

IEI Max 3

Installation/Programming Manual

Document Number: 6055673
Revision: 1.0
Date: 01/24/07

Table of Contents

Section 1: System Features and Specifications	5
1.1 System Features	5
1.2 Specifications	6
1.3 System Defaults	6
1.4 Max 3 Door Control Module Diagram	7
1.5 Backplane Diagram	8
Section 2: Installation	9
2.1 Check the Packing List	9
2.2 Mount the Enclosure	9
2.3 Ground the Unit	10
2.4 Connect the RS-485 Cable from the Module to the Backplane	11
2.5 Connect Additional Modules to the Backplane	12
2.6 Wire an Electric Door Lock to the Main Relay of the Max 3 Module	13
2.6.1 Installing a Diode to Prevent Electrical Kickback from Lock – DC Locks Only	14
2.6.2 Installing an MOV to Prevent Electrical Kickback from Lock – AC Locks Only	14
2.6.3 Mounting the PowerGard PG-1224-3 Power Supply for Lock Power	15
2.6.4 Wiring the PowerGard PG-1224-3 Power Supply for Lock Power	16
2.7 Connect a Secured Series Front End (SSFE) Reader to the Door Control Module	17
2.8 Connect the Primary Wiegand Front End Reader (IN Reader)	18
2.9 Connecting a Secondary Wiegand Front End Reader (OUT Reader)	19
2.10 Wire a Request to Exit (REX) device and Door Contact	20
2.11 Wire the Alarm Shunt Relay	21
2.12 Wire the Door Ajar Relay	22
2.13 Wire the Forced Door Relay	23
2.14 Network the Max 3	24
2.14.1 Connect the Max 3 Backplane Directly to a PC	24
2.14.2 Connect Multiple Backplanes Together	25
2.14.3 Connect the SEG-M to the Max 3 (LAN/WAN Connection)	26
2.14.4 Connecting the SEG-1 to the Max 3 (LAN/WAN Connection)	27
2.15 Installing a Tamper Switch	28
2.16 Complete Connections Between the 16.5 VAC Transformer and Backplane	29
2.17 Power up the System	30
Section 3: Programming	31
3.1 Programming Methods	31
3.2 Entering Program Mode and Changing the Master Code	32
3.2.1 Entering Program Mode	32
3.2.2 Changing the Master Code	32
3.2.3 Programming a Supervisor Code	32
3.3 Changing the Door Number	33
3.4 Changing the Main Relay Time	33
3.5 Setting the Time and Date	33
3.6 Programming Users	34
3.6.1 User Types	34
3.6.2 Programming a “Code Only” User	35
3.6.3 Programming “Card Only” Users by Presentation	35
3.6.4 Programming 26-Bit “Card Only” Users without Presentation	35

3.6.5 Programming “Code AND Card” Users.....	36
3.6.6 Programming “Code or Card” Users.....	36
3.6.7 Programming 26-Bit “Card Only” Users via Batch Entry without Presentation.....	37
3.6.8 Programming Consecutive “Card Only” Users via Batch Entry by Presentation.....	37
3.6.9 Command 50 Quick Program Feature - “Code Only” or “Card Only”.....	37
3.7 Deleting Users.....	38
3.7.1 Delete a Single User.....	38
3.7.2 Delete a Block of Users.....	38
3.8 Programming Extended Unlock Time.....	39
3.9 Programming Facility Code.....	39
3.10 Programming User Lockout.....	39
3.11 Programming the Door Ajar Output Time.....	40
3.12 Programming the Forced Door Time.....	40
3.13 Using the Default Auto-Unlock Timezone.....	41
3.13.1 Enable/Disable Timezones.....	41
3.13.2 Enable/Disable Auto-Unlock.....	41
3.13.3 Enable/Disable First-In Auto-Unlock.....	41
3.14 Programming Error Lockout.....	42
3.14.1 Setting the Error Lockout Threshold.....	42
3.14.2 Setting the Error Lockout Duration.....	42
3.15 Programming Wiegand LED Active State.....	43
3.16 Programming Wiegand Sounder Active State.....	43
3.17 Enable/Disable Control Module Audio Indicators.....	44
3.18 Resetting System Defaults and Erasing Memory.....	45
3.18.1 Resetting the Master Code and System Defaults Only.....	45
3.18.2 Erasing Entire Memory/Resetting System Defaults.....	45
3.18.3 Erasing the Transaction Event Log.....	45
3.19 Programming Daylight Savings Time.....	46
3.19.1 Enabling/Disabling Daylight Savings Time.....	46
3.19.2 Selecting Daylight Savings Time Format.....	46
3.20 Programming Options Chart.....	47
Section 4: Troubleshooting.....	50
4.1 Troubleshooting Chart.....	50
4.2 Keypad Self-Test.....	50
4.3 Front End Error Indicators.....	50
4.4 Lithium Battery Replacement.....	51

List of Tables

Table 1: System Features.....	5
Table 2: Specifications.....	6
Table 3: System Defaults.....	6
Table 4: User Types.....	34
Table 5: Control Module Audio Indicators.....	44
Table 6: Programming Options Chart.....	47
Table 7: Troubleshooting Chart.....	50
Table 8: Front End Error Indicators.....	50

List of Illustrations

Figure 1: Max 3 Module Diagram.....	7
Figure 2: Max 3 Backplane Diagram.....	8
Figure 3: Connecting the GND Terminal from Transformer to the Backplane.....	10
Figure 4: RS-485 Connection from Max 3 Module to Backplane.....	11
Figure 5: Connecting Additional Modules to the Backplane.....	12
Figure 6: Connecting Diode Across Strike.....	14
Figure 7: Connecting Diode Across Maglock.....	14
Figure 8: Connecting MOV Across Strike.....	14
Figure 9: Mounting the PG-1224-3 Power Supply.....	15
Figure 10: Wiring a Maglock to the PG-1224-3 Power Supply.....	16
Figure 11: Wiring an Electric Strike to the PG-1224-3 Power Supply.....	16
Figure 12: Connect Secured Series Front End to DCM.....	17
Figure 13: Connect Primary Wiegand Front End Reader to DCM.....	18
Figure 14: Connect Secondary Wiegand Front End Reader to DCM.....	19
Figure 15: Wiring a REX Switch and Door Contacts.....	20
Figure 16: Wiring the Alarm Shunt Relay.....	21
Figure 17: Wiring the Door Ajar Relay.....	22
Figure 18: Wiring the Forced Door Relay.....	23
Figure 19: Wiring Max 3 Backplane to a PC.....	24
Figure 20: Connecting Multiple Backplanes Together.....	25
Figure 21: Connecting the SEG-M to the Max 3.....	26
Figure 22: Connecting the SEG-1 to the Max 3.....	27
Figure 23: Installing a Tamper Switch.....	28
Figure 24: Completing the Transformer Connections.....	29
Figure 25: Plug on Detachable Keypad.....	31

Section 1: System Features and Specifications

The following section outlines the Max 3 features, specifications and default settings.

1.1 System Features

Table 1: System Features

Feature	Description/Details
Users	2000
Base Capacity	Supports 1-4 Max 3 Modules; Controls 1-4 Doors
Additional Capability	Network up to 64 doors with additional Max 3 modules
Communication Type	RS-485 Network; Connect via RS-232 to RS-485 Converter, USB to RS485 Converter or LAN connection using SEG-M or SEG-1.
Audit Trail	*2000 Event Transaction Log
Front End Support	Each Max 3 Module supports either two Wiegand or Secured Series front End readers for IN/OUT operation.
Programming	Max 3 Module supports keypad or PC programming
Auto-Unlock Time Zones	9:00 A.M. to 5:00 P.M. Monday-Friday *Eight user definable time zones for auto-unlock or access control *32 single day or block holidays
First-In Auto-Unlock	Requires valid entry to initiate auto-unlock schedule.
Forced Door Alarm Relay/Timer	
Alarm Zone Shunting Relay	
Timed Egress Input	
Non-Volatile EEPROM Memory	

* Indicates feature available with PC software only.

1.2 Specifications

The following table lists the Electrical, mechanical and environmental specifications.

Table 2: Specifications

Electrical	
Power Supply	16.5VAC 40VA or 50VA Class 2 Transformer (Revere # RT-G1640SL/M, Revere # RT-G1650SL/M or Globtek, Inc. # DA-40-16.5G)
Current Requirements	110mA (backplane with one module); Add 100mA for each Module
Front End	13.8 VDC, 300 mA (max. current draw)
Main Relay	12-24 VAC/DC, 2A (max. contact current)
Alarm Shunt, Door Ajar and Forced Door Relays	12-24VAC/DC, 1A (max. contact current)
REX/Door Loop	Dry contact closure
Wiring Requirements	
RS-485 Cable	24AWG, shielded, two twisted-pair telephone cable with a shunt capacitance of 16 pF/Ft (required only when using software)
Front End Cable	Stranded wire with overall foil shield.
REX/Door Loop Cable	Stranded wire with overall foil shield.
Mechanical	
Enclosure	Surface mount
Height	4.25" (10.8cm)
Width	19.5" (49.5 cm)
Length	16.5" (41.9 cm)
Material	19 gauge steel
Environmental	
Temperature Tolerance	-20°F to 130°F (-28°C to 54°C)
Recommended Use	For indoor use only

1.3 System Defaults

The following table lists the default settings for the Max 3 Door Control Module.

Table 3: System Defaults

Option	Default Setting	Option	Default Setting
Master Code	1234	Main Relay Time	5 Seconds
Door Ajar Output Time	30 Seconds	Forced Door Output Time	10 Seconds
Audio Keypress Feedback	Enabled	Visual Keypress Feedback	Enabled
User Lockout	Enabled	User Lockout Type	By Location
Time Zones	Disabled	Auto-Unlock	Disabled
First-In Auto-Unlock	Disabled	User Timezone	24 Hours
Daylight Savings Time	Enabled	DST Format	US
Wiegand LED State	Active Low	Wiegand Sounder State	Active Low
Error Lockout Threshold	3 Attempts	Error Lockout Duration	10 Seconds
Extended Unlock Time	10 Seconds	Facility Code	11
Door Number	1	Auto-Unlock Time Zone (Without software)	9 A.M to 5 P.M.; Monday through Friday

1.4 Max 3 Door Control Module Diagram

The diagram below shows the component locations and terminal connections on the Max 3 Door Control Module.

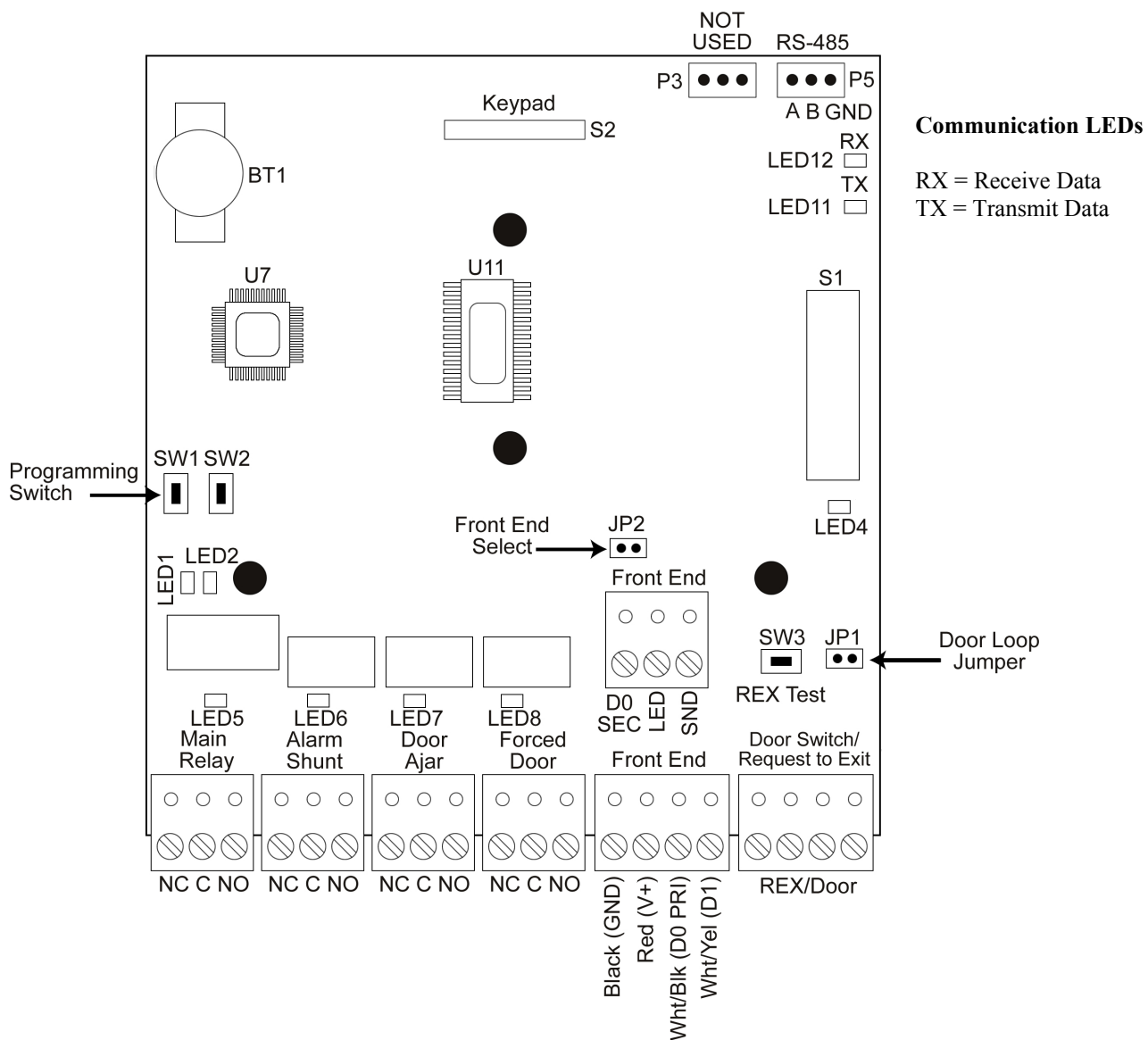


Figure 1: Max 3 Module Diagram

1.5 Backplane Diagram

The diagram below shows the component locations and terminal connections on the Backplane.

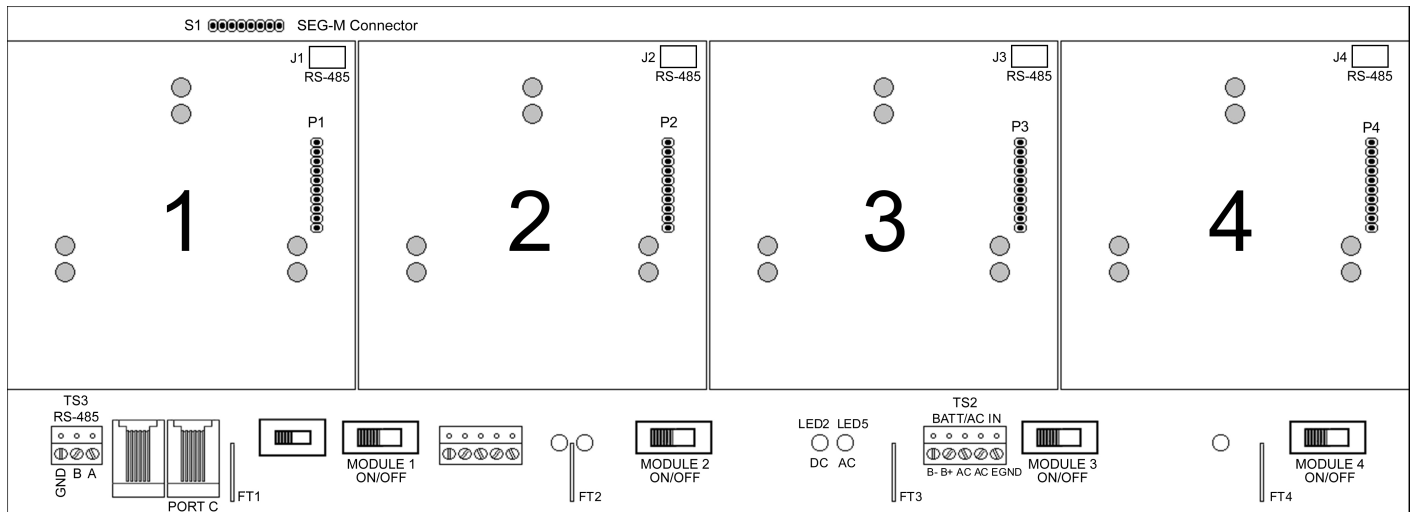


Figure 2: Max 3 Backplane Diagram

Notes:

The Max 3 communicates to the PC via an RS-485 connection. For this connection use TS3 on the far left, bottom of the backplane. The module is then connected to the backplane via connectors J1 through J4 using a wire harness.

Port C is used for configuring the SEG-M, when it's plugged onto S1 on the backplane.

Section 2: Installation

This section contains detailed procedures and wiring diagrams for installing the IEI Max 3 Access Control System. This section is presented in the order you should follow to install the unit. Not every section is necessary for every application.

The system must be installed within the protected area in accordance with the National Electrical Code (NFPA 70), local codes, and the authority having jurisdiction. It should also be located in an area that is accessible for programming purposes. After the installation is complete, the cabinet door should remain closed and locked to protect the contents.

Note: Programming commands are inserted into the installation procedures for your convenience. Programming should only be done after all electrical connections are made and the system is powered up.

2.1 Check the Packing List

Open the box and inside is a metal enclosure. The metal enclosure has a removable lid, to give you easier access when wiring. Inside the metal enclosure is:

- 1 Backplane mounted on standoffs
- 1 16.5VAC Transformer
- 1 Camlock with key
- 1 Hardware Pack containing:
 - 4 Wire nuts (ORANGE)
 - 4 Wall anchors (BLUE)
 - 4 #8 1¼" sheet metal screws
 - 4 6-32 x 3/8" screws (For Power Supply Mounting)
- 1 Set of battery cables (BLACK AND RED)
- 4 Ground cables (BLACK wire with RED flush tab receptacle) *one per Max 3 Module Port*
- 1 Max 3 Module
- 1 detachable keypad for programming (Pre-mounted to Max 3 Module)
- 1 Secured Series Software Package
- 1 Max 3 Installation and Programming Manual

Note: Max 3 System Kit contains additional components including power supply, second transformer and proximity reader.

Please check the contents of the enclosure and verify all components on the packing list are present. Taking this inventory will familiarize you with the components as well as ensure you have a complete kit.

2.2 Mount the Enclosure

The enclosure is designed to be wall mounted (surface mounted) using the supplied hardware. You must mount the enclosure on the secure side of the door in a secured area such as a locked utility closet. Make sure it is accessible for programming and maintenance purposes. Do not use the controller as access device to enter or exit through the door.

Mounting Procedure:

Unlock and open the metal enclosure. Notice that the enclosure lid opens from top to bottom so the enclosure lid forms a tabletop for a convenient workspace.

1. Use the supplied wall anchors and sheet metal screws to secure the enclosure to the wall.
2. Drill 11/64" diameter holes for the wall anchors.
3. Tap the wall anchors into the wall until the outer flange is flush to the wall surface.
4. Insert the sheet-metal screws ¾ of the way into the anchors.
5. Hang the enclosure by aligning the slotted holes (cut into the rear of the cabinet) with the sheet-metal screws. Space between slotted holes; on-center 17" Horizontally and 13" Vertically.
6. The enclosure should now be resting on the sheet-metal screws.
7. Tighten the sheet-metal screws until they are snug.

2.3 Ground the Unit

Grounding the system before making any electrical connections is imperative!

By grounding the system first you not only increase personal safety during installation, but you also protect the unit from damage due to static discharge or any other transient voltage effects. We cannot stress enough the importance of completely grounding the unit before making any connections or even touching the backplane (the large circuit board in the enclosure). Wire as shown and plug the transformer into a grounded electrical socket.

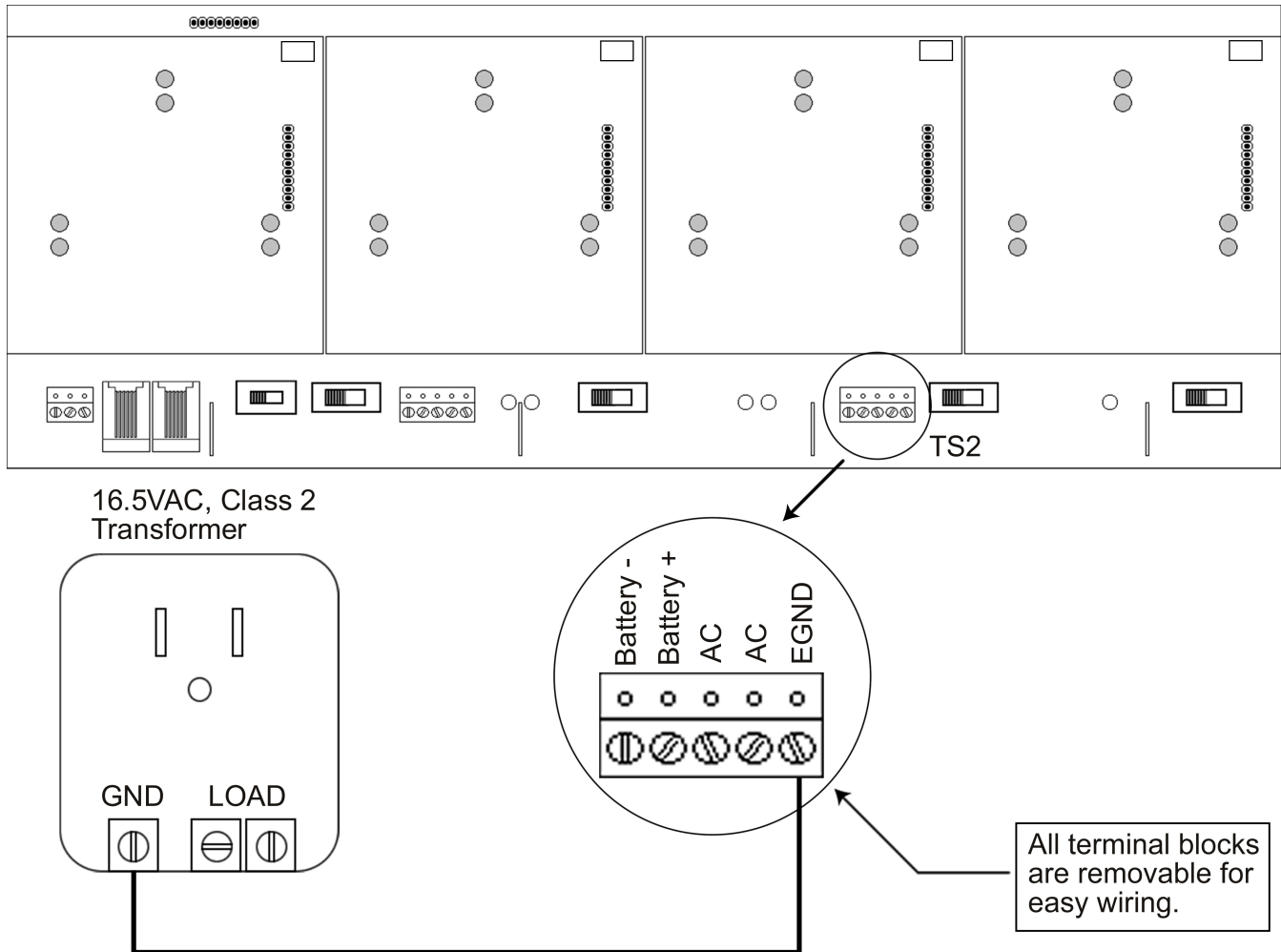


Figure 3: Connecting the GND Terminal from Transformer to the Backplane

TOUCH THE GROUNDED METAL CABINET BEFORE TOUCHING THE BACKPLANE OR THE MAX 3 DOOR CONTROL MODULE. THIS WILL REMOVE ANY STATIC CHARGE ON YOUR PERSON. STATIC ELECTRICITY CAN DAMAGE THE ELECTRONIC COMPONENTS USED ON THE CONTROLLERS.

2.4 Connect the RS-485 Cable from the Module to the Backplane

The Max 3 Door Control Module requires an additional three position cable to make the RS-485 connection to the backplane. This cable is connected from P5 on the upper right corner of the module to the corresponding three position connector underneath each module on the top edge of the backplane. The connectors from left to right are labeled J1 (for module 1) to J4 (module 4). Simply plug one end of the cable into P5 and the other end into the connector on the backplane. The diagram below illustrates how to connect module 1 to the backplane.

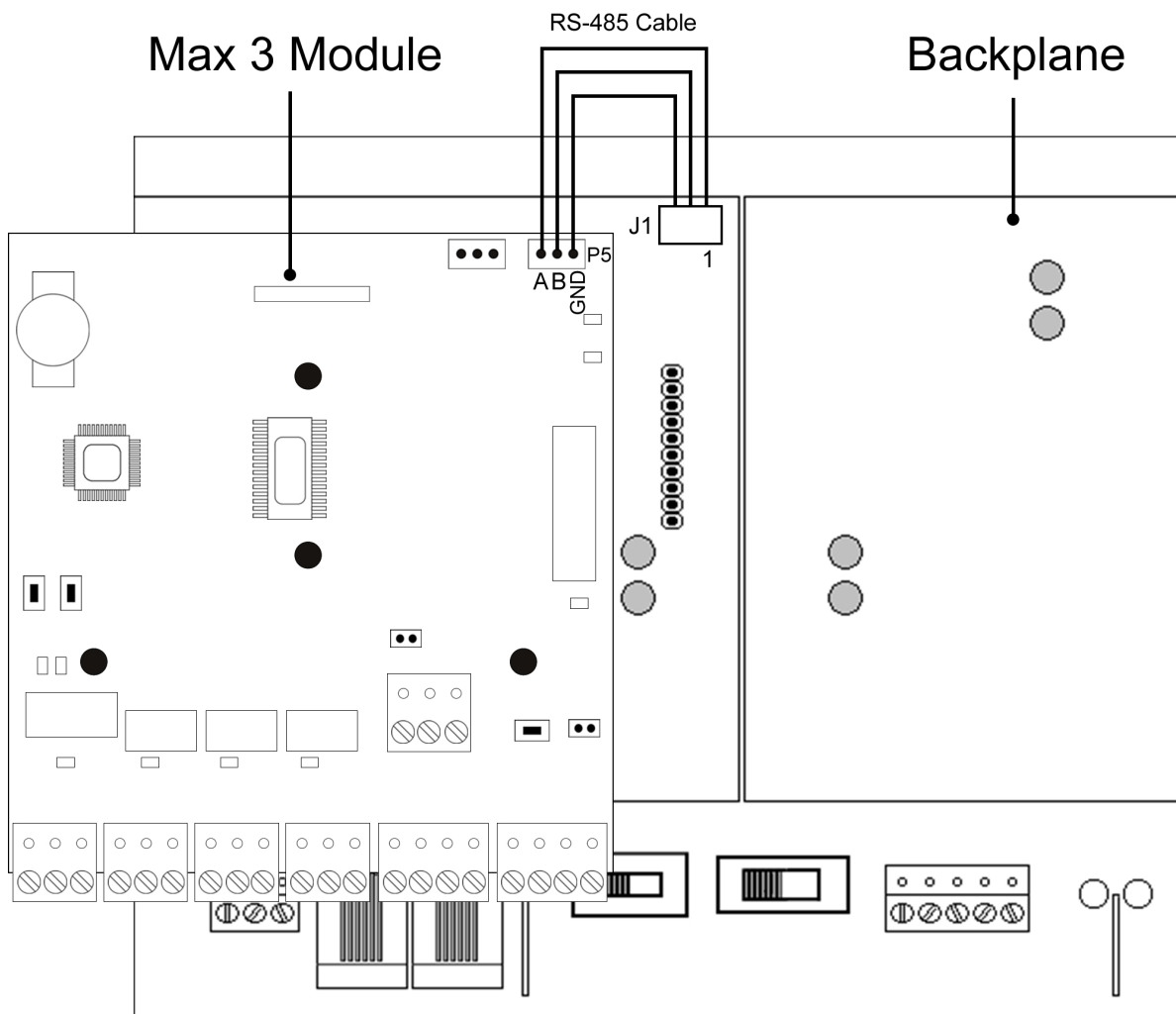


Figure 4: RS-485 Connection from Max 3 Module to Backplane

2.5 Connect Additional Modules to the Backplane

The backplane has 4 expansion ports for Max 3 Modules. Provided with the unit is one Max 3 Module which is installed into port 1 of the Backplane. If additional Max 3 Modules are purchased for this system, insert them into the remaining ports. You must connect each module to the RS-485 connector on the backplane as shown in the previous section.

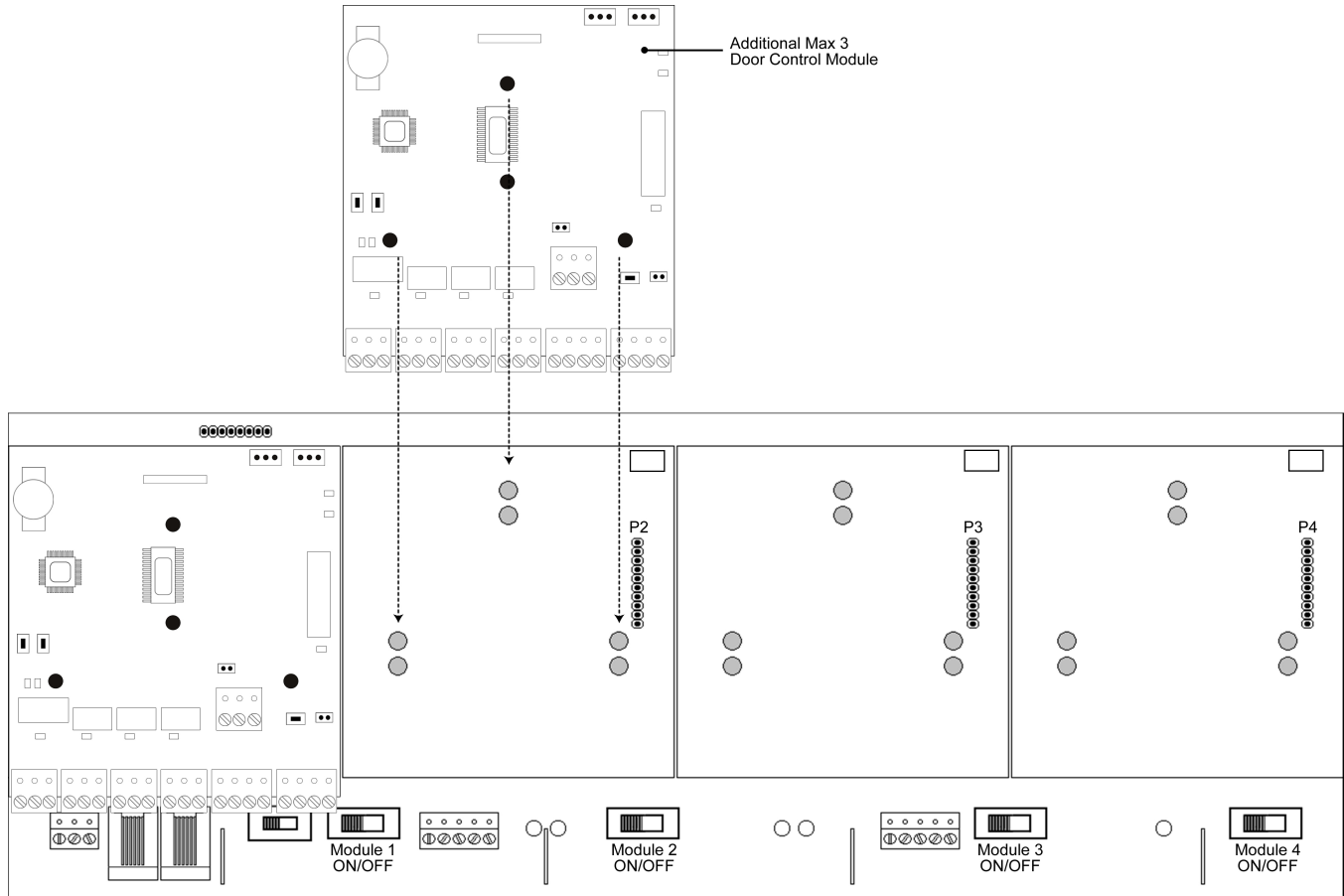


Figure 5: Connecting Additional Modules to the Backplane

To install additional Max 3 Modules:

1. Slide the Door Control Module onto the pin-rail marked Px (x = Expansion Port #; Example: P2) located on the backplane.
2. Align the 3 holes in the Door Control Module with the standoffs mounted on the backplane. Gently press down on the Module to snap it on onto the standoffs.
3. Using the supplied 3-position wire harness, connect P5 on the module to the RS-485 connector on the backplane.
4. Turn the Module Power Switch (located on the backplane) to “ON”.

2.6 Wire an Electric Door Lock to the Main Relay of the Max 3 Module

The locking device is connected to terminal strip TS1 as shown in the diagram on the right. The two diagrams below show how to connect both a Maglock and an Electric Strike using an external power supply.

For either locking device, positive voltage (V+) from an external power source is connected to the relay common terminal (C).

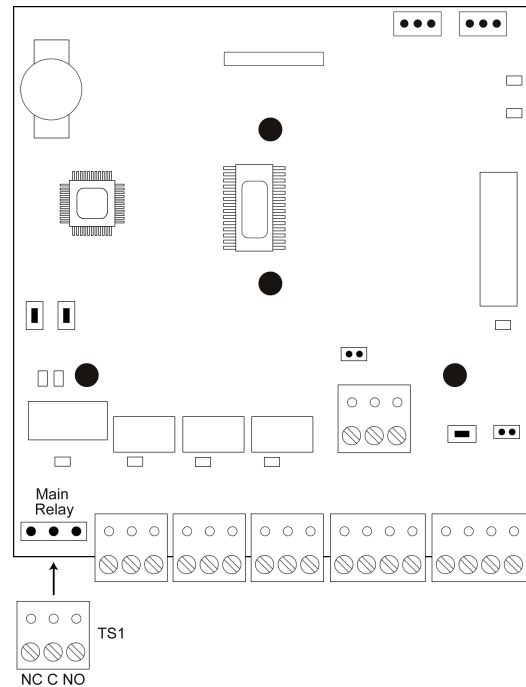
When using a Maglock, connect the lock's positive side to the normally closed (NC) terminal and the negative side to negative on your power supply. When using an Electric Strike, connect the lock's positive side to the normally open (NO) terminal and the negative side to negative on your power supply.

NOTES:

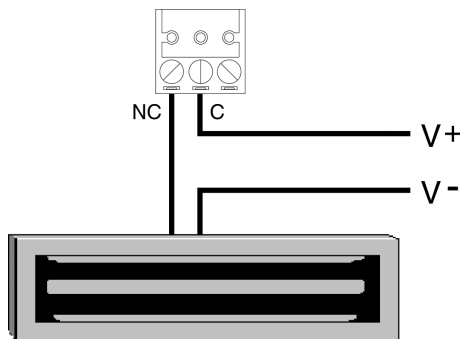
You must use an external power supply to power your lock.

The relay is a **FORM C DRY CONTACT**, which means there is **no** output voltage on the relay contacts.

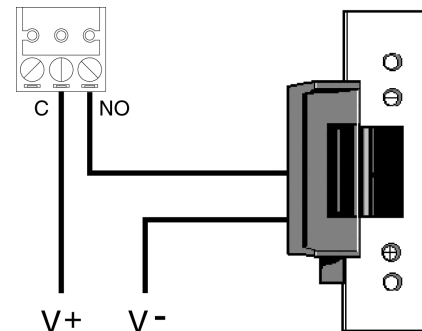
When using AC voltage, polarity does not matter.



Connecting a Maglock (Fail-Safe)



Connecting an Electric Strike (Fail-Secure)



Programming the Main Relay Time:

The command sequence below is used to change the Main Relay Time. The default value is 5 seconds.

Action	Press
Enter Program Mode	99 # Master Code *
Program Main Relay Time	11 # time # 0 # ** (time = 1 to 99 seconds)
Exit Program Mode	*

2.6.1 Installing a Diode to Prevent Electrical Kickback from Lock – DC Locks Only

If your electric locking device does not come pre-installed with internal protection for electrical “kickback voltage” use the supplied 1N4004 diode for DC locks only. This “kickback voltage” could possibly damage the Max 3 control module and installing the diode could help prevent this from happening. When installing the diode, connect it across the positive (V+) and negative (V-) of your locking device. The diode is polarized, which means the cathode mark (silver band at one end) must be connected to the positive connection as shown below. You must connect the diode as close as possible to the locking device for it to work properly.

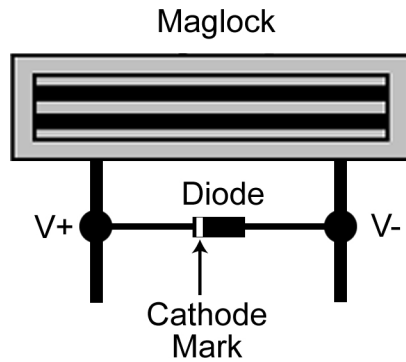


Figure 7: Connecting Diode Across Maglock

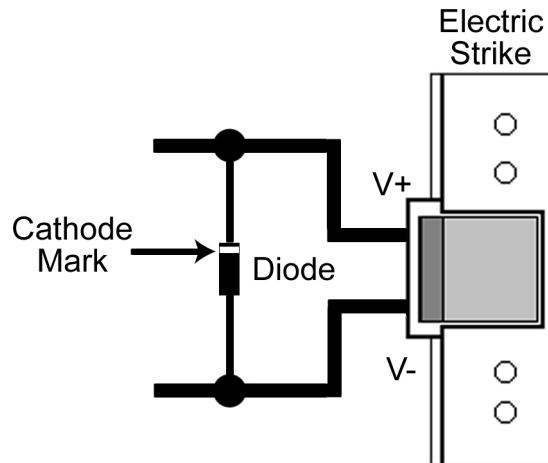


Figure 6: Connecting Diode Across Strike

2.6.2 Installing an MOV to Prevent Electrical Kickback from Lock – AC Locks Only

If your electric locking device does not come pre-installed with internal protection for electrical “kickback voltage” use the supplied MOV for AC locks only. This “kickback voltage” could possibly damage the Max 3 control module and installing the MOV could help prevent this from happening. When installing the MOV, connect it across the AC connections to your locking device. The MOV is not polarized so it does not matter which direction you install it. You must connect the MOV as close as possible to the locking device for it to work properly.

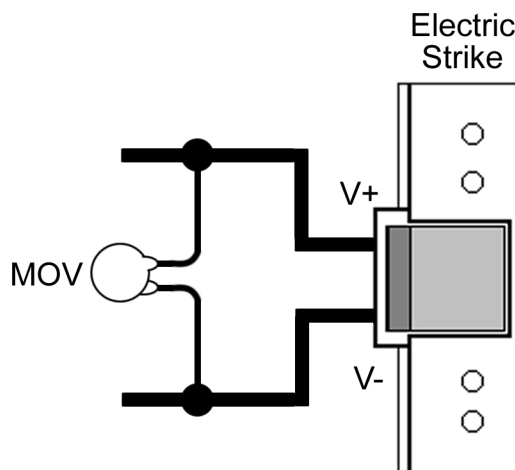


Figure 8: Connecting MOV Across Strike

2.6.3 Mounting the PowerGard PG-1224-3 Power Supply for Lock Power

The Max 3 System Kit includes the PowerGard PG-1224-3 Power Supply, which is used to power your locking device. This power supply is not included when you purchase the panel only, but you can purchase it separately. The Max 3 enclosure has four mounting posts used to mount the IEI PowerGard PG-1224-3 Power Supply. To mount the power supply use the four supplied 6-32 x $\frac{3}{8}$ " screws to secure it to the four posts in the bottom right corner of the enclosure as shown in the diagram below. Refer to section 2.6.4 for wiring information.

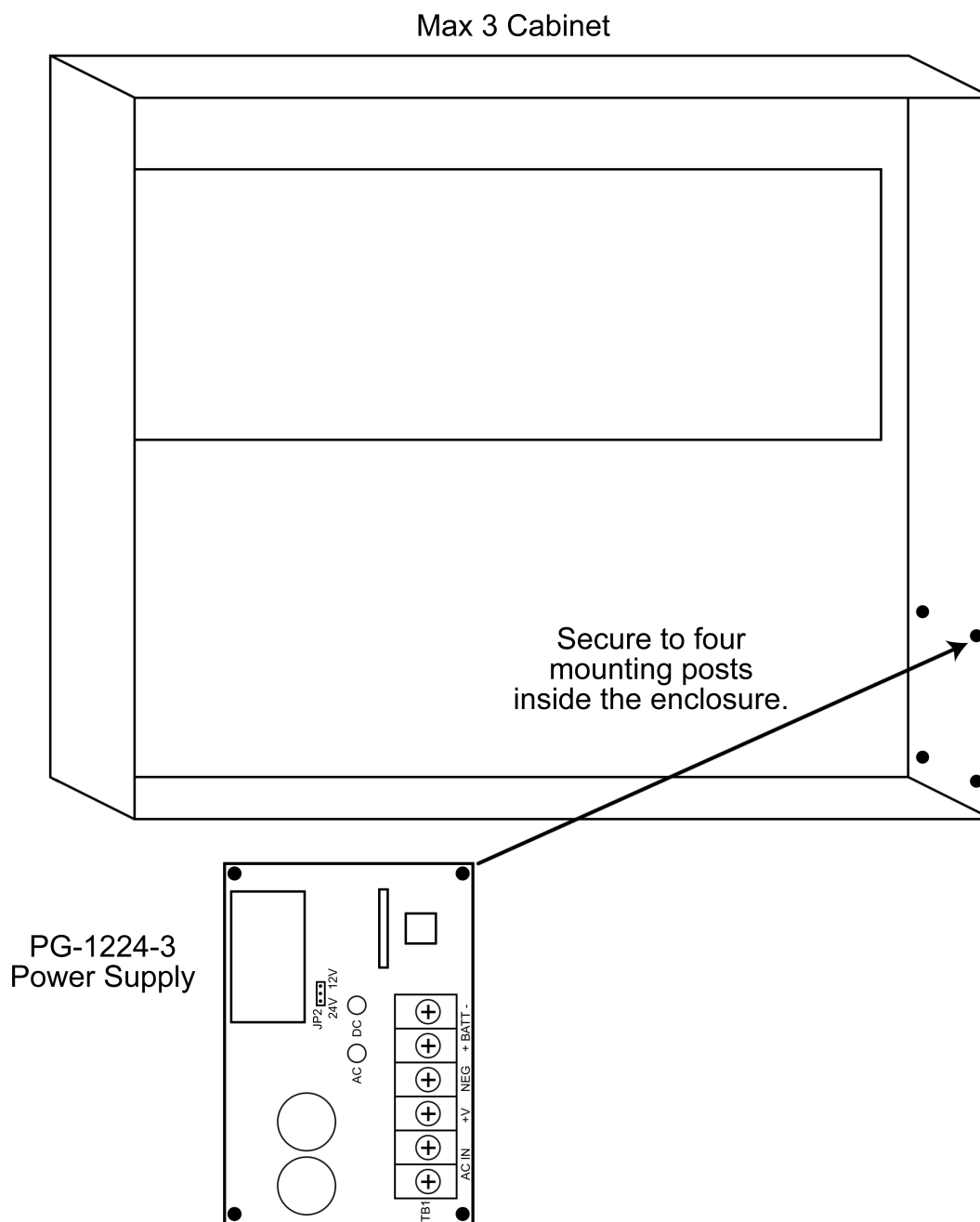


Figure 9: Mounting the PG-1224-3 Power Supply

2.6.4 Wiring the PowerGard PG-1224-3 Power Supply for Lock Power

The Max 3 System Kit includes a second transformer for use with the power supply. The second transformer is not included when you purchase just the panel. Using the 16.5VAC transformer the power supply output must be set for 12VDC. The power supply is capable of supplying 2.5 Amps of current for your lock. To power your lock using the PG-1224-3 Power Supply follow the diagrams below.

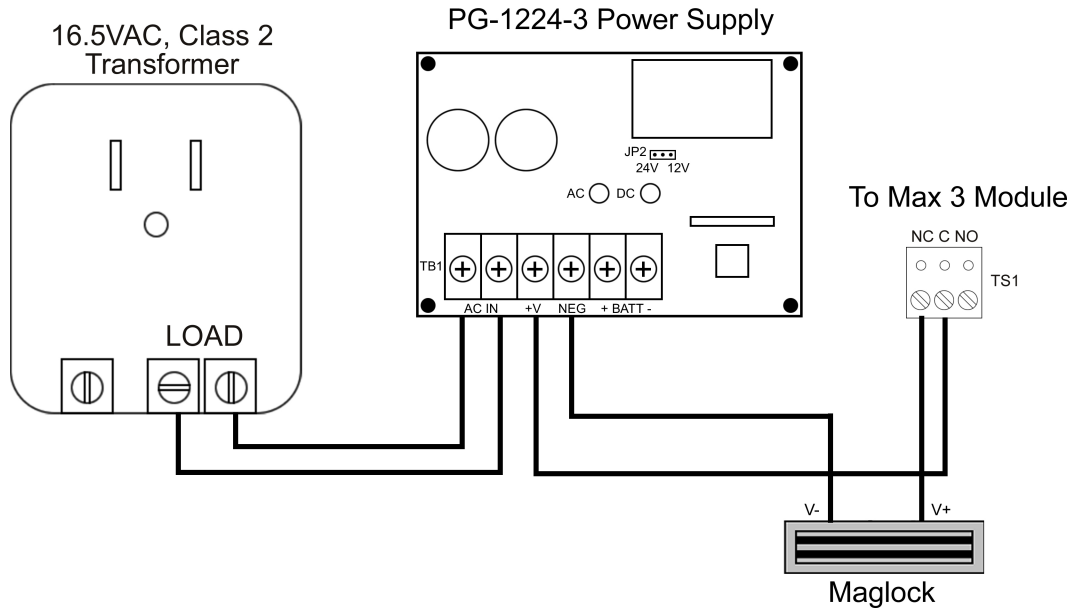


Figure 10: Wiring a Maglock to the PG-1224-3 Power Supply

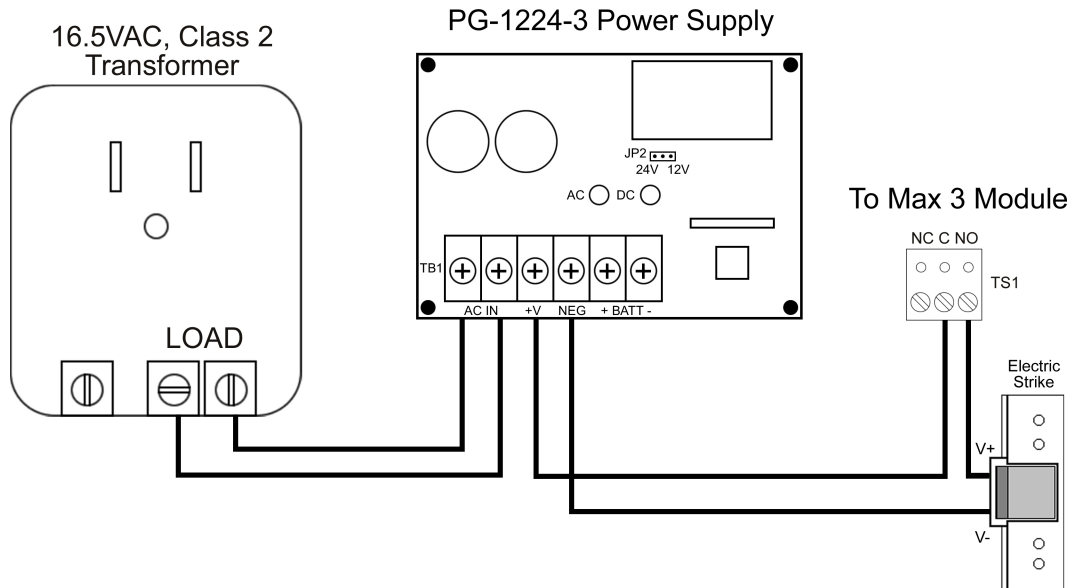


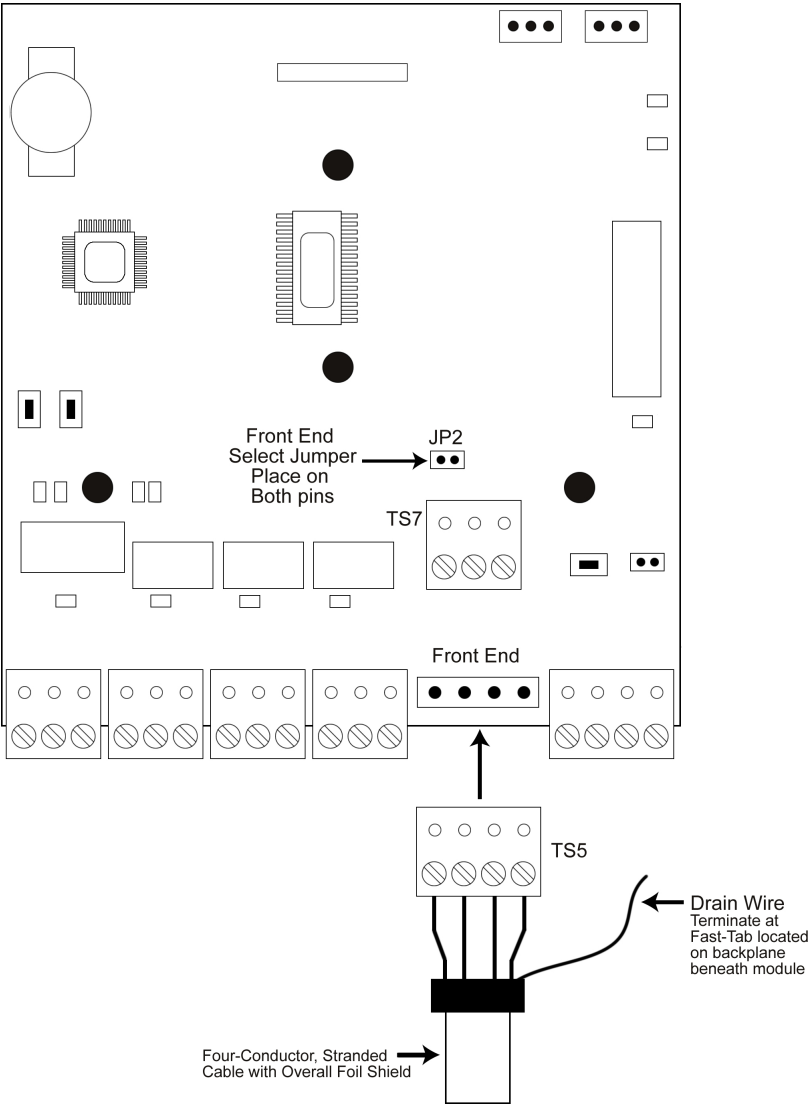
Figure 11: Wiring an Electric Strike to the PG-1224-3 Power Supply

2.7 Connect a Secured Series Front End (SSFE) Reader to the Door Control Module

The Max 3 supports IEI Secured Series Front Ends, which include keypads, card readers and touch chip readers. These are connected to the Front End terminal strip TS5. You can connect up to two readers to each Door Control Module, for In/Out operation by simply wiring them in parallel (both readers to the same four screw terminals). Each screw terminal is labeled with a wire color (black, red, white/black and white yellow). These correspond to the color wire on the wire harness supplied with the front end reader.

You must use a four-conductor stranded cable with overall foil shield to connect the Front End to the Door Control Module. You also must terminate the drain wire (the bare wire inside the foil shield), from the front end cable, to the fast-tab located on the Max 3 Backplane. There is a fast-tab located under each module on the lower edge of the backplane. They are labeled FT1, FT2, FT3 and FT4. Connect the drain wire from the front ends connected to module one to FT1 and so on. IEI has included four ground cables and wire-nuts to make this connection. **Do not terminate the drain wire at the Front End Reader. Cut off the exposed drain wire and wrap the insulation and the foil shield in electrical tape.**

Note: The Max 3 Door Control Module must be configured to operate in Secured Series Front End Mode. To do this, locate jumper JP2 above terminal strip TS7 and place the jumper on both pins.



Wire Size vs. Cable Length Chart

Distance	Wire Size
250 Feet	22 AWG
500 Feet	20 AWG
1000 Feet	18 AWG

Note: If you experience problems with front end communications after connecting a second keypad or reader, wiring a separate ground wire from each keypad to the black terminal on the Max 3 DCM may solve the issue. If this does not fix the problem contact IEI Technical Support.

Figure 12: Connect Secured Series Front End to DCM

2.8 Connect the Primary Wiegand Front End Reader (IN Reader)

Wiegand readers are connected directly to the Front End Terminals on the Door Control Module. The primary reader (IN) should be mounted on the exterior of the door and used to gain access into the secured area. The diagram and table below describe the connections in detail. Please note that the Primary Wiegand Reader Data 0 wire is connected to DO PRI (Data 0 Primary) on terminal strip TS5.

The LED connection is used to indicate status of the Main Relay and the Sounder connection is used to indicate various error conditions. These are explained in more details in later sections.

You must use a four to six conductor stranded cable with overall foil shield to connect the Front End to the Door Control Module. You also must terminate the drain wire (the bare wire inside the foil shield), from the front end cable, to the fast-tab located on the Max 3 Backplane. There is a fast-tab located under each module on the lower edge of the backplane. They are labeled FT1, FT2, FT3 and FT4. Connect the drain wire from the front ends connected to module one to FT1 and so on. IEI has included four ground cables and wire-nuts to make this connection. **Do not terminate the drain wire at the Front End Reader. Cut off the exposed drain wire and wrap the insulation and the foil shield in electrical tape.**

IMPORTANT: The Max 3 Door Control Module must be configured to operate in Wiegand Front End Mode. To do this, locate jumper JP2 above terminal strip TS7 and place the jumper on one pin. This is the default condition.

Primary Wiegand Reader Connections

Wiegand Reader	DCM	Terminal Strip
V- (Power)	Black	TS5
V+ (Power)	RED	TS5
Data 0	D0 PRI	TS5
Data 1	D1	TS5
LED Control	LED	TS7
Sounder Control	SND	TS7

Note: The primary reader records an IN event in the transaction log.

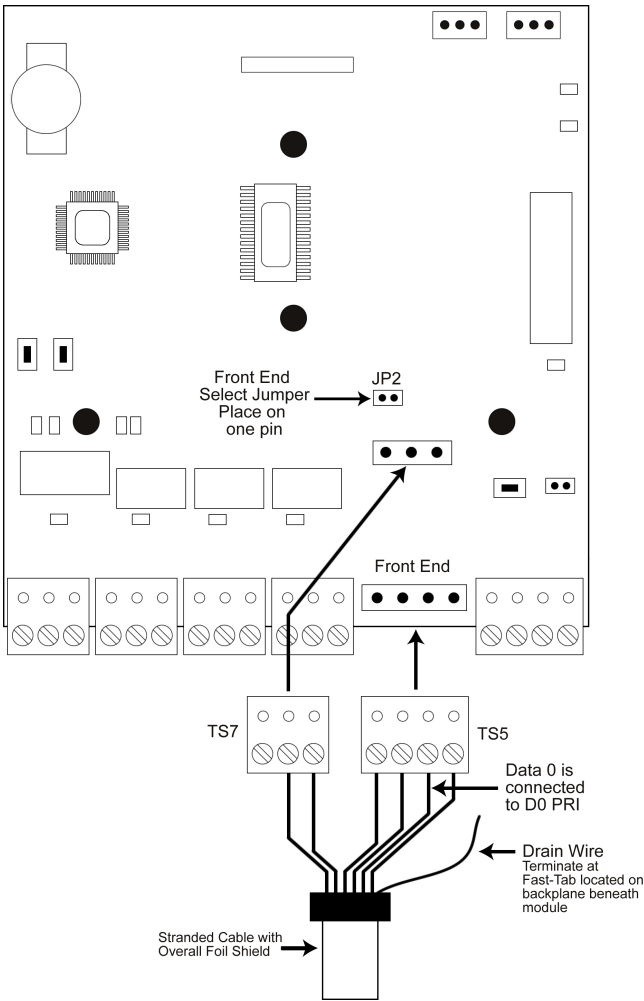


Figure 13: Connect Primary Wiegand Front End Reader to DCM

2.9 Connecting a Secondary Wiegand Front End Reader (OUT Reader)

The diagram below shows how to connect a secondary (out) reader to the Door Control Module. The secondary reader (OUT) should be mounted on the interior side of the door and used to exit the secured area. Please note that the Secondary Wiegand Reader Data 0 wire is connected to DO SEC (Data 0 Secondary) on terminal strip TS7.

The LED connection is used to indicate status of the Main Relay and the Sounder connection is used to indicate various error conditions. These are explained in more details in later sections.

You must use a four to six conductor stranded cable with overall foil shield to connect the Front End to the Door Control Module. You also must terminate the drain wire (the bare wire inside the foil shield), from the front end cable, to the fast-tab located on the Max 3 Backplane. There is a fast-tab located under each module on the lower edge of the backplane. They are labeled FT1, FT2, FT3 and FT4. Connect the drain wire from the front ends connected to module one to FT1 and so on. IEI has included four ground cables and wire-nuts to make this connection. **Do not terminate the drain wire at the Front End Reader. Cut off the exposed drain wire and wrap the insulation and the foil shield in electrical tape.**

IMPORTANT: The Max 3 Door Control Module must be configured to operate in Wiegand Front End Mode. To do this, locate jumper JP2 above terminal strip TS7 and place the jumper on one pin. This is the default condition.

Secondary Wiegand Reader Connections

Wiegand Reader	DCM	Terminal Strip
V- (Power)	Black	TS5
V+ (Power)	RED	TS5
Data 0	D0 SEC	TS7
Data 1	D1	TS5
LED Control	LED	TS7
Sounder Control	SND	TS7

Note: The secondary reader records an OUT event in the transaction log.

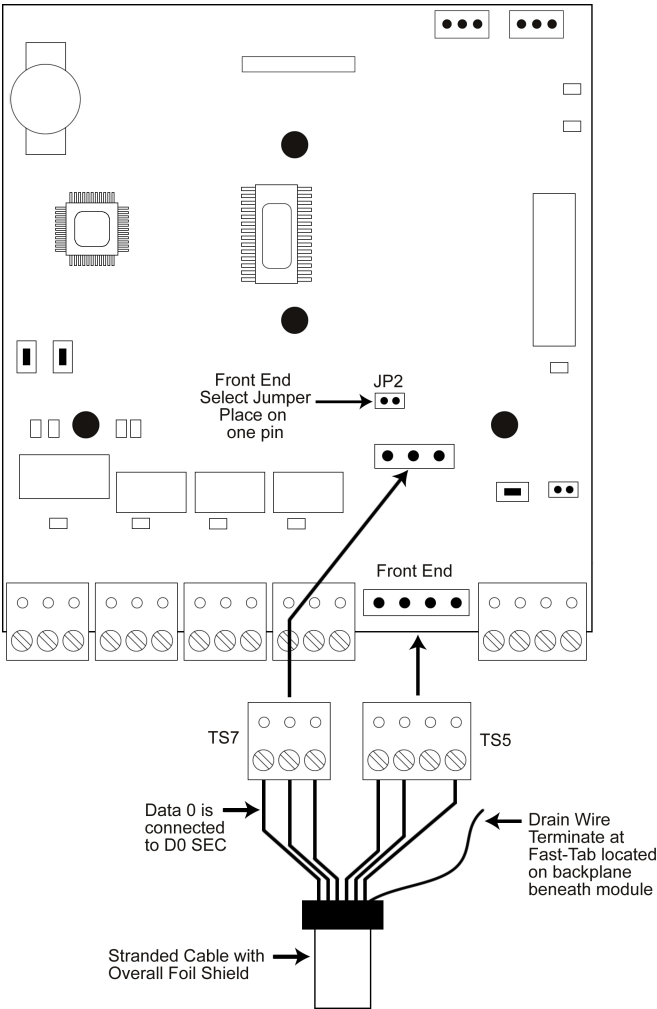


Figure 14: Connect Secondary Wiegand Front End Reader to DCM

2.10 Wire a Request to Exit (REX) device and Door Contact

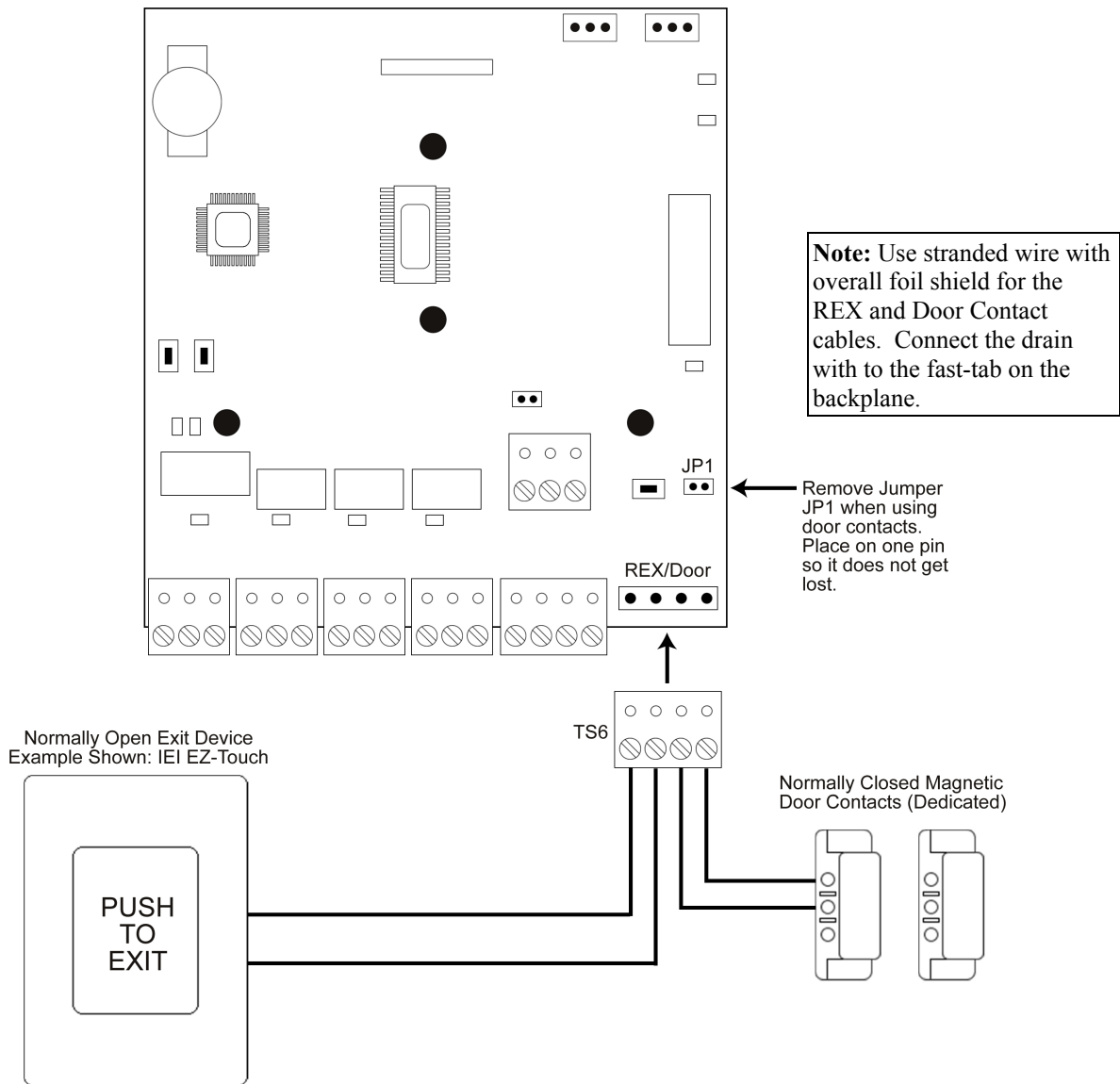


Figure 15: Wiring a REX Switch and Door Contacts

Request to Exit (REX)	This is a <u>normally open</u> loop, when momentarily closed activates the Main Relay for the length of time programmed in the Main Relay Time (command 11).
Door Switch Input	This is a <u>normally closed</u> loop that tells the Max 3 the door status. This is used for the Door Ajar, Forced Door and Auto-Relock features.

Auto-Relock

Auto Re-lock refers to the feature that automatically locks the door one second after the door contact switch is opened. This allows you to program a long unlock time, when required, without worrying about the door remaining open after the person has entered. No programming is necessary for this feature, but it does require you connect a door contact switch as shown in the diagram above. Remember you must **remove jumper JP1** for the door contact input to operate.

2.11 Wire the Alarm Shunt Relay

The Alarm Shunt Relay is used when you are controlling access to a door that is monitored by an external alarm system. This relay activates at the same time as the Main Relay (by either a valid code/card or REX) so you can bypass the existing alarm panel, as shown in the diagram below. For this feature you must wire dedicated door contact to terminals TS6 (door contact switch input) as shown below. The Alarm Shunt Relay remains energized until one second after the door contact switch input is closed. Remember you must **remove jumper JP1** for the door contact input to operate.

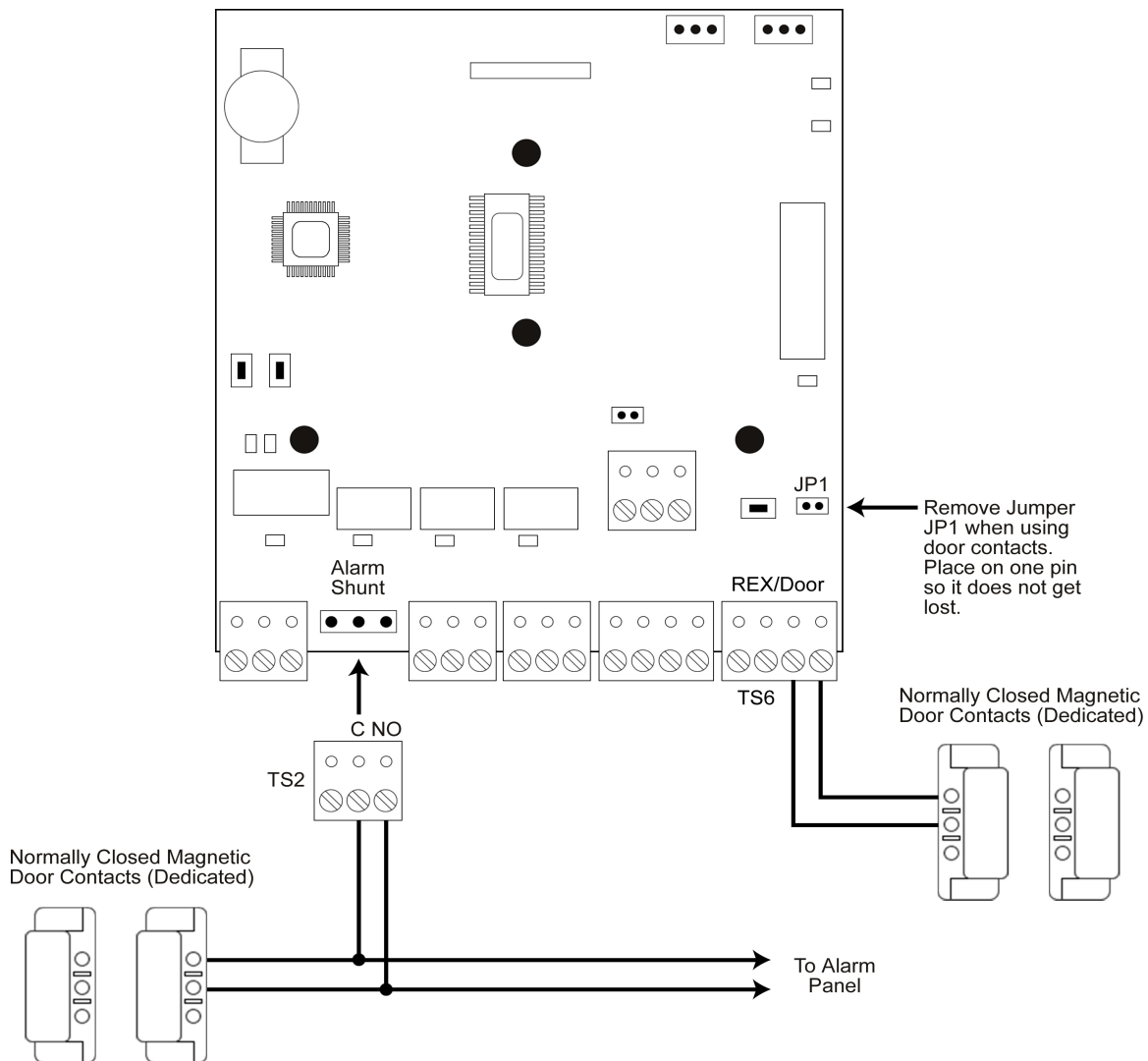


Figure 16: Wiring the Alarm Shunt Relay

2.12 Wire the Door Ajar Relay

The Door Ajar Relay output alerts personnel that the door is being held, or propped open, after a valid access or REX. For this feature to operate you must wire a dedicated door contact switch to the door terminals on TS6 (door contact switch input) as shown below. Once the door contact switch input is opened, the Door Ajar timer begins. When the time reaches the time programmed in the Door Ajar Time (command 44), the relay energizes and remains energized until the door contacts are closed. Remember you must **remove jumper JP1** for the door contact input to operate.

The diagram below shows how switch positive power (V+) to an alarm device. The Relay is rated to handle 1 Amp of current at either 12 or 24 Volts AC/DC. Alarm device(s) are not included with IEI equipment.

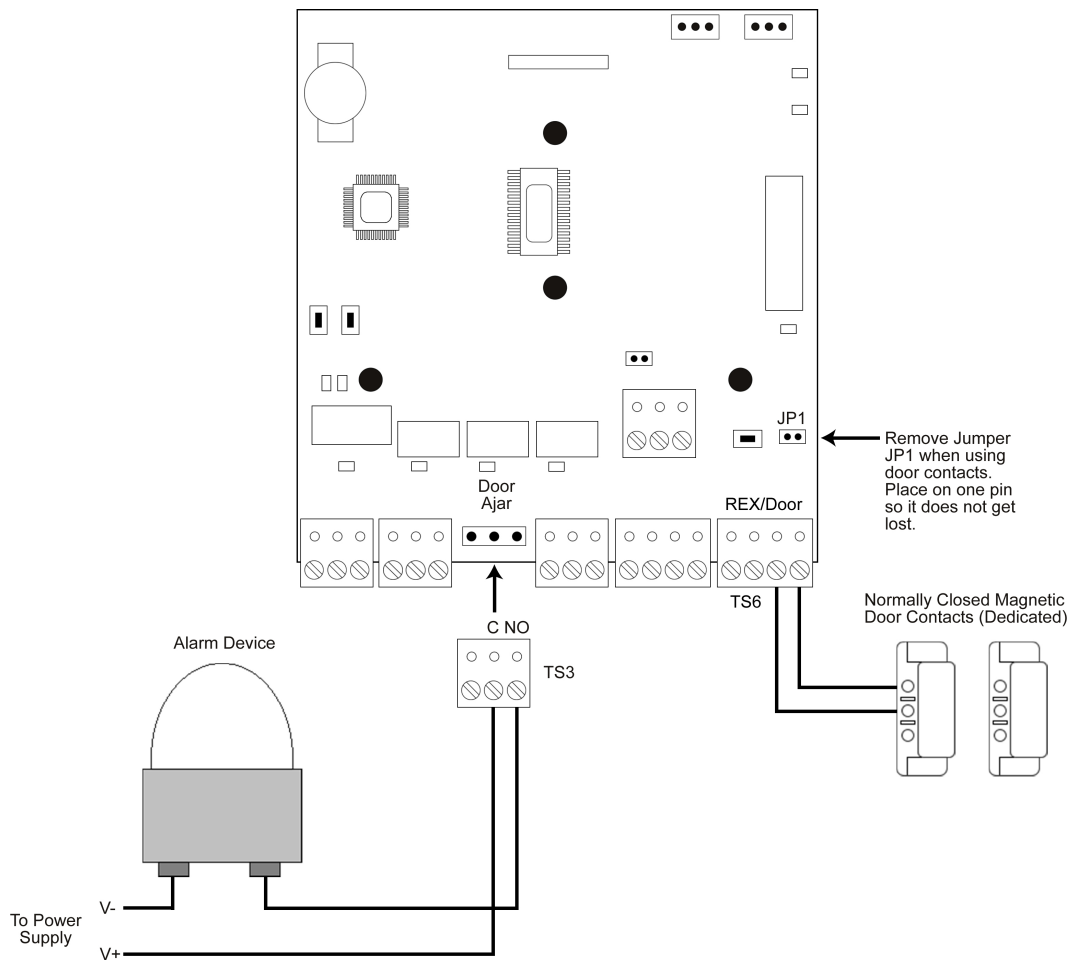


Figure 17: Wiring the Door Ajar Relay

Programming the Door Ajar Time:

The command sequence belows shows how to program the Door Ajar Time. The default value is 30 seconds.

Action	Press
Enter Program Mode	99 # Master Code *
Program Door Ajar Time	44 # time # 0 # ** (time = 10 to 990 seconds)
Exit Program Mode	*

2.13 Wire the Forced Door Relay

The Forced Door Relay Output alerts personnel that the door was opened without authorization. For this feature to operate you must wire a dedicated door contact switch to the door terminals on TS6 (door contact switch input) as shown below. Remember you must **remove jumper JP1** for the door contact input to operate. If these door contacts are opened without a valid access or REX, the Forced Door Relay energizes immediately. It remains energized until either a valid code is entered or card presented to the Front End Reader, a valid code is entered on the Max 3 Module or the Forced Time (command 45) expires.

The diagram below shows how to switch positive power (V+) to an alarm device. The Relay is rated to handle 1 Amp of current at either 12 or 24 Volts AC/DC. Alarm device(s) are not included with IEI equipment.

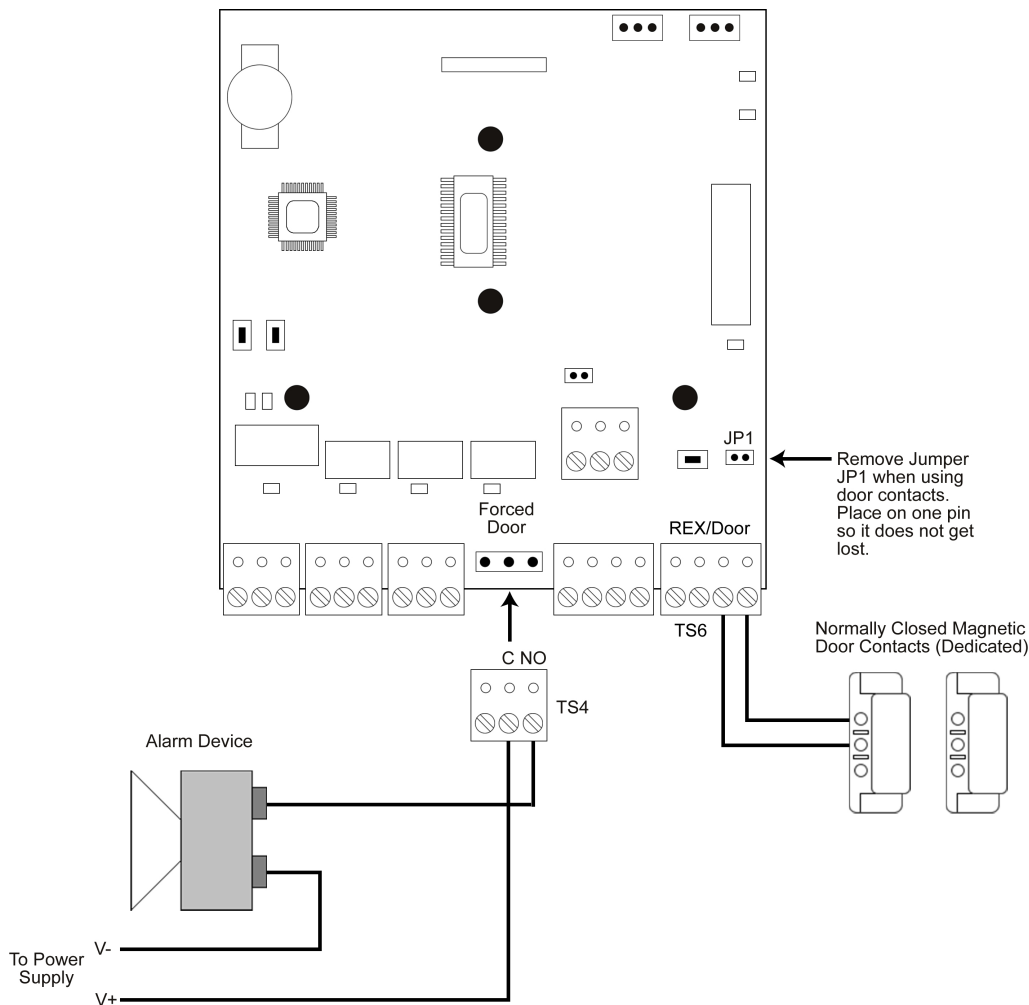


Figure 18: Wiring the Forced Door Relay

Programming the Forced Door Time:

The command sequence belows shows how to program the Forced Door Time. The default value is 10 seconds.

Action	Press
Enter Program Mode	99 # Master Code *
Program Forced Door Time	45 # time # 0 # ** (time = 10 to 990 seconds)
Exit Program Mode	*

2.14 Network the Max 3

The following section describes the various ways to connect the Max 3 to a personal computer (PC), as well as connecting more than one Max 3 together. You can connect up to 64 Max 3 doors together on a single network.

IMPORTANT: When using the PC software to manage multiple doors you must program a unique door number into each Door Control Module using the following command: 43 # 0 # Door Number # ** (Door Number = 1 to 64). Refer to section 3.3.

2.14.1 Connect the Max 3 Backplane Directly to a PC

The Max 3 connects to a PC using RS-485 communications. However, a PC has either an RS-232 serial COM port or a USB port. This means that in order to connect to a PC you must use either an RS-232 to RS-485 converter OR a USB to RS-485 converter. RS-485 communications does have some significant advantages over other connection types, such as increased distance of up to 4000 feet using the appropriate cable, the devices are wired in parallel which means if one unit goes off-line the rest are unaffected and increased data transfer speed.

To make this connection, connect the Data A, Data B and GND terminals on TS3 (See below) to the same corresponding connections on your converter. Then make the connection from the converter to your PC. Please refer to the instructions with your specific converter for complete details on that device.

Note: The Max 3 Module must be connected to the backplane using the wire harness described in section 2.4.

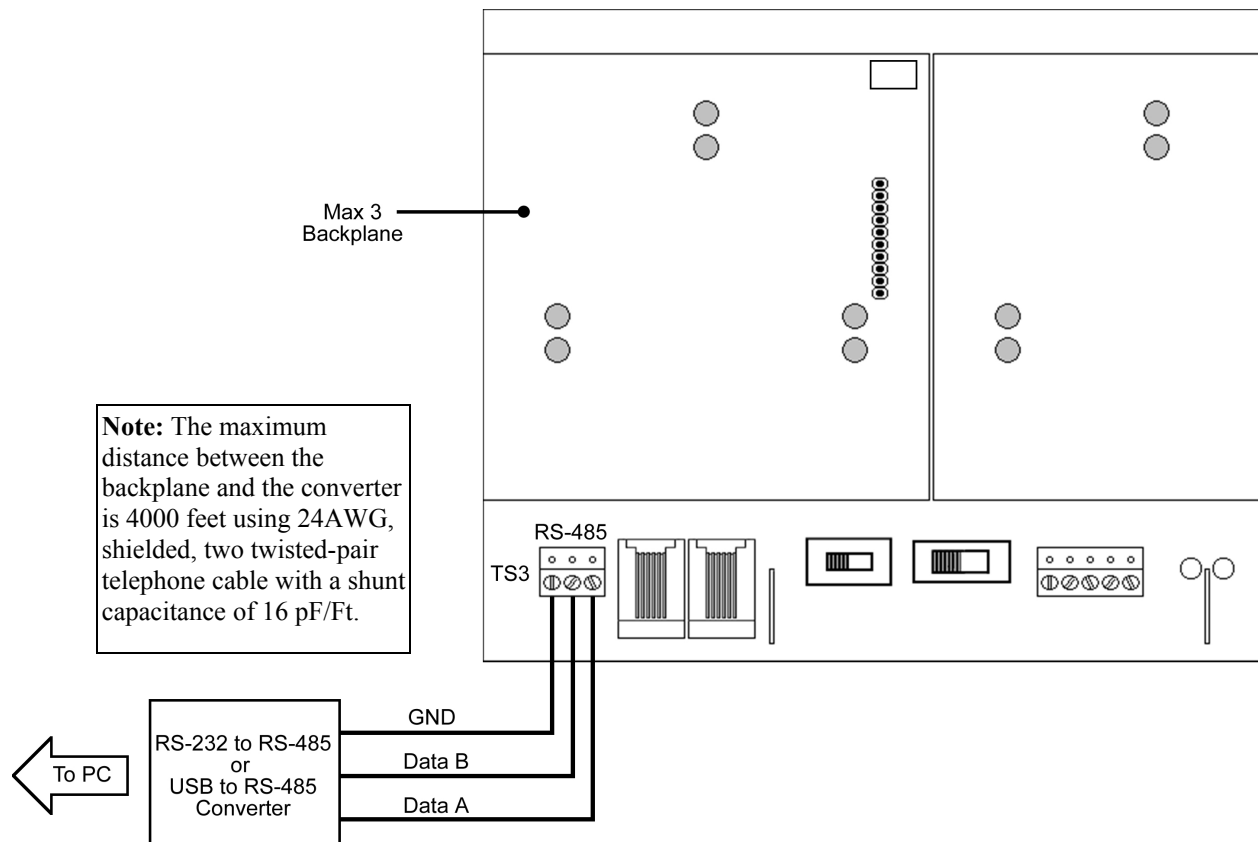


Figure 19: Wiring Max 3 Backplane to a PC

2.14.2 Connect Multiple Backplanes Together

The diagram below shows how to connect multiple backplanes together and then back to a PC. The units are wired in parallel, which means you connect TS3 on both backplanes back to the RS-485 converter. You can either daisy-chain them or wire them all directly back to the converter, depending what your installation requires. When connecting multiple backplanes, remember that each backplane can be up to 4000 feet away from the converter. For example if your PC was centrally located with two units in either direction at 4000 feet, the two backplanes would be 8000 feet apart. However, if you daisy-chain them, the last backplane in line, can't be more than 4000 feet away. Below is an example of daisy-chaining backplanes together.

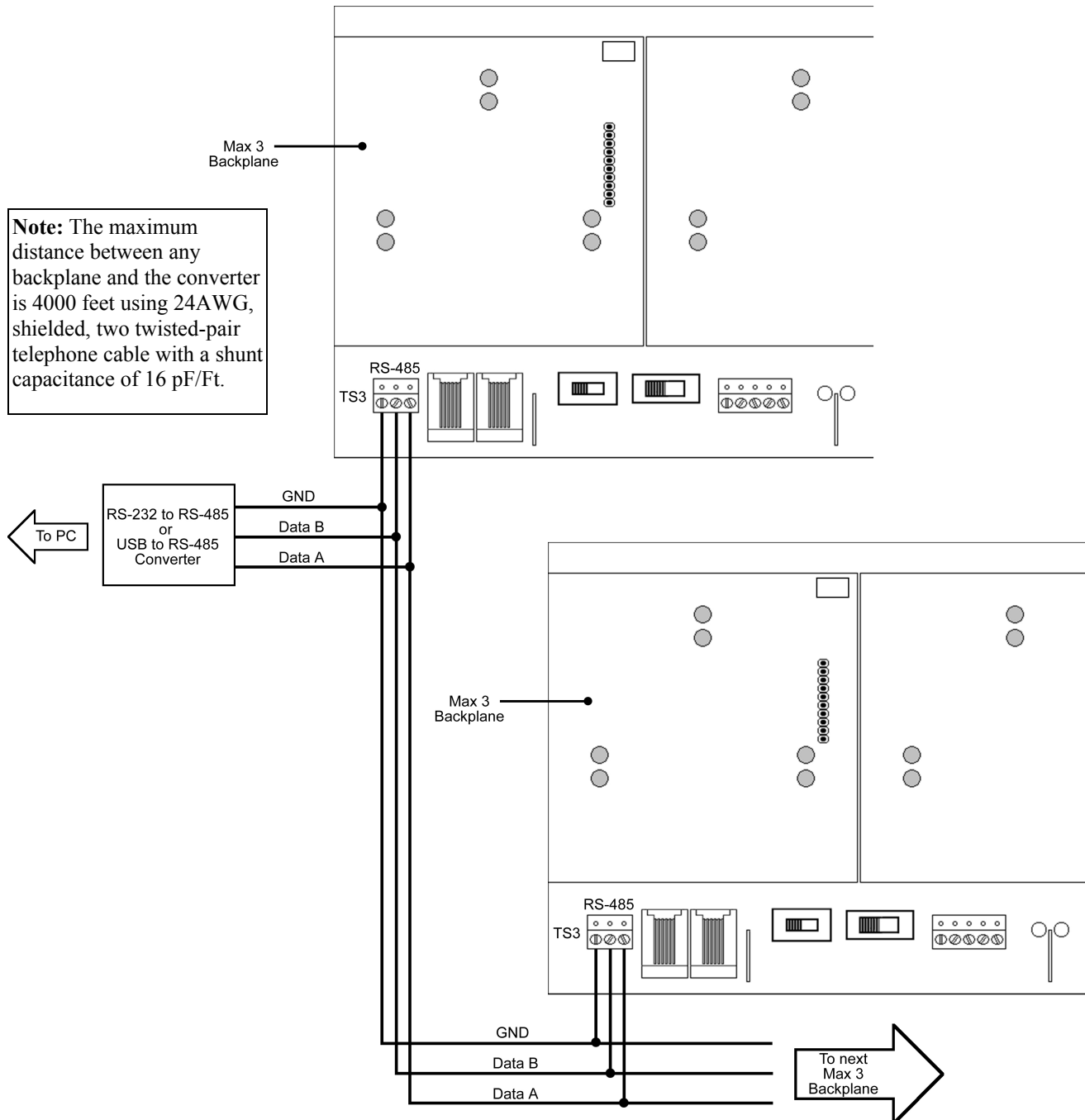


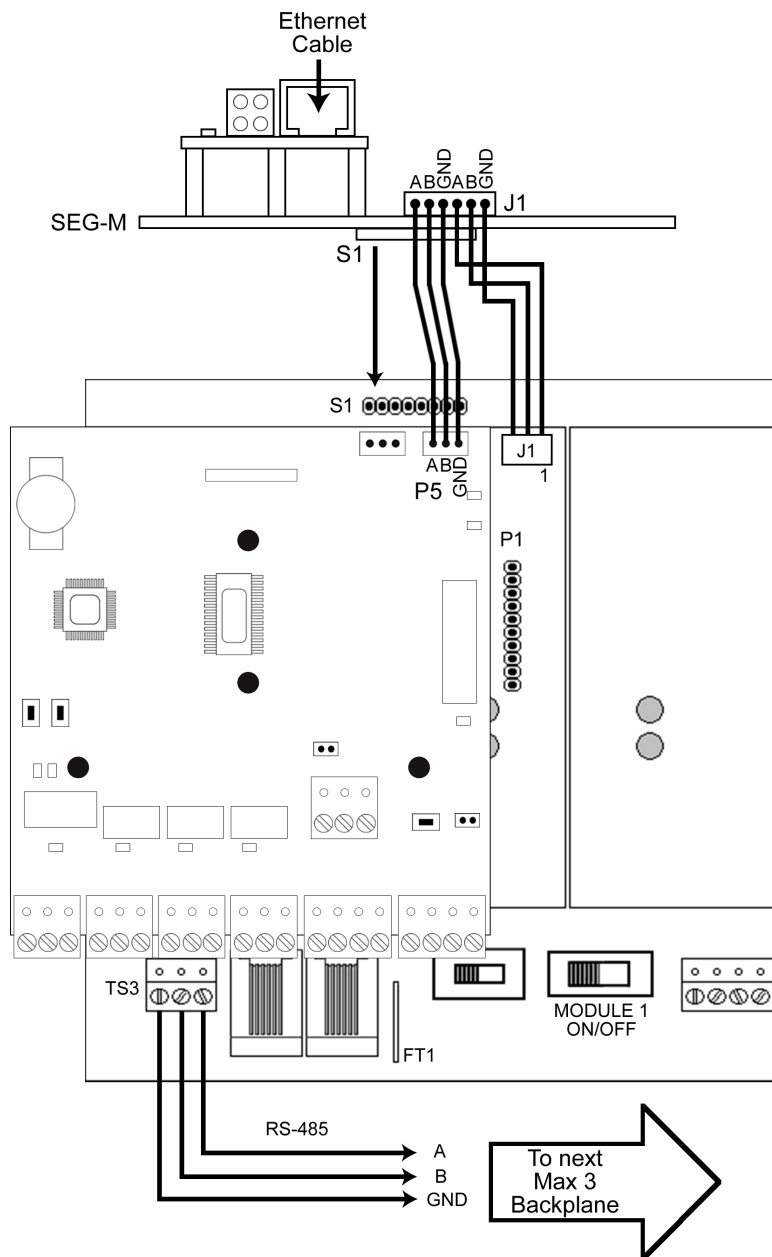
Figure 20: Connecting Multiple Backplanes Together

2.14.3 Connect the SEG-M to the Max 3 (LAN/WAN Connection)

You can connect your Max 3 to your LAN/WAN by using the SEG-M, Secured Ethernet Gateway. Follow the instructions below and refer to the diagram.

The connection from the SEG-M to the Max 3 requires you to plug the module onto the backplane connector S1 to power the unit. You must also use the six-conductor wire harness from J1 on the SEG-M to P5 on the module and J1 on the backplane. If you have more than one module on the backplane, you must connect each module to the corresponding RS-485 connector (J2, J3 or J4) underneath the module as described in section 2.4.

To connect additional backplanes to the system, simply connect TS3 on the first backplane to TS3 on the next backplane as shown below. The SEG-M is only required on the first backplane of the system (up to 64 doors Max; if you require more doors an additional SEG-M is required).



Note: The maximum distance between the first backplane with the SEG-M and the next backplane is 4000 feet using 24AWG, shielded, two twisted-pair telephone cable with a shunt capacitance of 16 pF/Ft.

Figure 21: Connecting the SEG-M to the Max 3

2.14.4 Connecting the SEG-1 to the Max 3 (LAN/WAN Connection)

You can also use the SEG-1 to connect your Max 3 system to your LAN/WAN. Follow the instructions below and refer to the diagram.

Run your RS-485 cable between terminal strip TS1 on the SEG-1 to TS3 on the backplane as shown in the diagram. You must also connect each module to the backplane by connecting the supplied 3-conductor wire harness from P5 to the RS-485 connector underneath each module on the backplane (J1 through J4).

To connect additional backplanes to the system, simply connect TS3 on the first backplane to TS3 on the next backplane as shown below. The SEG-1 is only required on the first backplane of the system (up to 64 doors Max; if you require more doors an additional SEG-1 is required).

Note: The maximum distance between any backplane and the SEG-1 is 4000 feet using 24AWG, shielded, two twisted-pair telephone cable with a shunt capacitance of 16 pF/Ft.

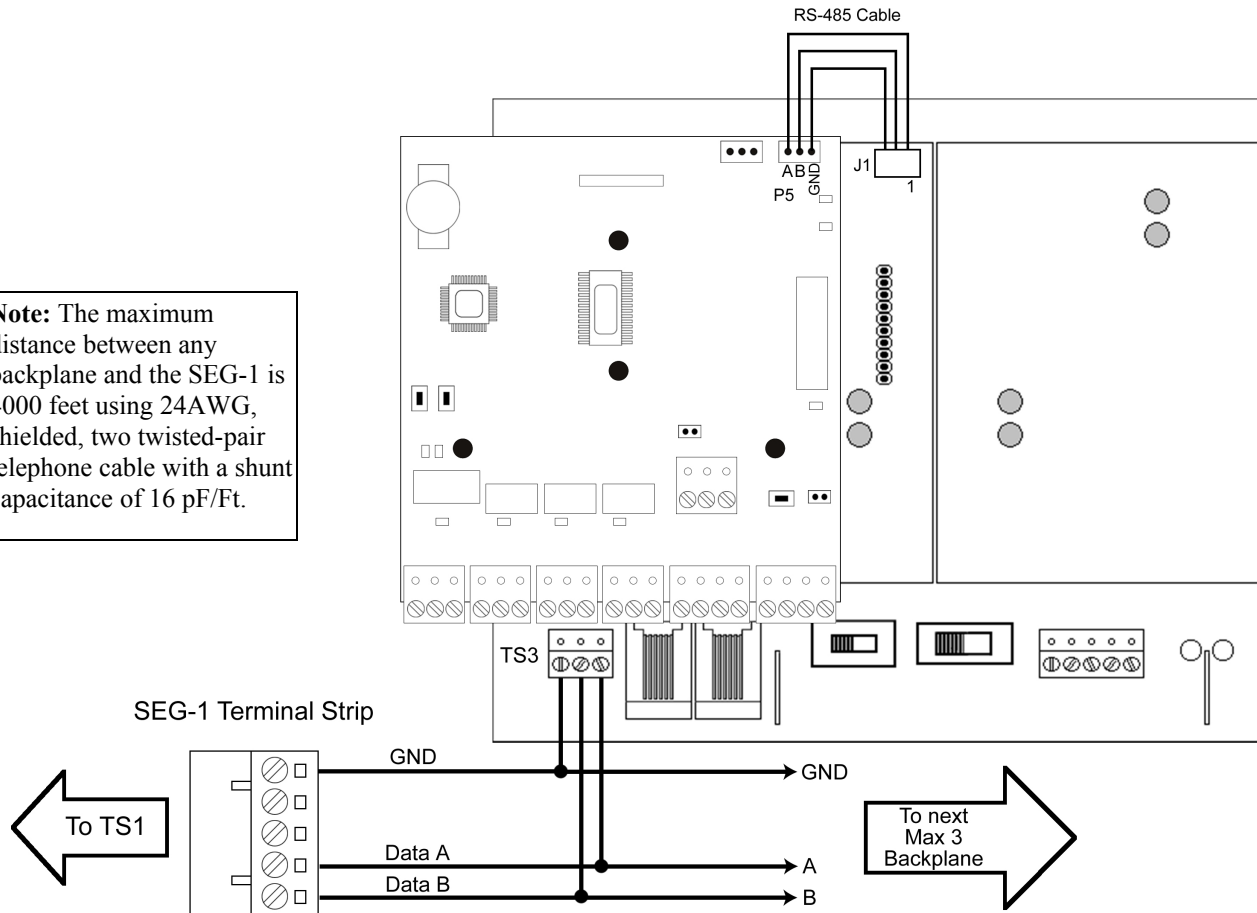


Figure 22: Connecting the SEG-1 to the Max 3

2.15 Installing a Tamper Switch

IEI recommends you install a tamper switch. The tamper switch must be mounted inside the locked cabinet and must activate if the cabinet door is opened. The tamper switch must be wired to an alarm panel or other device that sounds an alarm and/or prevents anyone from gaining access through the protected door.

IEI recommends using a Sentrol 3012 tamper switch (not provided).

To use this tamper switch, simply clip the switch on the side of the cabinet on the interior, then wire the leads to your alarm device using the appropriate cable. See diagram below.



Figure 23: Installing a Tamper Switch

2.16 Complete Connections Between the 16.5 VAC Transformer and Backplane

Connect the 16.5 VAC Transformer (included with the Max 3) to the Backplane at the terminals marked **AC** and **EGND**.

Provided with the Max 3 are Backup Battery Connection Cables. Connect these cables from your 12V battery (7AH Recommended) to the Backplane at the terminals marked **B+** and **B-**. Polarity is an issue! Be sure you know which battery terminals are positive and negative BEFORE you connect your battery to the Backplane.

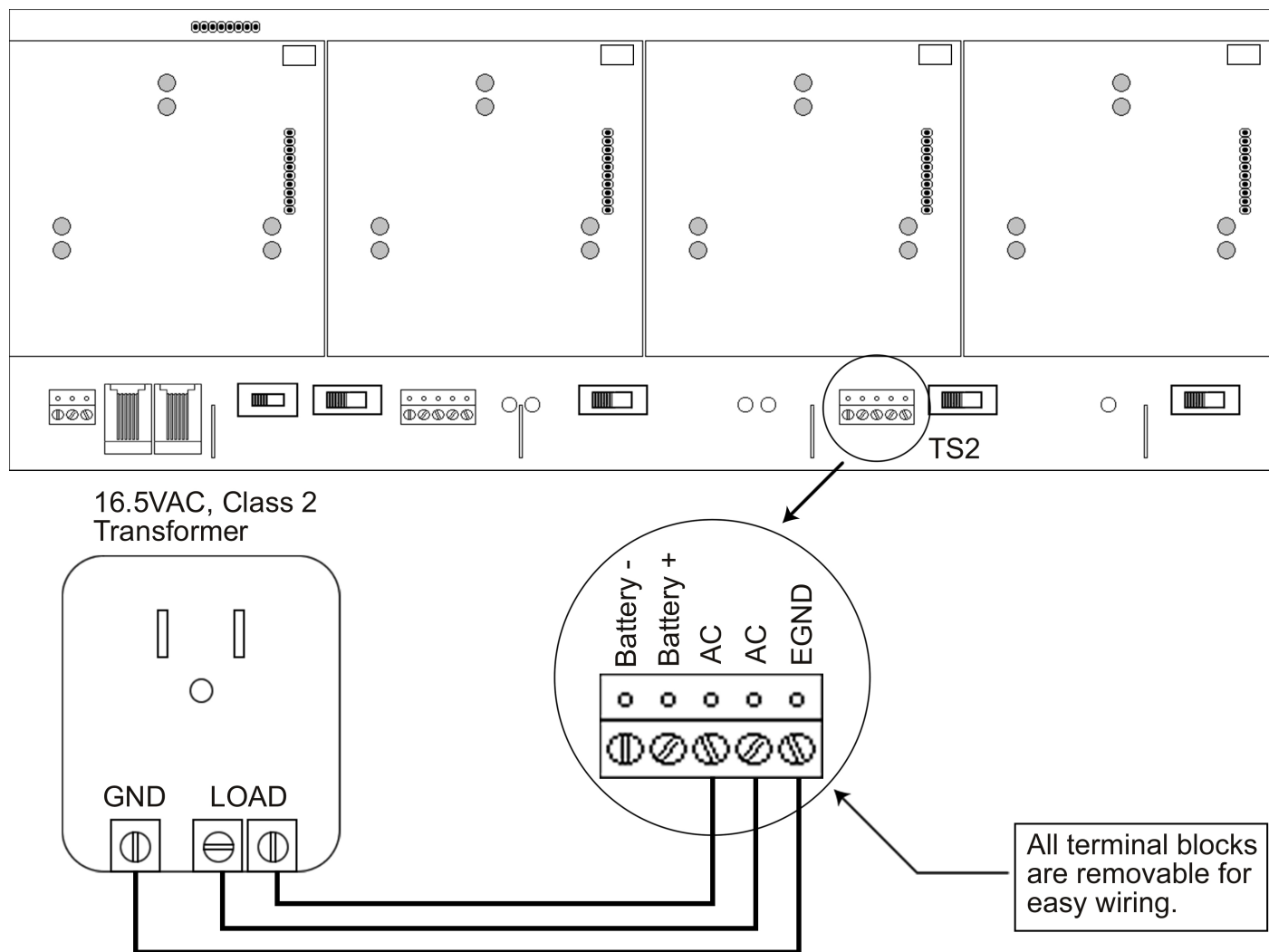


Figure 24: Completing the Transformer Connections

2.17 Power up the System

Plug the transformer into a grounded 110 VAC electrical outlet. You should now have power to your system. Check the power status by checking the following:

On the Backplane:

- LED 5 should be lit - This indicates that AC Power is present
- LED 2 should be lit - This indicates that DC Power is available on the Backplane

On the Max 3 Module:

- LED 1 should be lit - This indicates that the Max 3 Module is receiving power and functioning
- LED 4 should be lit - This indicates that the Front End Reader is receiving power

If the above requirements are met the system is now powered up and ready for programming and operation.

If the above requirements are *not* met see the Troubleshooting Section.

Section 3: Programming

This section contains the details of programming the Max 3 Door Control Module using the detachable keypad. If you are using the PC software, this section may not apply, but you may find it useful to familiarize yourself with the various features available in the Max 3. To see a complete list of programming commands refer to the programming options chart at the end of this section.

3.1 Programming Methods

There are two ways you can program the Max 3 Door Control Module. You can either program it using the detachable keypad or you can program it using the PC software. Using the PC software gives you access to many more features than you would have programming through the keypad only. This manual covers only programming through the keypad, although it does refer to features that require the PC software to use to it's fullest extent.

The diagram below shows how to connect the detachable keypad to the Door Control Module. The keypad comes pre-installed on the first module, but to program additional modules you must remove it and connect to the module you are programming.

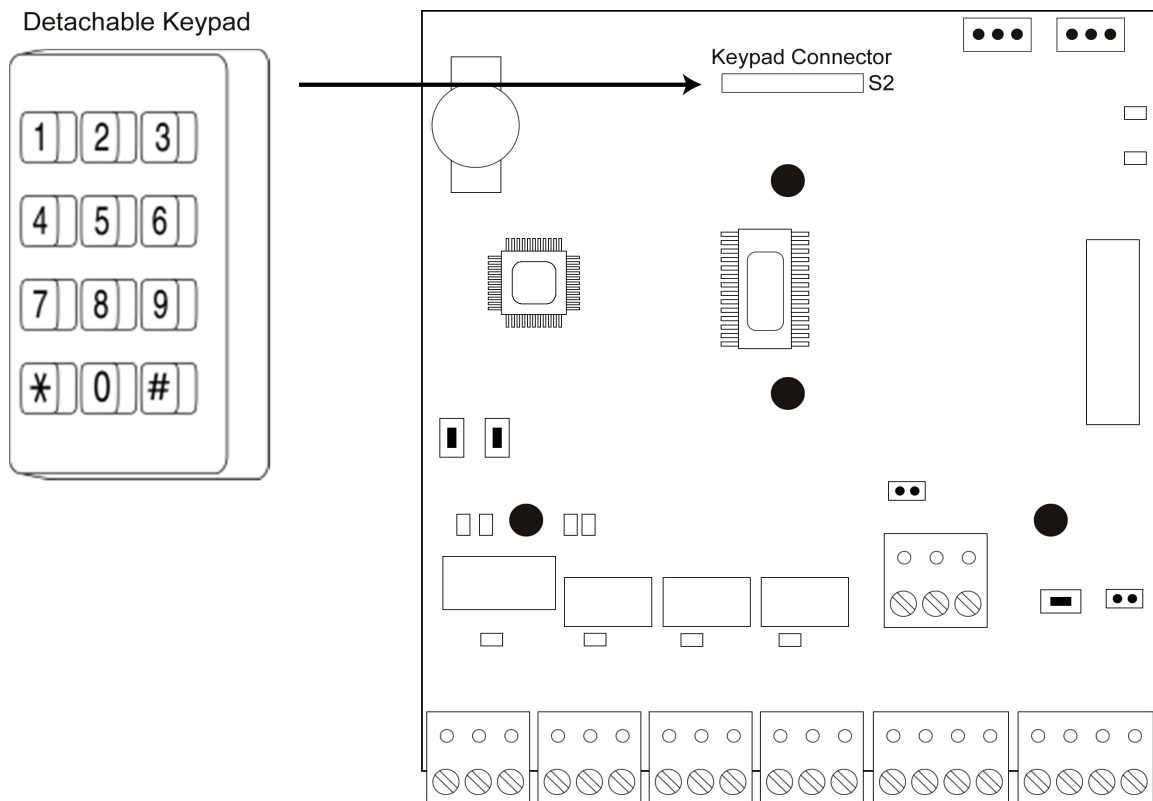


Figure 25: Plug on Detachable Keypad

3.2 Entering Program Mode and Changing the Master Code

The following sections explain how to enter program mode and change the master code. You also have the option to program a supervisor user, which allows an additional person to add and delete users.

3.2.1 Entering Program Mode

The first step in programming the Max 3 Door Control Module is to place it into program mode by using the master code, which is defaulted to 1234.

To place the unit in program mode, press: **99 # Master Code ***

When the unit is in program mode the yellow LED flashes slowly.

When you are done programming, to exit program mode press the * key and the yellow LED stops flashing.

If at any point you make a programming error (either press a wrong key or perform a command the unit does not recognize), the unit produces a program error by turning on the yellow LED solid. To clear a program error, simply press the * key.

Note: If you don't know the master code press the program button (SW1) on the main circuit board. Momentarily pushing this button forces the unit into program mode. You then should change the master code immediately.

3.2.2 Changing the Master Code

The master code is stored in user memory location 1 and used to enter program mode. To change the master code use the following programming sequence:

Action	Command
Enter Program Mode	99 # master code *
Change Master Code	1 # new master code * new master code *
Exit Program Mode	*

Note: Throughout the programming section the last step is to exit program mode. If you are going to program multiple users or keypad options, you are not required to exit program mode after each command sequence. You may continue to the next programming command without exiting program mode. When all your programming is complete, you can then exit program mode by pressing the * key.

3.2.3 Programming a Supervisor Code

The following table shows how to program a supervisor code. User location 2 is reserved for the supervisor code. This user has access to only user programming commands and can't change other system related options and parameters.

Action	Command
Enter Program Mode	99 # master code *
Program a Supervisor Code	2 # new code * new code *
Exit Program Mode	*

3.3 Changing the Door Number

Each Max 3 Door Control Module is assigned a door address or door number. The door number is used to identify each unit when they are networked together. You can network up to 64 Max 3 Door Control Modules together. You must change the door number when you are using the PC software. The default door number is 1. To change it, follow the instructions below.

Action	Command
Enter Program Mode	99 # master code *
Change the Door Number	43 # 0 # Door Number # * *
Exit Program Mode	*

3.4 Changing the Main Relay Time

The Main Relay Time is defaulted to operate for 5 seconds. Command 11 is used to reprogram this time. This time affects standard unlock users (type 1). If you need to program the Main Relay to toggle, you must program a toggle user. See the user section for details on user types.

Action	Command
Enter Program Mode	99 # master code *
Change Main Relay Time	11 # unlock time * 0 * (1 to 255 seconds)
Exit Program Mode	*

3.5 Setting the Time and Date

You must program the time and date into each Door Control Module in order for the timezone and transaction event log features to work. Follow the instructions below to reprogram the time and date.

Action	Command
Enter Program Mode	99 # master code *
Set the Time	41 # HHMM # 0 # ** (HH = Hours; MM = Minutes) Time is in 24 hour format.
Set the Date	42 # MMDDYY # DOW # ** (MM = Month; DD = Day; YY = Year; DOW = Day of Week: 1 = Sunday, 2 = Monday, 3 = Tuesday, 4 = Wednesday, 5 = Thursday, 6 = Friday, 7 = Saturday)
Exit Program Mode	*

3.6 Programming Users

The following section describes in detail how to program users. Each Max 3 Door Control Module can store up to 2000 users. Each user is stored in a unique position in the units memory. This is referred to as the user location. Codes can be from 1 to 6 digit in length in any combination. If at any point while programming a code or a card you get a programming error (solid yellow LED), and you know you are entering the command correctly, make sure that the code or card is not already programmed. If you are unsure try entering that code or presenting that card outside of program mode and see if you are granted access. If so, you must use a different code or card for that user.

Note: IEI recommends that, if you are not using software, you keep a list of all the users you have programmed in the device, in case you need to modify or delete a particular user later on.

3.6.1 User Types

The table below identifies and describes the four user types supported by the Max 3. The user type number is used in programming commands in the subsequent sections where it indicates “user type.”

Table 4: User Types

User Type Name	User Type Number	Description
Toggle User	0	Toggle users are used to latch the Main Relay in the unlocked position for an indefinite period of time. Entering the same (or another) toggle code, re-locks the unit.
Standard Access	1	Normal access users are the default user type. This user type unlocks the door for the duration of the Main Relay Time set in command 11. See section 3.4 for details.
Lockout User	3	A Lockout user is used to lock out other users from gaining access through the door. Refer to section 3.10 for details on user lockout.
Extended Unlock User	4	Extended Unlock users operate like standard access users, except they use a different unlock time programmed using command 32, parameter 3. It is defaulted to 10 seconds. See section 3.8 for details.
Singe Use User	5	Single use users are allowed to gain access only once. After you enter this code/card the user is deleted from memory.
Relock User	6	A Relock user is used to relock the door if it was toggled open or is in auto-unlock. Once entered, the door relocks immediately.
Emergency User	7	An Emergency user is a special user that can't be locked out by a user lockout code. This user also uses the extended unlock time. It is defaulted to 10 seconds. See section 3.8 for details.

3.6.2 Programming a “Code Only” User

To program a “Code Only” use command 50. This user gains access by entering their code on the keypad. Refer to table 4 for details on user types. Codes can be from 1 to 6 digit in length in any combination. The programming sequence is as follows:

Note: This programming command applies to Secured Series Front End Keypads only.

Action	Command
Enter Program Mode	99 # master code *
Program User	50 # user type # user location # code * repeat code *
Exit Program Mode	*

3.6.3 Programming “Card Only” Users by Presentation

To program a “Card Only” user by presentation (by presenting the card to the reader) use command 50. This user type gains access by presenting their card to the front end reader. Refer to table 4 for details on user types. The programming sequence is as follows:

Action	Command
Enter Program Mode	99 # master code *
Program User	50 # user type # user location # * * <present card>
Exit Program Mode	*

3.6.4 Programming 26-Bit “Card Only” Users without Presentation

To program a 26-Bit “Card Only” user without presentation (without presenting the card to the front end reader) use command 51. Refer to table 4 for details on user types. This command is useful, if you want to program a card, but you don't have the physical card with you. **When programming cards with this command, you must program the facility code, using command 32, parameter 2, prior to programming users.** The programming sequence to program cards is as follows:

Note: This programming command applies to Wiegand Front Ends only.

Action	Command
Enter Program Mode	99 # master code *
Program User	51 # user type # user location # card number * card number *
Exit Program Mode	*

3.6.5 Programming “Code AND Card” Users

When you are a combination “code and card” user you can present either your card/touch chip first at the front end reader or enter the code first on the front end keypad. Codes can be from 1 to 6 digit in length in any combination. Refer to table 4 for details on user types. After you either present your card or enter your code, the red and green LEDs alternate (if unit is equipped with LEDs). This indicates that the unit is awaiting the second part of the combination before granting access. Once access is granted, the LED turns solid green (if unit is equipped with LED) and the door unlocks. The programming sequence is as follows:

Note: This programming command applies to Secured Series Front End Keypads and Card Readers only.

Action	Command
Enter Program Mode	99 # master code *
Program User	50 # user type # user location # code * repeat code * <present card>
Exit Program Mode	*

3.6.6 Programming “Code or Card” Users

To program a “Code OR Card” user use command 52. This type of user can use either their code or card to gain access. Codes can be from 1 to 6 digit in length in any combination. Refer to table 4 for details on user types. The programming sequence is as follows:

Note: This programming command applies to Secured Series Front End Keypads and Card Readers only.

Action	Command
Enter Program Mode	99 # master code *
Program User	52 # user type # user location # code * repeat code * <present card>
Exit Program Mode	*

3.6.7 Programming 26-Bit “Card Only” Users via Batch Entry without Presentation

To program a 26-Bit “Card Only” user via batch entry without presentation (without presenting the card to the front end reader) use command 57. “Batch entry” allows you to enter multiple, sequential 26-Bit format cards into the unit’s memory at one time. Up to 1,998 users can be added this way at one time. (User 1 is reserved for the Master code and user 2 is reserved for the supervisor). When programming cards with this command, you must program the facility code, using command 32, parameter 2, prior to programming users.

Note: This programming command applies to Wiegand Front Ends only.

Action	Command
Enter Program Mode	99 # master code *
Program User	57 # number of users # starting user location # card number * card number *
Exit Program Mode	*

3.6.8 Programming Consecutive “Card Only” Users via Batch Entry by Presentation

To program consecutive “Card Only” user via batch entry by presentation (by presenting cards to the front end reader) use command 53. This command provides a simple method of programming a group of consecutive users by presenting the appropriate cards. Up to 1,998 users can be added this way at one time. Entering location 1 (master code) or location 2 (supervisor user) as the first card in the sequence generates an error because the master and supervisor codes cannot be programmed as a “Card Only” user. The card loading stops automatically once the current user location exceeds 2000. Pressing any key on the faceplate aborts the loading process.

Action	Command
Enter Program Mode	99 # master code *
Program Users	53 # user type # starting user location # * * <present card>, <present card>,
Exit Program Mode	*

3.6.9 Command 50 Quick Program Feature - “Code Only” or “Card Only”

The Max 3 contains a quick method for programming standard access user type users that are usually programmed using command 50. When using this method the 50 is not required in the command sequence.

Action	Command
Enter Program Mode	99 # master code *
Program “Code Only” User	user location # * code * repeat code *
Program “Card Only” User	user location # * * <present card>
Exit Program Mode	*

3.7 Deleting Users

There are two methods for deleting users from the Max 3. You can either delete a single user or you can delete a block of consecutive users. You must know the user locations for user(s) you wish to delete in order to do this.

3.7.1 Delete a Single User

To delete a single user, follow the steps below.

Action	Command
Enter Program Mode	99 # master code *
Delete User	user location # * *
Exit Program Mode	*

3.7.2 Delete a Block of Users

You can delete a block of consecutive users using command 58. This command requires you enter the starting user location you want the deletion to begin and how many users from that point you want to delete. You must enter each value twice to ensure that you've entered the correct number. Every user from the starting location to the ending user location is deleted. For example if you want to delete user 10 to user 25, enter 10 in the start user value and 15 in the number of users value.

To delete a block of users, follow the steps below.

Action	Command
Enter Program Mode	99 # master code *
Delete Users	58 # start user # start user # number of users * number of users *
Exit Program Mode	*

3.8 Programming Extended Unlock Time

The extended unlock time is the time used by the extended unlock user type (type 4) and emergency users (type 7). This time is defaulted to 10 seconds.

Action	Command
Enter Program Mode	99 # master code *
Program Extended Unlock Time	32 # 3 # unlock time # * * (1 to 255 seconds)
Exit Program Mode	*

3.9 Programming Facility Code

This command is used to set the facility code used when programming 26-bit wiegand cards using commands 51 and 57. When using these commands, the controller takes the programmed facility code and builds the 26-bit card data to store in the user location. The default value is 11.

Action	Command
Enter Program Mode	99 # master code *
Program Facility Code	32 # 4 # facility # * * (0 to 255)
Exit Program Mode	*

3.10 Programming User Lockout

User lockout is used to lock down the controller so users cannot gain entrance through the door. If a locked out user attempts to gain access after a lockout code (user type 3) is entered the front end indicates an error condition. On a Secured Series Front End, the yellow LED (if equipped) lights for 2 seconds. On a Wiegand Front End, the sounder activates for 2 seconds.

Note: The master code, supervisor user and emergency users can't be locked out.

User lockout locks out users by location. This means that any user in higher user location than the lockout user used to initiate lockout does not gain access. For example if the lockout user is in user location 6, users from locations 7 through 2000 do not have access.

By default, user lockout is enabled. If you wish to turn it off see the command below.

Action	Command
Enter Program Mode	99 # master code *
Enable User Lockout	30 # 5 # 1 # * * (default)
Disable User Lockout	30 # 5 # 0 # * *
Exit Program Mode	*

3.11 Programming the Door Ajar Output Time

To program the Door Ajar Output use command 44. You can program it from 10 to 990 seconds in 10 second increments. The default value is 30 seconds, which means the output triggers if the door position switch is held open for 30 seconds. The command sequence is as follows:

Action	Command
Enter Program Mode	99 # master code *
Delete Users	44 # time # 0 # ** (10 to 990 Seconds)
Exit Program Mode	*

3.12 Programming the Forced Door Time

To program the Forced Door time use command 45. You can program it from 10 to 990 seconds in 10 second increments. The default value is 10 seconds, which means the output triggers immediately after 10 seconds. The command sequence is as follows:

Action	Command
Enter Program Mode	99 # master code *
Delete Users	45 # time # 0 # ** (10 to 990 Seconds)
Exit Program Mode	*

3.13 Using the Default Auto-Unlock Timezone

The Max 3 Door Control Module contains a default Auto-Unlock timezone from 9:00 A.M. To 5:00 P.M. Software is not required for this feature to work. First you must enable timezones and then enable auto-unlock timezones. If you want it to operate as a first-in auto-unlock timezone you must also enable that feature.

Note: If you require additional timezones you must use the PC software.

3.13.1 Enable/Disable Timezones

Use the following command to enable or disable timezones.

Action	Command
Enter Program Mode	99 # master code *
Enable Timezones	30 # 9 # 1 # * *
Disable Timezones	30 # 9 # 0 # * *
Exit Program Mode	*

3.13.2 Enable/Disable Auto-Unlock

Use the following command to enable or disable auto-unlock.

Action	Command
Enter Program Mode	99 # master code *
Enable Auto-Unlock	30 # 11 # 1 # * *
Disable Auto-Unlock	30 # 11 # 0 # * *
Exit Program Mode	*

3.13.3 Enable/Disable First-In Auto-Unlock

Use the following command to enable or disable first-in auto-unlock.

Action	Command
Enter Program Mode	99 # master code *
Enable First-In Auto-Unlock	30 # 12 # 1 # * *
Disable First-In Auto-Unlock	30 # 12 # 0 # * *
Exit Program Mode	*

3.14 Programming Error Lockout

Error lockout is used to prevent someone from attempting to gain access by guessing a code or presenting cards. When the number of invalid attempts is reached (error lockout threshold), the unit locks out any attempt to enter a code or present a card for the time programmed in the error lockout duration. When this occurs the yellow LED on a Secured Series Front End or the sounder on a Wiegand Front End is turned on for the duration.

3.14.1 Setting the Error Lockout Threshold

To set the error lockout threshold use the following command. The default is 3 attempts.

Action	Command
Enter Program Mode	99 # master code *
Program Error Lockout Threshold	32 # 0 # attempts # * * (1 to 50 attempts)
Exit Program Mode	*

3.14.2 Setting the Error Lockout Duration

To set the error lockout duration use the following command. The default is 10 seconds.

Action	Command
Enter Program Mode	99 # master code *
Program Error Lockout Time Duration	32 # 1 # time duration # * * (1 to 255 seconds)
Exit Program Mode	*

3.15 Programming Wiegand LED Active State

This command is used to program the wiegand LED terminal active state, which controls the wiegand front end's LED to indicate whether the door is locked or not. By default the wiegand LED terminal is high (13.8 Volts) and when a programmed card is presented and is validated, the LED terminal goes low (Ground) when access is granted. This is known as active low. An active high state is just the opposite. The LED terminal is low and goes high on a valid access.

Action	Command
Enter Program Mode	99 # master code *
Set Wiegand LED Active State to Low	30 # 16 # 0 # * * (default)
Set Wiegand LED Active State to High	30 # 16 # 1 # * *
Exit Program Mode	*

3.16 Programming Wiegand Sounder Active State

The wiegand sounder terminal (SND) is used to indicate an error condition on a wiegand front end by using the reader's sounder (if available). When an access denied error condition such as user lockout, user disabled or bad timezone occurs the sounder terminal changes state for 2 seconds, which generates a solid tone on the reader's sounder. When error lockout occurs, the terminal changes state for the amount of time programmed for the error lockout duration (command 32, parameter 1). By default the sounder state is set to active low. This means that the terminal is normally high (13.8 Volts) and goes low (Ground) on an error condition. Setting the state to an active high means the terminal is normally low (Ground) and goes high (13.8 Volts) on error condition.

Action	Command
Enter Program Mode	99 # master code *
Set Wiegand Sounder Active State to Low	30 # 17 # 0 # * * (default)
Set Wiegand Sounder Active State to High	30 # 17 # 1 # * *
Exit Program Mode	*

3.17 Enable/Disable Control Module Audio Indicators

Control Module audio indicators refers the the sounds generated by the controller to indicate various conditions after a code is entered or card is presented at the front end. This feature should be used mainly for troubleshooting purposes, since you wouldn't be able to hear the audio indicators when the cabinet is closed. For instance, you may want to enable this to find out why someone is being denied access.

Note: These audio alerts only occur on the control module not on the front end.

Action	Command
Enter Program Mode	99 # master code *
Disable Audio Indicators	30 # 18 # 0 # * * (default)
Enable Audio Indicators	30 # 18 # 1 # * *
Exit Program Mode	*

Table 5: Control Module Audio Indicators

Condition	Sounder Indication
Invalid Code or Card	3 Very Rapid Beeps
User Lockout Activated	Pair of Double Beeps
User Lockout Canceled	Single Double Beep
Access Denied – User Disabled	1 Long Beep Followed by 1 short Beep
Access Denied – Bad Timezone	1 Long Beep Followed by 2 short Beeps
Access Denied – User Lockout	1 Long Beep Followed by 3 short Beeps
First-In Auto-Unlock Activated	4 Quick Beeps
Toggle Mode Activated	6 Quick Beeps

3.18 Resetting System Defaults and Erasing Memory

There are two methods for deleting programmed information from the Max 3 Door Control Module. The first method is using command 40, which resets the system defaults and the master code only. The second method is through command 46, which erases all the memory in the unit, except the transaction log.

3.18.1 Resetting the Master Code and System Defaults Only

Entering command 40 erases everything from memory except the user list and transaction log and restores the default settings. This is useful if the unit has experienced programming problems, or wish to delete earlier programming.

Action	Command
Enter Program Mode	99 # master code *
Reset System Defaults	40 # 00000 # 00000 # * *
Exit Program Mode	*

3.18.2 Erasing Entire Memory/Resetting System Defaults

Entering command 46 deletes everything from memory including the user list but not the transaction log and restores the default settings. This is used as a last resort if you need to erase a specific user and do not have a programmed user list.

Action	Command
Enter Program Mode	99 # master code *
Erase Entire Memory	46 # 00000 # 00000 # * *
Exit Program Mode	*

3.18.3 Erasing the Transaction Event Log

If you need to erase the transaction event log use command 76. Once you've done this command the transaction log is erased permanently.

Note: The PC software is required to view the transaction log.

Action	Command
Enter Program Mode	99 # master code *
Erase Transaction Event Log	76 # 00000 # 00000 # * *
Exit Program Mode	*

3.19 Programming Daylight Savings Time

The Max 3 Module supports Daylight Savings Time, which can be enabled or disabled by using the commands below. Daylight Savings Time is enabled by default.

3.19.1 Enabling/Disabling Daylight Savings Time

The following chart shows how to enable or disable Daylight Savings Time.

Action	Command
Enter Program Mode	99 # master code *
Enable Daylight Savings Time	30 # 13 # 1 # ** (default)
Disable Daylight Savings Time	30 # 13 # 0 # **
Exit Program Mode	*

3.19.2 Selecting Daylight Savings Time Format

Below is the command to select which Daylight Savings Time format you wish to use, United States (US) or European. Below the command is a chart containing the definition of the two formats. Please note that the Max 3 supports the US 2007 Daylight Saving Time.

Action	Command
Enter Program Mode	99 # master code *
Select US Daylight Savings Time Format	30 # 15 # 0 # ** (default)
Select European Daylight Savings Time Format	30 # 15 # 1 # **
Exit Program Mode	*

US DST Format	
Begins	Second Sunday in March at 2:00 AM
End	First Sunday in November at 2:00 AM
European DST Format	
Begins	Last Sunday in March at 2:00 AM
Ends	Last Sunday in October at 2:00 AM

3.20 Programming Options Chart

The following chart is a complete list of programming commands available in the Max 3 Door Control Module. This chart is for quick reference. Please refer to the preceding sections for complete details of each command. Defaults are in bold.

Table 6: Programming Options Chart

Action Desired	Press	Details																																				
Enter Program Mode	99 # (Master Code)*	Yellow LED blinks slowly																																				
Change Master Code	1 # (new code) * (repeat code) * Ex: 1 # 4321 * 4321 *	Code-only operation																																				
Add Supervisor Code	2 # (new code) * (repeat code) * Ex: 1 # 6478 * 6478 *	Code-only operation																																				
Set Main Relay Time	11 # time # 0 # **	Time = 1-99 seconds (default = 5 seconds)																																				
Set/clear standard option	30 # option # s/c # **	See Chart below																																				
<table> <tr> <th>Option</th><th>Set</th><th>Clear</th></tr> <tr> <td>0 – Audio Keypress Feedback</td><td>0 = Disabled</td><td>1 = Enabled</td></tr> <tr> <td>1 – Visual Keypress Feedback</td><td>0 = Disabled</td><td>1 = Enabled</td></tr> <tr> <td>5 – User Lockout Enable</td><td>0 = Disabled</td><td>1 = Enabled</td></tr> <tr> <td>9 – Time Zone Select</td><td>0 = Disabled</td><td>1 = Enabled</td></tr> <tr> <td>11 – Auto-Unlock Select</td><td>0 = Disabled</td><td>1 = Enabled</td></tr> <tr> <td>12 – First-In Auto-Unlock</td><td>0 = Disabled</td><td>1 = Enabled</td></tr> <tr> <td>13 – Daylight Savings Time</td><td>0 = Disabled</td><td>1 = Enabled</td></tr> <tr> <td>15 – Daylight Savings Time Format</td><td>0 = US</td><td>1 = European</td></tr> <tr> <td>16 – WFE LED Output Select</td><td>0 = Active Low</td><td>1 = Active High</td></tr> <tr> <td>17 – WFE Sounder Output Select</td><td>0 = Active Low</td><td>1 = Active High</td></tr> <tr> <td>18 – Control Module Audio Indicators</td><td>0 = Disabled</td><td>1 = Enabled</td></tr> </table>			Option	Set	Clear	0 – Audio Keypress Feedback	0 = Disabled	1 = Enabled	1 – Visual Keypress Feedback	0 = Disabled	1 = Enabled	5 – User Lockout Enable	0 = Disabled	1 = Enabled	9 – Time Zone Select	0 = Disabled	1 = Enabled	11 – Auto-Unlock Select	0 = Disabled	1 = Enabled	12 – First-In Auto-Unlock	0 = Disabled	1 = Enabled	13 – Daylight Savings Time	0 = Disabled	1 = Enabled	15 – Daylight Savings Time Format	0 = US	1 = European	16 – WFE LED Output Select	0 = Active Low	1 = Active High	17 – WFE Sounder Output Select	0 = Active Low	1 = Active High	18 – Control Module Audio Indicators	0 = Disabled	1 = Enabled
Option	Set	Clear																																				
0 – Audio Keypress Feedback	0 = Disabled	1 = Enabled																																				
1 – Visual Keypress Feedback	0 = Disabled	1 = Enabled																																				
5 – User Lockout Enable	0 = Disabled	1 = Enabled																																				
9 – Time Zone Select	0 = Disabled	1 = Enabled																																				
11 – Auto-Unlock Select	0 = Disabled	1 = Enabled																																				
12 – First-In Auto-Unlock	0 = Disabled	1 = Enabled																																				
13 – Daylight Savings Time	0 = Disabled	1 = Enabled																																				
15 – Daylight Savings Time Format	0 = US	1 = European																																				
16 – WFE LED Output Select	0 = Active Low	1 = Active High																																				
17 – WFE Sounder Output Select	0 = Active Low	1 = Active High																																				
18 – Control Module Audio Indicators	0 = Disabled	1 = Enabled																																				

Action Desired	Press	Details										
Change Platform Parameters	32 # parameter # value # **	See Chart Below										
<table><tr><th>Parameter</th><th>Value</th></tr><tr><td>0 – Error Lockout Threshold</td><td>1 – 50 Attempts (Default = 3)</td></tr><tr><td>1 – Error Lockout Duration</td><td>1-255 Sec. (Default = 10 Sec.)</td></tr><tr><td>3 – Extended User Unlock Time</td><td>1-255 Sec. (Default = 10 Sec.)</td></tr><tr><td>4 – Facility Code (For commands 51 & 57)</td><td>0 – 255 (Default = 11)</td></tr></table>			Parameter	Value	0 – Error Lockout Threshold	1 – 50 Attempts (Default = 3)	1 – Error Lockout Duration	1-255 Sec. (Default = 10 Sec.)	3 – Extended User Unlock Time	1-255 Sec. (Default = 10 Sec.)	4 – Facility Code (For commands 51 & 57)	0 – 255 (Default = 11)
Parameter	Value											
0 – Error Lockout Threshold	1 – 50 Attempts (Default = 3)											
1 – Error Lockout Duration	1-255 Sec. (Default = 10 Sec.)											
3 – Extended User Unlock Time	1-255 Sec. (Default = 10 Sec.)											
4 – Facility Code (For commands 51 & 57)	0 – 255 (Default = 11)											
Set System Time	41 # hhmm # 0 # **	hhmm=hour/minute (24 Hour Format)										
Set System Date	42 # mmddyy # dow # **	mmddyy=month, date, year; dow=day of week, 1=Sunday										
Set Door Number	43 # 0 # Door Number # **											
Set Door Ajar Time	44 # time # 0 # **	Time =door ajar time, to nearest 10’s seconds, entered as 30-990; (default=30 secs)										
Set Forced Door Time	45 # time # 0 # **	Time =forced door time, to nearest 10’s seconds, entered as 30-990; (default=10 secs)										
Reset System Defaults Only	40 # 00000 # 00000 # **	Does not delete users										
Delete Entire Memory and Reset System Defaults	46 # 00000 # 00000 # **	Deletes all memory including users										
Program User – Code Only	50 # user type # user location # code *repeat code *	User Types: 0 – Toggle 1 – Standard 3 – Lockout 4 – Extended 5 – Single Use 6 – Relock 7 - Emergency										
Program User – Code AND Card By Presenting Card	50 # user type # user location # code *repeat code ** <present card>	User Types: 0 – Toggle 1 – Standard 3 – Lockout 4 – Extended 5 – Single Use 6 – Relock 7 - Emergency										
Program User - Card Only By Presenting Card	50 # user type # user location # ** <present card>	User Types: 0 – Toggle 1 – Standard 3 – Lockout 4 – Extended 5 – Single Use 6 – Relock 7 - Emergency										

Action Desired	Press	Details
Program User – Card Only Without Presenting Card	51 # user type # user location # card PIN * card PIN *	User Types: 0 – Toggle 1 – Standard 3 – Lockout 4 – Extended 5 – Single Use 6 – Relock 7 - Emergency For 26-bit Cards only. The card PIN appears on the card (Facility code must be entered first; see 32 # 4 # command)
Program User – Code OR Card By Presenting Card	52 # user type # user location # code * repeat code * <present card>	User Types: 0 – Toggle 1 – Standard 3 – Lockout 4 – Extended 5 – Single Use 6 – Relock 7 - Emergency
Program Consecutive Users – Card Only By Presenting Cards	53 # user type # start user # ** <present card> <present card> ...	User Types: 0 – Toggle 1 – Standard 3 – Lockout 4 – Extended 5 – Single Use 6 – Relock 7 - Emergency Simply present one card after another.
Enable/Disable Users	56 # enable/disable # user location # **	Enable = 0 Disable = 1
Program Consecutive Users – Card Only Without Presenting Cards	57 # number of users # user location # card PIN * card pin *	“Number of Users” = total number of cards to be entered; card PIN appears on card; a facility code must be entered first (see command 32, option # 4)
Delete Block of Consecutive Users	58 # start user # start user # number of users * number of users *	
Delete User	user location # **	
Erase Transaction Log	76 # 00000 # 00000 # **	

Section 4: Troubleshooting

The following section contains information on troubleshooting and performing the keypad self-test.

4.1 Troubleshooting Chart

Table 7: Troubleshooting Chart

Max 3 Backplane	
Symptom	Probable Solution
LED 5 is not lit.	1. Disconnect the transformer from the Backplane and read the AC output. 2. Verify the AC output from the transformer is 16.5 VAC
If the transformer reads 16.5 VAC and LED 5 is not lit.	1. Unplug the transformer from the electrical outlet. 2. Reconnect the transformer to the Backplane. 3. Confirm you have solid connections on the TS2 Terminal Block. 4. Plug transformer back into electrical outlet. 5. If problem persists CALL IEI TECH SUPPORT.
If the transformer does not read 16.5 VAC.	1. Unplug the transformer from the electrical outlet. 2. Read the AC output from the electrical outlet and verify that 110-120 VAC is present. 3. If this voltage is not present, consult an electrician.
Max 3 Door Control Module	
Symptom	Probable Solution
LED 4 is not lit	1. This indicates that the BLACK and RED lines going to the Front End Reader may be shorted or the Front End is drawing too much current. 2. Disconnect the Front End Reader and see if LED 4 turns on. If LED 4 does not illuminate there may be a problem on your Max 3 Module. 3. CALL IEI TECH SUPPORT.

4.2 Keypad Self-Test

The keypad self-test is used to verify all the keys are operating correctly. To perform the keypad self-test enter: **7890#1234568** on the keypad for each module outside of program mode. Once completed the bi-color and yellow LEDs alternate followed by 3 beeps, then the red LED turns on solid again.

4.3 Front End Error Indicators

The following chart describes the various error conditions that can occur on the front end after entering a code/presenting a card.

Table 8: Front End Error Indicators

Error Condition	Secured Series Front End	Wiegand Front End
Access Denied – Bad Timezone	Solid Yellow LED for 2 Seconds	Sounder on Solid for 2 Seconds
Access Denied – User Lockout	Solid Yellow LED for 2 Seconds	Sounder on Solid for 2 Seconds
Access Denied – User Disabled	Solid Yellow LED for 2 Seconds	Sounder on Solid for 2 Seconds
Error Lockout	Solid Yellow LED for Length of Error Lockout Duration	Sounder on Solid for Length of Error Lockout Duration

Please refer to section 3.17 for details on the Max 3 audio indicators. These audio indicators can help you determine exactly what error is occurring if you are unsure.

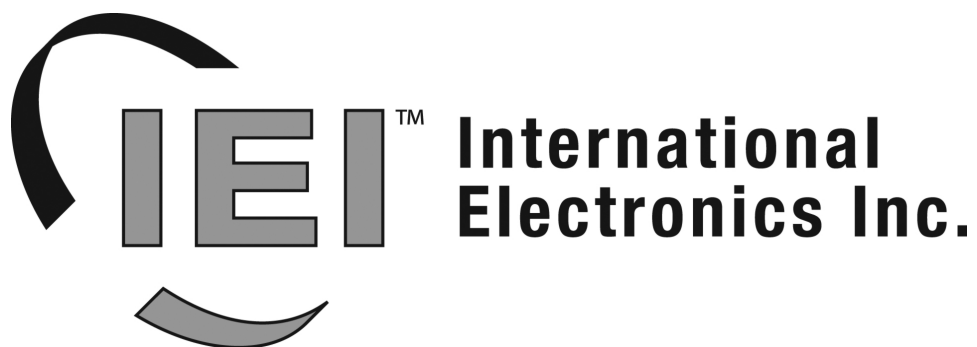
4.4 Lithium Battery Replacement

The lithium battery used for keeping the time and date is located on the upper left corner of the Door Control Module. The battery holder is labeled “BT1.”

To replace the battery, first power down the module using the On/Off switch (SW1-SW4) located on the backplane. Then remove the battery carefully by lifting it out of the holder.

Replace the battery with a Renata CR1225 or Varta CR1225 3 Volt Lithium battery. Use of another battery may present a risk of fire or explosion.

WARNING: The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in a fire.



International Electronics, Inc.
427 Turnpike St.
Canton, MA 02021 U.S.A.
Phone: 800-343-9502, 781-821-5566
Fax: 781-821-4443
Website: www.ieib.com