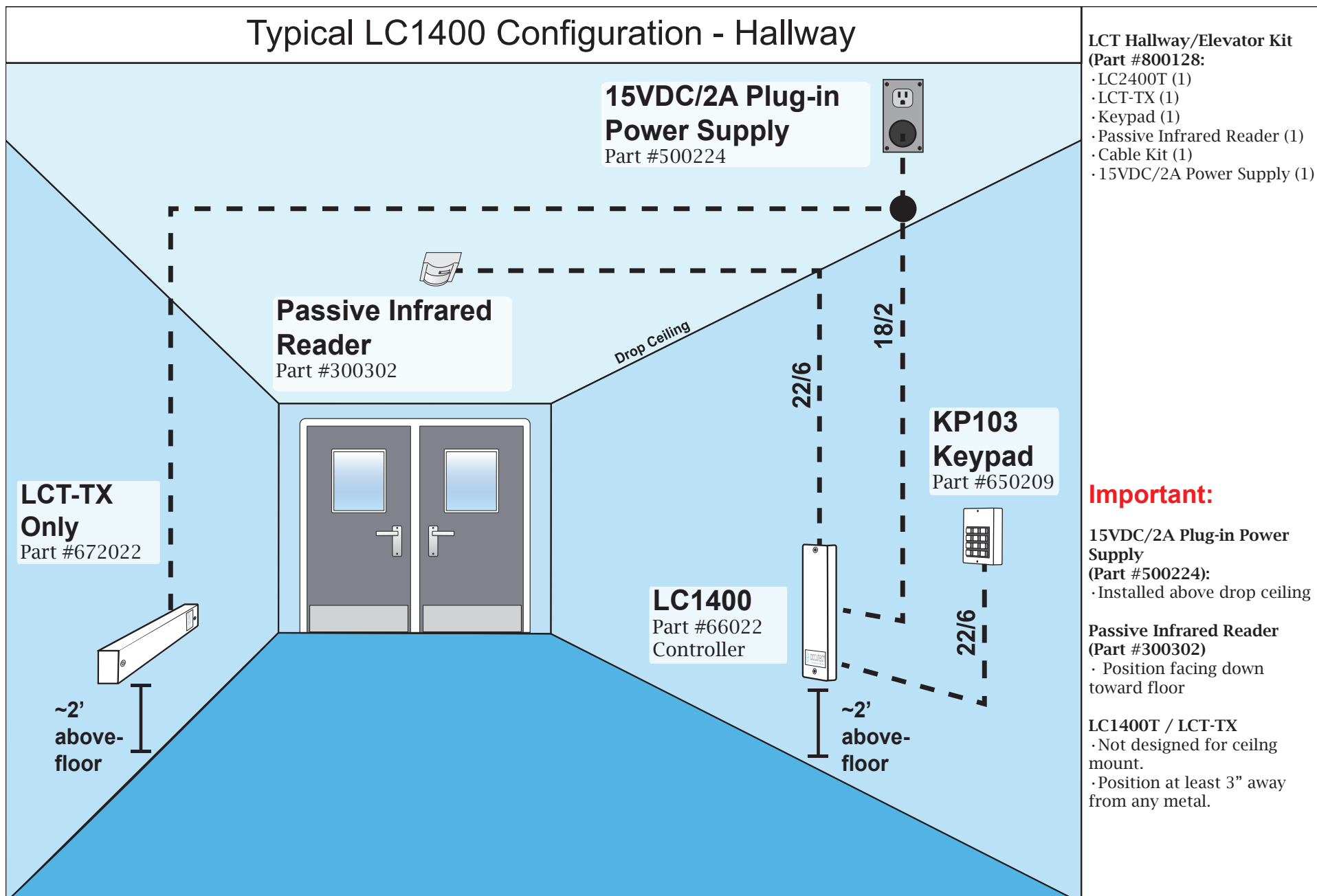
Magnetic Door Position Switch (Part #650514):

- Position on latch side of top of door

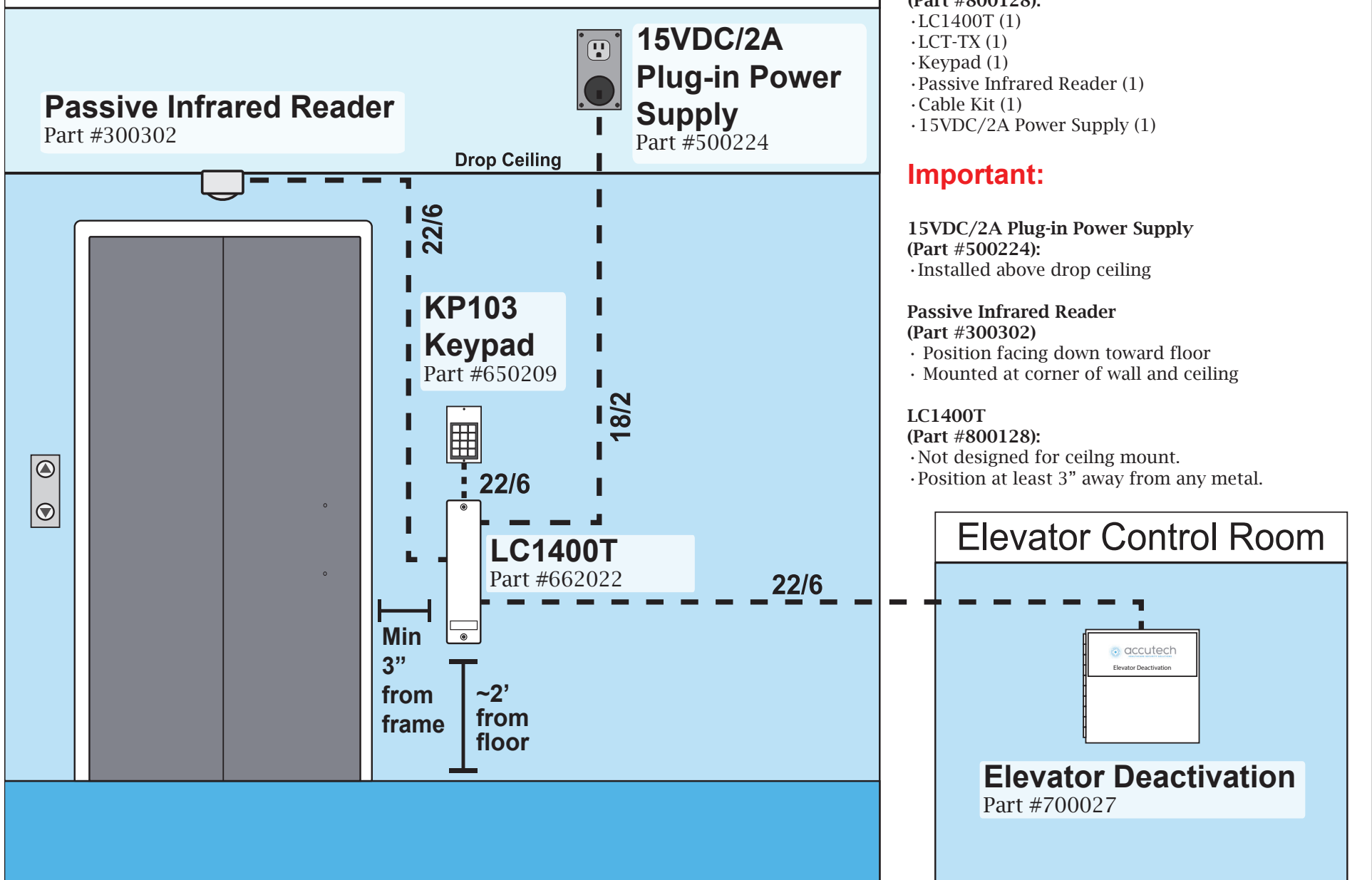
LC1400T (Part #XXXXXX):

- Not designed for ceiling mount.
- Position ferrite bar inside enclosure at least 3" away from any metal.
- Recommended distance from door: 3" - 6" (Max. 18")
- Position ~2" from floor

Typical LC1400 Configuration - Hallway



Typical LC1400 Configuration - Single Elevator



LC Hallway/Elevator Kit

(Part #800128):

- LC1400T (1)
- LCT-TX (1)
- Keypad (1)
- Passive Infrared Reader (1)
- Cable Kit (1)
- 15VDC/2A Power Supply (1)

Important:

15VDC/2A Plug-in Power Supply

(Part #500224):

- Installed above drop ceiling

Passive Infrared Reader

(Part #300302)

- Position facing down toward floor
- Mounted at corner of wall and ceiling

LC1400T

(Part #800128):

- Not designed for ceiling mount.
- Position at least 3" away from any metal.

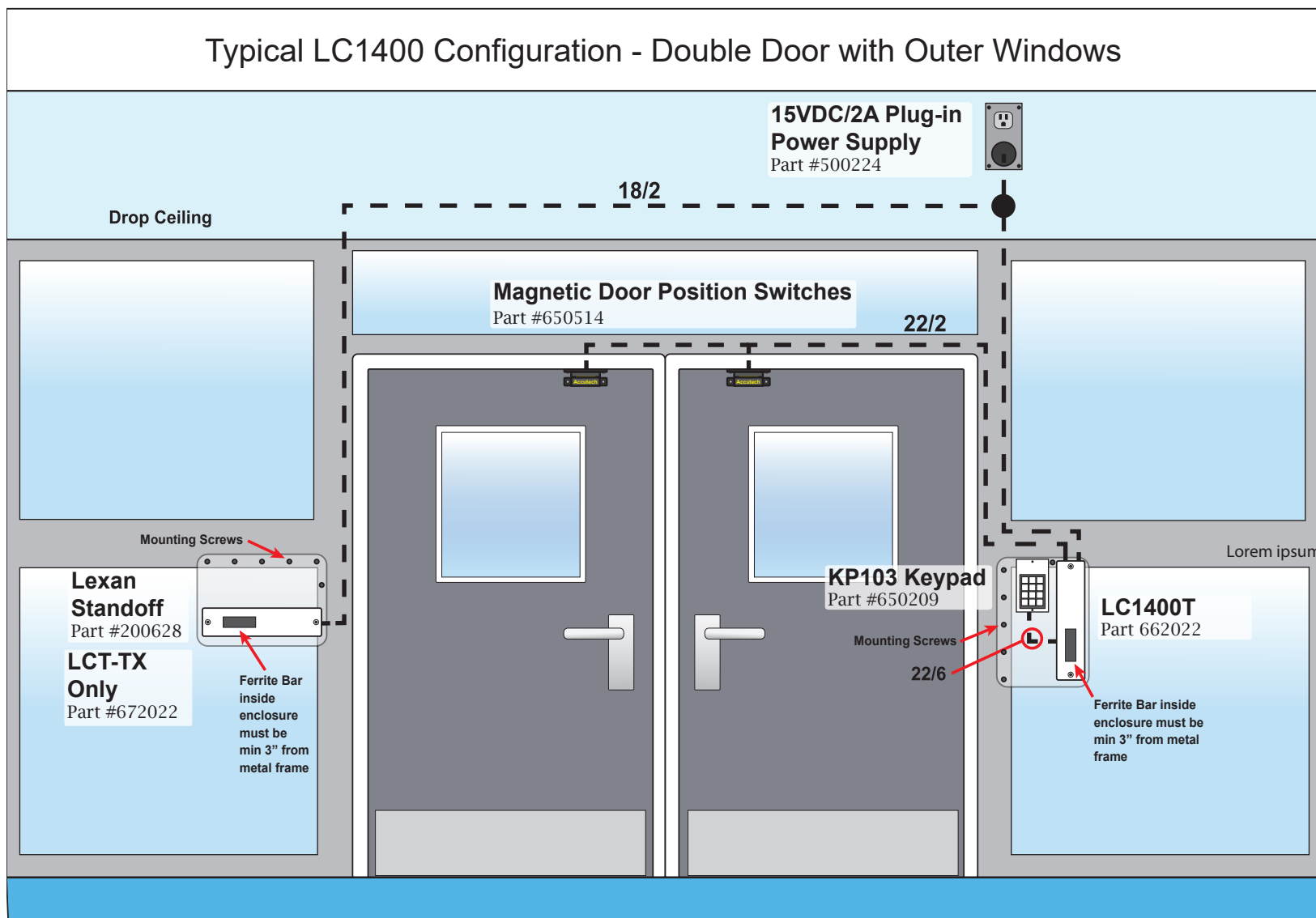
Elevator Control Room



Elevator Deactivation

Part #700027

Typical LC1400 Configuration - Double Door with Outer Windows



LC Double Door Kit (Part #800122):

- LC1400T (1)
- LCT-TX (1)
- Keypad (1)
- Magnetic Switch (2)
- Cable Kit (1)
- 15VDC/2A Power Supply (1)

Two Lexan Standoffs not included and must be purchased separately.

Important:

15VDC/2A Plug-in Power Supply (Part #500224):

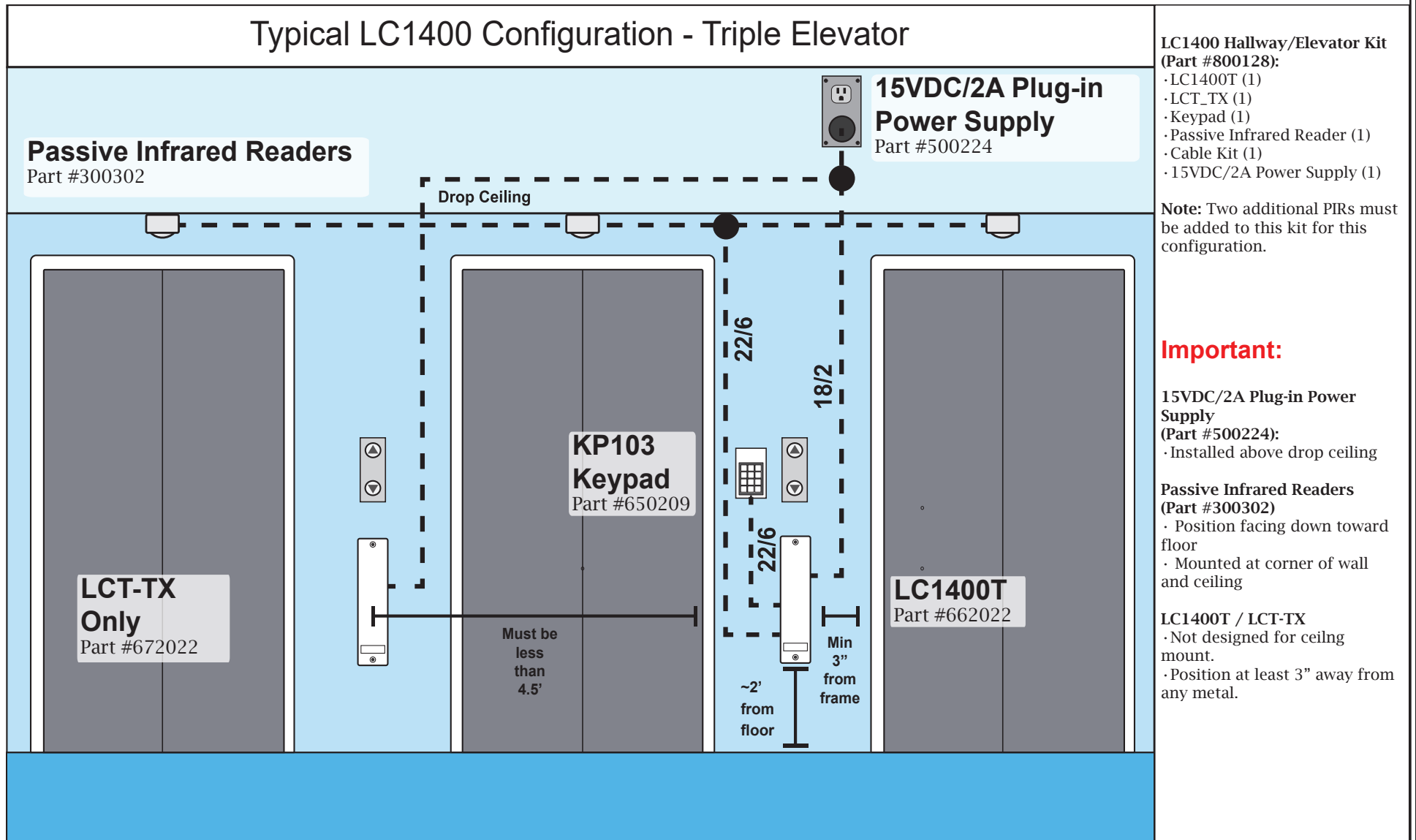
- Installed above drop ceiling

Magnetic Door Position Switch (Part #650514):

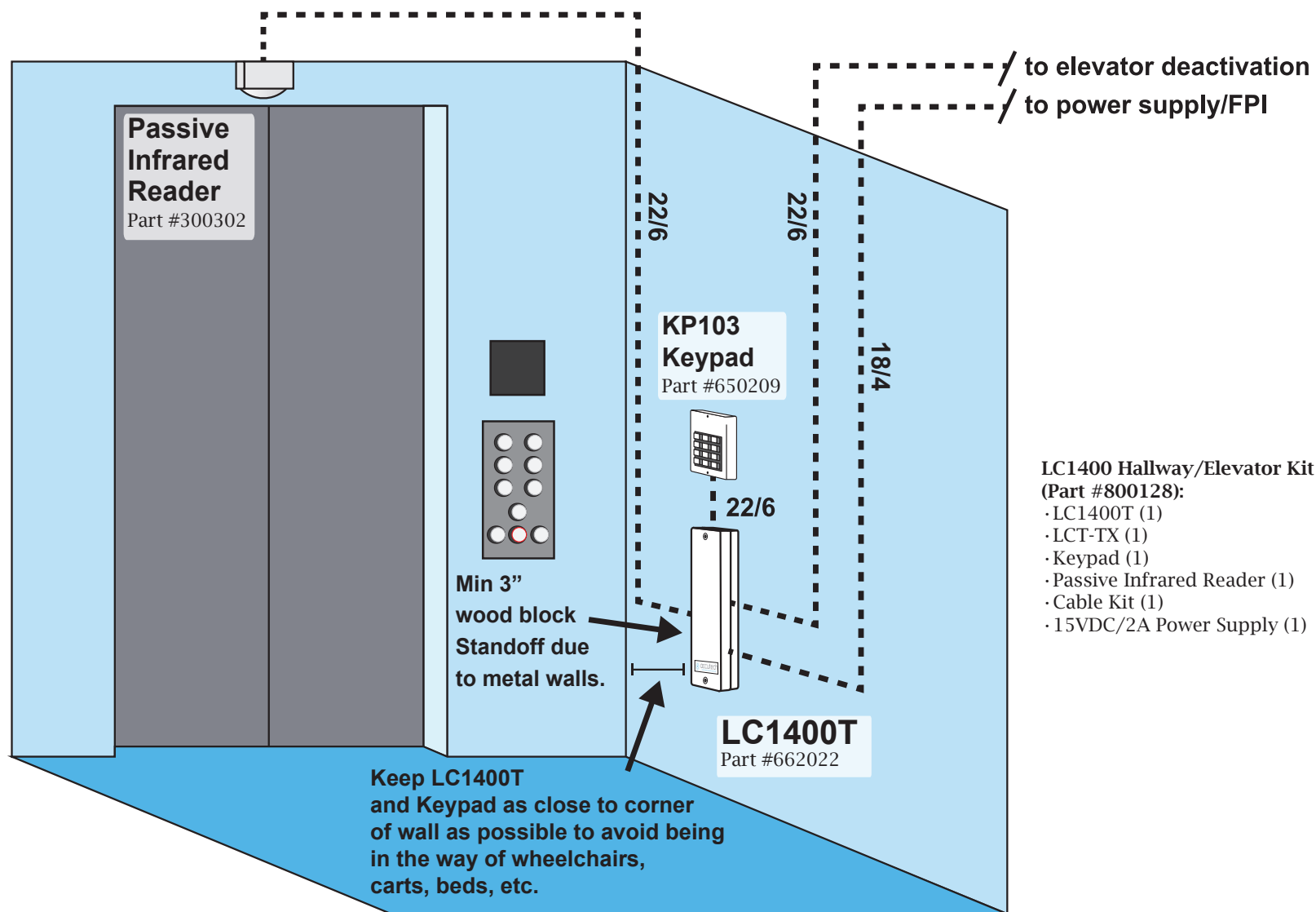
- Position on latch side of top of door

LC1400T / LCT-TX

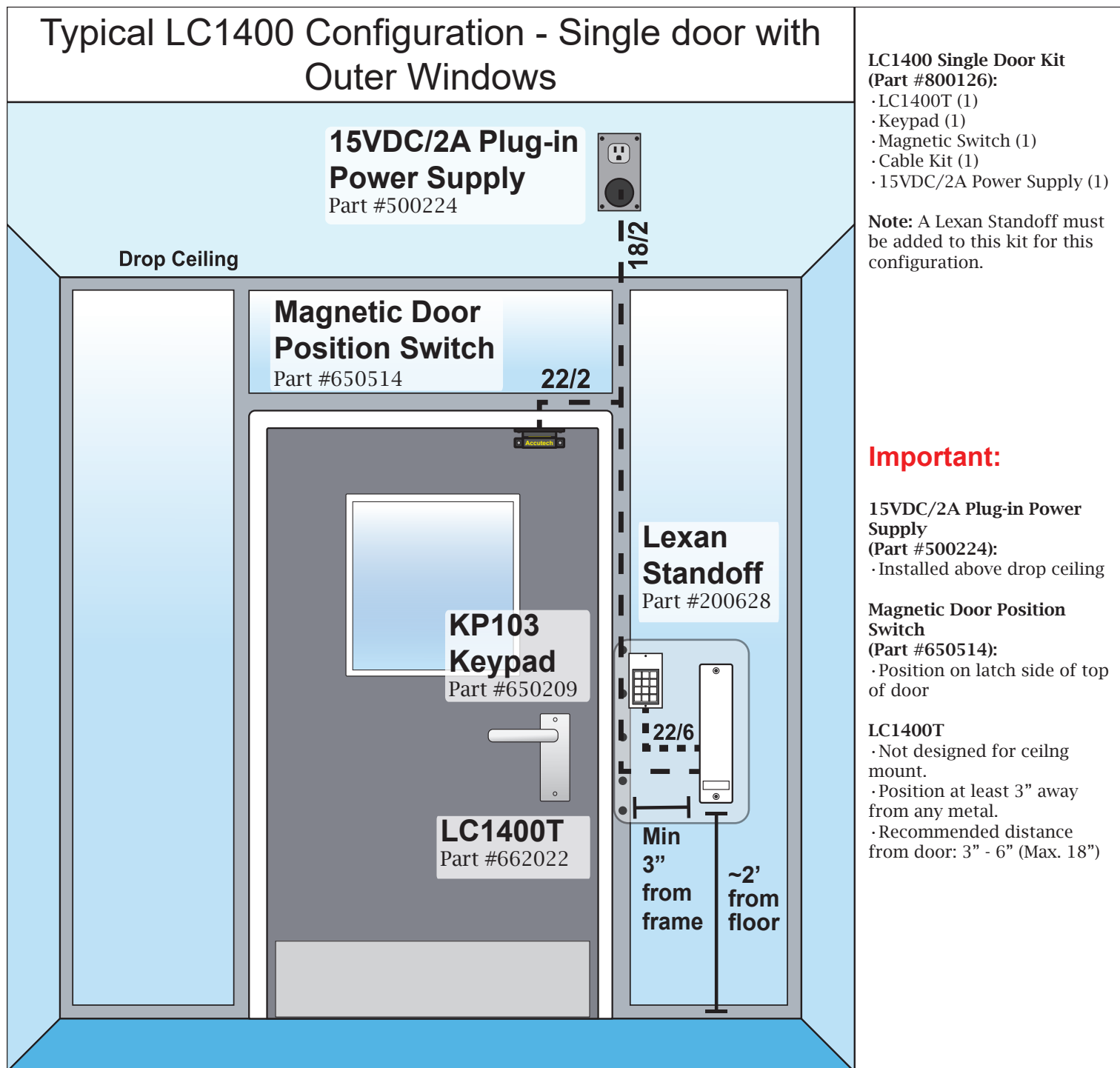
- Not designed for ceiling mount.
- Position ferrite bar inside enclosure at least 3" away from any metal.
- Recommended distance from door: 3" - 6" (Max. 18")
- Position ~2" from floor



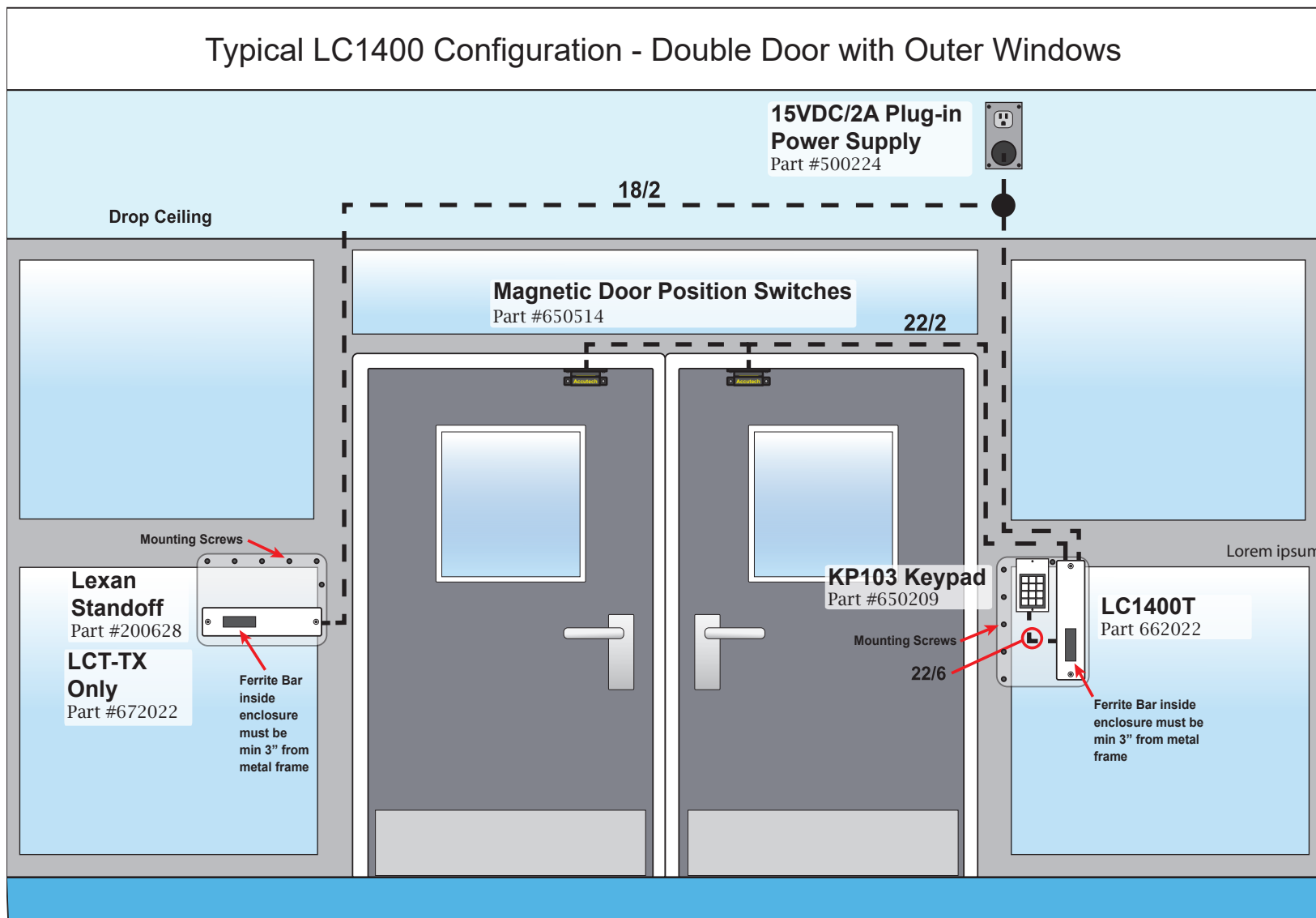
Typical LC1400 Configuration - Single Elevator Interior



*All cable requires shielding when inside elevator



Typical LC1400 Configuration - Double Door with Outer Windows



LC Double Door Kit (Part #800122):

- LC1400T (1)
- LCT-TX (1)
- Keypad (1)
- Magnetic Switch (2)
- Cable Kit (1)
- 15VDC/2A Power Supply (1)

Two Lexan Standoffs not included and must be purchased separately.

Important:

15VDC/2A Plug-in Power Supply (Part #500224):

- Installed above drop ceiling

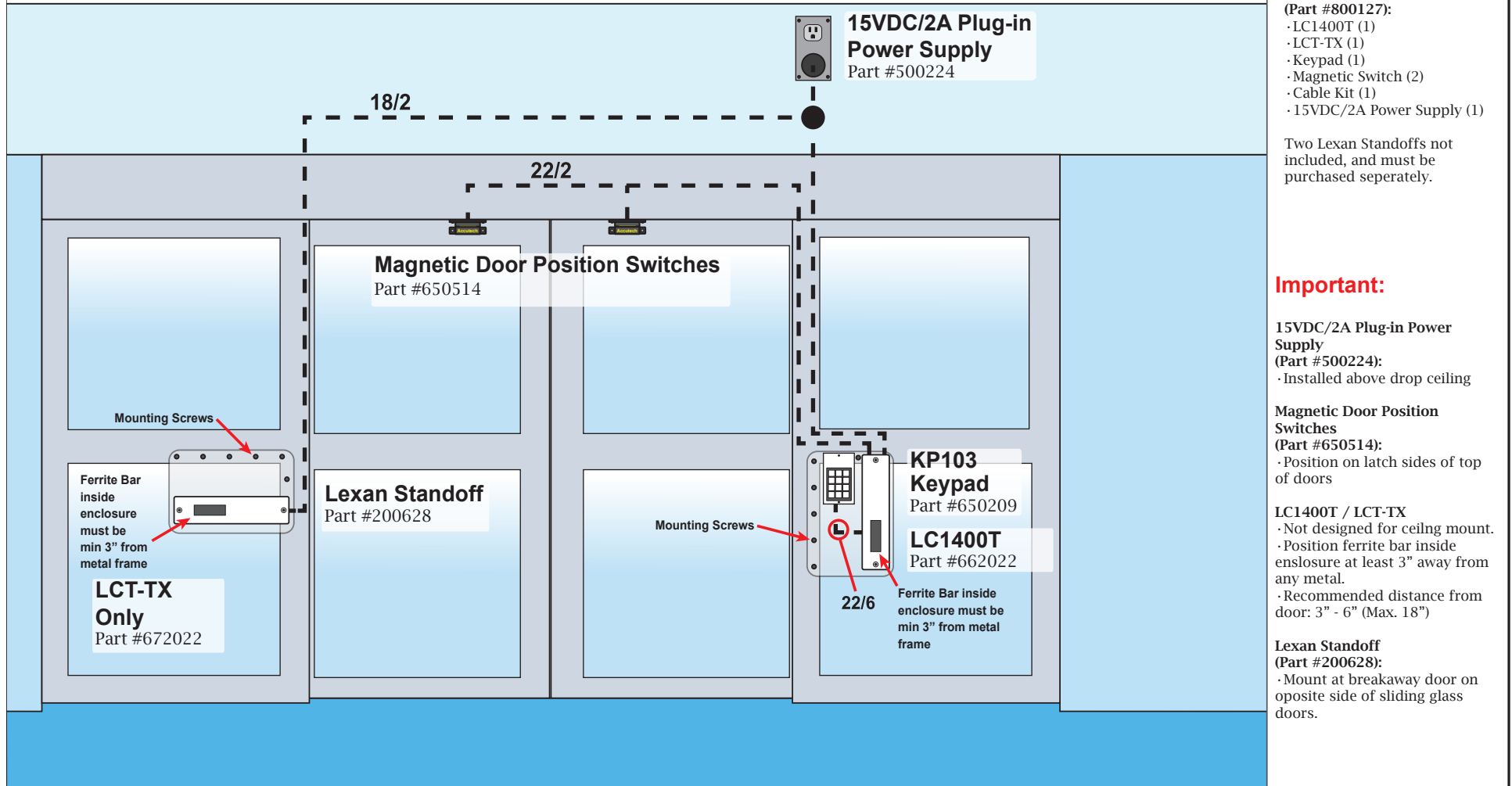
Magnetic Door Position Switch (Part #650514):

- Position on latch side of top of door

LC1400T / LCT-TX

- Not designed for ceiling mount.
- Position ferrite bar inside enclosure at least 3" away from any metal.
- Recommended distance from door: 3" - 6" (Max. 18")
- Position ~2" from floor

Typical LC1400 Configuration - Double Sliding Doors



Chapter 2

The LC1400T

The LC1400T

- Specifications
- Functionality
- Positioning
- Mounting
- Wiring
- The Circuit Board

Specifications

Electrical:

Operating Voltage: Minimum: 15 VDC

Current Consumption: Maximum: 250 mA

Mechanical:

Construction: Vacuum molded fire rated ABS

Size: 13.25" x 2.50" x 2.25"

Weight: 1 US pound

Mounting Surface: Four 3/16" screws

Operating Characteristics:

Transmit Frequency: Nominal 131 kHz
(129-137 kHz available for stagger tuning)

Receive Frequency: 418 MHz

Frequency Range: up to 10 feet radius (360°)

Output Impedance: 300 ohms nominal

Internal peizo: 85 db at 10 feet

Communication: RS485

Baud Rate: 115200 bps

Firmware Version: 0.0.2

Environmental:

Operating Temperature: 32° to 120°
Fahrenheit

Intended for indoor use only.

Duty Cycle:

Rated for continuous use.

Power Rating Statements

The LC1400T may be supplied with an unregulated 15 VDC, 2 A plug-in wall power supply that requires 120 VAC/60 Hz/20 W nominal input. Alternatively, a 15 VDC, 4.5 A central power supply may be used.

The LC1400T itself does not have a built-in power supply and requires only a DC voltage source at 15 VDC.

The 15 VDC, 2 A power supply can power the LC1400T with all required peripherals. The LC1400T has been designed to work with a specially configured reduced-current magnetic lock made by DynaLock exclusively for Accutech. The LC1400T can power up to two of these specially-configured *Dynalock 3101's.

*Using any other type of lock or restraint will require you to consider the entire 15 VDC Load. It is required that you provide a different power source for locks not supplied by Accutech.

Temperature

The LC1400T and its associated peripherals operate best in environments with ambient temperatures between 32 and 120 degrees Fahrenheit. Operation outside of this range may cause unexpected or undesirable results, including premature component or device failure.

Weight

The LC1400T weighs approximately 1 US lbs, which should be considered when choosing mounting locations and hardware.

Terminal Block Ratings

Maximum 300 V, 10 A on a single pin

Functionality

When a tag enters the LC1400T's Tx field, the tag activates and transmits an RF signal to the LC1400T's receiver. This is referred to as a Tag Detection event (Figure 2.1).

The LC1400T can interface with a direct connection to the Accutech 3101 DynaLock, or with an external relay to any other type of lock. When the lock is energized, a signal (*Lock Trigger*) from the LC1400T provides a low signal output to energize the lock.

Note

- For LC1400T connection labels, see figure 2.5.
- For timer definitions, see Field Adjustments chapter.
- For alarm definitions, see The LC1400 System chapter.

Tag Detection Events

A Tag Detection event begins when a tag enters a zone's Tx field. The event continues until all tags have left the field and the time set on the Tag Detect Delay timer passes.

When a Tag Detection event occurs while the door is closed

(PIR/MagSw-In is high)

- No alarm occurs.
- Door is locked (*Lock Trigger* pulled low).

When a Tag Detection event occurs while the door is open (Egress Alarm)

(PIR/MagSw-In is low)

- An alarm (*Alarm Com* normally closed) notifies staff that a resident with a tag entered the monitored exit.
- If enabled, the LC1400T activates the external sounder.
- Staff responds according to protocol.

When a Tamper alarm occurs

A Tamper alarm can be configured to be audible. When enabled:

- Tamper event is identified by the buzzer repeating the pattern (on for .52 seconds, off for .52 seconds, on for .52 seconds, and off for 1.4 seconds).
- Tamper alarm is not auto-cleared. A keypad reset is required to clear the alarm.

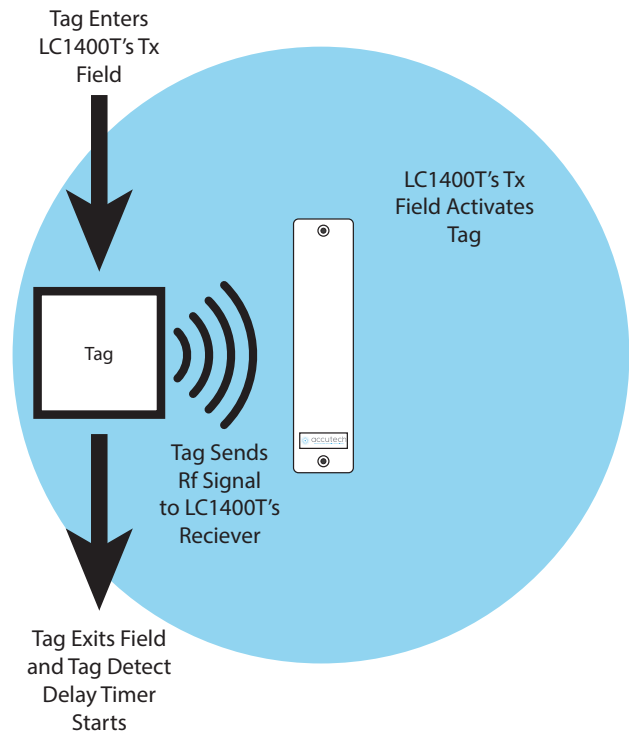


Figure 2.1
Tag Detection Event

Reset All & Reset Lock Events

A **Reset All** event resets all the alarms and locks/elevator controls of the LC1400T zone. This allows for a tag to be escorted through a zone without activating alarms or locks or deactivating an elevator.

A **Reset Lock** event only resets the lock at the LC1400T zone. This allows for staff to move through a zone while preventing tags from doing so, as an alarm will still sound when a door opens if a tag enters, or is already within, the zone during the event.

During any reset event, a timer determines how long the reset and its effects stay active after a code is entered into the keypad. For Reset All events, this is called the Reset All Timer. For Reset Lock events, this is called the Exit Door timer.

When a resident/patient is being escorted through a monitored exit point

When a staff member is escorting a resident/patient through a monitored exit point:

- A valid Reset All code is entered into the keypad (*Reset All-In* goes high, edge driven).
- The LC1400T drops *Lock Trigger* (goes high) to the lock.
- The LC1400T deactivates the *Door Alarm* relay, which deactivates the external sounder.

When resets are configured to terminate once the door closes

Reset All and Reset Lock are individually configurable to be terminated by the door closing during the reset event. When resets are configured to terminate once the door closes:

- A closing door deactivates the Reset All/Reset Lock function.
- The LC1400T operates as if the Reset All timer/Exit Door timer expired.

When Reset All is activated as indefinite

Reset All can be activated as indefinite by keeping *Reset All In* high when the Reset All timer expires. When this occurs, the LC1400T:

- Will stay in a Reset All state until it sees a low signal on *Reset All In* after a new Reset All timer expiration.
- The Reset All timer must be re-triggered by a rising edge on *Reset All In*.

Resetting an Alarm

To reset an alarm, the staff member uses a keypad (*Reset All In* goes high, edge driven) to reset the LC1400T. When *Reset All In* goes high:

- Lock Release Delay timer is reset.
- LC1400T drops *Lock Trigger* (goes high and stays high) to the lock (regardless of the Lock Release Delay Timer value).
- LC1400T drops *Reset to Lock* (goes low for as long as the value of the Reset All Timer) to the lock.
- The LC1400T deactivates the *Door Alarm* relay, which deactivates the external sounder.

Perimeter Mode Control

Perimeter mode is configured to be controlled by hardware. Perimeter is active by the Perimeter input (*Perimeter*) being held high.

Positioning

The recommended location of the LC1400T is on the wall next to the latch side of the door. Its lowest point should be about 2 feet above the floor.

Mount the LC1400T inside the intended monitored area.

Mount the LC1400T so its interior ferrite bar (figure 2.2) is positioned at least 3 inches away from any type of metal, including:

- Metal door frames
- Metal studs
- Metal lathe walls
- Metal electrical box
- Metal conduit
- Metal pipes



Figure 2.2 - Ferrite bar location in LC1400T

In addition, the LC1400T should be positioned within 3 and 18 inches of the monitored door or elevator to assure proper coverage. The recommended distance is 3 to 6 inches.

If the Controllers of adjacent zones are closer than 50 feet, implement Stagger Tuning to avoid crosstalk (activated Tags from one zone being detected in another zone). See the Stagger Tuning section of this chapter and chapters 8 & 9 for information on stagger tuning.

Positioning the LC1400T correctly will help avoid unintended activation of a tag in a nearby room or on a passerby. The goal is to produce a Tx activation field that adequately covers the doorway but does not extend into nearby rooms

.Bleed Through/ Adjacent Patient Rooms

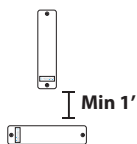
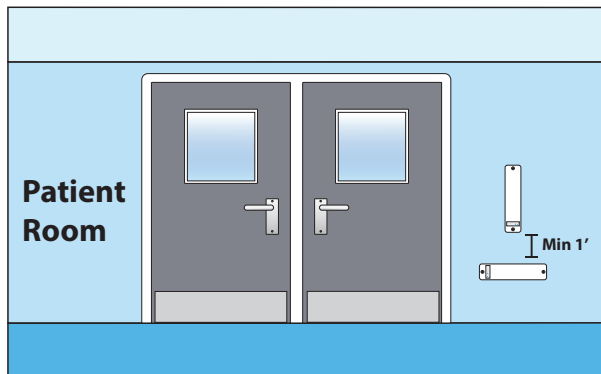
The position of the antenna will vary if patient rooms are adjacent to the zones. If a patient room is behind the wall on one side of an egress zone, position the antenna on the wall on the other side of the zone, where there is no patient room.

If there are patient rooms on both sides of an egress zone, Y-shield paint and grounding straps must be utilized. Use figure 2.3 and the following order of installation:

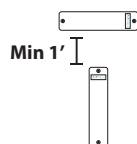
Y-Shield order of installation:

- 1) Install GSX50 grounding straps
- 2) NSF34 Y-Shield paint on 10'x10' area
- 3) Install GS3 grounding plate (do not paint grounding plate)
- 4) Ground GS3 to earth ground
- 5) Plaster over straps, as needed
- 6) Paint or wallpaper
- 7) Install LC1400T

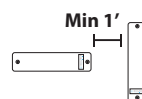
Patient room on one side of a Door



OR



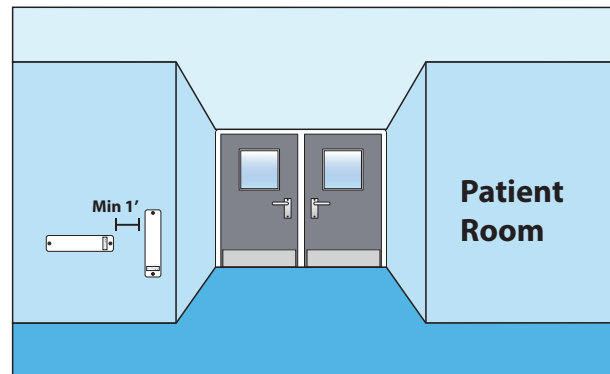
OR



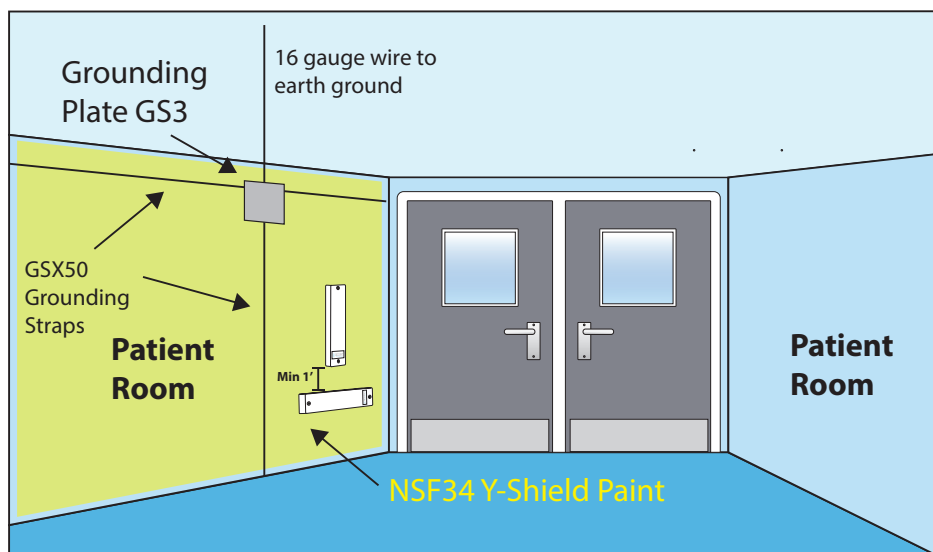
OR



Patient room one one side of a Hallway



Patient room on both sides of an exit



Y-SHIELD order of installation:

- 1) Install GSX50 grounding straps
- 2) Install GS3 grounding Plate
- 3) Ground GS3 to earth ground
- 4) NSF34 Y-Shield paint 10'x10' area
- 5) Plaster over straps, as needed
- 6) Paint or wallpaper
- 7) Install TX Antenna

Figure 2.3 - LC1400T installation around patient rooms

Stagger Tuning

Stagger tuning of the Antennas should be used to prevent crosstalk between zones if Controllers/doors are less than 50'-70' apart (depending on building structure) on the same floor, or floor-to-floor. Change the frequency of the Controllers to prevent them from interfering with one another.

However, if Controllers/doors are within 10' on the same floor, and/or their Tx fields are overlapping, keep them on the same frequency to prevent the Controllers from competing to activate and read the Tag. (Figure 2.4).

See chapter 8 for information on how to configure the antenna's dip switches to the different channels/frequencies. Each Low Frequency Tuning switch on an antenna must be set to the same channel/frequency.

See chapter 7 for information on how to set the channel/frequency in the software to match the frequency set on the board.

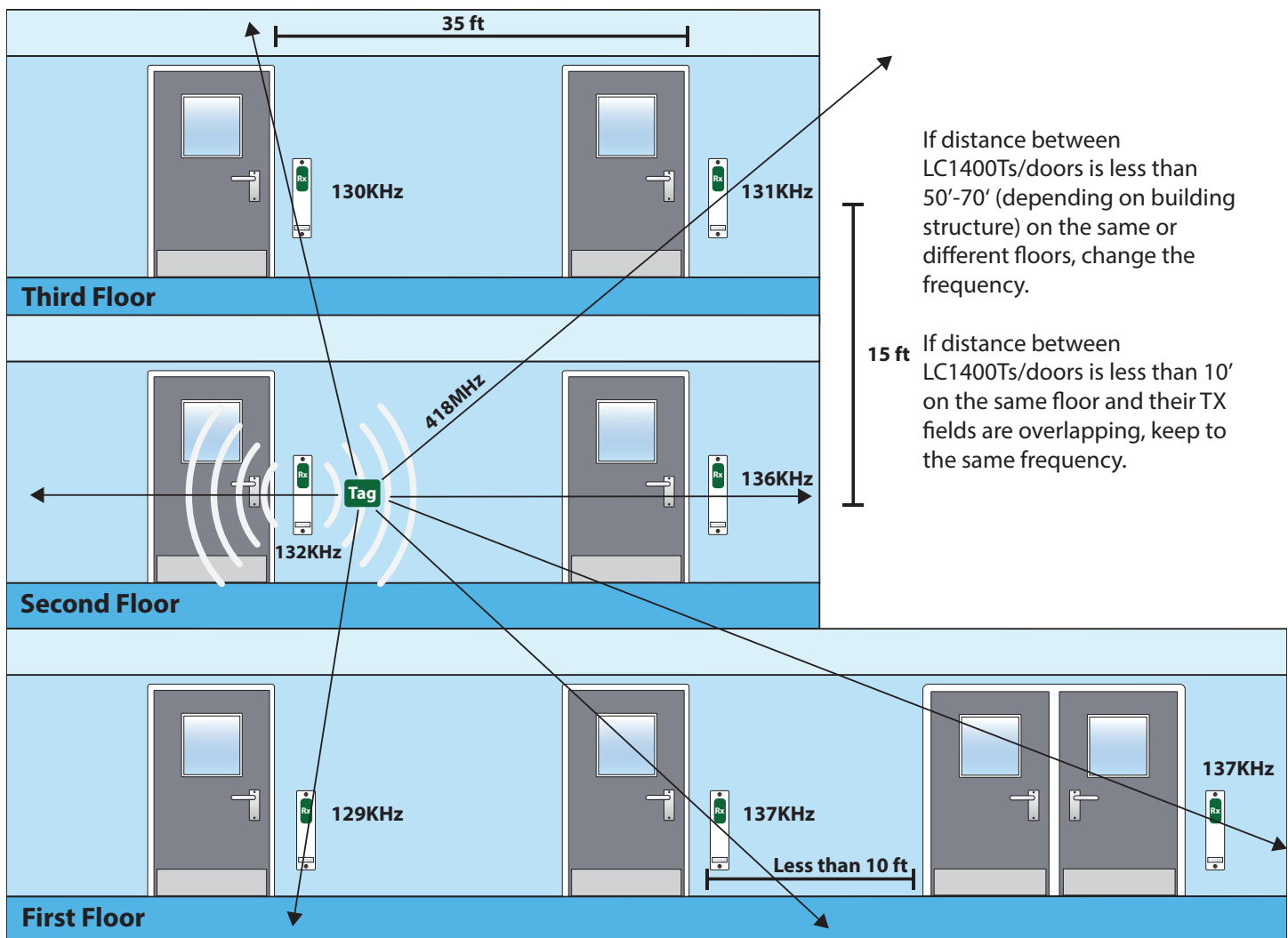


Figure 2.4 - Stagger Tuning

Mounting

To mount an LC1400T:

- 1) Remove the LC1400T cover and screws.
- 2) Locate, align, mark-out, and drill 4 mounting holes in the wall that correspond to the mounting holes of the LC1400T.
- 3) Using appropriate hardware for the mounting surface, install the four anchors.
- 4) Install the upper screws. Leave about 1/8th inch of each screw exposed.
- 5) Make any wire accommodations (such as fishing wires through the back cover or planning conduit/panduit interface) that are more easily completed while the LC1400T is unmounted.
- 6) Install the last two mounting screws, then tighten all four mounting screws.
- 7) Proceed to wiring.

Wiring

The LC1400T uses a 15 VDC plug-in power supply.

For instructions on wiring to the LC1400T, refer to the chapter on the component you are interfacing with.

Important

- Do not connect a plug-in power supply to a receptacle controlled by a switch.
- All wiring connections must be done in accordance with NFPA 70.
- Use UL-approved, plenum rated cable.

LC1400T Controller

The Circuit Board

- LEDs
- LED Displays
- Jumpers
- Low Frequency Tuners
- Switches
- Tamper Infrared Sensor
- Power Input
- Potentiometers
- Terminals

LEDs

LED1 (Alarm/Error) (Red)

LED2 (Power Indicator) (Green, Solid)

LED3 (Rx Signal Strength)

LED4 (Rx Signal Strength)

LED Displays

LED-X

(Bar Display X-Axis) (Blue)

This Bar Display indicates that the X-axis is powered and displays its relative Tx Output level.

Jumpers

JP1

(RS485, Terminating Resistor)

Default position: In

In: Add resistor

Out: Remove resistor

JP2

(Sound Enable)

Default position: In

In: Sound enabled

Out: Sound disabled

JP6

Tuning LED Enable)

Default position: In

In: Tuning LED Enabled

Out: Tuning LED Disabled

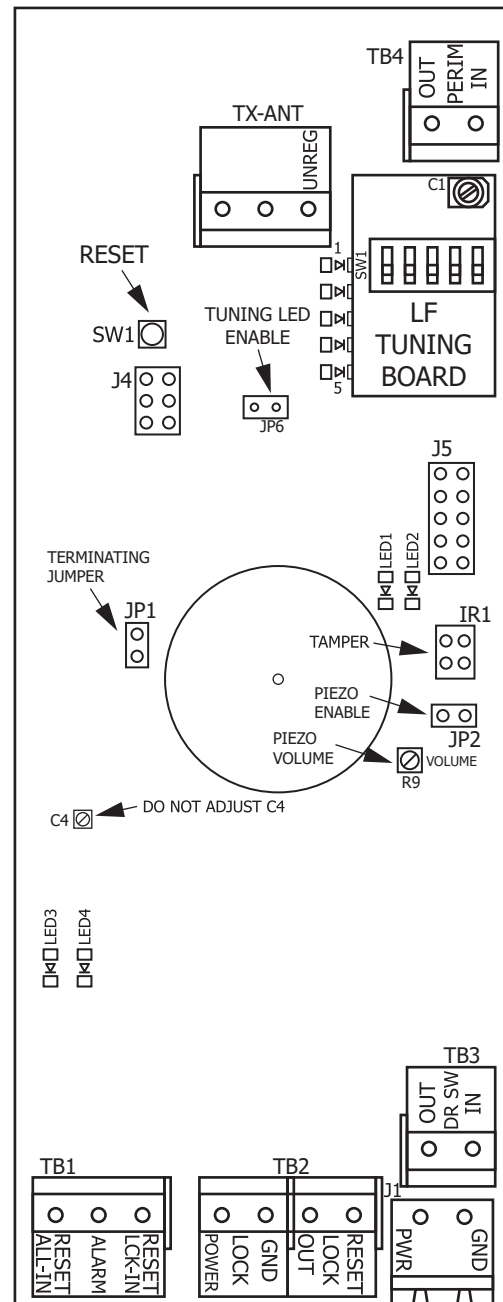


Figure 2.9
LC1400T Circuit Board

Terminals

J1 (Power)

J1-1 (Power for board)

Unregulated 15VDC

J1-2 (Ground for board)

TB1 (Keypad)

TB1-1 (Reset All In)

12VDC In resets LC1400T/Lock

TB1-2 (Alarm)

11.5 VDC @ 50 ma

TB1-3 (Reset Lock In)

Resets Lock Only with Low Input

TB2 (Lock)

TB2-1 (Power for Lock)

15VDC @ 600ma

TB2-2 (Ground for Lock)

TB2-3 (Lock Trigger)

Active Low on Tag Detected

TB2-4 (Reset to Lock)

Active Low Out when Reset Lock In Active

TB3 (PIR/Magnetic Switch)

TB3-1 (PIR/Magnetic Switch-In)

TB3-2 (PIR Power/Magnetic Switch-Out)

11.5 VDC @ 20 ma

TB4 (Perimeter)

Perimeter function active with 11.5VDC In

TB4-1 (Perimeter In)

TB4-2 (Perimeter Out)

11.5VDC @ 20ma

JP1 - 120 Ohm Terminating Resistor

J2 RS485 Connection

B,A, Ground

See 7-2. Figure 7.1

Used to configure or change settings in the LC1400T or LCT-TX only.

Low Frequency Tuners (LFTs)

SW1 on LCT

Sets frequency of Tx Activation field

C1 (Fine variable tuning cap)

This tuning cap fine tunes the Tx Activation Field strength of the X, Y, and Z axis.

See figure 2.6 for location

See figure 2.7 for dip switch configurations

Switches

SW1 (Micro Reset Push Button)

Tamper Infrared Sensor

The tamper infrared sensor (IR1) is provided to prevent unauthorized access to the LC1400T. An alarm will be generated if the LC1400T cover is removed. (Power to the unit is required for the infrared sensor to function).

A small piece of foam with reflective tape is glued inside of the controller cover to reflect infrared light back to the sensor. Do not remove this piece of foam or its reflective tape.

Potentiometers

R9 (Volume Control)

Default setting: Full scale

This potentiometer controls the volume of the internal peizo.

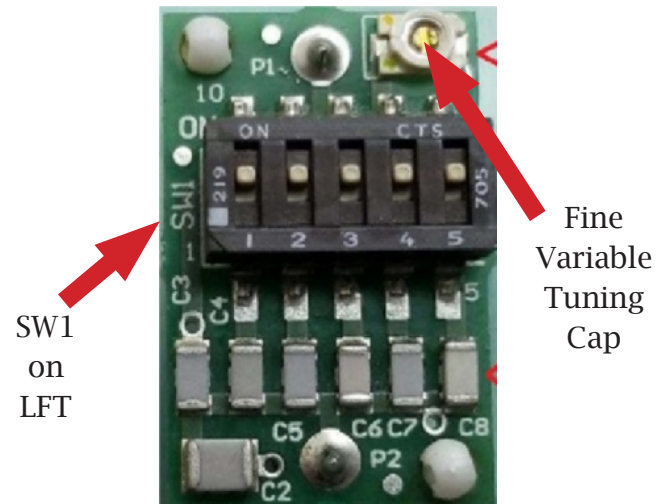


Figure 2.6
Low Frequency Tuner

LCT-TX Only

The Circuit Board

- LEDs
- LED Displays
- Jumpers
- Low Frequency Tuners
- Switches
- Power Input
- Terminals

LEDs

LED1 (Alarm/Error) (Red)

LED2 (Power Indicator) (Green, Solid)

LED Displays

LED-X

(Bar Display X-Axis) (Blue)

This Bar Display indicates that the X-axis is powered and displays its relative Tx Output level.

Jumpers

JP1

(RS485, Terminating Resistor)

Default position: In

In: Add resistor

Out: Remove resistor

JP6

Tuning LED Enable)

Default position: In

In: Tuning LED Enabled

Out: Tuning LED Disabled

Terminals

J1 (Power)

J1 - 1 (Power for board)

VN Regulated 15 VDC

J1 - 2 Ground for board

Switches

SW1 (Micro Reset push button)

J2 (RS485)

J2 RS485 Connection

See 7-2. Figure 7.1

Used to configure and change settings in the LC1400T or LCT-TX only

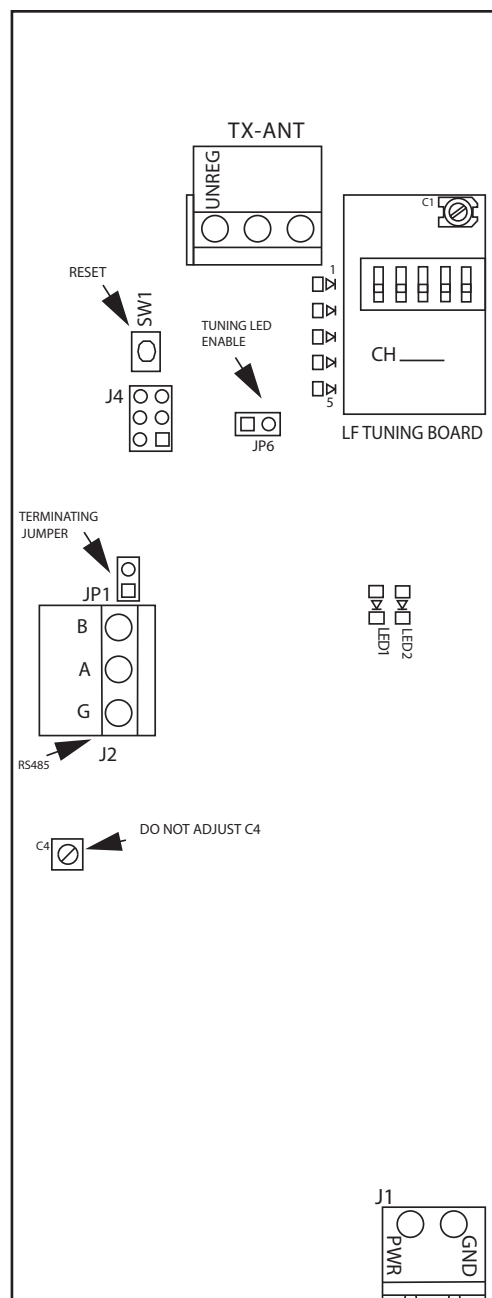


Fig. 2.13

Chapter 3

Tags, IDTAD, & TTS

Parts #77L016 (SB), #77L017 (WW), #77L018 (LT),
#77L018-W (LT-W) , #772015 (IDTAD), #700020-B(TTS)



Tags, IDTAD, & TTS

- LC1400 System Tags
- Tag Bar Codes
- Visual Pulse LED
- Attaching LT/WW Tags
- Tag and Band Maintenance
- The IDTAD
- The Tag Test Station

LC1400 System Tags

The LC1400 system uses LC1400 system tags.

The tags have three styles:

- LT (Part #77S018) (Figure 3.1)
 - » LT-W (Waterproof tag; Part #77S018-W)
- SB (Part #77S016) (Figure 3.2)
- WW (Wander Wearable) (Part #77S017) (Figure 3.3)

Each style of tag is activated and deactivated with an IDTAD unit.

The LT/SB tag band (Part #100901) is made from nylon-mesh-reinforced vinyl (latex-free). The WW tag band (Part #100917-5), which includes a snap fastener, is made from silicon. Each band is designed to resist tearing caused by pulling or chewing. If a band becomes frayed or torn, it will need to be replaced. In long-term applications, a band should be replaced periodically for cleanliness.



Figure 3.1
LT tag case style

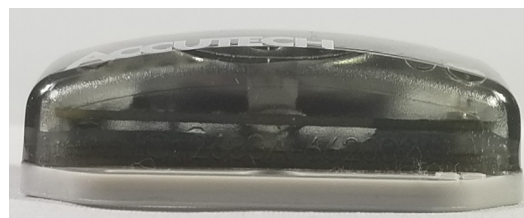


Figure 3.2
SB tag case style



Figure 3.3
WW tag case style

Tag Bar Codes

Bar codes on each tag (Figure 3.4) contain a tag's manufacturing history.



Figure 3.4
LT/SB Tag Case Bar code

The coding scheme is as follows:

M-WWYY-TSSS

M—Manufacturer designator

WWYY—Date code

Example: "1706" is the 17th week of 2006

T—Tag type designator

SSS—Tag serial number

Visual Pulse LED

(LT/SB Tags only)

The Visual Pulse LED indicates the tag's current mode by displaying corresponding light patterns as shown in the following table:

LED Light Pattern ○ off ● on	Tag LED Status
LT & SB Tags	
○○○○○○○○○○○○○○○○○○ ○○○	Tag is off.
○●○●○●○●○●○●○●○ ●○●	Active. Not in zone.
●●●●●●●●●●●●●●●● ●●●	Active. In zone.

Table 3.5
Tag LED Light Patterns

Attaching LT / WW Tags

Note: LT and WW (Wander Wearable) tags are both used for resident care.

To attach LT tags:

- 1) With the male part of the snap pointing in the same direction as the tag's Accutech logo is facing, slide the plastic band through the tag's slot. (Figure 3.6)
- 2) Adjust the band length to the nearest accommodating hole for a comfortable fit around the patient's extremity.
Important: The band can not be adjusted once it is secured.
- 3) Put the male part of the snap through the selected hole on the inner side of the band (Figure 3.7).
- 4) Fold over the female part of the Snap and secure to the male part by squeezing until they snap together.
- 5) Using scissors, carefully trim any excess band material. (Figure 3.8)
- 6) Use an IDTAD to activate the tag.



Figure 3.6
LT Tag Band



Figure 3.7
LT Tag Band Adjustment



Figure 3.8
LT Tag with Band Secured and Trimmed

To attach WW tags:

- 1) Feed the flat end of the band strap into the slot on the side of the tag with the word "accutech" on it. Push the band through until the end emerges from the other side.
- 2) Pull the band through the tag until the tag sets onto and stops at the risen part of the band.
- 3) Wrap the band around the resident's wrist, feeding the single-hole end of the band through the slotted end. Line up the holes on each end of the band to determine which sizing hole the rivet should be inserted into for the best fit. The fit should be as tight as possible without sacrificing the resident's comfort. **Important:** The band cannot be adjusted again once it is secured.
- 4) Insert the male end of the rivet through the inner side of the band and into the selected sizing hole. Fit the single hole on the other end of the band onto the rivet as well.
- 5) Fold the rivet over so the female and male ends are lined up. Squeeze them together tightly. You may hear a click or feel the teeth of the rivet come together. This ensures a secure connection.
- 6) Test the fit by using a small amount of force to confirm the rivet can not be removed. If the rivet comes apart during this test, attempt to secure the rivet again. If necessary, replace the rivet.
- 7) Use the IDTAD to activate the tag.



Figure 3.9
Securing the rivet on the WW Tag

Tag & Band Maintenance

- Testing Tags
- Cleaning Tags
- Cleaning Bands
- Storing Tags
- Storing Bands

Testing Tags

Accutech tags are powered by an internal battery. Over the course of normal operation, tags eventually lose battery power and the whole tag will need to be replaced. The tag battery is not replaceable.

For maximum protection of residents and/or assets, Accutech recommends that tags be tested on a weekly basis. There are many ways to test tags:

- Enter a monitored zone.
- Use an IDTAD.
- Check tag's visual pulse LED, if present.
- Check the keypad's auxiliary LED (Yellow), which will light up when a tag is detected. (Optional. Additional wire required)

Cleaning Tags

All tags are reusable but must be cleaned and sanitized between applications.

Clorox Healthcare® Hydrogen Peroxide Disinfectant Wipes, Sani-HyPerCide Germicidal Disposable Wipes, or a solution of 3% hydrogen peroxide with water, are the recommended cleaning solution for use when cleaning system tags. **Using any other cleaning solution can and will potentially cause premature failure of the tag enclosure and will void any warranty.**

Seek guidance from your Infection Control representative for approved cleaners that can be used on plastics.

In long-term applications, periodically clean the tags and replace tag bands. To clean and sanitize tags:

- 1) Put on latex, rubber, or nitrile gloves before handling disinfectants.
 - 2) Before using disinfectant wipes, remove dirt and other debris from tag.
 - 3) Wipe down entire tag surface with disinfectant wipe. Dispose of disinfectant wipe.
 - 4) Wait 1 minute for full disinfection (or for the recommended time based on the disinfectant).
 - 5) Rinse tag under running water or with a water-dampened cloth. Towel dry.
- **Do Not** submerge tags in water or cleaning solutions.
 - **Do Not** use solvents or abrasive cleaners/cloths.
 - **Do Not** put tags in an AutoClave.
 - **Do Not** put tags in a dishwasher.
 - **Do Not** put tags in a washing machine or dryer.
 - **Do Not** steam clean tags.

Cleaning Bands

All tag bands are for one-time use only. In long-term applications, periodically replace the bands and clean the tags.

Storing Tags

To preserve battery life and prevent nuisance alarms, tags must be turned off with an IDTAD when not in use. In addition, tags should be stored away from sources of electrical noise (see examples listed below) and stored in a metal container that has a lid.

Do not store tags within 3 feet from any of the following sources of electrical noise:

- Computer monitors
- Unshielded computer cables
- Television sets
- Medical monitoring equipment
- X-ray and other imaging equipment
- Fluorescent lighting

Storing Bands

Extra tag bands should be stored in a clean and dry environment.

The IDTAD

- Charging, powering, and unlocking the IDTAD
- Activating/Deactivating Tags
- Testing Tags
- Programming and Configuration Modes
- Tag Specifications
- Installing and Removing the Battery
- LiON Warning and Disclaimer



Figure 3.10
IDTAD

The IDTAD (figure 3.10) is the device that activates and deactivates LC1400 system tags. The IDTAD is also a testing device for tags. You must input an unlock code into the IDTAD to activate or deactivate a tag.

The IDTAD incorporates a keypad (for security purposes) and an internal tag that will cause an alarm if it moves into or through a monitored exit.

Note

Do not store the IDTAD next to a monitored exit or a Tag Test Station, as this will cause a nuisance alarm and/or drain the IDTAD's battery.

Charging, Powering, & Unlocking the IDTAD

Charging the IDTAD

Warning

Charge a new IDTAD for a minimum of 4 hours before using. Your battery pack is shipped with a 30% charge for safety reasons. The battery pack should be fully charged prior to its first use. Failure to fully charge will prevent the proper calibration of the battery level display icon.

Charging time may vary, depending on the computer's USB port or charging source. A USB-1.0 port will charge slower than a USB-3.0 port due to the amount of current provided.

To charge the IDTAD, connect the USB-C side of the supplied USB-C cable into the IDTAD (Figure 3.11). Connect the other side of the cable into a USB port on a computer.



Figure 3.11
IDTAD USB Connector and Port

Charging the IDTAD for the First Time

Once the IDTAD is initially plugged in for its first full charge, the battery indicator will display a question mark (?) inside the middle of the battery icon (Figure 3.12a). To allow proper battery level read and/or calibration, do not unplug the IDTAD during this process.

During this first full charge, you will not see an incremental battery level increase on the icon. As soon as the battery is fully-charged, the question mark will disappear and the battery icon will display a full charge (Figure 3.12b). This will take approximately 3-4 hours. If you disconnect the battery from the IDTAD at any time before it is fully charged, the battery/IDTAD will need to be re-calibrated for a proper battery level read. To recalibrate the battery/IDTAD, you may need to charge for up to another 3-4 hours.

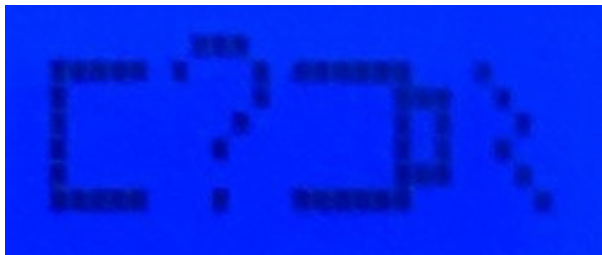


Figure 3.12a
IDTAD Charging Indicator

After the first full charge, the battery icon will display incremental battery levels as it recharges during any future charging sessions. The question mark (?) will no longer appear during recharge sessions. However, if the battery is disconnected or reconnected the question mark will appear again and the IDTAD will need to remain plugged in and charging for recalibration. This will happen regardless of whether or not the battery is fully charged when it is disconnected or reconnected.

The IDTAD can also function and be used without a battery pack if it is connected via the USB-C cable to a computer or wall charger. This scenario allows it to function if the battery fails, is no longer functioning, or if you are waiting to receive a replacement battery pack. A battery icon will not be displayed while the IDTAD is operating without a battery pack (Figure 3.12c).

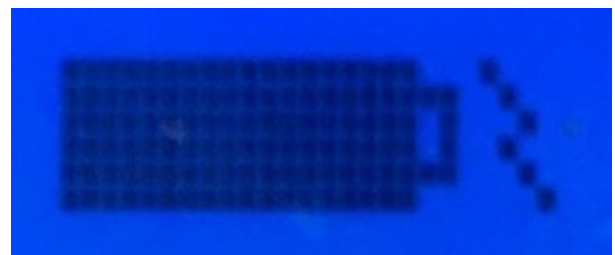


Figure 3.12b
IDTAD Fully Charged Indicator



Figure 3.12c
IDTAD Charging Indicator (No battery pack)

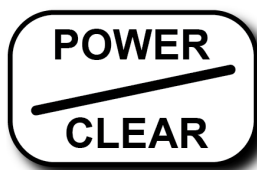
Powering the IDTAD On/Off

The IDTAD includes a built-in power saving feature that automatically turns off the IDTAD after a period of inactivity.

- 1) Press the Power/Clear button (a). The LCD screen lights up and "ACCUTECH" is displayed (b). The screen will remain lit for 1 minute without button activity. When nearing the 1-minute mark, the screen will display "20 sec to Power Off" and then "7 sec to Power Off".
- 2) To extend the length of time the screen remains lit, press the Power/Clear button (a) again before the screen powers down. Each press will extend the time by 1 minute (up to 5 minutes).
- 3) To manually turn off the IDTAD, hold down the Power/Clear button (a) for 5 seconds. Once the LCD screen turns off, you may release the button.

Important

The IDTAD's internal tag prevents it from leaving the monitored area while turned off. Once the IDTAD is turned on, the internal tag no longer functions. When the IDTAD is turned off, it will cause an alarm if it enters a monitored exit and will display as tag #254 on a computer with Accutech software.



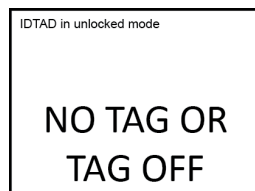
(a)



(b)



(c)



(d)

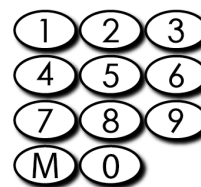
Unlocking the IDTAD

For added security, access to secure IDTAD operations is locked via 4-digit user codes.

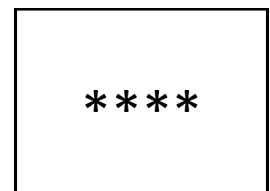
Note

The default user code is 7139. See the Programming Mode section to change the default user code.

- 1) Press the Power/Clear button (a). The LCD screen lights up and "ACCUTECH" is displayed (b).
- 2) Using the number grid (e), input a valid 4-digit user code. Inputting the code will display an asterisk for each number entered (f). See Programming Mode section of this chapter for more information on user codes.
- 3) Once the correct code is entered, press the Enter button (c). The screen will display "IDTAD in unlocked mode NO TAG OR TAG OFF" (d) if there is no tag near the IDTAD. If you entered the wrong code, "Invalid Code" will be displayed. Press the Power/Clear button (a) and start over.
- 4) You may now use the IDTAD for activating/deactivating tags, testing tags, and verifying tag data. Each action you take, except for pressing the Power/Clear button, will reset the screen on/off timer to 1 minute. After 1 minute of inactivity, the screen will turn off and you will need to enter a valid user code again.



(e)



(f)

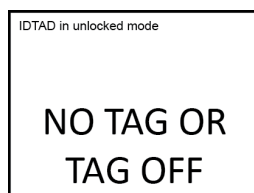
Figure 3.13a-3.13f
References for IDTAD Powering and Unlocking

Activating/Deactivating Tags

The IDTAD can activate and deactivate tags to conserve power and prevent nuisance alarms.

Activating

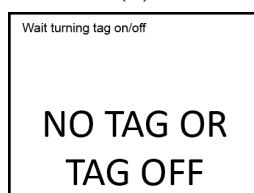
- 1) Turn on and unlock the IDTAD. The LCD screen will display "IDTAD in unlocked mode NO TAG OR TAG OFF" (a).
- 2) Hold the top side of the tag (the side with the Accutech logo) up against the IDTAD and within the tag receptacle (c). Position the tag in the orientation displayed within the receptacle.
- 3) Press the Enter button (b). The screen will display "Wait turning tag on/off NO TAG OR TAG OFF" (d). Do not remove the tag during this process.
- 4) Once the tag number is displayed on-screen, the tag has been activated (e). Verify this by making sure the tag's LED light is flashing.
- 5) If a low battery is detected, the letters "LB" will display next to the tag number (f). In this case, you must replace the tag immediately. Never use a tag with a low battery.
- 6) If a band removal alarm condition is detected, then BR will display next to the number (g).



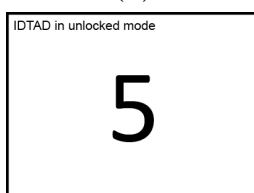
(a)



(b)



(d)



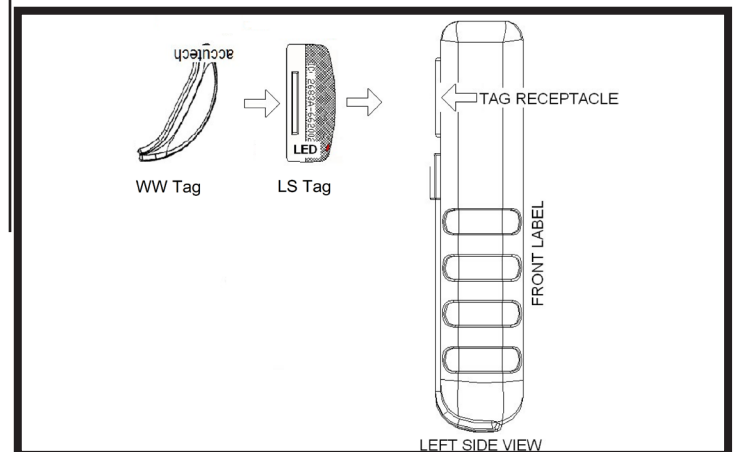
(e)

Deactivating

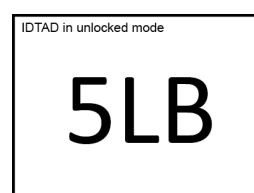
- 1) Unlock the IDTAD as previously instructed. If the IDTAD is unlocked, it will display "IDTAD in unlocked mode" on the top of the screen (a).
- 2) With the LCD screen displaying "IDTAD in unlocked mode NO TAG OR TAG OFF" (a), place the tag in the correct orientation within the tag receptacle on the back of the IDTAD (c).
- 3) Press the Enter button (b). The screen will display "Wait turning tag on/off NO TAG OR TAG OFF" (d), then "IDTAD in unlocked mode NO TAG OR TAG OFF" (e). This means the tag is deactivated.
- 4) Verify the tag is deactivated by making sure the tag's LED light is off.

Warning

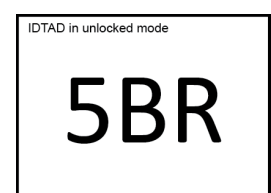
A band alarm condition can take precedence over a low tag battery condition. Be sure to handle the tag appropriately to properly check for a low battery condition.



(c)



(f)



(g)

Figure 3.14a-3.14g
Screens that Appear During IDTAD Activation and Deactivation

Testing Tags

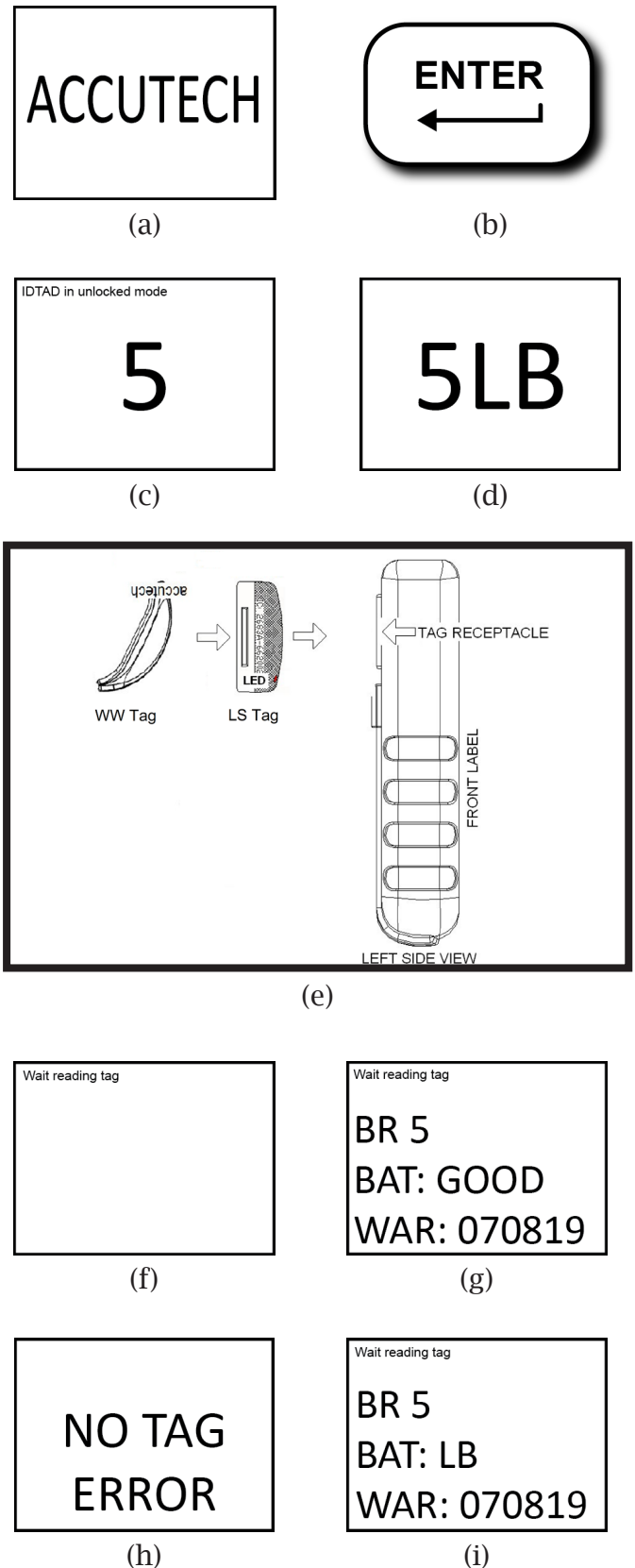
Testing a Tag for ID, Battery Level, & Warranty Date

The IDTAD can be utilized to test tags.

- 1) Press the Power/Clear button to turn the IDTAD on. Do not unlock the device. The screen will display "ACCUTECH" (a).
- 2) Touch the top side of the tag (the side with the Accutech logo) up against the IDTAD and within the tag receptacle (e). Position the tag in the orientation displayed within the receptacle.
- 3) Press the Enter button (b). The screen will display "Wait reading tag" (f). Do not remove the tag during this process.
- 4) Once the tag data is received, the screen will display the tag type and number, the battery level (only if tag is active), and the warranty date (g).
- 5) If "NO TAG ERROR" is displayed (h), reorient or re-seat the tag in the receptacle of the IDTAD and press the Enter button.
- 6) If the tag is active and has low battery, the screen will display the letters "LB" next to the tag number (d). In this case, you must replace the tag immediately. Never use a tag with a low battery.

To test a tag while it is being worn:

- 1) Power the IDTAD up. The screen will display "ACCUTECH" (a).
- 2) Hold the IDTAD up to and within 3 inches of the tag. The tag number will display on the screen (b).
- 3) If the tag has a low battery, the screen will display the letters "LB" next to the tag number (d). In this case, you must replace the tag immediately. Never use a tag with a low battery.



Figures 3.15a-3.15i
References for IDTAD Tag Testing

LC1400 System Tag Types

- LT Tag
- SB Tag
- WW Tag (Wander Wearable—Black)

BAT—Tag Battery Level

When tested while the tag is active, the tag battery level will be displayed as "GOOD" (g) if the battery level is adequate. Once a tag falls below a predetermined level, the tag will generate a low battery flag and display LB (i). In this case, you must replace the tag immediately. Never use a tag with a low battery.

WAR—Tag Warranty Date

The tag warranty date will be displayed with 6 numbers. The first two numbers are the month, the next two numbers are the day, and the final two numbers are the year (MM/DD/YY). This set of numbers will reflect the end date of the tag's warranty, which is one year from the start date of the tag's warranty.

Programming and Configuration Modes

IDTAD Programming Mode

If you want to change and/or add user codes, or if you want to add a certain function to the IDTAD, you will need to enter programming mode.

To Enter Programming Mode:

Press Enter>Enter>Master Code>Enter
(198237645 is the default master code).

To Exit Programming Mode

Press the Power/Clear button.

Important

To prevent the screen from timing out and turning off while configuring, press the Enter button when the display indicates it is counting down to Power OFF. The display will indicate "20 seconds to power off", then "7 seconds to power off" before shutting down.

Configuration

With the correct programming mode entered, the screen will display the following menu:

IDTAD Version 0.0.X

1. Configure Buzzer
2. Set Unlock Timeout
3. Set LCD Contrast
4. Change Master Code
5. Edit Unlock Codes
6. Set Defaults
7. Select MBM Display

1. Configure Buzzer

Press 1. This will bring you to a screen displaying “Press 1 or 2 to configure buzzer.” You will have 2 options:

1. Buzzer for Tag BR
Current: Enabled or Disabled
2. Buzzer for MBM
Current: Enabled or Disabled

To change the Current status of 1. Buzzer for Tag BR, Press 1. The next screen will display the current status, “BR BUZZER ENABLED” or “BR BUZZER DISABLED,” displayed with a selection of:

1. Enable
2. Disable

Select the preference and the display will change to that preference.

Enter>Enter returns you to the menu screen.

2. Set Unlock Timeout

Press 2. This will bring you to a screen displaying “Press 1-5 for unlock timeout minutes” CURRENT: 1 is the default. Press 2 for two minutes, 3 for three minutes, 4 for four minutes and 5 for five minutes.

Enter>Enter returns you to the menu screen.

3. Set LCD Contrast

Press 3. “Press 0-9 for LCD Contrast” is displayed. CURRENT: 4 is the default. Pressing 0 is the lowest. Pressing 9 is the highest.

Enter>Enter returns you to the menu screen.

4. Change Master Code

Press 4. “Enter current master code” is displayed. Input the code, then press Enter.

Once the code has been input, “Enter new master code” is displayed. Input the new master code (must be 9 digits).

Once all digits are entered, “Enter to change master” is displayed. Press Enter. “Master code changed” is displayed.

Enter>Enter returns you to the menu screen.

5. Edit Unlock Codes

Press 5. “Enter code to add or delete” is displayed. Input a code to be added or deleted.

After you add the 4 digits required, “Press 1 to add” and “Press 2 to delete” are displayed.

If you press 1, “User code XXXX Added” is displayed.

If you press 2, “User code XXXX deleted” is displayed.

Press the Enter button to return to the previous screen to add or delete another code.

Enter>Enter returns you to the menu screen.

6. Defaults

Press 6. “ENTER to set defaults” is displayed.

To reset all unit settings back to factory defaults, press the Enter button. “Setting defaults...” is displayed. Once all the unit's settings are set back to factory defaults, “Defaults set” is displayed.

Enter>Enter returns you to the menu screen.

7. Select MBM Display

Press 7. The following will be displayed:

Press 1 or 2 to configure MBM display

1. Display BABY

2. Display PEDS

CURRENT: BABY

"BABY" is the default. If you press 2, "PEDS" will then be the setting displayed.

Enter>Enter returns you to the menu screen.



Rechargeable Lithium Ion Battery
3.7V 1600mAh (5.92Wh) Li-ion Battery Pack
with PCM, NTC, PTC and Connector

Maximum Charging Current: 0.8A

Maximum Charging Voltage: 4.2V



WWYY

Made in China



Figure 3.16a

Battery Pack Label Front View



Figure 3.16b

Battery Pack Label Back View

IDTAD Specifications

Electrical

3.7 VDC 1600 mAh (5.92 Wh) Lithium Ion battery pack. (DO NOT attempt to repair or rebuild/replace the cells within).

Component Cell: UL 1642

Test Specification: UL2054:2004 R9.11

Maximum Charging Current: 0.8 A

Nominal Charging Voltage 5.0 V

Battery Shipping Compliance: UN38.3

Charging Cable: USB Type C - charges via a computer USB port or a 120 VAC to 5 VDC/500 mA Adapter (not included) **Note:** using a charger that provides less than the recommended 500 mA can work but will take longer than normal to charge.

Mechanical:

Size: approximately 5.50" x 3.00" x 1.25" (with boot)

Weight: 7 ounces

Environmental:

Operating Temperature: 32° to 120° Fahrenheit
Intended for indoor use only.

Operating characteristics:

Transmit Frequency: 127.0 kHz

Receive Frequency: 418 MHz

Internal Security Tag Transmit Frequency: 418 MHz

Internal Security Tag Receive Frequency: 127-137 kHz

FCC ID: JM7-HWHY-662015

Canada IC: 2683A-662015

Installing and Removing the Battery

Installing

- 1) Connect the new battery plug terminal to the main board (Black – left, Yellow – Center, Red – Right) (Figure 3.17a).
- 2) Replace the IDTAD cover and secure with the four Phillips-head screws.
- 3) Replace the battery cover.
- 4) Charge the new battery/unit for at least 4 hours before use. (see Charging, Powering, & Unlocking the IDTAD)

Removing

- 1) Disconnect and remove the USB cable.

Warning

When you disconnect a cable, pull on its connector or on its pull-tab—not on the cable itself.

- 2) Remove the battery cover.
- 3) Remove the four Phillips-head screws.
- 4) Remove the IDTAD back cover.
- 5) Carefully remove the battery pack from the compartment.
- 6) Carefully unplug the battery pack terminal from the main board connector.
- 7) Properly dispose of the used LiON battery.

Warning

Consult your bio-med department or your local municipality regarding location(s) for safe disposal and proper disposal methods. Never ship back to the mfg.



Figure 3.17a
Battery Terminal Connector Plug

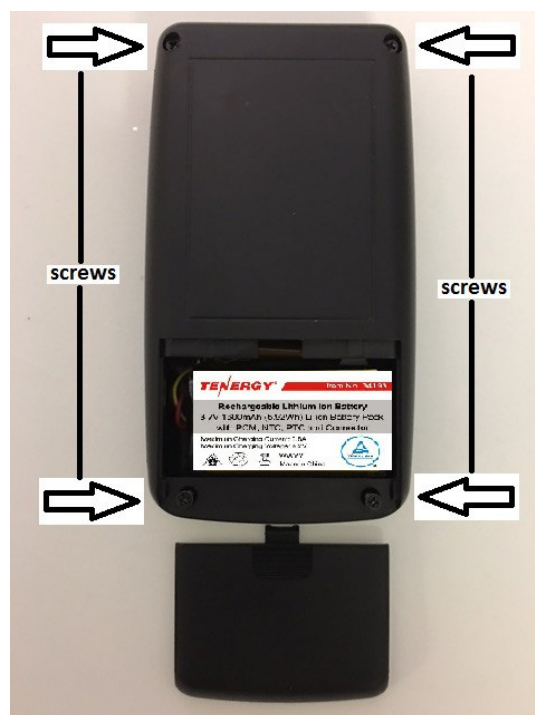


Figure 3.17b
Battery Cover Screws

LiON Warning and Disclaimer

General Safety Guidelines

- Never use a NiCd/NiMH charger to charge LiON batteries. Only use chargers designed for Lithium Polymer (LiON) batteries.
 - Never store LiON batteries in any location that exceeds 40–80° F (e.g. in a car, garage, or in the sun)
 - Never let the battery's positive and negative leads touch. This can cause the battery to short and lead to a FIRE. If for any reason you need to cut the terminal wires, it will be necessary to cut each wire SEPARATELY, to make sure the wires do NOT touch each other.
 - Never charge a swollen or ballooned battery (even if swollen upon purchase). Continuing to charge a battery that has begun to swell will result in a fire. Follow these steps:
 - 1) Stop the charging process and disconnect battery immediately.
 - 2) Disconnect battery from the device immediately.
 - 3) Place it in an open, non-flammable area.
 - 4) Watch it for approximately 30 minutes from a safe distance.
 - 5) Follow proper procedure to dispose of battery.
- Always inspect the battery to make sure there are no signs of damage, deformity, or swelling before charging. If there are, STOP charging the battery and follow the proper procedure to dispose of the battery.
 - Always store LiON batteries in cool, dry places between 40-80° F.
 - Always keep LiON batteries out of reach of children or pets.
 - If the battery reaches high temperatures in the event of damage to the IDTAD, follow these steps:
 - 1) Disconnect battery immediately from the device.
 - 2) Place it in an open non-flammable area.
 - 3) Watch it for approx. 30 minutes from a safe distance.
 - 4) If the battery appears to be stable (no signs of damage or swelling), put it back into your device and continue using with caution.

Avoid Over-Discharging LiON Batteries

Over-discharging—continuing to use a LiON battery even when it is almost completely drained or below its minimum voltage level—can cause permanent damage to the battery. The damage can be internal and will not always be visible; however, internal damage can eventually lead to a fire when attempting to recharge it later.

Charging Batteries Caution – Before Charging

- Always visually inspect LiON battery for any damaged leads, connectors, shrink wrap, swelling of cells, or other irregularities before charging or using.
- Do not use if you find any of the above issues with your pack.
- Use the supplied USB-C cable for charging.

If any damage to the pack or leads is found, or if the voltage is significantly less for your pack than specified above, do not attempt to charge or use the pack.

Batteries Involved In Severe Impact

Carefully inspect your battery after any damage to the IDTAD. Cautiously look for any damaged leads, connectors, broken shrink-wrap, punctures, swelling of cells, and other irregularities. Not doing so can lead to battery failure at some point in the future, and possibly a fire.

In the event of damage or if the battery exceeds high temperatures, follow these steps:

- 1) Disconnect the battery immediately from the device.
- 2) Place the battery in an open, non-flammable area.
- 3) Watch the battery for approximately 30 minutes from a safe distance.
- 4) If the battery appears to be stable (e.g. no signs of damage or swelling), proceed to put it back into your device and continue using with caution.
- 5) Never disassemble existing LiON packs to mix with other LiON cells/packs.
- 6) Do not discharge battery to a level below 3 V per cell under load. Deep discharge below 3 V per cell can deteriorate battery performance.

Battery Life & Disposal of LiPo Batteries

Rechargeable LiPo batteries do not last forever. Batteries that have lost 20% of their initial capacity should be removed from service and disposed of properly.

If at any time you see any physical damage in a LiON battery, such as swollen cell, split, or tear in the cell's covering, stop usage immediately and dispose of the battery.

Battery Product Warranty

Product warranty is limited to original defects in material and workmanship for 6 months. Warranty does not cover collateral damage. Due to the nature and use of this product, there is no term warranty. Misuse, abuse, incorrect charging, failure to comply with the above warnings and guidelines, and other inappropriate use of this product will not be covered under warranty.

The Tag Test Station—TTS

The Tag Test Station (TTS) (Figure 3.20) verifies a tag's ID number, tag type, battery level, warranty date and manufacture date without having to activate the tag with a STAD or IDTAD. It will also allow you to generate a report on tags that have been tested.

Enabling the Tag Test Station

Once the TTS is connected to your computer, select the Tag Test Station desktop icon (Figure 3.22) to view events from the TTS.



Figure 3.20
Tag Test Station

Selecting the Tag Test Station COM Port

In the drop-down menu of the Select Comm Port field (figure 3.21), select the Comm port that the TTS is connected to. Once the software detects the correct Comm Port, there will be a notification below this field indicating: "PORT COMxx CONNECTED: TAG TEST STATION DETECTED-FIELD ON- [NO READ/Writes ACTIVE]". If there is a lack of communication, reboot the computer with the TTS connected and follow the same steps.

Testing a Tag

To test and receive the data from a tag, place the tag face down into the square receptacle of the TTS. You do not need to activate the tag. The TTS will have a blue LED lit to indicate power. Once the tag is placed into the TTS, the yellow LED will be lit to indicate the TTS is reading tag data.

Do not remove the tag after it is placed in the TTS.

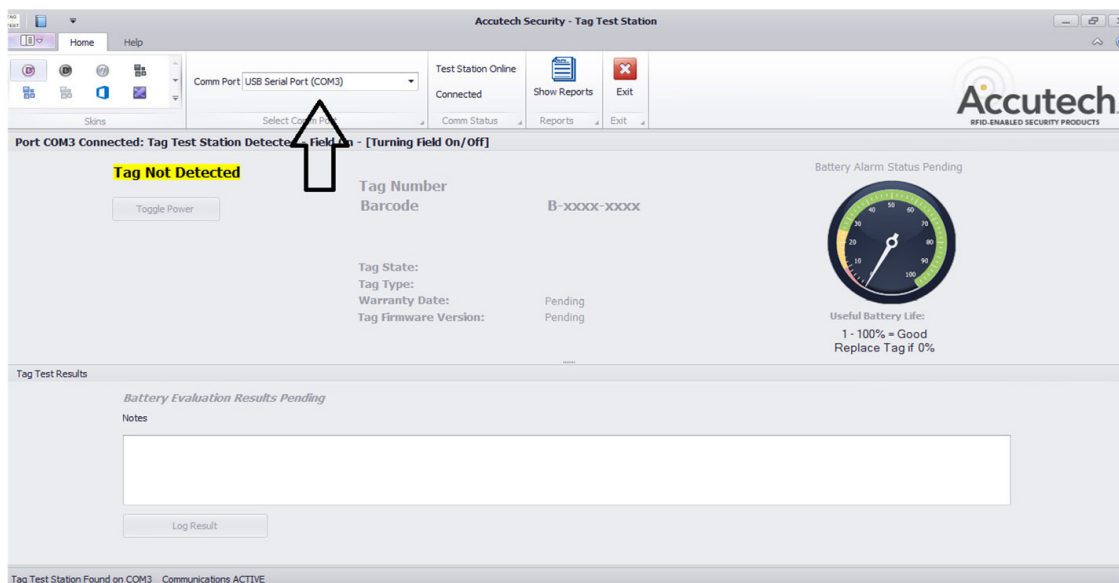


Figure 3.21
Tag Test Station-Select COMM Port



Figure 3.22
Tag Test Station
Desktop Icon

TTS Software Data

Once the TTS fully reads the data from the tag, which will take approx. 25 seconds, the software (figures 3.23-3.25) will provide:

- Tag Number
- Bar Code Number—indicates the manufacture date. (eg. 4209 indicates week and year)
- Tag State—whether the tag is in an OFF or ON state. You can then turn the tag on for use at this time. Or if the tag is already on, you can turn the tag off for storage purposes.
- Tag Type—LT, SB, WW
- Warranty Date
- Battery Level—The software will display battery flag (figure 3.25). if there is a low battery. Do not continue to use a tag with low battery indicated.

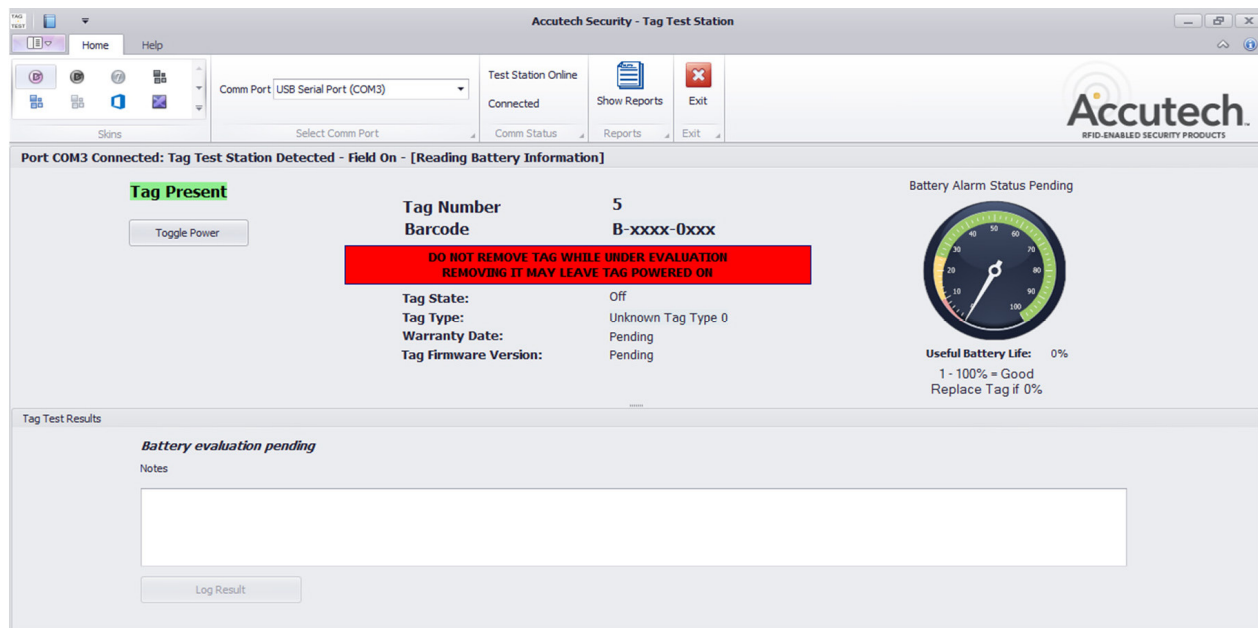


Figure 3.23
Tag Test Station Software Reading Tag Data

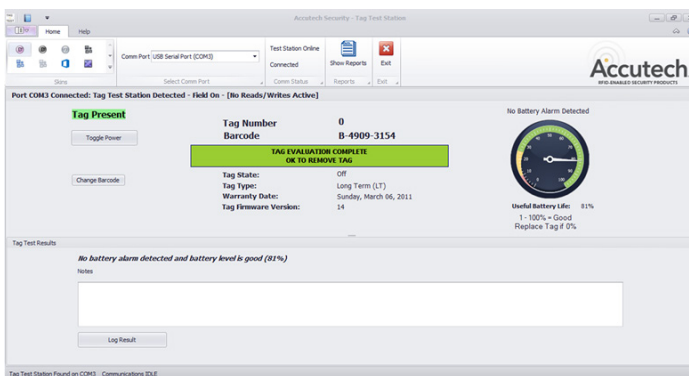


Figure 3.24 - Tag Test Software
Tag Data with No Battery Flag

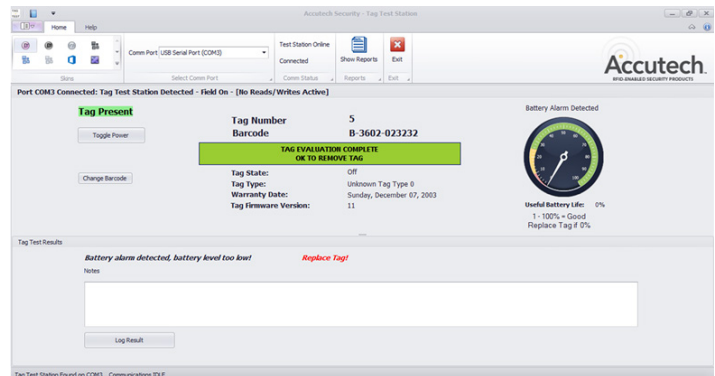


Figure 3.25 - Tag Test Software
Tag Data with Battery Flag

Generating a Report

Once the TTS fully reads the data from the tag, you can log the information and create a report for future reference. You can also enter notes which will be saved in the reports for the tag that was tested. If applicable, enter your notes in the Notes field and select the Log Result button. This will save the test results along with the notes associated with the test of the tag.

Go to the Reports field and select the Show Reports icon (figure 3.26).



Figure 3.26
Show Reports Icon

This will open the Reports screen. Select your dates and then select the Run Report button. This will generate the results (Figure 3.27) that were logged along with any notes. These include:

- Date and time the tag was tested
- Tag Number
- Tag Type
- Warranty Expiration Date
- Remaining Useful Battery Life
- Low Battery Indication
- Battery Evaluation
- Notes entered when the tag was tested and logged

You can then save the report and the test results for future reference.

Warning

Remove the tag from the TTS once testing of the tag has been completed.

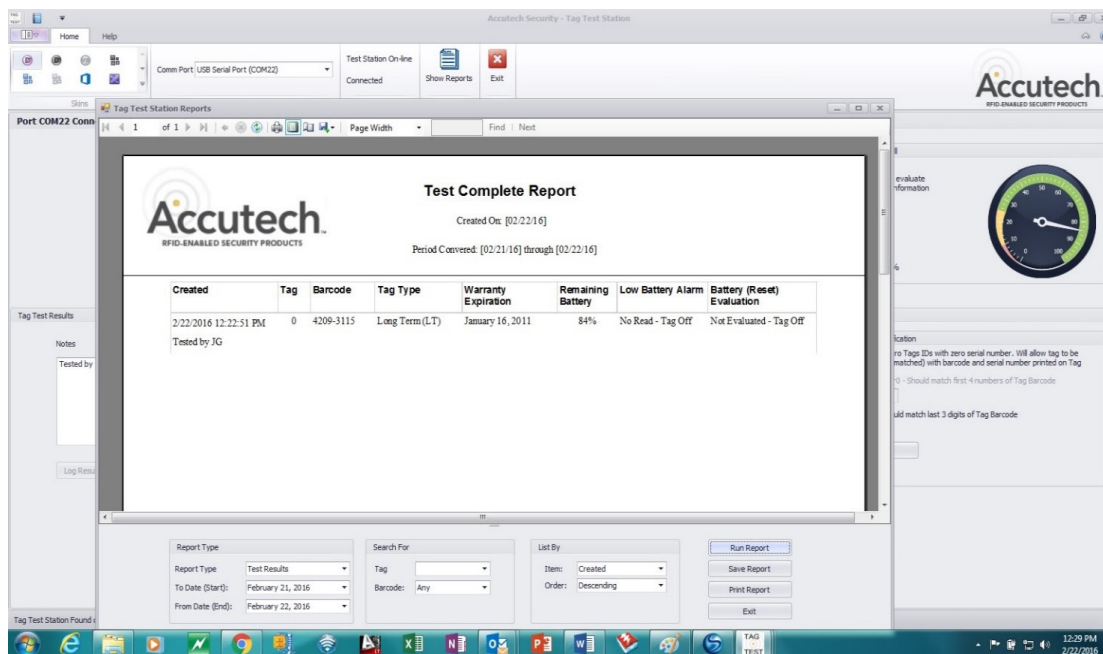


Figure 3.27
Generated Report Results

Chapter 4

The Magnetic Switch

Part #650514



The Magnetic Switch

- Specifications
- Positioning
- Mounting
- Wiring
- Double Door Applications
- Perimeter Door Applications

Magnetic Switches (Part #650514; Figure 4.1) are used on doors where alarm activation is not desired unless the zone's door is opened while a tag is in that zone's Tx activation field.

Specifications

Electrical

Operating Voltage: 150 VDC maximum

Contact Rating: 3 watts

Maximum Switch Voltage: 30V AC/DC
Switching

Current: 0.5 amps DC

Cable: needs minimum 22-gauge, 2-conductor

Mechanical

Size: 2.50" x 0.80" x 0.60"

Weight: 1.2 ounces

Color: Brown

Surface mounted (Flush available)

Operating Characteristics

Contacts: N.O., N.C., and Common

Initial contact resistance: 100 ohms maximum

Operating Time: 1.0 ms maximum

Bounce Time: N.C. leg 1.5 ms maximum

N.O. leg: 1.0 ms maximum

Release Time: 0.5 ms maximum

Maximum Operating Frequency: 200 Hz

Insulation resistance: 1 x 10 ohms maximum

Electrostatic capacitance: 1.5 pF maximum

Environmental

Operating Temperature: 32O to 120O F

Operating Humidity: 40%-60%

Intended for Indoor Use Only

Duty Cycle

Rated for continuous use.

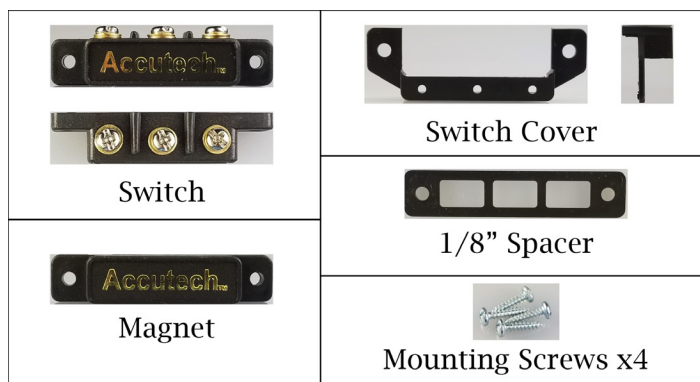


Figure 4.1

Magnetic Switch Parts

Positioning

Magnetic switches are usually located at the top of the monitored door on the doorstop. The part that contains the switch is mounted on the header or door frame, while the part that contains the activating magnet is mounted on the door itself (Figure 4.3). A recessed model is also available.

For simplicity, in this manual the term *Magnetic Switch* will reference the entire switch as a unit, not just the parts that contain the contacts.

Position the magnetic switch so that it is nearest the latch side of the door. If a magnetic lock is used, the switch should be the one mounted closest to the latch side.

Mounting

To mount the magnetic switch, refer to figure 4.3 and use the following instructions:

- 1) After choosing your location, following the hole pattern shown in figure 4.2, drill two 7/64" (0.109) mounting holes in the door frame to accommodate the switch. This size hole also coincides with the self-tapping screws provided with the switch. Be careful not to drill these holes oversize.
- 2) Drill a 5/16" (0.312) pass-through hole in the door frame to accommodate the wire from the LC1400T to the switch. **Important:** This hole should be drilled so the wire will come up just under the middle screw terminal (N.C.) of the switch. This hole can be drilled a little smaller, but not larger. If this hole is drilled too far out from the body of the switch, then the switch cover will not be able to hide this hole. Be sure to "de-burr" this hole.
- 3) Fish the 2-conductor/22-gauge wire through the large hole and strip enough insulation to make a good connection to the switch.
- 4) Connect the red wire to the COM terminal of the Switch.
- 5) Connect the black wire to the N.O. terminal of the switch.
- 6) Gently guide the excess cable back through the hole in the frame, while moving the switch into position over its mounting holes.
- 7) While positioning the switch, insert a mounting screw through each hole and secure the switch in place with the cover-side facing away from the door. Be careful not to pinch the wires when tightening.

- 8) Using the spacer provided in the kit, position the door magnet as shown in figure 4.3 and mark where the mounting holes (7/64") will be drilled.
- 9) After you have marked and drilled your holes, mount the magnet with the 1/8" spacer in between the magnet and the door. **Important:** Remember, if the door frame is metal you must install the spacer in between the magnet and the door or the magnet will lose effectiveness.

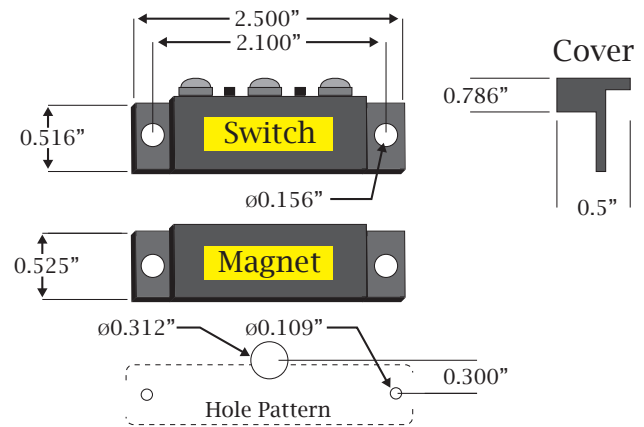


Figure 4.2
Magnetic Switch Dimensions

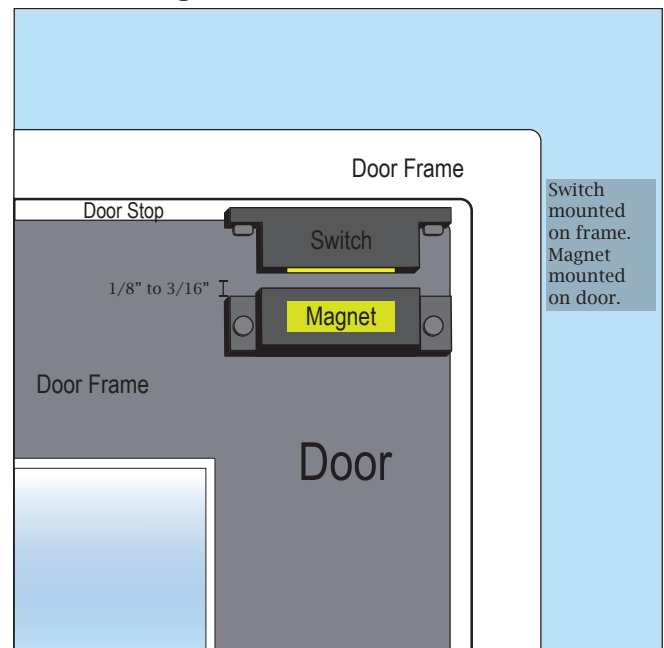


Figure 4.3
Mounting the Magnetic Switch

Wiring

Warning

All wiring connections must be done in accordance with NFPA 70. Use UL-approved, plenum rated cable.

You will need 22-gauge, 2-conductor plenum rated cable for this connection.

To wire the magnetic switch to the LC1400T, refer to figures 4.4-4.5.

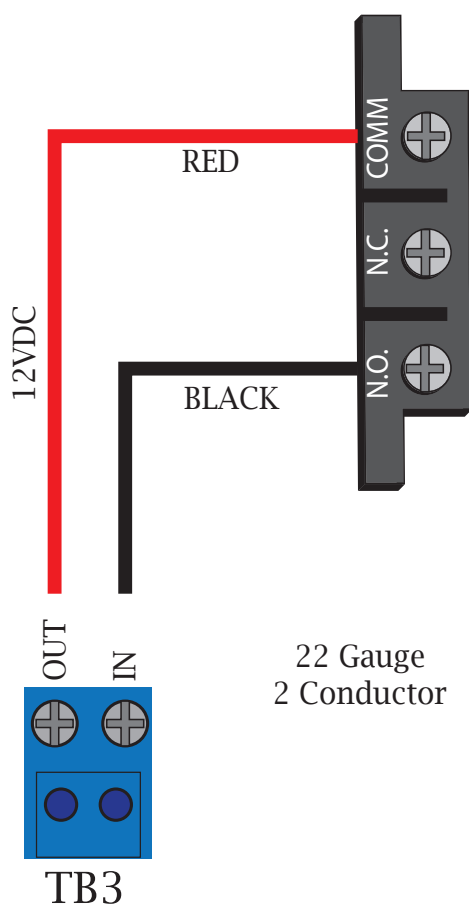


Figure 4.4

Mag Switch Wiring to LC1400T (Single Door)

Double Door Applications

For double door applications, connect the switches in series (figure 4.5) so that one switch will open when either door is opened.

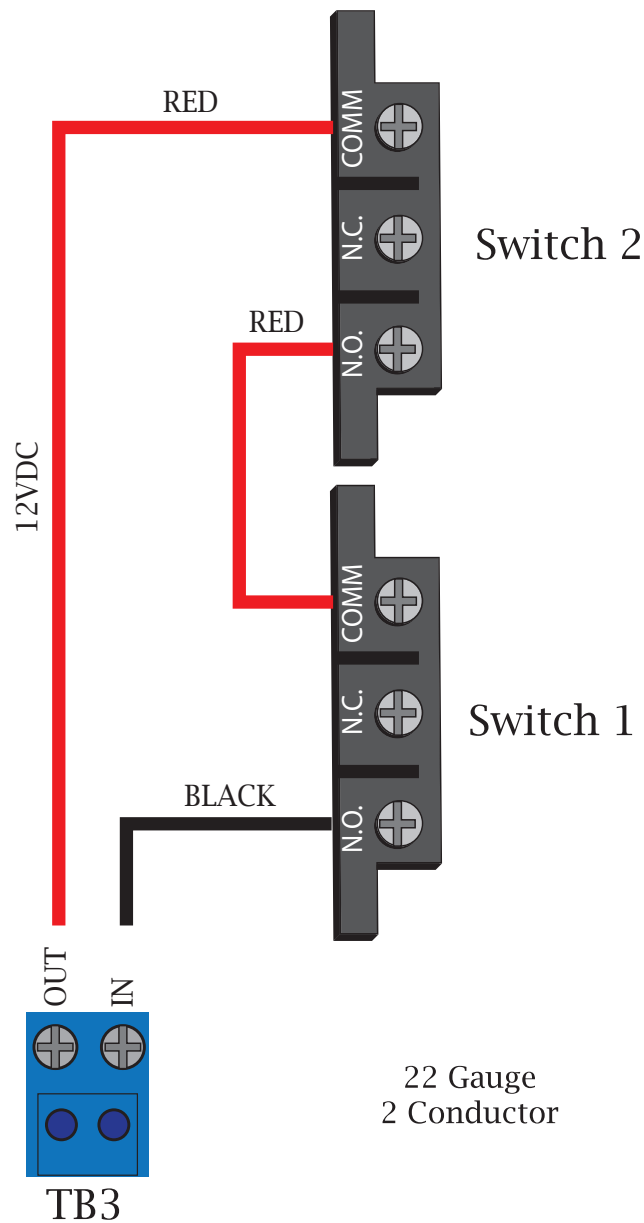


Figure 4.5

Mag Switch Wiring to LC1400T (Double Door)

Perimeter Door Applications

- Perimeter Door (No Locks)
- Perimeter Door (Locks)

Perimeter Door (No Locks)

The LC1400T can be made to function like a perimeter door to alarm the instant a door is opened regardless of if there is or is not a tag in the zone. When in this mode, whenever the door is opened (detected by the magnetic door position switch or PIR tripped) the LC1400T will alarm.

To activate this mode, utilize TB4 of the LC1400T.

To keep the controller armed 24/7, add a jumper to TB4, or short Out to In.

To arm the controller via timed schedule, use a Day/Night Timer (See "Timer" chapter)

To reset the zone, close the door and enter a valid code into the zone keypad.

Perimeter Door (Locks)

The LC1400T can be used as a perimeter door access control device. When in this mode, the door will remain locked (magnetic lock energized) at all times and will require a secondary code from the Keypad (Relay 2) to pass through the door. If the zone uses a 3101 magnetic lock, the Delayed Egress function would still be effect.

If a tag is in the zone while the system is in Perimeter mode, then the code for Relay 2 will not function. Additionally, if the door is open, and a tag becomes present in the zone, then the system will alarm. This is an anti-tailgate feature. The main code/relay 1 will need to be entered to clear the alarm.

To use the LC1400T as a perimeter door access control device, utilize TB4 of the LC1400T.

