e-*ASK*

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

CAN Multiplex System
Installation & Instructions

(UM26 ~ 24324-02)

For TriMark 25048-01 and 39589-01

TriMark®

500 Bailey Avenue
P.O. Box 350
New Hampton, Iowa 50659 U.S.A.
Tel: 641-394-3188
Fax: 641-394-2392
www.trimarkcorp.com

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Introduction

This manual provides the necessary information for the proper installation and use of Tri*Mark*'s CAN **e-*ASK*** system including vehicle module and keypad.

The nature of CAN multiplex communications mandates that at least 2 CAN-enabled devices must be connected via a CAN network in order for any of the devices to function. Therefore, if this keyless entry system is being installed into a vehicle that does not have a pre-existing CAN network to connect into, the RF receiver MUST be installed with a Tri*Mark* CAN-enabled keypad or e-GRAB handle.

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.

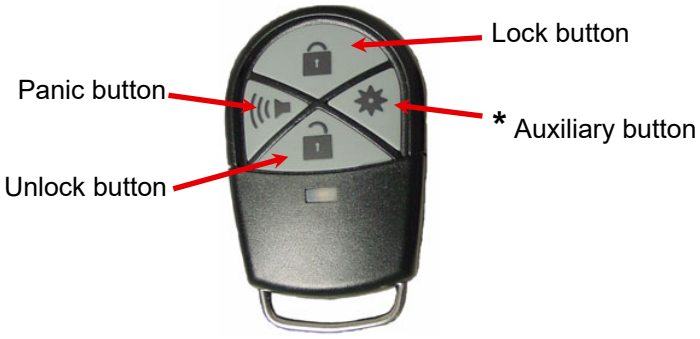
For TriMark 25048-01 and 39589-01

Tri*Mark* CAN RF Controller

CAN-enabled Keypad —
available vertical or horizontal

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

e-*FOB* Operation and Features - Standard Mode



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.

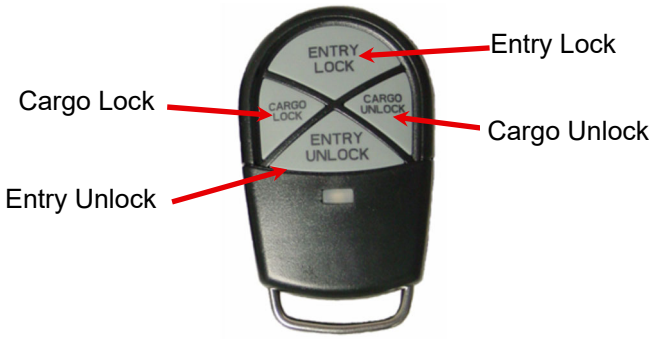
Note:

- 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



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 J2 pins 4, 7 and 8 to be wired accordingly) to show key inserted and ignition positions.

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. A –500 mA pulse on is output on AUX1 of the controller to the doorbell circuity.

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.

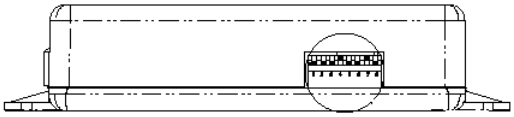
Note:

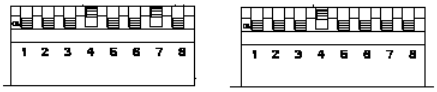
- The *Authority Code* does not allow for secure operations. It is only used to assign access codes (see page **12** for information on setting access codes).
- If an unassigned button is pressed, or no button is pressed, within 5 seconds of a correctly entered *Access Code*, the keypad reverts back 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-*ASK* CAN DIP Switch Configuration

DIP Switches 1-3:
The settings of DIP switches 1-3 define CAN address of the IO receiver module. A unique address must be assigned when multiple modules are used on a CAN network. If only one module is used on network then all DIP switches should be set to ON position.

- DIP Switch 1: On
- DIP Switch 2: On
- DIP Switch 3: On





STANDARD MODE CARGO MODE

DIP Switches 4-6:
The setting of DIP switches 4, 5 and 6 define configuration of the IO receiver module. Each configuration provides different functionality for keypad and interior switches. Most customers use default configuration D setting. See configuration setting definitions.

KEYPAD DIP Switch 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 other functions as in the chart below.

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

Configuration A *[SW 4 off / SW 5 off / SW 6 off]:*

- Button (1 / 2) (1): Unassigned
- Button (3 / 4) (2): Unlocks all entry and compartment doors
- Button (5 / 6) (3): Unassigned
- Button (7 / 8) (4): Unassigned
- Button (9 / 0): Toggles Aux 1 output

Configuration B *[SW 4 off / SW 5 off / SW 6 on]:*

- Button (1 / 2) (1): Unlocks all entry door(s)
- Button (3 / 4) (2): Unlocks all entry and compartment doors
- Button (5 / 6) (3): Unassigned
- Button (7 / 8) (4): Unassigned
- Button (9 / 0): Toggles Aux 1 output

Configuration C *[SW 4 off / SW 5 on / SW 6 off]:*

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

Configuration D *[SW 4 off / SW 5 on / SW 6 on]:*

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

INTERIOR VEHICLE SWITCH - Dip Switch Setting Configurations:

The following vehicle switch assignments of input pins of J1 define the functional assignment of interior switches. When the interior switch input pin is grounded, its corresponding function is specified.

Configuration A *[SW 4 off / SW 5 off / SW 6 off]:*

- J1 pin 1: Unassigned
- J1 pin 2: Unassigned
- J1 pin 9: Unassigned
- J1 pin 10: Unlocks all doors
- J1 pin 11: Lock all doors
- J1 pin 12: Unassigned

Configuration B *[SW 4 off / SW 5 off / SW 6 on]:*

- J1 pin 1: Lock all compartment doors (banks A-D)
- J1 pin 2: Unlock all compartment doors (banks A-D)
- J1 pin 9: Unlock entry door(s)
- J1 pin 10: Unlock all doors
- J1 pin 11: Lock all doors
- J1 pin 12: Lock entry door(s)

Configuration C *[SW 4 off / SW 5 on / SW 6 off]:*

- J1 pin 1: Unlock bank A
- J1 pin 2: Unlock bank B
- J1 pin 9: Unlock bank D
- J1 pin 10: Unlock entry door(s)
- J1 pin 11: Lock all doors
- J1 pin 12: Unlock bank C

***Configuration D** [SW 4 off / SW 5 on / SW 6 on]:*

- J1 pin 1: Unlock curb-side compartment doors (banks C-D)
- J1 pin 2: Unlock driver-side compartment doors (banks A-B)
- J1 pin 9: Unlock entry door(s)
- J1 pin10: Unlock all doors
- J1 pin 11: Lock all doors
- J1 pin 12: Lock entry door(s)

Note: Configuration D is the default. Example: If interior switch setting is set to configuration A: then keypad configuration will also be configuration A: and so on.

DIP Switch 7:

The setting of DIP switch 7 defines the type of remote FOB transmitter, either standard FOB or cargo FOB.

- Off: Standard FOB
- On: Cargo FOB

DIP Switch 8:

The setting of DIP switch 8 defines the type of CAN protocol, either RV-C or SAE J1939. As of model year 2014, almost every CAN device installed in RVs and not affiliated with engine control use RV-C.

- Off: RV-C
- On: SAE J1939

NOTE:

POWER MUST BE CYCLED TO THE DEVICE FOR DIP SWITCH CHANGES TO TAKE EFFECT.

POWER MAY BE APPLIED TO THE DEVICE ON MORE THAN ONE CONNECTOR, REMOVE ALL CONNECTORS ON A POWER CYCLE.

Additional 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 the trim pot setting. The dome/porch light is deactivated when engine-start is detected, or entry doors are locked using a keyless device.

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 diagnostics codes. The LED can be seen by looking into the control module through the cut out 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 have 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 while 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.

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

Timed Dome/Porch Light Activation

The dome/porch light is activated upon pressing any keypad button or by unlocking entry door via **e-*FOB*** transmitter. The activation duration is controlled via trim pot. Starting the engine or locking the doors deactivates the light.

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 1 Output Activation

Standard Mode: With proper wiring and system configuration, Aux 1 output can be activated with * Button on **e-*FOB*** transmitter, via keypad, or toggled with vehicle switch. The activation duration is controlled via potentiometer. Starting the engine deactivates the output. 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 FOR EACH OPTION AND ALL NOTES **BEFORE BEGINNING** TO KNOW WHAT TO EXPECT DURING THE PROGRAMMING PROCESS.

The *Authority Code* has only one purpose: it grants the owners the 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.*

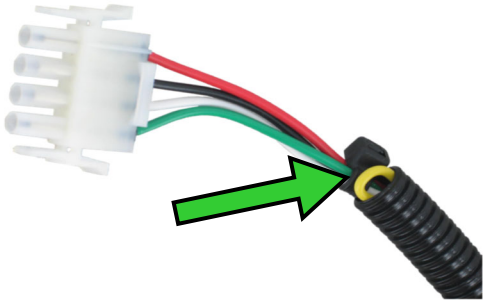
In pages below (1/2) double numbers refer to standard button keypads as the (1) single numbers refer to Doorbell style keypads.

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 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						

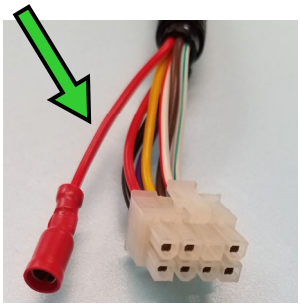
Troubleshooting

The keypad's "Yellow Programming Wire":

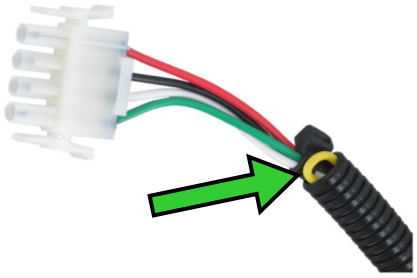
In order to complete many higher-level reprogramming tasks, access to the keypad's "yellow programming wire" is required. Access to this wire is usually intentionally restricted and difficult in an effort to detract unauthorized manipulation of the security system. Typically, a vehicle manufacturer will 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 dip switch 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. See Appendix C
   - 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.

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

CAN Communication Protocol Settings:

Tri*Mark* CAN-enabled devices support two communication protocols on the CAN bus, but only one at a time. Most RVs use the RV-C communication protocol, while all other vehicles use the SAE J1939 protocol. For the control module, changing this setting is described on page 8. Changing this setting on the keypad is a bit more involved, and is described here. After changing this setting on **ANY** device, power **MUST** be cycled to that device for the change to take effect.

NOTE: Prior to 2014 RV's may be running on J1939.

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.
3. The keypad will beep for 3 seconds; remove the yellow wire from ground before the keypad stops beeping.
4. Press and hold the (7/8) or (4) button for about 5 seconds, or until the keypad beeps.
5. Press the button corresponding to the desired protocol:
   - (1/2) or (1): Changes to SAE J1939 mode
   - (9/0) or (DOORBELL): Changes to RV-C mode
6. The keypad will beep once upon making a selection, then confirm your choice with one beep for SAE J1939 mode or two beeps for RV-C mode.
7. The keypad leaves this programming mode with a long beep. Once it is done beeping, *CYCLE POWER* to the keypad to make these changes take effect.

CAN Communication Configuration

In some cases, CAN needs to be disabled for either proper operation or for troubleshooting the system. Follow these instructions for enabling or disabling CAN communication.

Disable CAN Communication (module):

1. Disconnect power from module by unplugging the 24-pin and 10 -pin connector.
2. Record ALL DIP switch positions and move switches 4, 5, and 6 to the ON position.
3. Connect CAN-H PIN-4 to GND and CAN-L PIN-2 to +12V in the small 4-pin connector J5 using jumper wires.
4. Power up system by plugging in the 24-pin and 10-pin connectors back into the module.
5. LED behind DIP switches will light for 5 seconds and go off.
6. Disconnect power from module and remove the CAN-H and CAN-L jumpers.
7. Move dipswitches 4, 5, and 6 back to their original position.
8. Power up the module by plugging in removed connectors.

Enable CAN Communication (module):

1. Disconnect power from module by unplugging the 24-pin and 10 -pin connector.
2. Record ALL DIP switch positions and move switches 4, 5, and 6 to the ON position.
3. Connect CAN-H PIN-4 to +12V and CAN-L PIN-2 to GND in the small 4-pin connector J5 using jumper wires.
4. Power up system by plugging the 24-pin and 10-pin connectors back into the module.
5. LED will light for 5 seconds and go off.
6. Disconnect power from module and remove the CAN-H and CAN-L jumpers.
7. Move dipswitches 4, 5, and 6 back to their original position.
8. Power up the module by plugging in removed connectors.

Disable CAN Communication (keypad):

1. Disconnect power from keypad unplug 4 pin connector.
2. Connector yellow programming wire to GND (see page 16).
3. Connect CAN-H (WHITE) to GND (BLACK) and CAN-L (GREEN) to +12V (RED).
4. Power up system re-plug 4 pin connector.
5. Keypad will beep 5 seconds and then provide 5 short beeps.

6. Disconnect power from keypad and remove CAN-H and CAN-L jumpers.
7. Disconnect yellow wire from GND.
8. Power up keypad re-plug 4-pin connector.

Enable CAN Communication (keypad):

1. Disconnect power from keypad unplug 4 pin connector.
2. Connect yellow programming wire to GND (See page 16).
3. Connect CAN-H (WHITE) to +12V (RED) and CAN-L (GREEN) to GND (BLACK).
4. Power up system and re-plug 4 pin connector
5. Keypad will beep 5 seconds and then provide 5 short beeps.
6. Disconnect power from keypad and remove CAN-H and CAN-L jumpers.
7. Disconnect yellow wire from GND.
8. Power up keypad and re-plug 4 pin connector.

e-*ASK* Doorbell Mode Configuration

The following procedure turns the keypad doorbell mode on or off. The factory default depends of the label printed on the last keypad button (9/0 or DOORBELL).

1. Gain access to the wire harness behind the keypad at the connector. Sometimes the manufacturer provides an access panel for troubleshooting, but usually this requires that the keypad be removed from the side of the vehicle.
2. Ground the yellow programming wire for about 2 seconds. The buzzer will sound for 3 seconds and the keypad backlights will flash (See page 16).
3. Press and hold the (5 / 6) or (3) button for 5 seconds, or until the keypad chirps.
4. Press a button to set the desired mode of operation:
   - (1 / 2) or (1) will disable doorbell mode.
   - (9 / 0) or (DOORBELL) will enable doorbell mode
5. A single chirp sounds followed by one 1/2-second beep for doorbell mode disabled and two 1/2-second beeps for doorbell mode enabled.
6. If a Tri*Mark* vehicle I/O module is recognized on the CAN network, it will be automatically updated to doorbell mode.

Setting CAN Keypad Function Instance (Location):

The following procedure sets the keypad's CAN address and identifies the keypad's location within the vehicle. Each keypad installed in a vehicle must have a unique location. The default function instance is 0.

1. Ground the yellow programming wire for about 2 seconds. The buzzer will sound for 3 seconds and the keypad backlights will flash continuously (See page 16).
2. Press and hold the (1 / 2) or (1) button for 5 seconds, or until the keypad beeps.
3. Next press button to indicate which function instance this keypad should be assigned:
   - (1 / 2) (1) = function instance 0 = Driver's side
   - (3 / 4) (2) = function instance 1 = Passenger's side
   - (5 / 6) (3) = function instance 2 = 3rd keypad
   - (7 / 8) (4) = function instance 3 = 4th keypad
   - (9 / 0) (DB) = function instance 4 = 5th keypad

   Note: This step must be completed within 10 seconds.
4. A single beep sounds to confirm the function instance change. Then number of beeps are played indicating which function instance is stored (i.e. 1 beep for function instance 0, 2 beeps for function instance 1, etc.).
5. The keypad then resets out of learn mode. The CAN address will be claimed with the new function instance. To ensure proper operation, cycle power to the keypad after this step.

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.

Appendix A: Installation and Application Notes

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 RF receiver should be placed in an interior location that does not shield RF signals. You may need to try multiple locations to optimize reception. 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.

The vehicle control module contains several internal mechanical relays. These relays are susceptible to excessive G-force loads (greater than 30 G), and can toggle unexpectedly if the module is mounted in an unsuitable location. Poor mounting locations include on or inside doors, on or near chassis suspension features, or on or near a generator or other internal-combustion engine.

Mount **e-*PAD*** grab handle to vehicle with #8 or M4 screws. Connect 12V to the rod illumination LED from desired source with the red wire to +12V and black wire to ground. Keypad harness provides connection between CAN keypad and the CAN bus.

Testing Inputs and Outputs:

Many of the inputs and outputs of the vehicle control module are low-voltage or low-current signals. When testing these I/O signals, USE a high-impedance multi-meter, DO NOT use a test light. Most test lights pull too much current, and can cause permanent damage to the control module that is not covered under Tri*Mark*'s warranty. I/O signals that are sensitive to excessive current draw are marked with an asterisk on the connector tables on Appendix Pages IV and V.

Clean +12V Power and Ground:

Inductive devices that may share a circuit or power supply with the keyless entry system can cause noise on the power or ground connections that could cause unexpected behavior in the security system, including artificial brown-outs. Make sure that all electric devices that generate magnetic fields powered by the same power source as the keyless entry system have proper noise suppression in place, such as TVS diodes or properly sized decoupling capacitors to handle transients that can generate when the induced magnetic fields collapse. Problematic devices include solenoids and electric motors.

Appendix B: Drawing and Wiring Tables

The following tables and diagrams are provided to show connector and pin assignments for the **e-*ASK*** CAN Multiplex system.

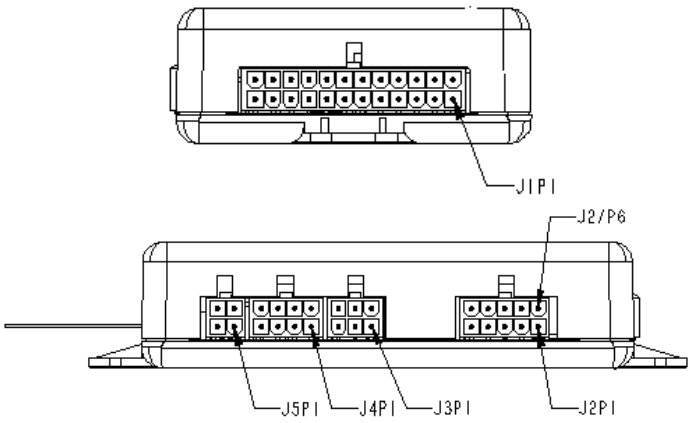


Table 1: Connector and Pin Information

Connector	Mating Connector	Mating Terminal
J1	VAL-U-LOK 2-794594-4	MATING TERMINAL TE 1586841-1 18-22 AWG wire 18-22 AWG wire TE 1586055-3 16 AWG wire
J2	VAL-U-LOK 1-794594-0	
J3	VAL-U-LOK 794594-6	
J4	VAL-U-LOK 794594-8	
J5	VAL-U-LOK 794594-4	

AMPHENOL = AMP IS NO LONGER MAKING THESE CONNECTORS

Function	Pin Location
J1 Connector	
Bank C-D Unlock Input (GND)*	1
Bank A-B Unlock Input (GND)*	2
Compartment Door Ajar Input (GND)*	3
Vehicle Ground	4
Bank D Lock Output (Relay 30A)	5
Bank D Unlock Output (Relay 30A)	6
Vehicle Power 12 V	7
Unlock Entry Output (Relay 30A)	8
Unlock Entry Input (Gnd)*	9
Unlock All Input (Gnd)*	10
Lock All Input (Gnd)*	11
Lock Entry Input (Gnd)*	12
Security Input (Gnd)*	13
Unassigned	14
Unassigned	15
Vehicle Ground	16
Bank D Lock Output (Relay 30A)	17
Bank D Unlock Output (Relay 30A)	18
Vehicle Power 12 V	19
CAN High*	20
Lock Entry Output (Relay 30A)	21
CAN Low*	22
Entry Door Ajar Input (Gnd)*	23
Dome Light Output (2A MAX Gnd)	24
J2 Connector	
Vehicle Power 12 V	1
Unassigned	2
Unassigned	3
Key Inserted Input* (Opposite of J2 P7) +/-	4
Unassigned	5
Vehicle Ground	6
Ign/Key Input Polarity/Common* select +/-	7
Ignition Input (Opposite of J2 P7) +/-	8
Unassigned	9
Vehicle Ground	10

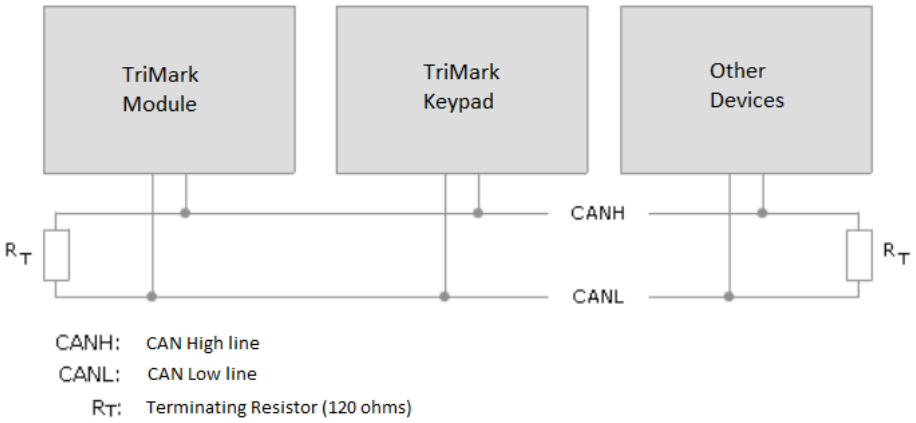
Function	Pin Location
J3 Connector	
Bank C Lock (Relay 25A)	1
Bank B Lock (Relay 25A)	2
Bank A Unlock (Relay 25A)	3
Bank B Unlock (Relay 25A)	4
Bank C Unlock (Relay 25A)	5
Bank A Lock (Relay 25A)	6
J4 Connector 7	
External Relay Coil Power (+12V)	1
Horn Output (-500 mA)*	2
Headlight Output (-500 mA)*	3
Auxiliary 1 Output (-500 mA)*/(Doorbell output)	4
Compartment Lights Output (-500 mA)*	5
Door Ajar Output (-500 mA)*	6
Siren Output (-500 mA)*	7
Unassigned	8
J5 Connector	
Keypad Power (Does not power relays) 12V out	1
CAN Low*	2
Ground	3
CAN High*	4

An asterisk (*) indicates an input or output that is sensitive to high current loads. Do not use test lights on these I/O signals.

Notes:
J1 Inputs are grounding inputs (activated by grounding them) so to achieve desired output functions.
J2 pin 7 is selectable Positive or Negative to allow Pin 4 Key inserted and Pin 8 Ignition input to be either positive or negative for either system being used by vehicle manufacturer.
J4 Pin 1 is 12 volts for the input coil of control relays only, not to power external devices directly.
J4 Pins 2-7 are grounding outputs for return of control relay coils only limited to 500mA.

Appendix C: CAN Requirements

There must be at least two CAN systems on the CANH and CANL.
There needs to be a resistors at each end of the CAN network (total of two).
With everything unplugged, the harness must be 60 ohms between CANH and CANL.
Highly recommended that CANH and CANL wires are twisted together



TriMark®
500 Bailey Avenue
P.O. Box 350
New Hampton, Iowa 50659 U.S.A.
Tel: 641-394-3188
Fax: 641-394-2392
www.trimarkcorp.com

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