Bus-Scan® CR2 RF

Installation and Operation Guide

800-995-6056

Table of Contents

1.0 Introduction

Before installing and using, please be sure to read this manual.

- This product is for vehicle interior use only.
- To prevent short-circuits or the risk of electric shock, do not install or use in damp or wet areas.
- In the event of any liquid or foreign object entering the unit, please disconnect the power immediately.
- This product is not user-serviceable. Please refer to a qualified technician for service.
- Specifications and features are subject to change without notice.

1.1 Installation Environment

- Requires 11-13.6V DC power supply. Please confirm the power source before powering.
- Select an appropriate location for installation: Dry, with adequate ventilation.

1.2 Packing List

Item	Quantity
Bus-Scan CR2 Control Unit	1
Bus-Scan RF Remote Transmitter (includes battery)	1
12-Position Interface Cable	1
#8 x 3/8" sheet metal screws for mounting	4
Drilling templates for Control Unit & Transmitter	1 Each
This Manual	1

1.3 Product Overview

The **Bus-Scan CR2 RF** child reminder system is appropriate for all mobile environments, including school buses and passenger vans, when installed as designated herein. This RF (radio frequency) model incorporates our exclusive wireless-disarming feature, which obviates the need to run wires to the rear of the vehicle . Please refer to the appropriate sections of this manual for information about specific features and operations.

2.0 Operational Features

- Can auto-activate within five seconds of Ignition being turned on
- Can use an arming input (Parking Brake, etc.)
- Starts a warning beeper to alert the driver to begin a vehicle inspection
- Driver must proceed to the rear of the vehicle, and press the disarm button
- If any floor-level door is opened without disarming, the alarm will sound / light
- Interior lights automatically activate during inspection, and remain on for 1 minute
- Auto courtesy lights assist entering and exiting passengers
- The alarm can sound the vehicle horn, or can use an optional siren
- Horn will sound up to thirty minutes if the vehicle check is not performed
- Audible and Visual system status indications
- Pluggable harness for quick and easy wiring
- High-capacity Horn & Light relays are built in – external modules not required
- Uses relays with open contacts (not transistors) to prevent vehicle system interference

3.0 Required Tools
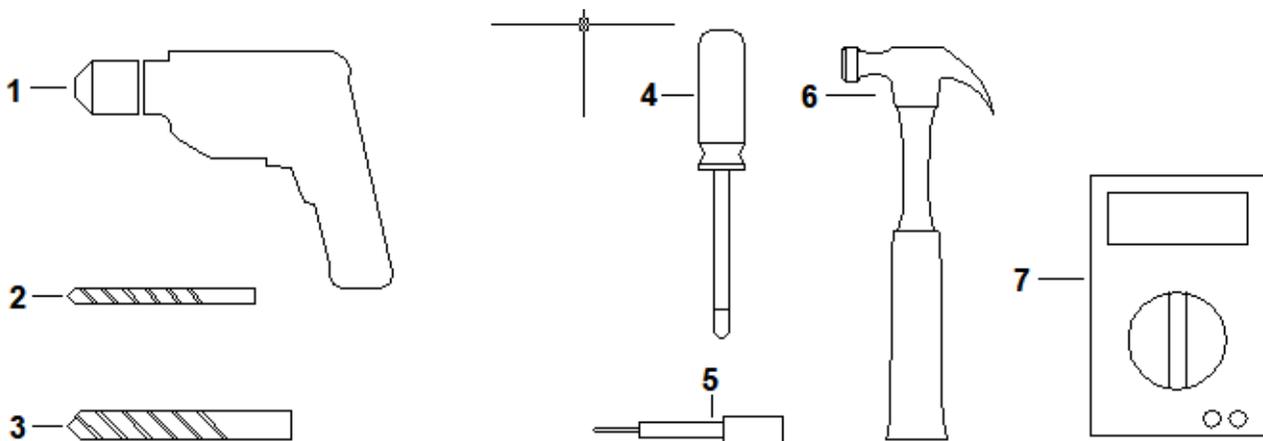
1	Electric Drill
2	1/8" Drill Bit
3	1/2" Drill Bit
4	Phillips Screw Driver
5	Center Punch
6	Hammer
7	Multi-meter

4.0 Mounting the Control Unit

1) Select a suitable location near the driver's compartment
2) Use the supplied template, center-punch the indicated mounting holes and drill
3) Use the DIP switches on the back of the Control unit to set features, if desired
4) Mount the **Bus-Scan CR2** Control Unit with two of the #8 x 3/8" Sheet Metal Screws

5.0 Wiring the Control Unit

Refer to the following wiring diagrams to connect the **Bus-Scan CR2** Wiring Harness. The harness comprises a 12-pin connector, fuses where appropriate, and wire of sufficient length for typical installations. If additional wire length is required, please make sure to observe standard wiring practices to ensure safe and proper operation.

For clarity, we have separated our wiring diagrams into sub-systems. We hope that providing you with multiple, task-oriented views can make the system more comprehensible (although all the diagrams can appear intimidating at first glance, you'll find that breaking it into tasks ultimately makes it easier).

The first section is just an overview of the wiring harness—its colors and functions. Next, are wiring diagrams for the Horn, the Lights, and the system inputs.
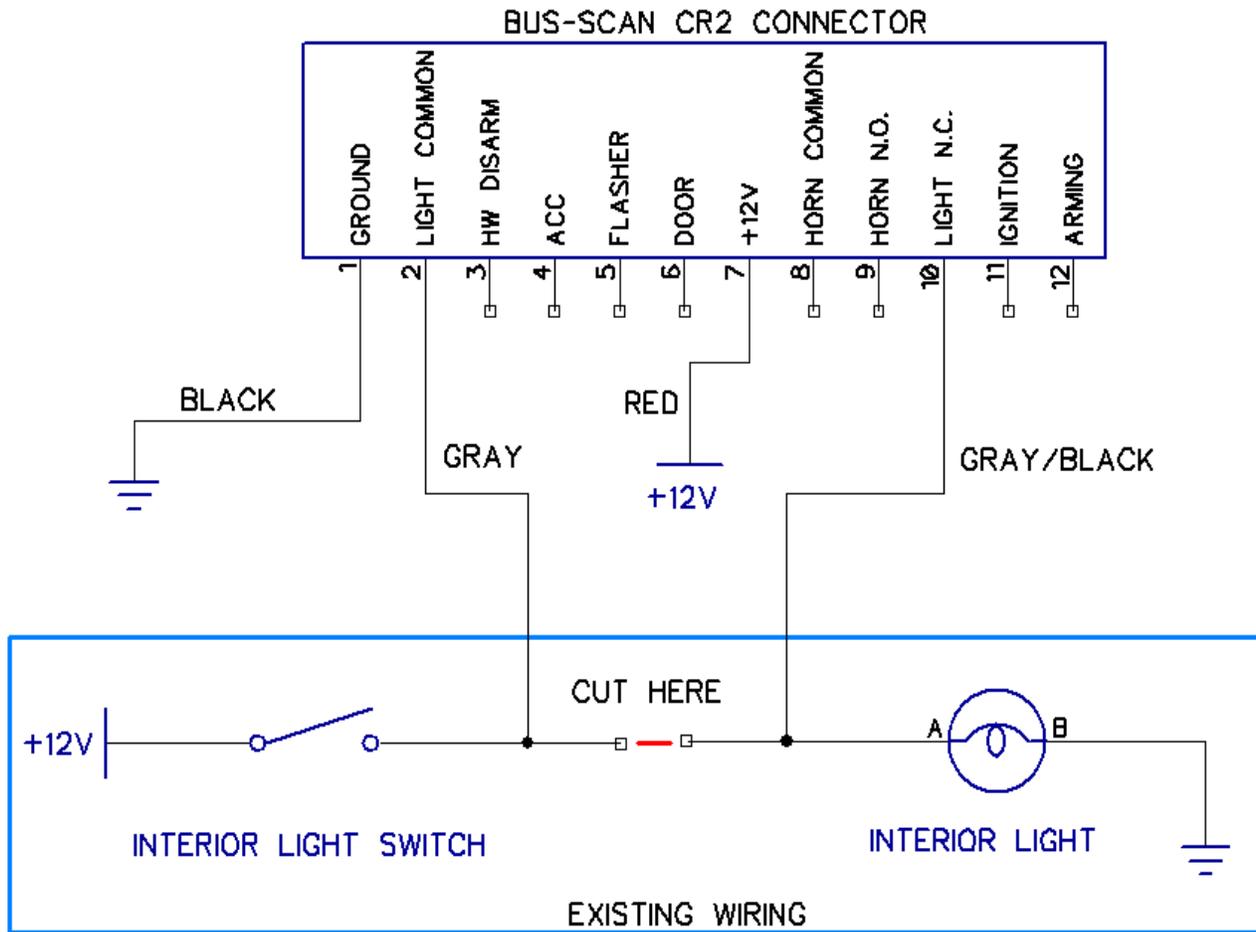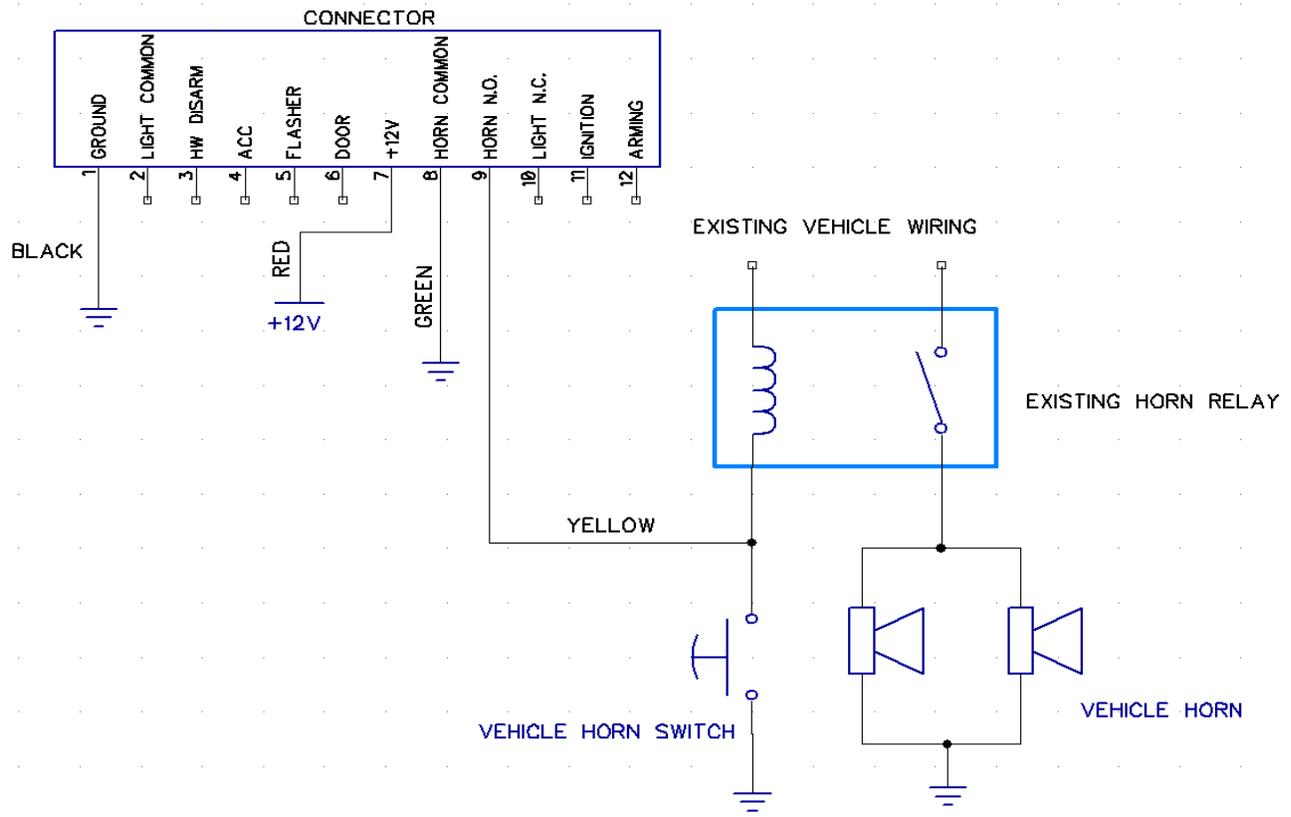
5.1 Control Unit Harness Details

CLIP SIDE

Wire	Function
RED	+12VDC
GREEN	HORN COMMON
YELLOW	HORN N.O.
GRAY / BLACK	LIGHTS N.C.
BROWN	IGNITION
BLUE	ARMING

NON-CLIP SIDE

Wire	Function
VIOLET	DOORS
GREEN / BLACK	FLASHERS
WHITE	UNUSED
ORANGE	DISARM
GRAY	LIGHTS COMMON
BLACK	GROUND

5.2 Harness Function Table

Wire Color	Function	Activates	Pin
BLACK	Ground	---	1
GRAY	Lights Relay Common Contact	---	2
ORANGE	Disarm (Wired Disarm Models only)	@GND	3
WHITE	No connection—for future use	---	4
GREEN / BLACK	No connection—for future use	---	5
VIOLET	Door Chain Input	@GND	6
RED	+12V DC Constant	---	7
GREEN	Horn Relay Common Contact	---	8
YELLOW	Horn Relay Normally Open Contact	---	9
GRAY / BLACK	Lights Relay Normally Closed Contact	---	10
BROWN	Ignition Switch	@+12V	11
BLUE	Arming Input (Parking Brake, Stop Arm, etc.)	@+12V	12

5.3 Wiring the Vehicle Lights

BUS-SCAN CR2 CONNECTOR

1 GROUND	2 LIGHT COMMON	3 HW DISARM	4 ACC	5 FLASHER	6 DOOR	7 +12V	8 HORN COMMON	9 HORN N.O.	10 LIGHT N.C.	11 IGNITION	12 ARMING

BLACK

RED

GRAY

+12V

GRAY/BLACK

CUT HERE

+12V

INTERIOR LIGHT SWITCH

A   B

INTERIOR LIGHT

EXISTING WIRING

CONNECTOR

GROUND (1) — BLACK — ground

LIGHT COMMON (2)

HW DISARM (3)

ACC (4)

FLASHER (5) — RED — +12V

DOOR (6)

+12V (7)

HORN COMMON (8) — GREEN — ground

HORN N.O. (9) — YELLOW

LIGHT N.C. (10)

IGNITION (11)

ARMING (12)

EXISTING VEHICLE WIRING

EXISTING HORN RELAY

VEHICLE HORN SWITCH

VEHICLE HORN

IMPORTANT: Never connect the Bus-Scan CR2 Horn Relay output directly to the vehicle horn. Always connect to the COIL side of the existing vehicle horn relay. Failure to observe this practice can create a hazard and damage the Bus-Scan 500 system (as well as void the warranty)

If your vehicle does not have a Horn Relay, you can order one from us (order number 102893), or source your own.

5.6 Wiring the System Inputs
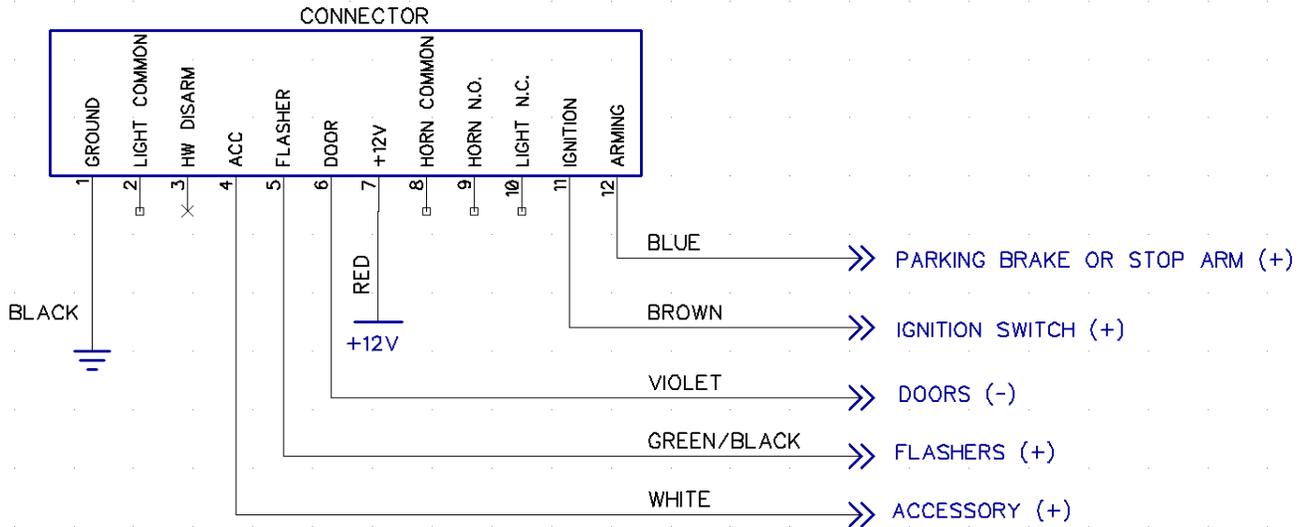
Input Type	Color	Notes
Parking Brake or Stop Arm	Blue	Connect to have Brake or Stop Arm arming (+12V activation). If not used, then tie to +12V for auto-arming within two seconds.
Ignition Switch	Brown	"ON" Initializes the system. Cycling to "OFF" starts a reminder sequence that requires disarming (+12V activation). Required input.
Doors	Violet	Ground = "DOOR OPEN." Required input.
Flashers	Green/Black	For future use
Accessory	White	For future use

5.7 Connect the Control Unit Harness

After the harness wiring has been completed, plug the connector into the mounted **Bus-Scan CR2 RF** unit. Now it's time to pair and test the system.

6.0 Pair the Remote Transmitter with the Control Unit

1) Turn the ignition to the "ON" position to power up the Control unit. The system must be powered in order to pair with the Remote Transmitter.
2) Locate the Pairing Hole on the front of the Control Unit. It is just to the left of the RF Link light, and is 1/16" in diameter.
3) Insert a paper clip into the hole and press to activate Pairing Mode. The RF Link indicator will start flashing to indicate Pairing Mode.
4) Within 15 seconds, press the Remote Transmitter button to pair. The RF Link indicator will stop flashing when the pairing is complete.
5) Press the Remote Transmitter button and watch for the RF Link indicator to blink, to confirm pairing.
6) When you turn off the Ignition, the system should sound a reminder tone.
7) Wait a few seconds, then press the Remote Transmitter button. The tone should stop, indicating that the system has successfully disarmed.

NOTE: If the Remote Transmitter button is not pushed within 15 seconds, the Control Unit will abandon pairing mode, and the RF Link indicator will stop flashing.

7.0 Mount the Remote Transmitter

- Once you have confirmed pairing and proper operation, find a suitable location at the rearmost area of the vehicle.
- Use the provided template and a center punch to prepare for drilling.
- Use a 1/8" drill bit to create clearance holes for the remaining 2 #8 x 3/8" sheet metal screws.
- Mount the Remote Transmitter.

This completes the installation of the Bus-Scan® CR2 RF

3-Position DIP Switch on Back of Unit

1. **Timed Auto-arming** (field-trip mode). In addition to arming the Bus-Scan **CR2** by an input signal (8-way flashers, stop sign, etc.), you can choose to have the system automatically arm after the ignition has been on for 10 minutes, with both doors closed. Enable by sliding **Switch 1** of the 3-position DIP switch to the 'ON' position.
2. **Timed Alarm Mode** Adds a timeout alarm to the usual "Door Opened Without Disarming" mode. Sliding **Switch 2** to the 'ON' position enforces a time limit of 60 seconds for the driver to press the "Disarm" button. Therefore, the system must be disarmed before opening a door AND within 60 seconds.
3. **Diagnostic Mode** This is used for factory testing, but can be used during installation, to speed up the process. There are many timed functions in the **CR2**, including auto-arming, light delays, etc. Sliding **Switch 3** to the 'ON' position will "speed up the clock" to move through those delays very quickly—so that you can confirm that everything is working properly. For example, the usual Auto-arm of 10 minutes occurs in only 10 seconds. If you use this special Diagnostic Mode, make sure to return **Switch 3** to the 'OFF' position when you are finished. Otherwise, the system will not function properly.
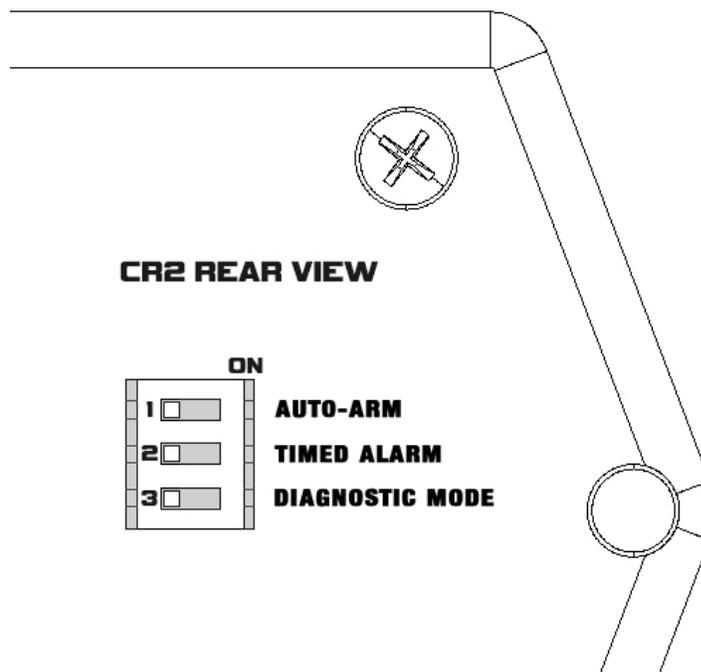
9.0 Technical Specifications

Bus-Scan CR2 Control Unit	
Dimensions	Length: 4.25" Width: 2.25" Height: 1.50"
Enclosure Material	Flame Retardant ABS Plastic, UL 94-5VA
Electrical System	12 Volt DC Negative Ground. Fuse at 2.0 Amps
Horn Activation	Form A Contact, Fuse at 2.0 Amps
Light Activation	Form A Contact, Fuse at 2.0 Amps
RF Receiver	315 MHz ASK

Bus-Scan CR2 Remote Transmitter	
Dimensions	Length: 4.25" Width: 2.375" Height: 1.0"
Enclosure Material	Flame Retardant ABS Plastic, UL 94-5VA
Battery	12 Volt Alkaline Battery MN21A, GP23A or Equivalent
RF Transmitter	315 MHz ASK

10.0 Warranty

Robotics Technologies, Inc. (RTI) warrants its products to be free from defects in materials and workmanship for a period of one (1) year from the date of purchase. Its obligation under this warranty is limited to repairing or replacing at its own sole option any such defective products. To obtain service under this warranty you must obtain a Return Material Authorization (RMA) number from RTI. Products must be returned to RTI with transportation charges prepaid and must be accompanied by a brief description of the problem encountered and proof of date and place of purchase. This warranty does not apply to equipment that has been damaged by accident, negligence or misapplication or has been altered or modified in any way. This warranty applies only to the original purchaser. The Bus-Scan® Seat Check Reminder is not a security or detection device. It is used as a reminder for the driver to physically check seats. It is the responsibility of the customer to ensure secure mounting and the continued maintenance thereof. Customer will indemnify RTI and hold it harmless from all actions or litigation arising from misuse of or improper mounting of the Bus-Scan®. EXCEPT AS PROVIDED HEREIN RTI MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Some states do not permit limitation or exclusion of implied warranties; therefore the aforesaid limitations(s) or exclusion(s) may not apply to purchaser. EXCEPT AS PROVIDED ABOVE, IN NO EVENT WILL RTI BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF THIS PRODUCT EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE. Specifically, RTI is not liable for any costs such as loss of profits or revenue, loss of service, loss of equipment, costs of substitutes, and claims by third parties or otherwise. This warranty gives you specific legal rights and you may also have other rights that vary from state to state.