

# The Child Reminder System Installation Manual

Revised June, 2006

*New!*

*New!*

Detailed installation information can be found at [www.childreminder.com](http://www.childreminder.com).  
Get through your installation quickly and easily by calling 1-888-330-6786  
and speak with one of our technical support staff! We will show you exactly  
where to connect each wire.

## Available Models from CRS Electronics

- *Original Child Reminder*
- *Newest Child Reminder with Field Trip Protection,  
Courtesy Lighting, and Quick Diagnostic Check for  
Mechanics.  
Our Most Popular Model Ever!!!*
- *Day Care School Vehicle Model for Vans and Buses*
- *A Florida Compliant Model*

**Did you know you can change the program of your  
current unit without buying a new one?**

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# How the Child Reminder Works Better

Up until now, there were only two methods used by electronic alarms designed to make sure drivers check their buses for sleeping children.

## ***Method 1: Ignition Off / Timer Method***

The concept is simple. When the driver turns off the bus, a timer is initiated and a buzzer sounds. The driver has 30 to 60 seconds to get to the rear of the bus and press a deactivator button or open the rear door.

The problem: Our research found that some drivers were bypassing such systems by walking around the outside of the bus and deactivating them through the rear door, even if the deactivator was located near the roof (especially in mini buses). Since this type of system does not monitor the doors, it is incapable of distinguishing whether the driver walked through the bus or around it.

It was also discovered that drivers were so concerned about getting to the back of the bus before the alarm sounded, they did not perform thorough checks for children. In addition, other drivers were in such a rush to get home, they actually left the yard before the horn sounded.

## ***Method 2: Ignition On Method***

With the bus still running, the driver walks to the rear of the bus and presses a deactivator or opens the rear door. If the system is not deactivated prior to turning off the bus, an alarm sounds immediately.

The problem: Our research found that many drivers were asking students to press the deactivator button on the way to school. This type of system usually resets itself every time the warning lights are used (to avoid having a driver start the bus and immediately push the deactivator). However, since the warning lights are usually not used after dropping students off at school, the opportunity exists to have a student press the button for the driver, rendering the system ineffective.

# Our Solution

The Child Reminder System (CR2A) uses a different method to make sure drivers check their buses for sleeping children. The CR2A monitors ALL exit doors of the bus. If the driver shuts off the bus and attempts to leave (i.e. opens one of the doors), the system will sound the vehicle horn immediately, which does not give them time to get out of “earshot” before the horn sounds. There is no time delay. Turning on the vehicle’s accessory power is the only way to silence the horn once it sounds. This forces the driver back into the bus and will not let them walk around the outside to deactivate it.

When the driver turns the bus off, the system arms and turns on the interior lights to help the driver see better. Opening any doors of the vehicle will set off the alarm unless it is deactivated first (by “cracking” open the rear door handle). Therefore, the driver cannot get out of the bus without deactivating The Child Reminder first. This makes it impossible for the driver to walk around the outside of the bus and reach in through the back door to deactivate the system. In addition, drivers can’t have a student deactivate the system. Unlike other systems, the accessory power must be on to open the service door without setting off the alarm once it has been armed. Therefore, unloading students requires the accessory power to remain on (the engine does not have to be running). Deactivation can only occur after the ignition is turned off and the driver wants to leave the bus. No students should be left on board, leaving only the driver to deactivate the system.

The CR2A requires drivers to exit the bus in the following sequence:

1. Make sure all doors are closed
2. Turn off the bus. Interior lights and red LED illuminate.
3. Walk to the rear of the bus and open the rear door.

The interior lights will flash twice when you open the rear door. This confirms that you have deactivated the system. The interior lights and LED will turn off in approximately 25 seconds.

## **Before You Start Installing...**

If this is your first time installing a Child Reminder, you may want to visit our website or call 1-888-330-6786. If you have a high-speed internet connection, you can click on a similar bus you might be working on and a video will start playing within seconds that will show you where and how to make all connections for your installation. The address is [www.childreminder.com](http://www.childreminder.com).

Wiring diagrams and a parts list can be found at the back of this manual. Make and verify all connections to the wiring harness before plugging in the control module. The control module should be mounted behind the accessory panel so the driver does not have easy access to it. The LED should be mounted in a location that can easily be seen by the driver while he / she is in the driver's seat. The sticker should be located near the LED.

## **Important for Air Door Buses**

If your school bus has a power assisted service door, you may require the optional part # ADK1. The door switches in some power assisted doors do not operate when emergency releases are used. The ADK1 kit includes a micro-switch and universal mounting bracket that will correct this. A simple test to determine whether or not the ADK1 is required is to start the amber warning lights, push the door open manually using the emergency release, and see if the red lights come on. If the red warning lights don't activate, you will need to install the ADK1.

# You Need to Know This First!

## *What is a diode?*

A diode is an electrical “one-way valve”. Current will flow in one direction only. This means that there is a polarity to observe when using them. Think of current as flowing from the positive terminal of the battery, through a load to ground. A diode can be placed in series with the circuit anywhere, as long as current comes in the lead without the grey stripe and leaves through the lead with the grey stripe. The diode will then allow current to flow in the proper direction only. It will stop any current from flowing backwards.

The diodes included with the Child Reminder have a maximum current rating of 1 Amp.

## Why are diodes necessary?

The Child Reminder is a microprocessor controlled system. School bus body manufacturers still use mechanical buzzers. When the CR2A microprocessor attempts to sense resistance and voltage levels in the rear door circuit, current can flow backwards through the buzzers causing incorrect readings if diodes are not used.

In general, diodes help create a trouble-free system by isolating various circuits from each other.

## Buzzer Isolation Diode(s) IMPORTANT!!!

A diode **MUST** be installed in series with each wire feeding accessory power to each emergency exit buzzer. Install the diode(s) so that the terminal **WITH** the grey stripe faces the buzzer. This will keep current from running backwards through the buzzer(s). Do not skip this step!

# Wiring Harness Connections

## ***RED (Power)***

Connect to constant + 12V. DO NOT CUT OUT THE FUSE. This fuse is necessary to prevent possible damage to both the Child Reminder and the school bus.

## ***BLACK (Ground)***

Connect to ground.

## ***YELLOW (Accessory Power)***

Connect to accessory power. This wire must receive + 12V when the ignition key is in the "ON" or "Accessory" positions.

## ***GREEN and GREY (Interior Lights In/Out)***

Locate the wire running from the interior light switch to the interior lights. Cut it. Connect the green wire to the wire running TOWARDS the interior lights. This wire provides + 12V power (10 Amp maximum) to turn on the interior lights. Connect the grey wire to the wire coming from the interior light switch. DO NOT CUT OUT THE FUSE. This fuse is necessary to prevent possible damage to both the CR2A and the school bus.

## ***BLUE (Horn Output)***

Connect to the vehicle horn relay or directly to the horn. The blue wire will output either + 12V or ground signals (10 Amp maximum) to energize the vehicle horn relay. For information on locating the horn relay wire in the vehicles, see the section "Locating The Horn Wire And Identifying It's Polarity". Also see the section "How The Horn Circuit Works".

## ***RED/WHITE (Horn Polarity)***

If a + 12V signal is required to activate the vehicle horn, connect this wire to constant + 12V. If a ground signal is required to activate the vehicle horn (most common type), connect this wire to ground. For information on determining the horn wire polarity, see the section "Locating The Horn Wire And Identifying It's Polarity. DO NOT CUT OUT THE FUSE. The fuse is necessary to prevent possible damage to both the Child Reminder and the school bus.

## ***ORANGE (Arming Wire)***

When this wire receives + 12V (and accessory power is on), it will arm the system – meaning the bus must be checked upon shutdown. If you want the system to arm when the overhead warning lights have been used, connect to the warning light master switch or the stop arm output on the warning light flasher. If you wish to have the system arm every time the vehicle is started, connect the orange wire to accessory power. Some customers have connected this wire to the brake light switch (requires bus to be checked if it is MOVED).

## ***GREEN/VIOLET (Positive Door Input)***

For standard large buses this wire is usually not used. This wire is only required if there are any positive type door switches (some mini bus driver doors). Connect to door switches that read + 12V when the door is open. Leave disconnected if no positive door switches are present. If more than one positive door switch must be monitored, see the section “Monitoring Multiple Door Switches”.

## ***VIOLET (Negative (Grounding) Door Input)***

Connect to service door switches that go to ground when the door is open. Leave disconnected if no ground type door switches are present. A good place to find the door switch signal is on the 4/8 way overhead warning light flasher. Connect to either the “Flash reds whenever door is open” terminal or the “Flash reds only after ambers” terminal. One of them will be connected to the bus door switch already. You can “piggy back” the Child Reminder door switch input at this point. If other components use the door switch (air solenoid for stop arm, relays, etc.), you may need to install a diode in series with the other component(s). If the system sounds the horn immediately upon shutdown of accessory power (without opening the service / entrance door), other components in the bus are interfering with the system.

## ***Determining Rear Door Wiring Configuration***

The white wire is used if the bus has a dedicated wire (side window exits and roof hatches on a separate wire) that runs from the front buzzer to the rear door switch. Most buses are wired this way. The Black / Grey wire is used if the rear door switch shares a wire with other emergency exits (ex. Blue Bird). To determine if the rear door switch has its own wire, turn on the accessory power and open the rear door. The front buzzer should sound. Begin removing wires from the negative post on the front buzzer. When it stops buzzing, you have found the rear door switch wire. Reconnect all other wires, leaving the rear door switch wire disconnected. Open the other emergency exits one by one. If they all still activate the buzzer, the rear door switch has its own wire. If any of the other exits can only activate the buzzer if this wire is connected, they share the wire with the rear door and the diode sniffer wire (Black / Grey) must be used instead of the white wire. Thomas and International/Amtran have dedicated wires. Blue Birds do not.



***WHITE (Dedicated Rear Door Wire)  
Deactivation***

To use the rear door, disconnect the dedicated rear door switch wire from the negative post on the front buzzer (located near the driver's seat) and feed it directly to the white wire on the Child Reminder. Install a diode (grey stripe towards white wire) between the white wire and the negative post on the buzzer. See the wiring diagram for clarification. If a momentary type push button is installed at the back of the bus with a dedicated wire running to it, connect the white wire to the push button. Connect the other side of the push button to ground.

**Or**

***BLACK / GREY (Diode Sniffer for Shared Rear Door Wire)  
Deactivation***

This wire is to be used when other emergency exits share the wire running from the rear door switch up to the front buzzer. Connect to the negative post of the rear door warning buzzer located near the driver's seat. Leave the rear door switch wire connected to the buzzer.

Connect 2 diodes in series with the rear door switch at the back of the bus. The Child Reminder will scan ALL of the emergency exit switches and look for the one with these diodes attached. A momentary push button switch can be used instead of the rear door switch by connecting one side of the button to the rear door switch wire. Connect the other side through 2 diodes to ground. See the wiring diagram for clarification.

# How the Horn Circuit Works

To activate the horn, The Child Reminder connects the Red/White wire to the Blue wire internally through the contacts of a 10 Amp relay. Whatever connection (+12V or ground) is made to the Red/White wire will be fed out through the Blue wire when the system attempts to turn on the horn. This feature eases installation and eliminates the need for external relays and additional wiring.

## Locating the Horn Wire and Identifying its Polarity

The horn wire can almost always be found at the base of the steering column. Connect the alligator clip of a test light to ground. Probe the wire you believe carries the horn signal with the test light. If the horn activates immediately upon probing, you have found the correct wire. In addition, you can also conclude that the horn is activated by a ground signal. Test lights draw enough current to activate many ground triggered horn relays. If you find a wire that lights up the test light immediately (may only be a dim light), and turns the light off when the horn is activated, you have most likely found the correct wire and can conclude that the horn is activated by a ground signal.

If you find a wire that lights up the test light when the horn is activated, you have most likely found the correct wire and can be fairly certain that it requires + 12V to activate the horn.

## Identifying the +/- Posts on the Buzzer

Connect the alligator clip of a test light to ground. Turn on the ignition. Probe one terminal of the buzzer. Observe the brightness of the test light and listen carefully to the buzzer. Probe the other side of the buzzer. Observe the brightness of the test light and listen carefully to the buzzer. The positive (+) terminal of the buzzer should give a noticeably brighter test light reading than the negative (-) terminal of the buzzer. In addition, the buzzer will attempt to activate when probing the negative (-) terminal. Tapping the test light repeatedly to the terminal will help you hear the buzzer attempting to sound.

# Testing System Operation

1. Start the vehicle. Close all doors.
2. Turn the ignition key to the "OFF" position
3. Confirm that the interior lights did not illuminate.
4. Start the vehicle.
5. Activate the warning lights.
6. Turn off the warning lights.
7. Turn the ignition key to the "OFF" position
8. Confirm illumination of interior lights and LED.
9. Open any door except rear door.
10. Confirm vehicle horn honking
11. Turn ignition key to "Accessory Power" position.
12. Confirm silencing of the vehicle's horn.
13. Close all doors.
14. Turn ignition key to "OFF" position.
15. Confirm illumination of interior lights and LED.
16. Open any emergency exit except rear door.
17. Confirm interior lights DO NOT flash.
18. Close all emergency exits.
19. Open rear door.
20. Confirm 2 flashes of interior lights.
21. Wait approximately 20 to 30 seconds.
22. Confirm shut off of interior lights and LED.

## **Notes:**

Steps 9 through 15 should be followed for each door to confirm that the bus driver cannot exit any doors without triggering the alarm.

Steps 16 and 17 should be followed for each emergency exit to confirm that the bus driver cannot deactivate the system with an emergency exit other than the rear door.

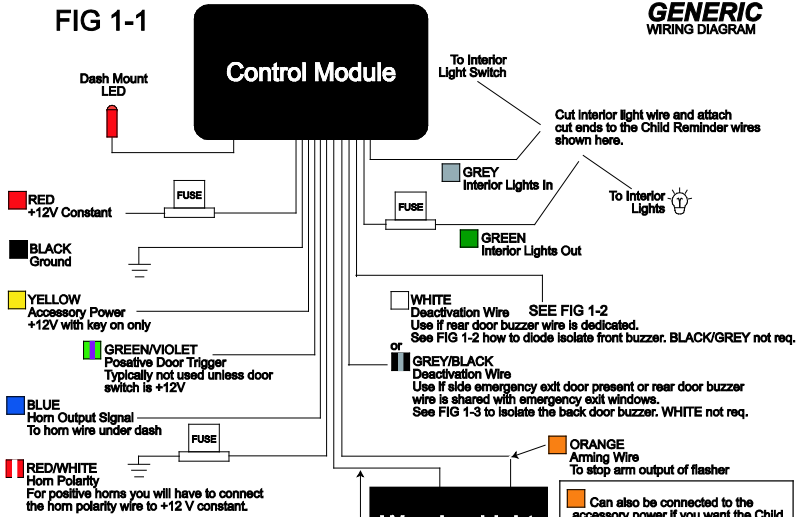
***If you are testing a Child Reminder Model B go to page 16.***

***If you are testing a Child Reminder Day Care Model go to page 18.***

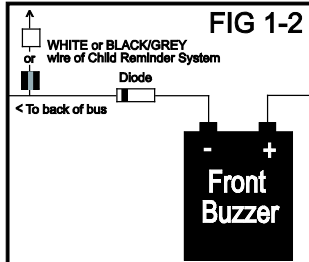
# Troubleshooting Guide

| Problem  | Corrective Actions   |
|--|--|
| <p>System does not arm upon shut down of accessory power.</p>  | <p>Check the fuse on the RED wire. RED should be +12V constant. YELLOW should be +12V ACC, and ORANGE must receive +12V for at least 0.6 seconds to arm the system. Typically ORANGE is connected to the warning light circuit or to ACC.</p> <p>Did you remember to turn on the accessory power AND the warning lights (or whatever system you connected the ORANGE wire to) to arm the system?</p>   |
| <p>Interior lights do not activate, but LED turns on.</p>  | <p>Check connections on GREY and GREEN wire. GREEN wire must go towards interior lights.</p> <p>Check fuse on GREEN wire.</p>  |
| <p>System won't deactivate when I crack the rear door handle open. I am using the diode sniffer wire.</p>  | <p>Make sure all emergency exits are closed. The system can't find the diodes if another exit is open.</p> <p>Check connection on BLACK/GREY wire. Is it on the negative terminal of the buzzer? Did you put a diode in series with each buzzer to stop reverse current flow?</p> <p>Make sure 2 diodes are properly installed at rear door switch.</p>  |
| <p>System deactivates itself immediately upon shut down of the accessory power. (Interior lights flash twice, then go out 20 seconds later).</p>   | <p>Buzzers are not isolated properly and current is running backwards through them. Check installation of diode(s) on accessory power feeds to buzzer(s).</p>  |
| <p>Horn activates immediately upon shut down of the accessory power. I am using the violet wire for my entrance door input and have verified that it is "piggy backed" on door input connector on the warning light flasher.</p> | <p>The most common cause is another component (stop arm air solenoid, crossing arm, relay coil, etc.) using the same entrance door switch without proper isolation. Check resistance to ground of door switch wire with Child Reminder unplugged and ignition key off. If it is below 5,000 ohms, look for a component (other than the warning light flasher) that may be sharing the switch. Install a diode in series with the component causing the low resistance reading.</p> |
| <p>Horn does not activate when I turn off accessory power and open a door, but I can hear a relay inside the control module clicking on and off.</p>   | <p>Check connection on BLUE wire. Verify that you have connected it to the vehicle horn relay wire. Log on to website to find the wire.</p> <p>Check connection on RED/WHITE wire. Verify that you connected it to +12V constant or to ground, depending on vehicle horn signal polarity. Most buses are grounding type.</p> <p>Check fuse on RED/WHITE wire.</p>  |
| <p>Horn does not activate when I turn off accessory power and open a door, and I do not hear any relays clicking inside the control module.</p>  | <p>Check door trigger connections. If used, the GREEN/VIOLET wire should read 0V when the door is closed, and +12V when it is open.</p> <p>If used, the VIOLET wire should read +12V when the door is closed, and 0V when it is open.</p>  |

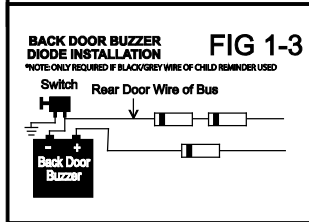
**FIG 1-1**



**FIG 1-2**



**FIG 1-3**



**Warning Light Flasher**

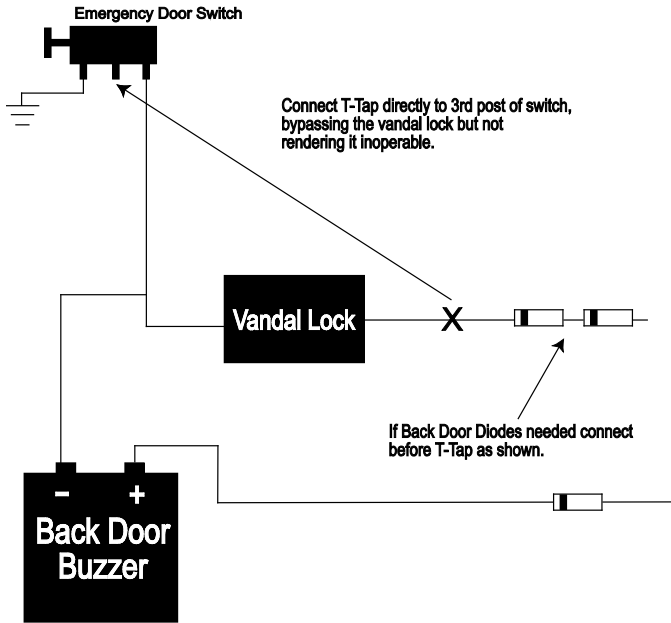
**VIOLET** Negative Door Trigger Connects to Door Switch Input of flasher

If this is an Air Door bus please refer to the Air Door Kit (ADK) instructions on what to do with the violet wire. These instructions can be found in the ADK1 box. Contact your dealer if you do not have this kit. You cannot finish the installation without it.

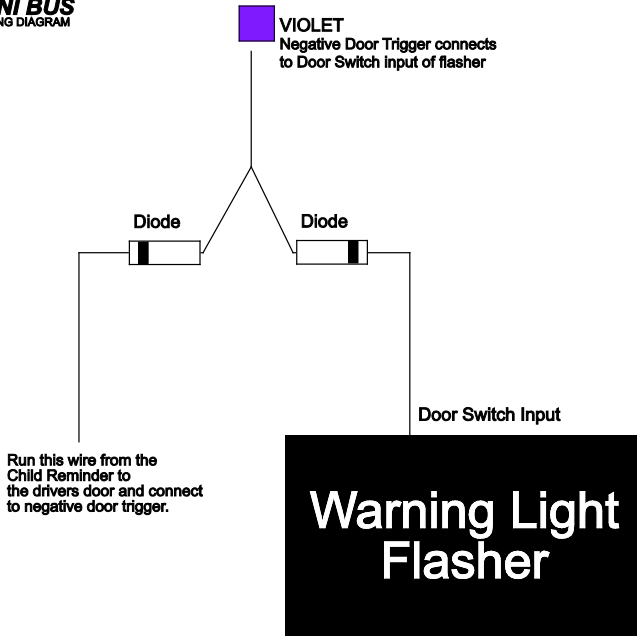
**TIPS FROM CRS ELECTRONICS INSTALLERS**

1. Most bus manufacturers as of year 2000 and up have begun wiring diodes directly to the buzzer outputs. Check for diodes before installing and save yourself the trouble of installing them twice.
2. Be sure to check the horn polarity as stated in installation instructions. Late model Fords especially!
3. The LED hole is a 21/64" drill bit.

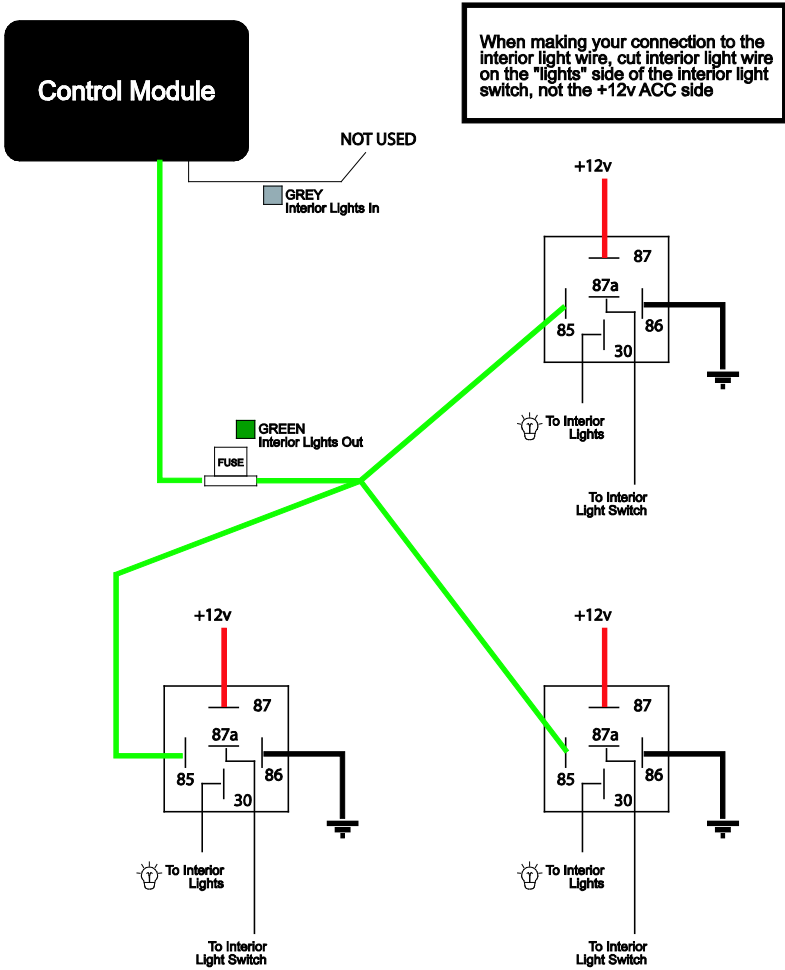
**VANDAL LOCK**  
WIRING DIAGRAM



**MINI BUS**  
WIRING DIAGRAM



# MULTIPLE INTERIOR LIGHT CIRCUITS WIRING DIAGRAM





# Child Reminder: Model B

## Part Number: CR2B

System arms with the warning lights as well as self arms 10 minutes after the bus has been running with the door closed. The system can only be disarmed with the key in the off position. When the bus shuts down the interior lights will go on for added view of the bus and an LED will illuminate on the dash. The driver is required to go to the back of the bus and lift the door handle to disarm. A push button is optional. When the driver disarms the system, the lights will flash to confirm that the system is disarmed and will stay on for the next 60 seconds, for added view when returning to the front of the bus. The driver is now free to exit the bus. If this procedure is not followed, the **horn will honk immediately** when the driver tries to exit the bus. The driver will then be required to put the key back in the ignition in the on position to stop the horn from honking and close the door and start the process over.

### Added Features

**1. Self Arming** – Arms after 10 minutes of the bus running with the door closed. This will protect field trips when warning lights are not used.

**2. Diagnostic Check-** When performing the pre-trip inspection, the driver will open and close the service door quickly twice and the horn will honk to confirm the Child Reminder is functioning properly. If the horn does not honk, the system should be checked by the mechanics.

**3. Courtesy Lighting-** The interior lights will illuminate when the door is opened. It is on a two minute timer to protect against a dead battery should the door blow open in the middle of the night.

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**Part Number: CR2B-FL- Florida Version** - System arms with the warning lights as well as self arms 10 minutes after the bus has been running with the door closed. The system can only be disarmed in the off position. When the bus shuts down the interior lights will go on for added view of the bus and an LED will illuminate on the dash. The driver is required to go to the back of the bus and lift the door handle to disarm. A push button is optional. **The driver has 60 seconds in which to disarm or the horn will start to honk.** When the driver disarms the system, the lights will flash to confirm that the system is disarmed and will stay on for the next 60 seconds, for added view when returning to the front of the bus. The driver is now free to exit the bus. If this procedure is not followed, the **horn will honk immediately** when the driver tries to exit the bus. The driver will then be required to put the key back in the ignition in the on position to stop the horn from honking and close the door and start the process over.

### Added Features

**1. Self Arming** - After 10 minutes of the bus running with the door closed. This will protect field trips when warning lights are not used.

**2. Courtesy Lighting-** The interior lights will illuminate when the door is opened. It is on a two minute timer to protect against a dead battery should the door blow open in the middle of the night.

## **Wiring Changes:**

There are three different ways to wire the CR2B and CR2B-FL depending how you would like the alarm to function.

1. If you want the system to arm every time the key is turned on connect the orange wire to +12V accessory.
2. If you want the system to arm after the bus runs for 10 minutes or when the warning lights are used, connect the orange wire to the stop arm output of the warning light flasher.
3. If you want the system to only arm after the bus has been running for 10 minutes, DO NOT connect the orange wire.

## **Testing System Operation:**

### **CR2B**

1. Open service door and confirm illumination of interior lights
2. Wait 2 minutes and confirm shut off of interior lights
3. Start the vehicle. Close all doors
4. Turn the ignition key to the "OFF" position
5. Confirm that the interior lights did not illuminate
6. Start the vehicle. Let it run for at least 10 minutes
7. Turn the ignition key to the "OFF" position
8. Confirm the interior lights and LED have illuminated
9. Open service door or driver's door (if present)
10. Confirm vehicle horn honking
11. Turn ignition key to "ON" position
12. Confirm silencing of the vehicle's horn
13. Close ALL doors
14. Turn ignition key to "OFF" position
15. Open any emergency exit except rear door
16. Confirm interior lights DO NOT flash
17. Close ALL emergency exits
18. Open rear door or push deactivator button (if installed)
19. Confirm 2 flashes of the interior lights
20. Wait approximately 20-30 seconds
21. Confirm shut off of interior lights and LED

If you used 1 or 2 in the wiring changes also follow these steps

22. Start the vehicle. Close all doors
23. Activate the warning lights.
24. Turn off the warning lights.
25. Turn the ignition key to the "OFF" position
26. Repeat Steps 8 to 19
27. Open and close front service door twice quickly
28. Confirm double honk from vehicles horn

### **CR2B-FL – substitute these above**

25. Turn ignition key to "OFF" position, wait approximately 60 seconds
26. Confirm vehicle horn honking
27. Repeat Steps 8 to 19

# Child Reminder: Day Care

Part Number: CR2ADCREVB

**For Daycare vans.** Used in vehicles that do not have access to the back from inside the vehicle. The unit will arm when the ignition is turned on. When the van shuts down the interior lights will illuminate and the driver has a 60 second time limit to get out of the vehicle and around to the side door to reach in and disarm the system by pushing a button. If the unit is not disarmed within 60 seconds, the horn will start honking until the button is pushed to disarm. The lights will flash to confirm deactivation.

## ***Wiring Changes:***

The system must arm every time the key is turned on. To do this, connect the orange wire to +12V accessory.

Interior Lights (Green and Grey) most often are not used. If you desire these to function please call 1-888-330-6786 and ask to speak to Technical Support.

Door Trigger wires (Violet and Green/Violet) are most often times not used unless you wish the driver to remain inside and travel through the vehicle to the rear to depress the deactivator button. In some cases such as Ford, GMC, Chevy, and Dodge 15 passenger Vans this is not desirable as the spacing is very tight and was not designed for this purpose.

Push Button is connected to the white wire. You will need to extend this wire to reach the rear of the vehicle. In vans, install the push button in the middle between the children's loading door and the back double doors. In School Bus type vehicles, install the button at the rear wall above the rear windows.

## **Testing System Operation:**

1. Start the vehicle. Close all doors
2. Turn the ignition key to the "OFF" position
3. Confirm the interior lights and LED have illuminated
4. Wait approximately 60 seconds
5. Confirm vehicle horn honking
6. Turn ignition key to "ON" position
7. Turn ignition key to "OFF" position
8. Confirm the interior lights and LED have illuminated
9. Deactivate system by pushing the button
10. Confirm 2 flashes of the interior lights
11. Confirm shut off of interior lights and LED

**Notes:**

***This box contains:***

| <b>Qty</b> | <b>Description</b>     |
|------------|------------------------|
| 1          | Control module         |
| 1          | Wiring harness         |
| 1          | LED with wire and plug |
| 1          | NOTICE sticker         |
| 6          | 1 Amp diodes           |

***Tools you will need to perform this installation:***

Cordless Drill  
Crimpers and Wire Strippers  
21/64" LED Drill Bit  
Test Light and Volt/Ohm Meter  
Connection method – Mar, Quick Connects, Solder

***Technical Support:***

***1-888-330-6786***

Other innovative products from CRS Electronics include:

**G2 Fusion LED Warning Lights**

*Red, Super Red and Amber*

**7" LED Brake/Tail and Signal Lights**

**4" LED Brake/Tail and Signal Lights**

**4" LED Clear Backup Light**

**4" LED Brake/Tail with LED License Plate Light**

**Assorted LED Marker Lights**

**Headlight Flasher**