Bus-Scan®
ALERT
...with built-in **GPS**!

INSTALLATION / OPERATION MANUAL
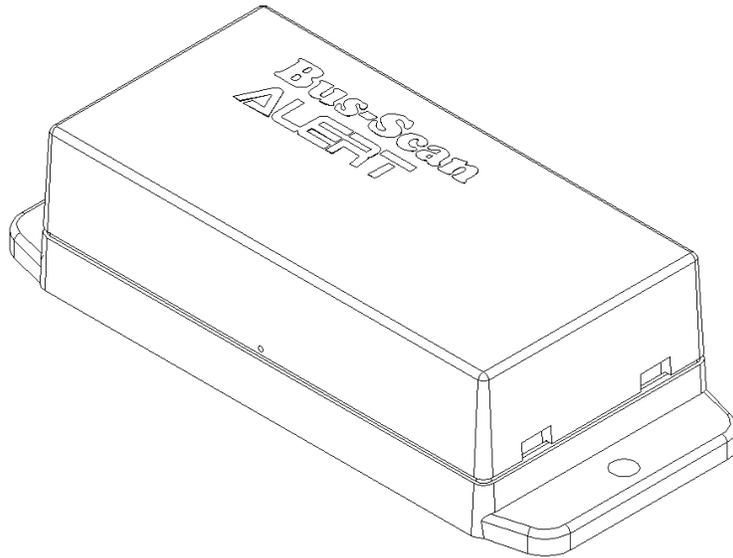
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Introduction

Thanks for choosing the Bus-Scan® ALERT. It's a stand-alone system that can send text message (SMS) alerts to your smart phone whenever a child reminder alarm occurs on your vehicle, and displays the location of that vehicle.

It is intended to extend the reach of the alarm that is generated when the proper vehicle check has not been performed. Usually, that alarm is the vehicle's horn or an auxiliary siren. As good as those can be, many times that local alarm isn't heard, or worse—is ignored.

Although it is best used with our own Bus-Scan® Child Reminders, the Bus-Scan® ALERT is just as easily connected to most other child reminders as well, as a retrofilt. If you own a Bus-Scan® of any vintage or model, the Bus-Scan® ALERT will work with it.

Here are the built-in alerts that are available:

- Child Check ALARM on <vehicle ID>
- Panic ALARM on <vehicle ID>
- Motion ALARM on <vehicle ID>
- Door ALARM on <vehicle ID>

Each message is followed by the date and time of the event (in GMT [Greenwich Mean Time] format for universality), then by a link that will take you to a Google Map that displays the location of the vehicle.
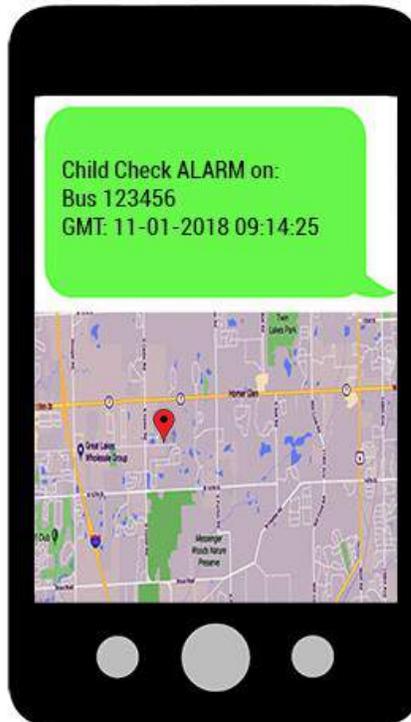
1.0 FAQ (Frequently Asked Questions)

How does it work?
The Bus-Scan® ALERT uses a micro SIM card (not included)—just like your smart phone. Just subscribe to your carrier's most economical plan, because the usage is so infrequent (it uses data only during an alarm condition).

Is it complicated to install and use?
Both are simple. Just connect to vehicle power (+12V and Ground), then wire up to four signal inputs from switches or sensors. In the case of wiring to a child reminder for alerting an alarm condition, just connect a single wire to the horn output of the reminder (the Bus-Scan Alert will accept either a +12VDC or Ground-activated output type).

For a Driver Panic Button, just connect a normally-open pushbutton switch to the appropriate Bus-Scan® ALERT input. Other inputs (for Motion & Door sensing) require additional sensors or switches. We can supply those, or you can source your own. View our wiring instructions to learn more about the requirements.

Using it is easy, because there's nothing for you to do. Once it has been connected, it just works.

Do I need special tools to install it?
No. The unit has two flanges for easy mounting with simple sheet-metal or machine screws (#4). Alternatively, you can use a strong double-stick tape—it's lightweight, only about 3 ounces. Just make sure not to "bury it" in sheet-metal. It needs to have the same access to cell service as any smart phone would. Try to mount near an area where it can "see" the sky, like the windshield, or near a window. If your smart phone can operate in a location, Bus-Scan Alert can, too.

Space is limited on my vehicle. Does it require a lot of area?
No, it's very compact: Only 3.54 L" x 1.77 W" x 1.08 H". As mentioned earlier, it weighs only about 3 ounces.

Does it require a large antenna?
It has a built-in antenna, just like your smart phone. Sometimes though, if you have special mounting requirements (under the dashboard, etc.) that prevent you from having optimal reception, we can provide a model with a separate, extended antenna to ensure good reception.

Will it work under all conditions?
Yes, inasmuch as your smart phone will. Like phones, the Bus-Scan® ALERT is subject to the verities of weather, obstructions and your carrier's service reliability. Although we can't guarantee service for all circumstances or be responsible for performance because of such interruptions, you can expect the same reliability that you would from any smart phone or similar device under similar circumstances. GPS operation depends on having a clear "view" of the sky and satellites for operation.

2.0 Wiring

Bus-Scan Alert provides four alarm conditions:
- Child Check
- Panic Button
- Door Alarm
- Motion Alarm

To provide the most flexibility during installation, the Child Check, Motion and Door alarms have two inputs: One that activates at +12 VDC, and one that activates when Ground is applied. Either input can be used to send the appropriate message when it is activated.

The Panic Button has a single Ground-activated input. Please see the table below for the wiring assignments for those alarms.

2.1 Wiring Table

Function	Level	Wire Color	Notes
Positive Power Supply	+12 VDC	Red	A constant source, fused @1A
Child Check Alarm	Ground	Yellow	Connect to Child Reminder Output
	+12 VDC	Green	
Panic Button Alarm	Ground	Orange	Requires optional normally-open pushbutton switch
Motion Alarm	Ground	Blue	Requires optional motion sensor. Must be used in combination with the Door Alarm feature and Ignition input, in order to arm properly.
	+12 VDC	Gray	
Door Alarm	Ground	Violet	Requires optional door switch/sensor. Can be used with or without the Motion Alarm. Requires the Ignition input.
	+12 VDC	White	
Ignition	+12 VDC	Brown	+12 VDC when engine is running. Required only if using Door/Motion Alarm features
Power Supply Ground	Ground	Black	Chassis Ground

2.2 Door and Motion Alarm Sequence

NOTE: Since vehicles have door and motion activity during the course of normal operation, of course it is undesirable to have Door and Motion text alarms being sent constantly. Therefore, we have provided internal logic to activate those features only when required. In that sense, the operation is similar to that of a car alarm—it's automatically armed after the ignition is turned off, and the vehicle has been exited.

Here is the activation sequence:

1. Ignition is turned on for the trip
2. Ignition is turned off at the end of the trip, with the entry door closed
3. The driver opens the door to exit, then closes it behind him
4. After a delay of 5 seconds*, the Door/Motion sensors will be armed
5. When the driver re-enters the vehicle by opening the door, there will be a grace period of 15 seconds* to turn on the ignition to disarm the system. A beeper will sound upon opening the door, to remind the driver to disarm.

*NOTE: These delays are user-settable for special conditions. See Section 3.7 for a list of commands that can be used to customize those delay times.

In some jurisdictions (California, for example), the driver is required to turn off the ignition and take the keys when exiting the vehicle to help passengers. For those circumstances, the Arming Delay can be set to wait up to 30 minutes before arming, in order to avoid nuisance alarming. Please see the table of commands for details about this feature.

We can provide kits that include sensors, switches and key-switches, or you can source your own. If you source your own, please ensure that you observe these input limitations: Ground inputs must never be at levels less than ground (negative voltage), and +12 VDC inputs must not exceed +16 VDC. All inputs are high-impedance so they can be easily activated with very low current (~ 1 ma).

All optional **RTI** sensors and switch kits come with their own wiring and operation instructions.

2.3 General Block Diagram
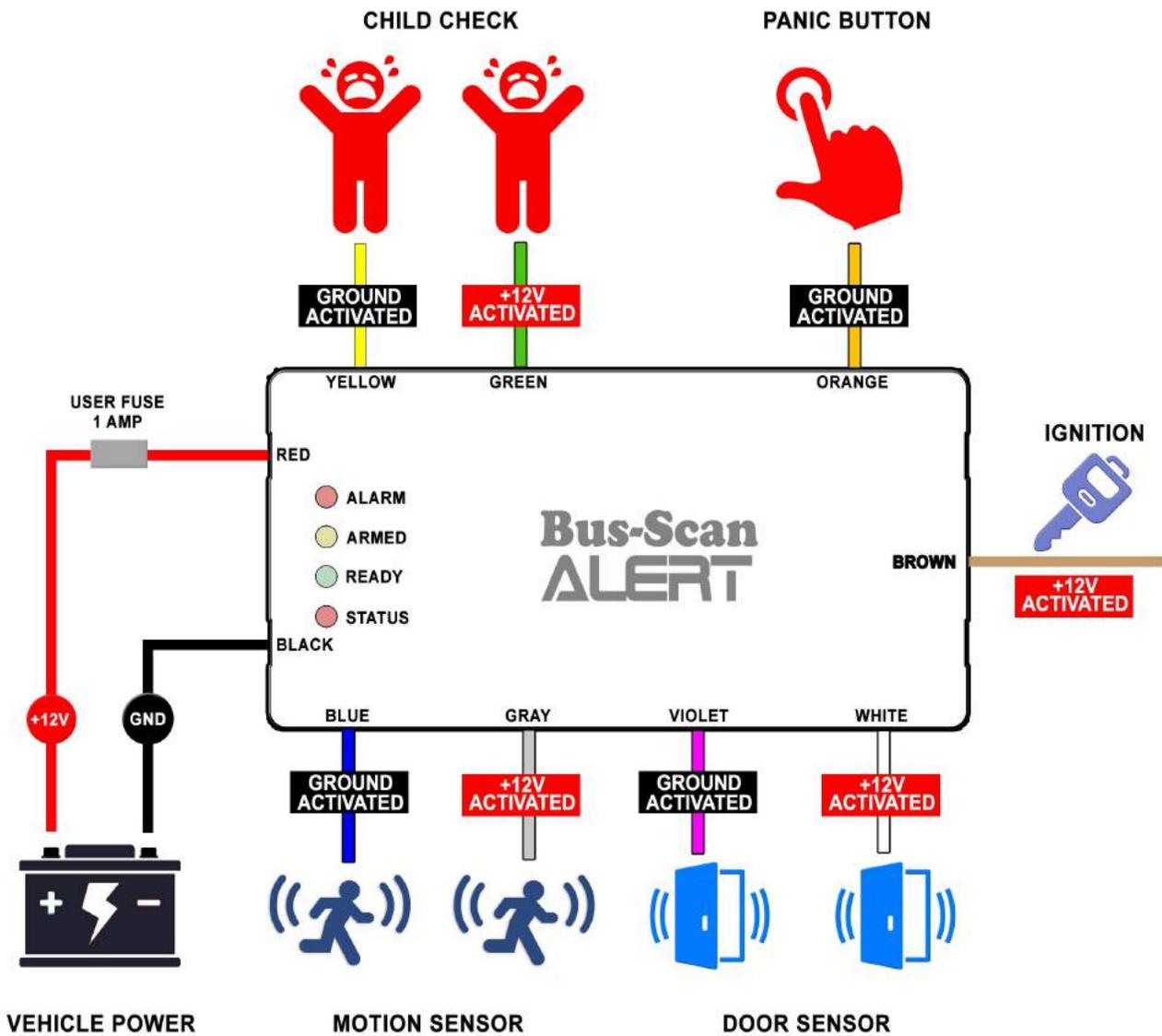
All Bus-Scan Alert wire assignments are shown above. Only the Ignition and Panic Button inputs are activated by single polarities: The Ignition (+12 VDC) and the Panic Button (Ground). All others have dual inputs (+12V and Ground), to provide flexibility in installation.

Note the rectangular Red & Black symbols. Those indicate the activation polarity that is associated with each wire color. For example, if your Door Sensor sends a Ground level when the door is OPEN (which is considered to be the "active" state), then it must be wired to the Violet wire.

2.4 Schematic Wiring Diagram
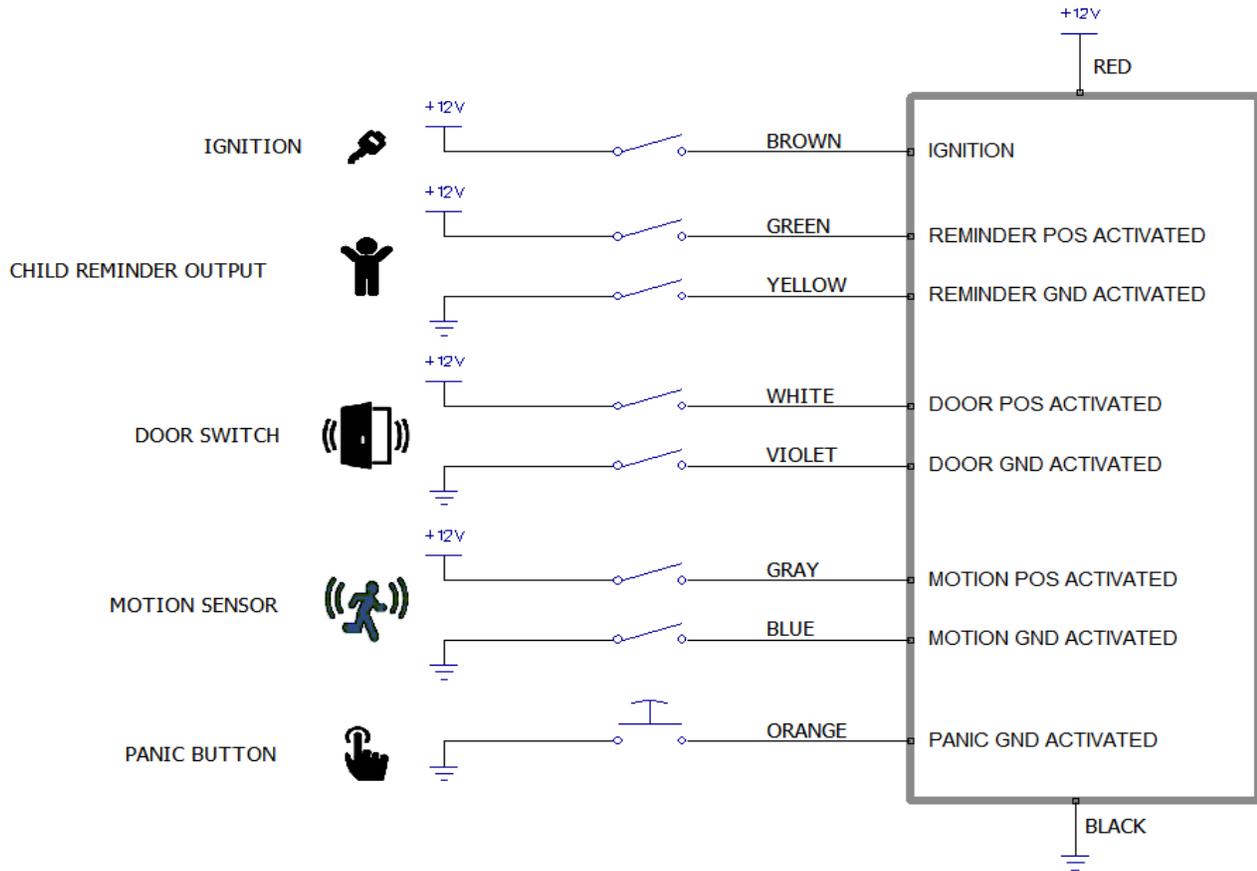
3.0 Setup

3.1 Installing a SIM Card

1. Remove the cover by squeezing its sides inward, and pulling toward you. Be careful not to place any stress on the antenna cable(s) when removing.
2. Insert your micro SIM card carefully into the hinged SIM holder. Make sure to gently slide and latch the card securely in place. Note and record the phone number that is associated with the SIM card.
3. Replace the cover.

NOTE: Current models support AT&T and Verizon phone carriers. Other carriers are available upon request.

3.2 Setting the Primary Call-back number for reporting an alarm (do this first)

1. Select the smart phone that you would like to use for notification when an alarm occurs.
2. Using that smart phone, send a text message consisting only of two asterisk characters ****** to the phone number that you recorded (above). Within a few moments, you should receive a confirmation message that your phone is the call-back number.
3. If you want to assign the **Call-back Number** to a phone that's different from the calling phone, then send a text message with two exclamation characters **!!**, followed by the number, in this form: For the number 555-123-4567, you would send **!!15551234567**. Note that the "1" access code must be included, and no additional characters (dashes or spaces) can be used. As previously, you will receive a confirmation message.

3.3 Setting a Secondary Call-back Number for reporting an alarm

To assign an extra, backup number to report an alarm:
1. Use your smart phone to send a text message prefixed with two dollar signs **\$\$**, followed by the phone number. Use this form: For the number 555-123-4567, you would send **\$\$15551234567**. Note that the "1" access code must be included, and no additional characters (dashes or spaces) can be used. As previously, you will receive a confirmation message. If you do not want to have a secondary call-back number, just clear it by sending a zero as the call-back number: **\$\$0** This is the default setting.

3.4 Setting the Vehicle ID for Reporting an alarm

1. It is essential to have a unique Vehicle ID to know which one is reporting an alarm.
2. Set the **Vehicle ID** by sending a text message prefixed with a two pound characters **\#\#**, followed by the Vehicle ID, as follows: For BUS 1234, you would send **\#\#BUS 1234**. You can use any combination of numbers or letters as a Vehicle ID, but punctuation or special characters are reserved, and not permitted. Do not exceed 10 characters in the Vehicle ID. As previously, you will receive a confirmation message about the change.

3.5 Setting the Trigger Point to send a Child Reminder Alarm

To help prevent false text message alarms, the Bus-Scan Alert can be set with a trigger threshold. Occasionally a driver will forget to perform the required inspection (and trigger the child check alarm). In most cases, the driver will correct that mistake within a short time, and sending a text message would be a nuisance. For that reason, the Bus-Scan® Alert can be made to delay for a specified number of alarm pulses from the child reminder system that it is connected to. The goal is to generate a text message only when a genuine alarm condition exists, as when the driver has walked away or ignored the alarm. The factory default is to wait for 60 pulses before sending a text message. That trigger point can be set from 1 to hundreds of pulses. Generally, any trigger between 40 and 120 works well. To set a custom trigger point of 25, send a text message as follows: **&&25**

3.6 Requesting the Current Location of the vehicle

Even when a vehicle is not in an alarm condition, it can be useful to know its current location. To query the location, use your smart phone to send a text message consisting of two question marks **??**. You will receive a reply consisting of a link to a Google Map that displays the current location.

NOTE: The Bus-Scan® Alert is not intended as a real-time tracking device. Such devices require a protocol for frequent, periodic queries, and those are beyond the scope of this product. This location function is merely an adjunct to its primary purpose, and is provided as a convenience for occasional use only.

3.7 Table of Commands

Command*	Function	Format	Default
**	Auto-set Primary Call-back to calling phone number	** <u>\<always set this FIRST></u>	0
‼	Manual-set Primary Call-back number	‼15551234567 <no spaces or dashes>	0
$$	Manual-set Secondary Call-back number	$$15551234567 <no spaces or dashes>	0
##	Set Vehicle ID (Limit 12 Characters)	##Bus 1234 <alpha and number only for the Vehicle ID>	0000
&&	Set pulse count threshold for Child Check alarm activation	&&20 <alarm will occur after 20 pulses>	15
%%	Set Delay Seconds before arming door and motion sensors (Exit Time)	%%20 <sets Delay seconds to 20>	10
++	Set Delay Seconds before having to disarm door and motion sensors (Entry Time)	++10 <sets Delay seconds to 10>	20
((	Set Alarm Duration (limits how long the alarm is active, to save battery power)	((60 <sets Duration to 60 seconds>	30
??	Query current vehicle location	??	NONE
=====	Settings are returned to Factory Defaults. Phone numbers are preserved.	=====	NONE

*NOTE: All Command characters are reserved, and cannot be used within any phone number or vehicle ID. Commands must be entered precisely as shown, for proper operation. Make sure to set the Primary Call-back number first **. Note that the Primary Call-back can also be set manually, by using the prefix ‼.

4.0 Bus-Scan® ALERT Warranty

Robotics Technologies, Inc. (RTI) warrants the Bus-Scan® ALERT 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® ALERT is not a security or detection device. It is intended to send text messages (SMS) to smart phones upon detection of specific conditions. Detection is dependent upon the switch and sensor input that has been connected to its inputs, and their reliabilities therein.

As with smart phones, the Bus-Scan® ALERT is subject to the verities of weather, obstructions and your carrier's service reliability. Although we can't guarantee service for all circumstances or be responsible for performance because of such interruptions, you can expect the same reliability that you would from any smart phone or similar device under similar circumstances. The Bus-Scan ALERT is an adjunct to, and is subordinate to all other security and notification measures that the customer has in place. In that regard, there are no warranties, express or implied of performance under any or all circumstances.

Customer will indemnify RTI and hold it harmless from all actions or litigation arising from misuse of or improper mounting of the Bus-Scan® ALERT.

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.

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AFTER RECEIVING AN RMA, PLEASE RETURN YOUR PRODUCT TO THIS ADDRESS:

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20655 BURL COURT
RMA: <YOUR RMA NUMBER HERE>
JOLIET IL 60433

TOLL-FREE NUMBER: 800-995-6056