TriMark
DOOR SYSTEMS
Access to Excellence

e-*ASK*

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

e-*ASK* Keyless-entry System Installation & Instructions

Prevost H-Series Vehicle Entry/Push to start System

Rev. 1
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Introduction

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

Push to Start

This vehicle is equipped with an advanced push to start ignition system. The start/ignition sequence is accomplished via CAN messaging between the Prevost Mux Module and the e-ASK module. When the push button start switch is pressed, the following sequence occurs:

- The Prevost Mux module sends the e-ASK module a "Start request" command
- The e-ASK module pings LF antenna 2 (searches for fobs in proximity)
- A fob in the proximity of antenna 2 will receive the ping and the LED on the face of the fob will blink once
- If an authorized fob is found, the e-ASK module sends an "authorized fob found" message to the Prevost Mux module.
- The Prevost Mux Module performs the remainder of the start sequence
- If an authorized fob was not found, the e-ASK module sends "No authorized fob detected" to the Prevost Mux module
- Override/Failsafe: When an authorized fob is not detected, there is a 1 minute time period in which a valid code entered on the keypad will enable engine start. This is accomplished by the keypad communicating to the e-ASK module, and the e-ASK module communicating to the Prevost Mux module "valid login password"

e-*FOB* Operation and Features

Button		Function	Button Press Duration
1	**Lock All**	Locks entry and luggage doors and arms security system.	Short Press
2	**Unlock Entry**	Unlocks entrance door and disarms security system. Hold button to unlatch door.	Short Press: Unlock Entrance Door Long Press: Unlatch Entrance Door
3	**Panic**	Activates panic mode when pressed and held for 2 seconds.	Long Press
4	**Luggage Unlock**	Unlocks luggage doors. Does not disarm alarm.	Short Press

Lock All

All of the following methods can lock the entry door

- Via Key Fob button 1
- Via Interior cab switch (J2P6) activates (-)
- Via Keypad 9/0 button only (access code not required)
- Via Mux Converter Switch (CAN messages)

All methods will initiate the following sequence:

- If currently tripped, the alarm will deactivate
- If the entrance door is closed (J1P11=float) Door open (J1P11=GND)
    - Activates Wake Out (J1P10=GND for 1 second)
    - Attempts arming the alarm (SEE 1.7.5.1)
    - Pulses Door Lock Relay (J1P5 +, J1P6 -) for ½ second
    - Sends CAN message to MUX for 2 seconds to lock the luggage doors

Unlock Entry/Unlatch

All of the following methods can unlock the entry door

- Via Key Fob button 2
- Via Interior cab switch (J2P9) activates (-)
- Via Mux Converter Switch (CAN Messages)
- Via Keypad with user password + ½ key within 5 seconds of successful password entry
- All methods will initiate the following sequence:
    - The alarm is deactivated (if currently tripped) and then disarmed.
    - Activates Wake out (J1P10=GND for 1 second)
    - Pulses unlock output (J1P6+, J1P5-) for ½ second
    - If button 2 on fob, ½ key on keypad, or cab switch continue being pressed (1.5 seconds total)
        - Pulse the unlatch output J2P10 (-) for ½ second

e-*PAD* Operation and Features

- The e-*PAD* is shipped with a default access code and a unique authority code. The authority code is printed on the product label. Unless the default code has been changed, the access code is:

- **Access code:**

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

- **Locking doors with keypad**
- Press and hold down the (9/0) button for 1-2 seconds. An access code is not needed to lock the doors

Secure Operations

Entering a valid 4-digit access code enables secure operations. After entering an access code, the keypad is enabled for 5 seconds, and a fifth button press and release initiates a secure operation.

(1/2): Unlock Entry Door
(1/2) hold: Unlatch Entry Door
(3/4): Unlock All
(5/6): Unlock Luggage

Notes:

- If an unassigned button or no button is pressed while the system is enabled, the keypad reverts back to disabled state.
- A double beep after the 4th digit indicates correct code and readiness for an output command.

Unlock Luggage

The unlock luggage output (CAN message) occurs with fob luggage unlock and secure operations (3/4) and (5/6).

e-*PAD* Anti-tamper lockout mode

After repeated attempts to enter codes (5 invalid user codes), the keypad plays a 2 second error beep and enters an inactive mode that disables buttons for 1 minute. The lock indicator flashes red and amber during this state. This helps prevent undesired access by entering random codes. No beep will sound with button press while the system is disabled.

e-*Pad* Lighting

The e-*PAD* back lighting is typically off. When a button is pressed, the backlight goes high momentarily. After button presses stop, the backlight

is low for 30 seconds. After 30 seconds of no keypad activity the keypad back lights turn off again. While training new access codes and fobs the backlighting flashes continually.

Status LED's

This LED is on the e-ASK module circuit board. It comes on for one second at power up. If there is a CAN communication error, a long-short-short pattern or five flash sequence is provided. While module is in fob learn mode, the LED blinks continuously.

Miscellaneous e-ASK Module Features

Lock and Unlock Confirmation

This section to be completed by Prevost since the bus multiplexer creates these outputs.

Door Ajar/Security Warning

A triple HEADLIGHT output is provided if entry door or security input is activated when system is locked and alarm attempts to arm. If a door is open or security input activated, the alarm is not armed. Once the security breaches are resolved, the system must be locked again to arm alarm.

Alarm

After locking all and a delay of 10 seconds, the system is armed and the anti-theft LED (J4P8) flashes continuously . The alarm is activated when the entry hinge switch (J1P23), security input (J1P13), or ignition (J2P8) provides an input to the e-*ASK* module. The intrusion/alarm output is on (J4P3).

The security input could be connected to external shock sensor, motion detector or other sensing device. When alarm is triggered, the Intrusion/alarm output (J4P3) is activated until the system is unlocked from either the fob or keypad.
If

Reduced Security

If the entrance door is locked using the dash mount switch (J1P11), the security input (J1P13) and key switch input (J1P1) will not set off alarm. If the key switch is activated, it will disarm the alarm. The entrance door

hinge switch (J1P23) will set off the alarm.

The intrusion/alarm output is on J4P3.

Wake Up Out
The Wake Up Out signal is activated for 5 seconds after any fob, switch or keypad input if the system has not been activated in the previous five minutes. This is a GND output.

Panic Mode
The panic output (J4P2) is activated for 30 seconds from these three inputs:

- Press and hold the Fob Panic button for 3 seconds.
- Enter a valid user code on the keypad then hold the 7/8 button for 3 seconds.
- Press and hold the hidden panic switch (J1P3) for 5 seconds.

Panic is disabled by pressing any fob button or unlocking the entrance door via the keypad.

Teaching Additional Transmitter FOBs

The keypad is the only method of syncing fobs. The following sequence puts the e-ASK module into a "Learn Fob" mode.

- Press 5/6 button on the keypad for 5 seconds, listen for double beep
  - Keypad backlight continuously flashes on/off
- Enter the 6-digit authority code and listen for double beep
  - Both keypad LEDs continuously flash amber on/off
- Press and hold the 7/8 button on the keypad for 5 seconds, listen for double beep
  - Both keypad LEDs illuminate solid amber
  - The e-ASK module red & green LEDs will blink rapidly while in learn mode
  - The entrance door lock is pulsed to Lock, then unlock
  - Fob learn mode is now active
- Fob Learn mode
  - The e-Ask module stays in fob learn mode for 10 seconds
  - Pressing any button of a fob adds that Fob's serial number to the "Authorized Fobs List"
  - Each time a fob is added, the 10 second timer resets
  - When the first fob is added the entire "Authorized fobs list" is erased and a new one is added. Previously sync'd fobs will

not function, thus all desired fobs must be sync'd in one sequence
    - Each time a fob is successfully added, the entrance door will lock, then unlock
    - Up to 20 transmitters can be synched with an e-*ASK* module. Additional fobs will over-write the first units to be programmed
- To exit fob learn mode, wait 10 seconds without pressing any Fob buttons, or press any key on the keypad
    - The keypad beeps 4 short beeps
    - The entrance door unlocks
    - The e-ASK module reboots automatically and the green LED rapidly blinks. When the LED changes to a solid green, the system is now in normal operation
    - If no keypad buttons are pressed for 60 seconds, the keypad exits learn mode and beeps for 2 seconds

Option 1 (Using keypad and authority code):

- Hold middle (5/6) button of keypad for 5 seconds. The keypad will beep and the LEDs will flash.
- Enter authority code (6 digits, printed on keypad label); double beep sounds.
  Hold (7/8) for 5 seconds. A double-beep plays.
- The receiver module is now in FOB Learn Mode (The LED under the receiver enclosure will be blinking rapidly—this will not be visible unless the enclosure cover is removed).
- Press the lock button of each fob to be programmed for 5 seconds. Pause for 2 seconds between each fob. Up to 20 fobs may be programmed.
- Press the (9/0) button **twice** to exit fob learn mode. The keypad will beep twice. Backlight blinking will stop.

Teaching Keypad New Access Codes

With a valid authority code (unique 6 digit code that is printed on keypad label) an access code can be programmed with the following

instructions.

- Press the middle (5/6) button for 5 seconds, the keypad will beep. The backlighting LED of the keypad will flash indicating the learn mode.
- Enter in the 6-digit authority code (printed on keypad label) followed by the (1/2) button. The keypad will provide one short beep. If a long beep occurs the code memory is full and you need to delete codes before adding additional codes.
- Enter in your new 4-digit access code. The keypad will provide three confirmation beeps.
- Re-enter new access code. The keypad will provide four confirmation beeps.
- Press the (9/0) button to exit keypad program mode. The keypad will beep twice. Backlight blinking will stop.

Press (1/2) button and repeat steps 3-4 to assign additional access codes. Up to 40 unique user codes can be programmed.

Deleting Keypad Access Codes

- Press the middle (5/6) button for 5 seconds, the keypad will beep. The backlighting LED of the keypad will flash indicating the learn mode.
- Enter in the 6-digit authority code followed by the (3/4) button. The keypad will provide one short beep. If a long beep occurs there are no access codes to erase.
- Enter in the 4-digit access code to be removed. The keypad will provide three confirmation beeps.
- Re-enter access code. The keypad will provide four confirmation beeps.
- Press the (9/0) button to exit keypad program mode. The keypad will beep twice. Backlight blinking will stop.

Press (3/4) button and repeat steps 3-4 to delete additional access codes.

Pairing Keypad

e-ASK Blink Codes

Troubleshooting

CAN Error Diagnostic Codes:

The following defines diagnostic code for e-*ASK* module and keypads. Similar codes are used with both types of units. The keypad module uses back lighting LED and buzzer for communicating codes while the e-*ASK* module uses red LED on the PCB for communication.

1) At power up the e-*ASK* module will attempt to claim its address on the CAN bus. This takes 1/4 second. Afterwards, it waits another 1/4 second then sends out a request to all the other nodes on the bus to see what other modules are on the CAN network. After this, it turns on both LEDs for 1 second.

This “long blink" of the LEDs is intended to tell you that the CPU reset and why:

- One 1 second blink = normal power on
- Two 1 second blinks = watchdog timer reset the CPU (this indicates a software bug)
- Three 1 second blinks = brownout reset. The power supply fell below the minimum requirement for a moment. This threshold is set for 2.0 V.

2) After the long blinks, a series of "short blinks" indicate other errors that may have occurred:

- Two short blinks = the CAN bus is inactive. This means there is an electrical problem with the CAN bus (possibly a problem with bus termination), or simply that the e-*ASK* module is the only node attached to the bus. The module and keypad are both disabled during this time.
- Three short blinks = the e-*ASK* module couldn't claim its CAN address. This is probably because another I/O module on the bus is set to the same function instance. This is considered a fatal error so the e-*ASK* module will reset itself and try again.

NOTE: CAN communications errors and address claim problems take a while to detect because of the retry code in the I/O module, so if any errors are found the initial power-on long blink will not occur until a couple of seconds after power on.

J9139 CAN Network:

The module and keypad function as part of a J1939 CAN network. This means that wiring for a legitimate network must be in place for these units to work. Please refer to J1939 Physical Layer definition for additional implementation definition.

Problem Description	Possible Solution
e-*FOB* Hints	
Button press does not provide correct operation	Verify power to the e-*ASK* module
	Re-teach the FOB transmitter to the receiver. Ensure that only Lock button is pressed while in learn mode.
No operation or intermittent operation	Mount 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.
Alarm mode starts when powered up	Press Unlock button of FOB transmitter
One particular e-*FOB* function does not work.	Check wire connection of affected function at RF module, wiring harness, and e-*ASK* module.
e-*PAD* Hints	
No response with button press	Verify power to the e-*ASK* module.
	Verify that keypad cable is connected. (rest of system will function).
Access code is not recognized	Verify that code has not been changed. Reassign keypad with instructions starting on page xx.
	Confirm use of an access code, not the authority code.
Key fob works correctly, keypad beeps, but no output	Cycle power to e-*ASK* module.
Unexpected, secure operation occurs	Verify DIP switches are set to correct configuration setting.
e-*ASK* Hints	

No response in any system element	Verify power to the e-*ASK* module.
Output relay (external) latches on or off.	Verify that power to relay comes from external relay power pin. .
	Cycle power to system. If condition continues, replace relay.

Connectors and Pinouts

The following tables and diagrams are provided to show connector and pin assignments for the ***e-ASK*** MODULE and the Keypad.

Table 1: CONNECTOR AND PIN INFORMATION

CONNECTOR	MATING CONNECTOR	MATING TERMINALS
J1	DEUTSCH DT06-12SA-P012 WEDGE LOCK W12S-P012	DEUTSCH 0462-201-16141 OR 1062-16-0122
J2	DEUTSCH DT06-12SB-P012 WEDGE LOCK W12S-P012	
J3	APTIV 13521459 GT280 CPA 15317832	15304719 TERM 15366065 SEAL

KEYLESS MODULE FUNCTION	PIN
J1 CONNECTOR	
UNUSED LF ANTENNA 1	1
GROUND	2
CAN HIGH	3
CAN LOW	4
ENTRANCE LOCK OUTPUT (15A)	5
ENTRANCE UNLOCK OUTPUT (15A)	6
VEHICLE POWER (+12V DC)	7
DOOR KEY SWITCH INPUT (-)	8
UNUSED OUTPUT (-500 mA)	9
WAKE OUTPUT (-500 mA)	10
DOOR AJAR INPUT (-)	11
UNUSED LF ANTENNA 1 RETURN	12

J2 CONNECTOR	
433 MHz RF ANTENNA (107.5 cm LONG)	1
GROUND	2
PKS ANTENNA 2 RETURN	3
UNUSED LF ANTENNA 3	4
GROUND	5
INTERIOR LOCK SWITCH INPUT (-)	6
12V ANTI-THEFT LED SUPPLY	7
ANTI-THEFT LED OUTPUT (-500 mA)	8
INTERIOR SWITCH UNLOCK INPUT (-)	9
ENTRANCE DOOR UNLATCH OUTPUT (-500 mA)	10
UNUSED LF ANTENNA 3 RETURN	11
PKS ANTENNA 2	12

KEYPAD FUNCTION	PIN
J3 CONNECTOR	
VEHCILE POWER (+12V DC)	A
GROUND	B
CAN HIGH	C
CAN LOW	D

Regulatory Information

This device 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.

Le manuel d'utilisation des appareils radio exempts de licence doit contenir l'énoncé qui suit, ou l'équivalent, à un endroit bien en vue et/ou sur les appareils :

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications (moving the LF antenna for example) not expressly approved by the manufacture could void the user's authority to operate the equipment.

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement

RF Exposure Statement:

The device shall be used in such a manner that the potential for human contact normal operation is minimized. This equipment complies with RSS-102 radiation exposure limits. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body. This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

Le dispositif doit être utilisé de manière à minimiser le potentiel de fonctionnement normal par contact humain. Cet équipement est conforme aux limites d'exposition au rayonnement RSS-102. Cet équipement doit être installé et utilisé avec une distance minimale de 20 cm entre le radiateur et votre corps. Cet appareil et son (ses) antenne (s) ne doivent pas être co-localisés ou utilisés conjointement avec une autre antenne ou un autre émetteur