e-*ASK*

electronic *A*ccess *S*ecurity *K*eyless-entry

CAN Multiplex System
Installation & Instructions
(UM25 ~ 24324-01)

For TriMark 25048-01 and 39589-01
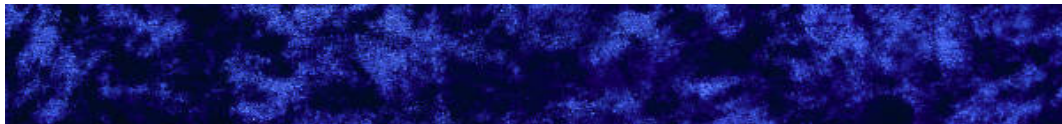
Table of Contents

Introduction

This manual provides the necessary information for the proper use of Tri*Mark*'s CAN **e-*ASK*** system.

The RF controller and FOB transmitters are shipped programmed. After following installation instructions as shown in this manual, the system will function as described. Additional and Replacement FOB's are available. This manual will demonstrate how to synchronize them.

Note: Some features discussed in this manual may not be available on your vehicle's installation. Consult with your dealer for more information about features specific to your vehicle.

For TriMark 25048-01 and 39589-01

TriMark CAN RF Controller

CAN-enabled e-*GRAB* Handle
(Available with or without doorbell options)

CAN-enabled Keypad —
available vertical or horizontal

e-*FOB* Operation and Features - Standard Mode

Lock button

Panic button

* Auxiliary button
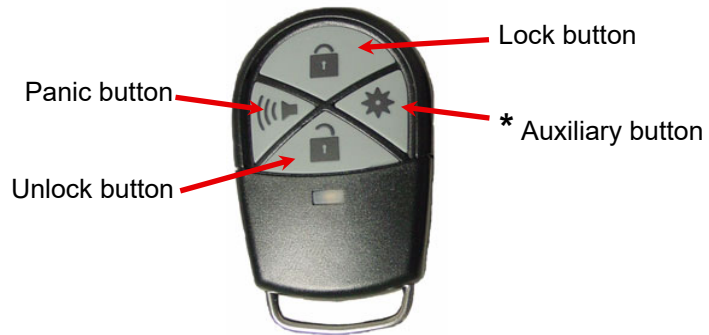
Unlock button

Button	Function
Lock	Locks doors and arms security system.
Unlock	Unlocks doors and disarms security system. Also activates the dome light.
Panic	Activates panic mode when pressed and held for 2 seconds.
* Auxiliary Button	Auxiliary output. Possible assignment includes: interior/exterior lighting, awning extension/retraction, gas cap release, hood release, etc.

Note:
- Only the unlocking function of the **e-*FOB*** remains while the system detects that the engine is running—other functions are deactivated.

Note:
- Two button e-FOB's are also available but are limited to LOCK/UNLOCK FUNCTION ONLY.

e-*FOB* Operation and Features - Cargo Mode

Entry Lock

Cargo Lock

Cargo Unlock

Entry Unlock

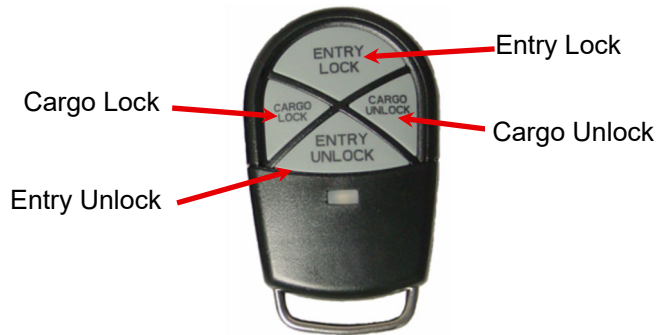| Button	Function
Entry Lock	Locks entry door and arms security system.
Entry Unlock	Unlocks entry door and disarms security system. Also activates the dome light.
Cargo Lock	Locks cargo doors and arms security system.
Cargo Unlock	Unlocks cargo doors and disarms security system. Also activates compartment lights.

Note:
- Only the unlocking function of the **e-*FOB*** remains while the system detects that the engine is running—other functions are deactivated (this requires your system to be wired accordingly). Ask your dealer about these functions.

Standard e-*PAD* Operation and Features

The **e-*PAD*** is shipped with default *Authority* and *Access Codes*. If the OEM or dealer has not changed the default codes, the *Authority* and *Access Codes* are:

Access code:

Digit 1	Digit 2	Digit 3	Digit 4	Digit 5
1 / 2	3 / 4	5 / 6	7 / 8	9 / 0

Authority code:

Digit 1	Digit 2	Digit 3	Digit 4	Digit 5
7 / 8	7 / 8	7 / 8	7 / 8	7 / 8

Locking Doors With Keypad
NO CODE ENTRY IS NECESSARY TO LOCK
Press and hold down the (1 / 2) button for 1-2 seconds. Keypad will beep again when held long enough.

Secure Operations
Entering a valid 5-digit *Access Code* provides a double-beep and enables a secure operation. After entering an *Access Code*, the keypad is enabled for 5 seconds and the next button pressed initiates a secure operation, such as unlocking the doors.

Notes:

- The *Authority Code* does not allow for secure operations. It is only used to assign access codes (see page **12** for information on setting access codes).
- If an unassigned button is pressed, or no button is pressed, within 5 seconds of a correctly entered *Access Code*, the keypad reverts back to disabled state.
- If the keypad does not Double-beep after the 5th digit of your entered *Access Code*, then you have not entered the correct *Access Code*.
- The secure keypad operations are set depending on the system configuration. See page 6 for more information.

Doorbell e-*PAD* Operation and Features

Access code:

Digit 1	Digit 2	Digit 3	Digit 4	Digit 5
1	2	3	4	4

Authority code:

Digit 1	Digit 2	Digit 3	Digit 4	Digit 5
4	4	4	4	4

Locking Doors With Keypad

NO CODE ENTRY IS NECESSARY TO LOCK
Press and hold down the (1) button for 1-2 seconds. An
Keypad will beep again when held long enough.

Door Bell Operation

The doorbell button sends a CAN message to the RF Controller
instantly when pressed. An *Access Code* is not necessary for the
doorbell.

Secure Operations

Entering a valid 5-digit *Access Code* provides a double-beep and
enables a secure operation. After entering an *Access Code*, the keypad
is enabled for 5 seconds and the next button pressed initiates a secure
operation, such as unlocking the doors.

Note:

- The *Authority Code* does not allow for secure operations. It is
  only used to assign access codes (see page **12** for information on
  setting access codes).
- If an unassigned button is pressed, or no button is pressed, within
  5 seconds of a correctly entered *Access Code*, the keypad
  reverts back to disabled state.
- If the keypad does not Double-beep after the 5th digit of your
  entered *Access Code*, then you have not entered the correct
  Access Code.
- The secure keypad operations are set depending on the system
  configuration. See the next page for more information.

e-*PAD* Configuration

Keypad Setting Configurations:
Entering a 5-digit access code enables the keypad. After entering the Access Code, the next button pressed initiates a secure operation, such as unlocking specific doors or some other operation. The following table should be filled out by your dealer to explain the function of each button. Not all buttons have a function in some installations. Common configurations are listed in Appendix B on page II

Secure Function Button Pressed	Secure Operation
Button (1 / 2) or (1)	
Button (3 / 4) or (2)	
Button (5 / 6) or (3)	
Button (7 / 8) or (4)	
Button (9 / 0)	

Optional Keyless Entry System Features

Dome/Porch Light Activation

The dome/porch light is activated for a timed duration (5-60 seconds) whenever a keypad button is pressed or when system is unlocked from FOB transmitter or vehicle switch. The time duration is dependent on a mechanical setting inside the control. The dome/porch light is deactivated when engine-start is detected, or entry doors are locked using a keyless device. Your Dealer *may* able to adjust this time.

e-PAD Anti-tamper Deactivation Feature

After repeated attempts to enter a correct code (20 button presses without enabling), the keypad enters an inactive mode that disables buttons for 1 minute. This helps prevent undesired access by entering random codes. No beep will sound with button press while the system is disabled.

e-*Grab* Handle Lighting

The grab handle bar is lit continuously with a circuit installed separately from the rest of the keyless entry system The timing and control of that light is determined by an outside circuit, but is typically tied to the parking lights circuit or porch light circuit. The **e-*PAD*** back lighting is lit with a button press and while training new access and authority codes.

Status LED

LED flashes at power-up and can provide other troubleshooting diagnostic codes. The LED can be seen by looking into he control module through the cutout for the DIP switches. The LED is behind the DIP switch housing and is easiest to see when the area around the controller is darkened.

Internally Controlled Door Locking and Unlocking

A pulse output provides locking and unlocking operation to the entry doors and the compartment doors (banks A-D). The locking and unlocking pulses are opposite polarities. Locking and unlocking operations are activated via **e-PAD**, **e-FOB**, and vehicle switch inputs.

Lock and Unlock Confirmation

- *Standard mode **e-FOB***: The headlights flash once and the horn honks once with a lock command. On unlock, the headlights flash twice.

- *Cargo mode **e-FOB***: There is no unlock confirmation. The headlights flash once and the horn honks once when either the entry or compartment doors are locked. When both entry and compartment doors are locked within 10 seconds, headlights flash twice and the horn honks twice.
- *Keypad:* The headlights flash once with a lock command. On unlock, the headlights flash twice.
- Locking and unlocking confirmation is deactivated if the keyless entry system detects that the engine is running.

Deactivate Lock Confirmation
The system defaults to confirmation ON with power-up. Horn and headlight confirmation can be toggled off and on from the keypad.

1. Press and hold the (5 / 6) or (3) button for 5 seconds until the keypad beeps.
2. Enter the *Authority Code*. The buzzer stays on.
3. Hold the (1 / 2) or (1) button for 5 seconds. A double-beep sounds.
4. The ON/OFF status of confirmation output (lights and horn) is toggled.

Door Ajar Warning
A triple chirp sounds when attempting a lock and a compartment door or security input is grounded. If these inputs are active (door open), THE ALARM WILL NOT ARM.

Alarm
After locking all doors, the system is armed. In cargo mode, both the entry door and compartment doors must be locked within 10 seconds to set the alarm. The alarm is activated when any entry door or compartment door is opened, or by grounding the extra security input.

The extra security input could be connected to a shock, sensor, motion sensor or other sensing device. When alarm is triggered, the siren is continuously activated and headlights flash for 1 minute.

To deactivate alarm mode:
- Unlock all doors via **e-*FOB*** transmitter.
- Unlock system via **e-*PAD*** or vehicle switch.
- Start the engine (only works if engine monitoring is installed).

The following table describes audio/visual activations at various conditions in **standard mode**.

Outputs	Unlock Confirmation	lock Confirmation	Alarm
Siren	Not used	Not used	1 minute or when shut off
Horn	1 chirp	2 chirps	Not used
Headlights	1 flash	2 flashes	1 minute or when shut off

The following table describes audio/visual activations at various conditions in **cargo mode.**

Outputs	Single Lock Confirmation	All Lock Confirmation	Alarm
Siren	Not used	Not used	1 minute or when shut off
Horn	1 chirp	2 chirps	Not used
Headlights	1 flash	2 flashes	1 minute or when shut off

Compartment Light Activation

Compartment lights are activated upon unlocking compartment doors (bank A-D) or toggling vehicle switch. The activation duration is controlled via trim pot. Starting the engine deactivates the light.

Auxiliary (*) Output Activation

Standard Mode: With proper wiring and system configuration, Aux 1 output can be activated with the "STAR" or "GEAR" button on the standard version **e-*FOB*** transmitter, via keypad, or toggled with vehicle switch. Ask your dealer for the function that has been assigned to this button and for adjustment of activation duration. This output ceases when the preset time duration expires or if system detects that the engine has started.

NOTE: With doorbell keypad, pressing the doorbell button will immediately activate the Auxiliary 1 output.

Teaching Additional Transmitter FOBs

There are 2 ways that the receiver can be put into **e-*FOB*** learn mode. The first requires that a CAN keypad be connected to the network. This option allows the module to be put into learn mode without physically accessing the module. The 2nd option requires physical access to the module.

In pages below (1/2) double numbers refer to standard button keypads as the (1) single numbers refer to Doorbell style keypads.

Option 1 (CAN keypad connected to network):
1. Hold the (5 / 6) (3) button of keypad for 5 seconds. The keypad will beep and the LEDs will flash.
2. Enter AUTHORITY code. The buzzer stays on.
3. Hold (9 / 0) (DB) for 5 seconds. A double-beep plays.
4. The receiver module is now in **e-*FOB*** learn mode. (The LED under the receiver enclosure will be blinking rapidly).
5. Next press lock button of each transmitter to be trained. (LED stays solid for 2 seconds as each one is trained.) Press the transmitter button for 5-7 seconds. A three second delay must occur between each transmitter.
6. After 60 seconds of **e-*FOB*** button inactivity, or by simply pressing any key on the keypad, 4 beeps will sound and the module will return to normal operation.

IF OPTION 1 DOES NOT WORK THEN PROCEED TO OPTION 2

Option 2 (no CAN keypad connected to network):
1. Remove power from module. Record DIP switch settings!
2. Move Module DIP switches 4-6 to the "ON" position.
3. Connect module to CAN network.
4. Connect power and GND to module (J1 P4,16 and J1 P7,19).
5. Wait about 5 seconds. Module LED will flash continuously.
6. Press any transmitter button for about 5-7 seconds until LED pattern changes, then release. This trains the first transmitter.
7. Press any button of 2nd transmitter, LED pattern changes immediately. This synchs the 2nd transmitter.
8. Repeat step 7 until all transmitters are trained.
9. Remove power from module.
10. Move DIP switches 4, 5 & 6 to normal position and verify DIP switches 1-8 are in proper position.
11. Reconnect power to module.
12. Verify that FOBs are synched to the CAN module. CAN module needs to be connected to a valid CAN network (2+ devices on network) or CAN must be disabled to verify functionality.

Notes:
- Up to 10 transmitters can be synched with a module. If a 11th transmitter is added an earlier transmitter becomes invalid.
- All transmitters must be trained together. Training at least one key fob after putting the module into learn mode erases all previous FOBs.
- If you place the system in learn mode and teach nothing, the system will return to a normal mode in 60 seconds.
- The memory for FOB's will not be erased if power is removed

Teaching Keypad New Authority / Access Codes

IMPORTANT: READ ALL INSTRUCTIONS AND ALL NOTES *BEFORE BEGINNING* TO KNOW WHAT TO EXPECT DURING THE PROGRAMMING PROCESS.

The *Authority Code* has only one purpose: it grants the owner sthe ability to set new *Access Codes.* The *Authority Code* must be **EXACTLY 5** digits long. Changing the *Authority Code* erases all previous *Access Codes* and sets a new *Access Code* in memory bank 1 that is the same as the new *Authority Code.*

In pages below (1/2) double numbers refer to standard button keypads as the (1) single numbers refer to Doorbell style keypads.

Important: *Authority* and *Access Codes* should be different for the greatest security.

Preparation:
1. Find the wiring harness coming out of the back of the keypad. This is usually behind the passenger armrest next to the entrance door. In some cases, the keypad may need to be removed from the side of the vehicle to access the harness in the correct location. See Page 16.
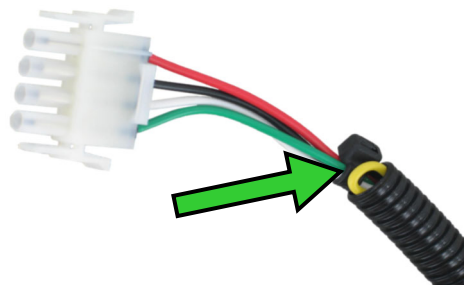
Programming:
2. With the keypad still plugged in, short the yellow wire to ground until the keypad begins to beep (tucking the stripped, loose yellow wire into the back of the connector with the black wire works).
3. The keypad will beep for 3 seconds; remove the short before the keypad stops beeping. The keypad is now in "Learn Mode."

4. Enter a new 5-digit *Authority Code* (double chirps after each button press). The keypad chirps 3 times after the 5th digit's entry.

5. Re-enter the new *Authority Code* for confirmation. The keypad will chirp FOUR times for successful confirmation. **A long beep indicates a failure to change the code.**

6. Test the new code to confirm it by using it to perform a secure operation.

In pages below (1/2) double numbers refer to standard button keypads as the (1) single numbers refer to Doorbell style keypads.

The following area can be used to document the new *Authority Code*:

My New Authority Code				
Digit 1	**Digit 2**	**Digit 3**	**Digit 4**	**Digit 5**

Notes:
- While in "Learn Mode," each button push provides a double-chirp and the backlight flashes.
- The authority code is to be controlled by individuals (owners of vehicle, fleet manager, etc.) who manage the distribution of access codes to vehicle users.
- The authority code should be changed when the vehicle is sold.
- The authority code should not be used to enable secure operations (lock/unlock doors, etc.)—it should only be used to assign access codes.
- Doorbell systems only allow codes using buttons 1-4 and provides memory for 4 unique access codes.
- The keypad automatically leaves "Learn Mode" when the new code is set.

Assign New Access Codes

The *Access Codes* are used for secure functions, such as unlocking doors. The *Access Codes* must be **EXACTLY 5** digits long. With a valid *Authority Code*, a new *Access Code* can be programmed with the following instructions.

Programming:
1. Press the (5 / 6) or (3) button for 5 seconds until the keypad beeps. The backlighting of the keypad will flash indicating the keypad is in "Learn Mode."
2. Enter the 5-digit *Authority Code* (see page 4 for the code).
   - If you enter an INCORRECT *Authority Code*, the keypad will beep for 1 second, and leave "Learn Mode."
   - If you enter a CORRECT *Authority Code*, the keypad will provide a constant beep that will only stop after you have defined a **memory bank** to store the new *Access Code*.
3. Press and release the button that corresponds to the **memory bank**. For example, press (1 / 2) or (1) button for Memory #1 and press (3 / 4) or (2) button for Memory #2. During this activity you are choosing 1 of 5 (4) memory banks.
4. Enter a new 5-digit *Access Code*. The keypad chirps 3 times after the 5th digit's entry.
5. Re-enter the new *Access Code* for confirmation. The keypad will chirp 3 times after a successful confirmation. A long beep indicates a failure to change the code.
6. Test the new code to confirm a successful change.

Repeat process to assign additional *Access Codes* to different memory slots*.*

Notes:
- Up to 5 (or 4 for doorbell keypads) different *Access Codes* can be assigned at any time. As additional *Access Codes* are defined, pre-existing *Access Codes* are overwritten. For example, if a new *Access Code* is assigned to Memory #3, the previous *Access Code* in Memory #3 is no longer valid.

- If an error is made at any point, or if time runs out, the keypad will exit "Learn Mode," provide a 1-2 second beep, and not change anything.

The following area can be used to document the new *Access Code* assignments:

| Memory #	User Name	Digit 1	Digit 2	Digit 3	Digit 4	Digit 5
1/2 (1)						
3/4 (2)						
5/6 (3)						
7/8 (4)						
9/0						

Troubleshooting

The keypad's "Yellow Programming Wire":

In order to complete many higher-level reprogramming tasks, access to the keypad's "yellow programming wire" is required. Access to this wire is usually intentionally restricted and difficult in an effort to detract unauthorized manipulation of the security system. Typically, a vehicle manufacturer will provide an access panel inside the vehicle to allow users with access to the inside of the vehicle relatively unobstructed access to the harness. Unfortunately, this is not always the case, and some vehicles require the keypad to be completely removed from the vehicle to gain access to the harness at the correct location.

Depending on the model of keypad that is installed on the vehicle, the yellow programming wire will be located in one of two places.

1. ON EMBEDDED KEYPADS WITH A BLACK BEZEL (34120-xx)
   These keypad are multi-function keypads with support for many operating modes. For the purposes of this CAN system manual, only the CAN modes are discussed. This keypad has two wire harnesses; one is a 4-pin CAN connector, the other is a 8-pin discrete signal connector. In these keypads, the "yellow programming wire" can be found securely mounted in the 8-pin discrete signal connector.
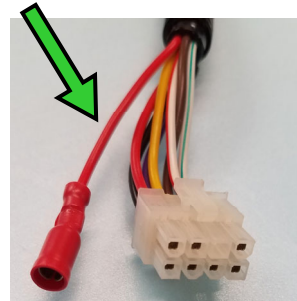
2. ON CHROME e-GRAB CAN-ENABLED KEYPADS (38334-xx)
   These keypads have a more restricted level of function support because of the lack of space within the e-GRAB base. One consequence of this restriction is being limited to only one harness coming from the keypad. Since the 8-pin discrete signal connector is not present on these keypads, the "yellow programming wire" does not have a location to be securely mounted. Instead, the "yellow programming wire" is drawn through the convoluted sheathing that protects the CAN wire harness, and then looped around and tucked back into the sheathing. While this does protect the wire from being unintentionally grounded, it can also be difficult to find during troubleshooting and reprogramming.
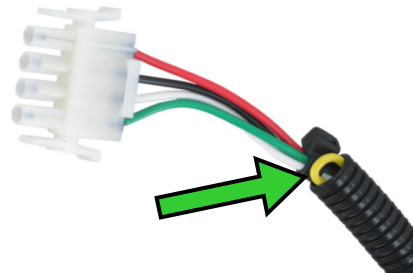
CAN Error Diagnostic Codes:

In many cases, when a problem is detected with the CAN bus, one or both Tri*Mark* CAN-enabled devices will announce an error. Similar codes are used with CAN vehicle module and CAN keypad. The keypad uses back lighting and buzzer for announcing codes while the vehicle module uses the internal red LED behind the dipswitch bank.

1. At power up, the CAN devices will attempt to claim their preferred network address on the CAN bus. After this, they will announce a successful power-up using either the internal LED or a buzzer and backlighting.

    This "long announcement" communicates a CPU reset and why:
    - One 1-second announcement = normal power on
    - Two 1-second announcements = watchdog timer reset the CPU (this indicates a software bug)
    - Three 1-second announcements = brownout reset. The input power fell below the 9.0 volt minimum momentarily.

2. After the long announcement, a series of "short announcements" indicate other errors that may have occurred:
    - Two short announcements = CAN bus error. This means there is an electrical problem with the CAN bus (possibly a problem with bus termination), or simply that the device reporting this error is the only node attached to the bus. If there is intentionally only one CAN-enabled device on the network, CAN communication must be disabled for normal operation.
    - Three short announcements = the device reporting this error couldn't claim its preferred CAN address. This is probably because another device on the bus is set to the same function instance. This is considered a fatal error so the device will reset itself and try again.

3. For some problems, the keypad provides five short beeps followed by a pause to indicate a CAN bus error. Make sure that both network wires are intact and connected to all TriMark CAN-enabled devices.

Problem Description	Possible Solution
e-*FOB* Hints	
e-*FOB* Button press does not provide correct operation	Verify RF receiver is powered and active.
	Re-teach the FOB transmitter to the receiver.
No operation or intermittent operation	Move RF receiver away from enclosed metal areas and fully extend antennae.
	Check FOB transmitter battery voltage. Batteries need to be changed every 1-2 years depending on usage.
One particular **e-*FOB*** function does not work	Check wire connection of affected function at RF module, wiring harness, and I/O module.
e-*PAD* Hints	
No response with button press	Verify RF receiver is powered and active.
	Verify that keypad cable is connected and undamaged.
Access code is not recognized	Verify that code has not been changed. Reassign keypad with instructions starting on pages 11-12.
	Make sure an Access code is being used, not the Authority code.
Key FOB works correctly, keypad beeps, but no output	Verify that the keypad and RF receiver are using the same CAN protocol.
Unexpected, secure operation occurs	Verify DIP switches are set to correct configuration setting.

e-*ASK* System Hints	
No response in any system element	Verify power to the RF Receiver.
Lights and panic mode do not turn off with ignition start	Verify that ignition input is wired properly.

This product has been manufactured with methods to ensure high quality and to meet the high expectations of our customers. Tri*Mark* warrants this product to be free from workmanship defects and will remedy issues per Tri*Mark's* warranty policy.

Remote transmitter FOBs, batteries, and other equipment subject to normal wear and deterioration may need to be replaced periodically by dealer and/or end user and are not covered by this warranty. Tri*Mark* will not be liable for indirect, special, incidental or consequential damages.

This system complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and (2) This device must accept any interference received including interference that may cause undesired operation.

Note: The manufacturer is not responsible for any radio or television interference caused by unauthorized modification to this equipment. Such modification could void the user's authority to operate the equipment.

<u>Appendix A: Installation and Application Notes</u>

This system uses low-voltage circuitry and wireless communication. To protect these components and to ensure the device operates as expected, these application notes must be followed.

General Mounting Guidelines:

The antennae must be left fully extended and exposed. Minimize shielding from metal enclosures.

Looping the antenna, wrapping the antenna around a metallic object, or grouping the antenna wire in with another wire harness will have severe and detrimental consequences on the functional operating range of the remote key fobs.

Appendix B: Available e-*PAD* Configurations

Configuration D is standard.

Non-doorbell Configuration A
- Button (1 / 2): Unassigned
- Button (3 / 4): Unlocks all entry and compartment doors
- Button (5 / 6): Unassigned
- Button (7 / 8): Toggles Aux 1 output
- Button (9 / 0): Activates zone 6 unidirectional actuation

Non-doorbell Configuration B
- Button (1 / 2): Unlocks all entry door(s)
- Button (3 / 4): Unlocks all entry and compartment doors
- Button (5 / 6): Unassigned
- Button (7 / 8): Toggles Aux 1 output
- Button (9 / 0): Activates zone 6 unidirectional actuation

Non-doorbell Configuration C
- Button (1 / 2): Unlocks all entry doors
- Button (3 / 4): Unlocks all doors assigned to relay bank A
- Button (5 / 6): Unlocks all doors assigned to relay bank B
- Button (7 / 8): Unlocks all doors assigned to relay bank C
- Button (9 / 0): Unlocks all doors assigned to relay bank D

Non-doorbell Configuration D
- Button (1 / 2): Unlocks all entry doors
- Button (3 / 4): Unlocks all entry and compartment doors
- Button (5 / 6): Unlocks all curb side compartment doors (relay banks C-D)
- Button (7 / 8): Unlocks all driver side compartment doors (relay banks A-B)
- Button (9 / 0): Toggles Aux 1 output

Doorbell Configuration A
- Button (1): Unassigned
- Button (2): Unlocks all entry and compartment doors
- Button (3): Unassigned
- Button (4): Toggles Aux 1 output
- Button (doorbell): Activates zone 6 unidirectional actuation

Doorbell Configuration B
- Button (1): Unlocks all entry door(s)
- Button (2): Unlocks all entry and compartment doors
- Button (3): Unassigned
- Button (4): Toggles Aux 1 output
- Button (doorbell): Activates zone 6 unidirectional actuation

Doorbell Configuration C
- Button (1): Unlocks all entry doors
- Button (2): Unlocks all doors assigned to relay bank A
- Button (3): Unlocks all doors assigned to relay bank B
- Button (4): Unlocks all doors assigned to relay bank C
- Button (doorbell): Activates zone 6 unidirectional actuation

Doorbell Configuration D
- Button (1): Unlocks all entry doors
- Button (2): Unlocks all entry and compartment doors
- Button (3): Unlocks all compartment doors (relay banks C-D)
- Button (4): Unlocks all compartment doors (relay banks A-B)
- Button (doorbell): Activates zone 6 unidirectional actuation

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