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ASSA ABLOY, the global leader in door opening solutions

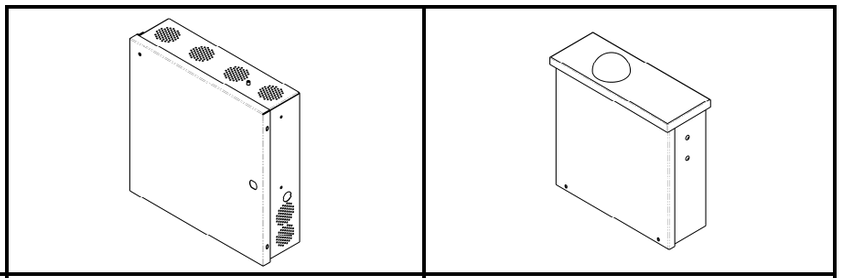
CELLULAR CONTROL MODULE CCM-2 AND CCM-2N INSTALLATION AND OPERATING INSTRUCTIONS

1. INTRODUCTION

The Cellular Control Modules CCM-2 and CCM-2N combine Securitron's renowned power supply and access control technology with an intelligent cellular and internet (web) based management system. These units provide remote access of electrically actuated lock systems using a telephone, via the internet or local Wiegand control. The CCM-2 electronics package is recommended for indoor use and is contained inside a standard Securitron (NEMA-1) power supply cabinet. The CCM-2N is for outdoor applications and is contained in a NEMA-3R cabinet. Each unit operates at 12 VDC and provides a variety of easily selectable operating functions. This manual is intended to provide the installation, electrical requirements, functional options and selectable settings required to successfully install a CCM-2 or CCM-2N unit.

Note: CelAccess™ use requires AT&T™ Cellular Service. To verify coverage in the required area go to www.wireless.att.com/coverageviewer.

2. SPECIFICATIONS



MODEL	CCM-2	CCM-2N
Use/Environment	Indoor (NEMA-1)	Outdoor (NEMA-3R)
Weight (without batteries)	13 Lbs [5.9 kg]	14 Lbs [6.4 kg]
Dimensions: Length	14.3" [363mm]	12.8" [325mm]
Height	14.3" [363mm]	13.6" [345mm]
Depth	4.1" [104mm]	4.7" [119mm]
Voltage	12 Volts DC	12 Volts DC
Current – At Rest	Up to 45mA	Up to 45mA
*Current – Operating	Up to 155mA	Up to 155mA
Operating Temperature Range (without batteries)	-22° to +140° F [-30° to +60° C]	-22° to +140° F [-30° to +60° C]
Operating Temperature Range (with batteries)	-4° to +113° F [-20° to +45° C]	-4° to +113° F [-20° to +45° C]

*Current draw shown here does not include the locking device.

3. RECOMMENDED TOOLS

- Hammer
- Center Punch
- Power Drill
- Drill bits
- Wrenches
- Pliers, vise grip
- Screwdrivers: Phillips & 1/8" Flat Blade
- Fish Tape or Lead Wire
- Wire Strippers/Cutter
- Multimeter

4. INSTALLATION INSTRUCTIONS

It is recommended that a site survey be performed to determine the mounting location prior to installation. The following should be considered:

- The area must have cellular coverage with a sufficient signal.
- Physical strength of mounting areas should provide adequate support of the installed unit.
- Adequate space should be provided for ventilation. Ensure that there is at least 2" of unobstructed space provided around the four sides of the enclosure.
- Ensure wiring can be routed to protect from damage due to intrusion or vandalism. (The enclosure is provided with knock-outs for conduit connections).

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4.1 Physical Installation

The CCM-2 is intended for indoor use and may be mounted directly to a wall. Use appropriate wall anchor hardware to secure the unit into place. A cam lock and screws have been provided to secure the hinged cover of the cabinet.

The CCM-2N is rated for outdoor use and can be wall mounted or affixed to a pole or post up to 1-1/2" diameter using the included hardware. Use short U-bolt in lower mounting holes to allow room for battery. A bracket kit accessory package for larger diameters is also available (see Section 6). A drop-in hasp for a padlock (not included) has been furnished to secure the CCM-2N cover.

The CCM-2N is furnished with its own integrated antenna (dome) affixed to the top of the unit. The CCM-2 is provided with a magnetically attachable antenna with an 8' cable. A hole is required through the cabinet that will allow the antenna cable to be routed from the modem connection to the desired location of the antenna. A simple access hole can be created by partially bending one of the cabinet electrical access knock-outs to create a feed through. The antenna base is magnetic and may be attached to any flat ferrous surface.

4.2 Electrical Installation

4.2.1 General Characteristics

Securitron's Model CCM-2 is combined with a 12 volt DC, 1 Amp power supply delivered in a single enclosure with the line voltage connection to be made by screw terminals. The unit features a regulated output with an independent sealed lead acid/gel cell battery charging capability. The voltage levels of the dedicated battery charging circuit are inherently current limited to a maximum of 100mA.

THE OUTPUT VOLTAGE MUST NOT BE ADJUSTED!

This unit meets Class 2 electrical requirements, which means that under the National Electrical Code, output wiring need not be in conduit. However, always check local building requirements to make sure of compliance with applicable wiring codes before installing these units.

4.2.2 Electrical Safety

Two conditions are present on the CCM-1 and CCM-1N power supply which present possible safety concerns. Line voltage input presents a potential high voltage shock hazard and the battery output presents a high energy hazard. If shorted, the battery output can generate sufficient heat to ignite some materials. To insure safety, note first that the cover LED is on (no LED on N version) whenever the supply offers danger, which is either if it is receiving line voltage or if the batteries are operating.

THE SUPPLY CABINET MUST ONLY BE OPENED BY TRAINED SERVICE PERSONNEL. THE AC POWER GREEN LED LOCATED ON THE POWER CONTROL BOARD IS LIT WHEN AC VOLTAGE IS PRESENT ON THE RED, ORANGE AND YELLOW TRANSFORMER WIRES. THE DC POWER RED LED IS LIT WHEN THE SUPPLY IS RECEIVING LINE VOLTAGE OR IF THE BATTERIES ARE OPERATING.

WARNING: IF A BATTERY PACK IS INSTALLED, THE VOLTAGE MUST BE 12 VOLTS.

4.2.3 Operating Characteristics

4.2.3.1 Line Voltage Input

120 VAC should be input to terminals “H”, “N”, “G”, as shown in Figure 1. The line voltage current drawn by the power supply module will be approximately 500 mA.

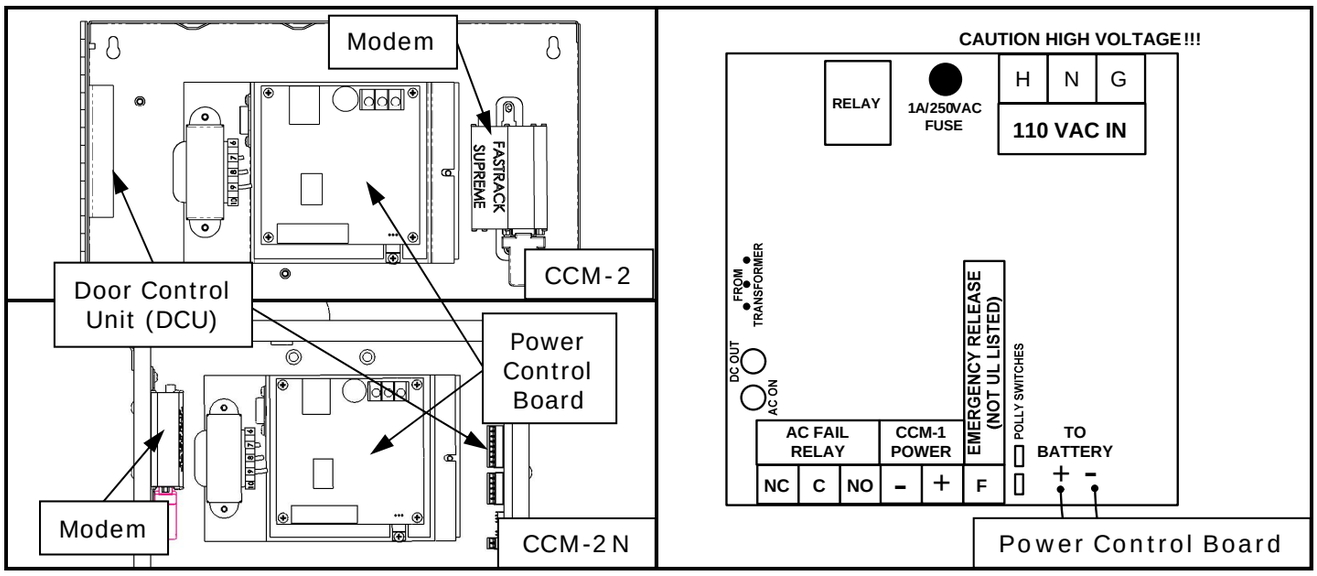

Figure 1

4.2.3.2 DC Output

The supply is capable of outputting 1 Amp when operating at 12 Volts.

4.2.3.3 LED Indicators

The AC power green LED located on the power control board is lit when AC voltage is present on the red, orange and yellow transformer wires. The DC power red LED is lit when the device is supplying DC voltage or if the batteries are supplying the operating power.

The status of LEDs can be used to diagnose certain fault conditions and are listed in Table A:

Red LED (DC) (on board)	Green LED (AC) (on board)	Description
ON	ON	Normal operation
ON	OFF	No AC detected – battery back-up is powering output
OFF	ON	No DC output – polyswitch may be tripped
OFF	OFF	No AC - no battery or polyswitch may be tripped
FOR CCM-2 ONLY: The front cover red (DC) LED is lit when DC voltage is sensed before the polyswitches. The red LED (DC) on the power control board is lit when DC voltage is sensed after the output polyswitch at the DC+ output. If the front cover red (DC) LED is lit and the red (DC) LED on the power control board is not lit, the output polyswitch may be tripped.		

Table A - LED Diagnostics

4.2.3.4 Battery Charging

The power supply incorporates a battery charging circuit appropriate for standby rated sealed lead acid or gel cell batteries. Batteries are an option. The power supply can be used with or without them. The battery pack is merely connected to the red and black battery leads following correct polarity. The batteries will be kept charged at all times by the power supply acting in concert with the components on the board. In the event of a line voltage power failure, the batteries will automatically drive the load. If the emergency release terminals are opened, battery power will, however, be cut off just as normal power from the power supply would be.

The components utilized on the unit for battery charging operate for battery packs up to 20 Amp hours in capacity. Note that certain long backup times are not achievable with the maximum size of the battery packs (“N/A” appears in the chart). Consult the battery pack chart Table B to calculate the correct battery pack based on desired backup time and the current drawn by the load.

Chart to determine the size of the battery pack

CURRENT DRAW	1HR	2HR	4HR	UL STD	8HR	16HR	24HR	48HR	72HR
150mA	5AH	5AH	5AH	5AH	5AH	5AH	8AH	8AH	12AH
300mA	5AH	5AH	5AH	5AH	5AH	8AH	12AH	16AH	N/A
500mA	5AH	5AH	5AH	5AH	8AH	12AH	16AH	N/A	N/A
750mA	5AH	5AH	8AH	12AH	12AH	16AH	20AH	N/A	N/A
900mA	5AH	5AH	8AH	12AH	12AH	N/A	N/A	N/A	N/A

Table B – Battery Pack Selection

(THIS CHART IS VALID IF BATTERIES ARE OPERATED AT ROOM TEMPERATURE).

BATTERIES MUST BE REPLACED AT LEAST EVERY 5 YEARS AS THAT IS THEIR MAXIMUM OPERATING LIFE.

BATTERIES MUST BE SEALED LEAD ACID TYPE - DO NOT USE DRY CELL OR NICAD BATTERIES.

4.2.3.5 Circuit Polyswitches and Fusing

A 1 Amp AC fuse is provided on the power control board together with 2 each 2.5 Amp DC polyswitches. The AC fuse is on the hot 120 VAC input and protects against a transformer internal short. A short in the DC load will not blow the AC fuse as the power supply is short-circuit protected. If more than the rated output is attempted to be drawn, it will shut off. A DC short, therefore, cannot damage the power supply but still will cause problems as the load will be shut off.

To protect against a short-circuit when batteries are being employed, a 2.5 Amp DC polyswitch breaker is provided. The polyswitch functions as an automatic circuit breaker. If it receives an overload, it rapidly cuts the current down to a small leakage current (about 100 mA). Once this happens the polyswitch must be reset by removing all current from the polyswitch for a period of 10 seconds. This is performed by simply disconnecting the wire from the "+" or "-" terminal. If, for example, a short-circuit occurred which tripped the polyswitch and you corrected the short but did not disconnect the wire from the "-" terminal, the polyswitch would "see" the normal load and would continue to block current flow until reset as described has been performed.

4.2.4 Electrical Wiring

All wiring to the installed unit is made to terminal blocks on the PC boards inside the cabinet. For ease of access and wiring, the door control unit (DCU) PC board is furnished with removable terminal block connectors. Ensure all wiring installation conforms to any local code requirements.

4.2.4.1 Emergency Release

Emergency release of DC output at the power supply is most easily accomplished by using the unconnected "F" terminal (see Figure 1). Connect the NC contacts of the release switch between "+" and "F" and then connect the load to "-" and "F". When the emergency release contacts open, all DC power will be cut off. When the connection is to a fire alarm system, use auxiliary latching normally closed contacts. Do not use "trouble" contacts.

4.2.4.2 AC Fail Relay

The power supply is equipped with an AC fail sense SPDT relay contact. The relay coil is energized when 120VAC power is available and de-energized otherwise. The contacts are available for connection at the terminal block (see Figure 1). When AC power is available there is continuity between terminals "C" and "NO", otherwise continuity exist between "C" and "NC". The contacts are rated for 3 Amps at 30VDC or 250VAC.

4.2.4.3 Lock Relay Wiring

The lock relay terminals ("3" and "4") located at terminal block 1 on the CCM-2 PC board are controlled by a SPST, 2 Amp dry contact relay which is factory set to 10 seconds. (This setting can be accessed and changed as necessary through the CelAccess™ web site). Either the internal CCM-2 power supply or an additional external power source (Figure 2) can be used depending on the specific installation.

The CCM-2 has two additional relays using terminals "1" & "2" and "5" & "6" which function simultaneously with the lock relay. The "1" & "2" relay is factory set to 1/2 second for use with

automatic operators, while the “5” & “6” relay is factory set to 30 seconds for additional signaling devices. The relay times can be changed via the website based user requirements.

If life safety is a concern (being installed on an emergency exit location) refer to all local codes regarding fire alarm release of electric locks. Follow the wiring in Figure 2 for external power supply wiring using a UL approved power supply.

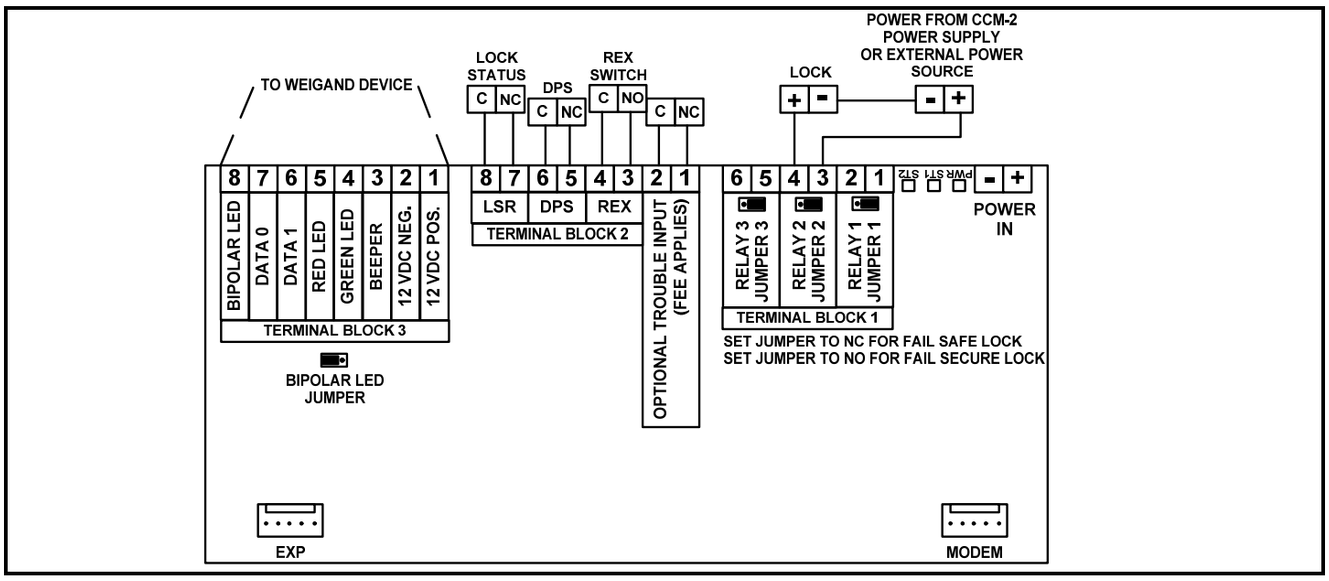

Figure 2 – Door Control Unit (DCU)

4.2.4.4 Wiegand Device Wiring

The CCM-2 will accept standard 26-bit keypads, 26-bit card readers and some non-standard devices. Carefully follow the device manufacturer’s instructions when wiring the door control unit (DCU) PC boards to terminal block 3.

5. SYSTEM OPERATIONS

5.1 General Description of Operation

The CCM-2 provides the capability of remote security access to an opening using a telephone, via the internet or local Wiegand control device. Monitoring and management of the system is also provided through a secure internet website. Setup and configuration of this remote wireless control system requires a PC with internet access and is described in the CCM-2 Web Access Quick Start Guide. Additional user selectable functions and settings that are accessed internally to the CCM-2 family are:

5.1.1 Lock Relay Jumper Function

Each of the CCM-2 relay output functions can be set individually to operate either normally open (NO) or normally closed (NC) depending on the position of each jumper (see Figure 3). For fail secure lock operations the jumper must be in the “NO” position, for fail safe operation it must be set in the “NC” position.

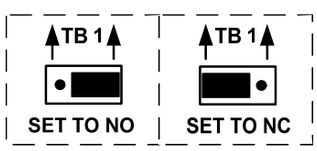

Figure 3

5.1.2 REX (Request to Exit) Function

Often, when the CCM-2 is used, provision must be made to allow people to use the door freely from the inside. If an electric strike is used, exit may be accomplished by purely mechanical means (turning the doorknob). If, on the other hand, a solenoid operated or electromagnetic lock is used, free exit is only possible if a switch on the inside releases the lock. Connection of this switch (or switches) can be accomplished using the REX input terminal of the CCM-2 (see Figure 2). When a normally open switch activates the REX terminal, the control relay of the CCM-2 will open the lock for the amount of time programmed into the CCM-2 timer. The result is the same as if the CCM-2 was used from the outside of the door. The REX terminal is activated by a closure of terminals “3” and “4” located at terminal block 2. Figure 2 shows

the simplest connection to an external normally open momentary switch. Any number of additional switches could be connected in parallel so that pressing any of them would activate the REX function. An example of when this multiple switch capability is used would be an installation with an exit button at the door and a second one at a receptionist's desk. Either could open the door for the programmed time.

There are some special characteristics as to how the REX input works. First, it does not start the timer when the input is closed but rather when it reopens. This means that you can use the REX input to release the door for an extended period of time. As long as terminals "3" and "4" remain connected, the lock will be released. When they disconnect, the lock will remain released for the amount of time programmed. This extended release capability is useful in certain applications.

The REX input is also re-triggerable. This means that if the lock has been released and the REX input is triggered, the release time will be extended to the full value that has been programmed.

SPECIAL NOTE:
When using exit switches, the possibility must be considered that an electronic failure may occur to the CCM-2 and a person will not be able to exit. If the CCM-2 controls the only door exiting the area, additional steps should be taken to improve the reliability of exiting so as to avoid trapping someone. This can most easily be done by implementing a secondary means of releasing the lock not dependent on the CCM-2's REX input. Additional switch contacts should be used which directly control the electric lock. In the case of a fail safe lock, which should always be employed when there is only one exit path, this can be easily accomplished with "double break" wiring between the exit button, electric lock, and CCM-2.

Using a DPST or DPDT exit switch, wire it so that when the exit switch is activated, the NC contacts open which releases the fail safe lock (tied in series with lock relay). At the same time, the NO contacts directly activate the REX input. This de-energizes the lock control relay which releases the lock "a second time" for the amount of time that has been programmed. If the CCM-2 suffers a failure, the exit switch can still release the lock for safety.

ALWAYS CONSULT LOCAL BUILDING OR FIRE DEPARTMENT WHEN SECURING DOORS THAT ARE PART OF AN EMERGENCY EXIT PATH TO ENSURE COMPLIANCE WITH LOCAL CODES.

5.1.3 Bipolar LED Jumper Function

For devices using one wire for both the red and green LEDs, the CCM-2 can reverse the LED logic by changing the position of the Bicolor LED jumper (see Figure 4). Factory default is red="decline" and green="accept".

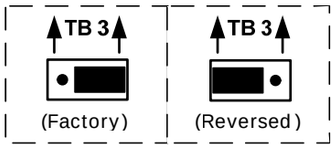

Figure 4

5.2 System Functions

5.2.1 Setting Lock Release Time and Hold Open

The CCM-2 will release the lock device it controls for a factory set default time of 10 seconds. This can be changed by altering the settings via the website. (This may take several moments to update).

The CCM-2 will operate in Hold Open if programmed through the website to do so. In Hold Open operation, the relay will energize when activated by an authorized Hold Open command and will de-energize either when the Hold Open time expires or when initiated by an authorized close command. Hold Open mode is generally used for applications where the door is released all day and then secured again all night.

5.2.2 Anti-Tailgating/Auto-Relock Function

When the CCM-2 is used (or the REX input is used), the lock will release for the amount of time programmed. If the door is not opened at all, the lock will re-secure when the set time expires and nothing further will happen. If the door is opened and re-closes before the time expires, it will re-secure immediately upon closure. This is called anti-tailgating and means that although you have selected a long release time, a second person will not be able to use the door after a

first person has because the door re-secures immediately upon re-closure. This is done by connecting a normally closed door position switch (DPS) between terminals “5” and “6” of terminal block 2 that opens its contact when the door opens (see Figure 2 for wiring). When the door closes the switch contact closes and expires the remaining time.

5.2.3 Forced Door/Door Prop Alarm Function

This function provides enhanced security at the door by creating an alarm signal any time the door is forced open or left open too long while being used for entry or exit. With the function enabled, select a relatively long door open time. You will then need a lock status or door position switch whose contacts open when the door opens. To wire the lock/door switch, refer to Figure 2. If the door is forced open or remains open for a longer period of time than is set on the lock release timer, the condition will be reported to the CelAccess™ web site.

NOTE:
If this function is NOT being used, a jumper must be installed between terminals “5” and “6” of terminal block 2.

5.2.4 Auxiliary Trouble Input Function

The CCM-2 can provide an additional auxiliary input for use with various devices such as intrusion detection, motion sensors, etc. To activate terminals “1” and “2” of terminal block 2 for such use contact CelAccess™ by telephone at 972-231-1999.

5.3 Initial Setup

5.3.1 Temporary Access Code and Account Setup

All devices are shipped “live”…

- When power is connected, the LED on the side of the modem will blink once, and then go dark for about 1 minute while device registers on network.
- LED will start blinking when registered.
- Call 866-ZAP-OPEN (866-927-6736), enter device ID and initial access code (located inside the enclosure) when instructed. Relay should trigger in 15-20 seconds.
- Initial access code will work 10 times, and then will expire.
- Please use the CCM-2 Web Access Quick Start Guide for account setup and additional instructions.

6. SPECIALIZED MOUNTING BRACKETS

- 3” Pole/Post Mount Kit – This bracket kit is designed for mounting a CCM -1N or 2N directly to a fence post or pole up to 3” [76mm] in diameter. These kits are available through Securitron or their authorized distributors.

7. MAINTENANCE

7.1 Cleaning Methods

- Use canned/compressed air to blow out dirt and dust from inside the cabinet.
- Cleaning once a year is recommended.
- Clean every six months in very dusty environments.
- Cleaning more often may be required in outdoor applications.

Troubleshooting (CCM-2)

Problem	LED on modem does not start blinking…
Solution	This is probably a cellular coverage issue. Move antenna if possible. Signal boosters are available for additional fee.

Problem	Computer does not accept code…
Solution	Conduct phone test before Wiegand! Be sure to enter the four digit device ID, then the pound key, then the four digit initial code and the pound key. This combination is unique for each device.

Problem	Computer accepts code, but does not trigger device…
Solution	Check the relay with ohm meter. Call CelAccess™ customer service 972-231-1999.

Troubleshooting (Wiegand)

Problem	No response to Wiegand entry…
Solution	When code is entered or card is scanned, note if ST2 blinks briefly. (This happens as soon as code is entered). If not the WIM did not receive a code. If ST2 did blink, the code or device may not be set up properly on the website. Check "Reports" tab for invalid code activity. If Reports shows device actuation, check relay(s) with ohm meter.

Problem	Relay triggers, but "accept" indicator on Wiegand device does not activate…
Solution	The LED wires are not properly connected or jumper J5 needs to be changed.

Problem	"Rejection" indicator on Wiegand device does not activate with invalid code…
Solution	The LED wires are not properly connected or jumper J5 needs to be changed.

IF PROBLEMS PERSIST CALL SECURITRON TOLL FREE
(800) MAG-LOCK
(800) 624-5625