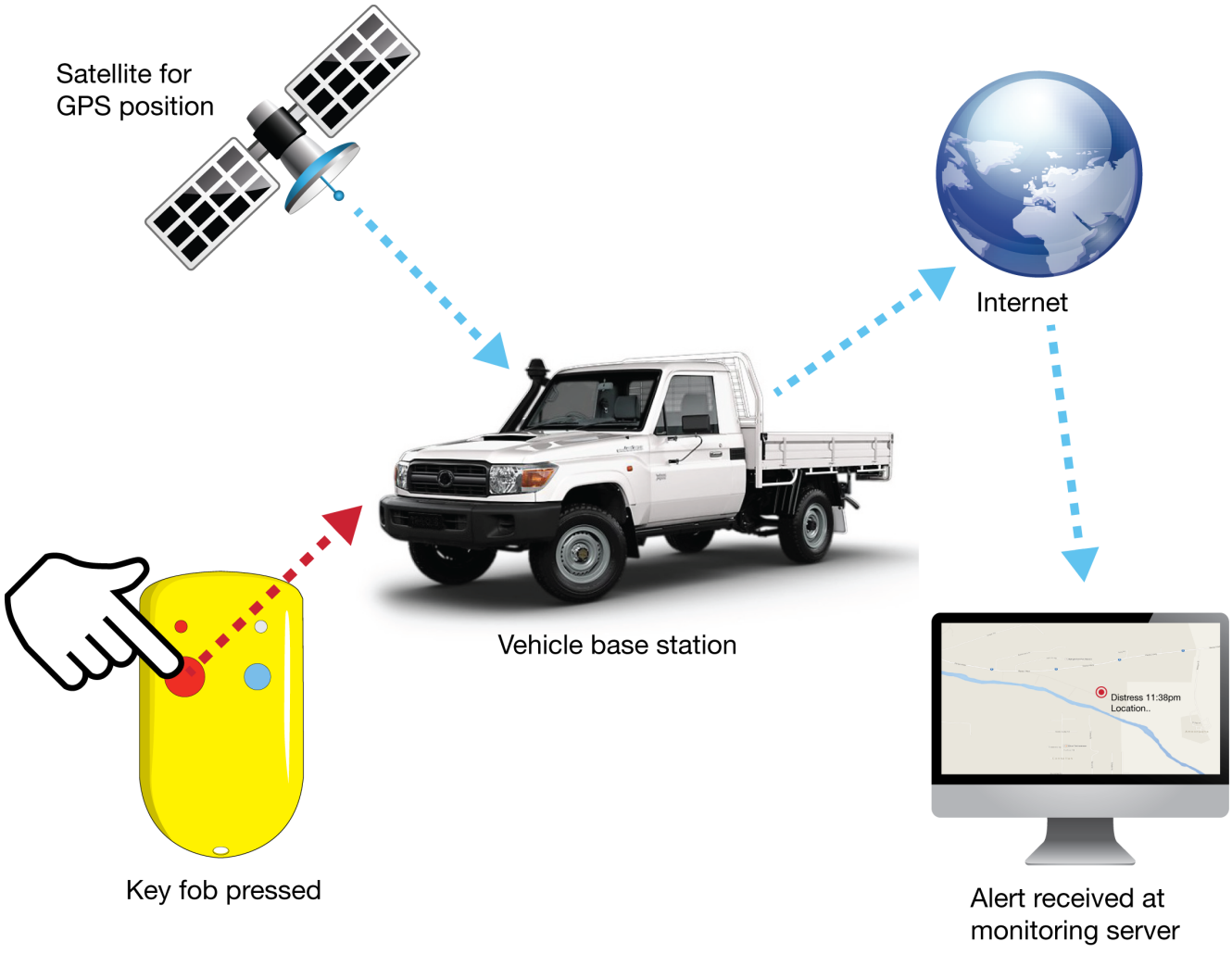
Innovative GPS and RFID technology

SGRDA
Remote RF Duress Alert System

The SGRDA is a low cost wireless remote system that provides personal emergency alerting for people in a variety of workplace environments including remote or isolated areas.

The system consists of a battery powered personal key-fob, and a vehicle powered base station that can be connected to a GPS based Automated Vehicle Location (AVL) unit or other alerting system. The key-fob is light enough to be carried on a lanyard around the neck or carried in a shirt pocket.

If a situation arises where the person requires urgent assistance, they can depress the alert button on the key-fob to send an RF signal to the base station in the vehicle that can be up to 500 metres away. The base station then activates an input on the AVL that in turn transmits an urgent alert signal containing critical information like identification, time, and location to a remote monitoring service. The monitoring service then displays the alert on a map for local operators. The service can also send a text or email message to support personnel or dial specified phones and play a text to voice message.



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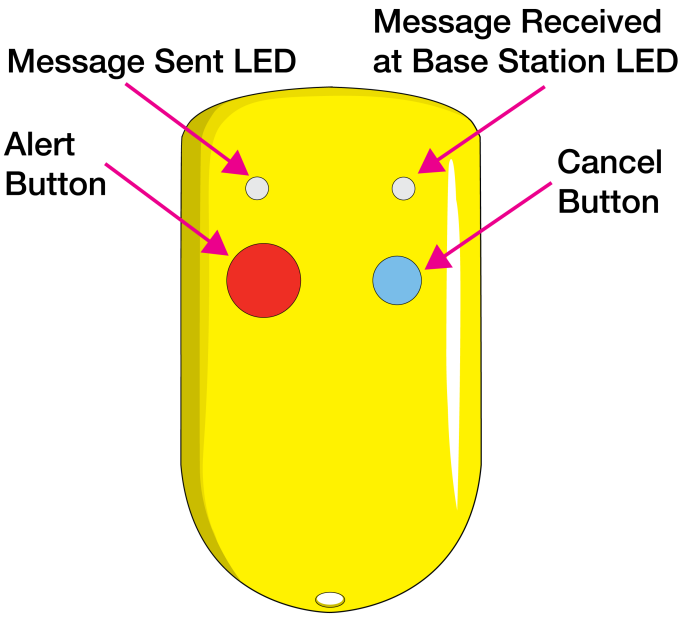


The SGRDA fob has two push buttons, RED for alert and the smaller BLUE for cancel. The buttons are low profile to prevent being accidently knocked or depressed. When the base station receives the coded alert signal from the fob it latches a contact output and holds the latch for half a second.

The contact output can be connected to an AVL (Automated Vehicle Location) device via a digital input. When the input changes to the alert state, the AVL unit can generate an alert message with time and location data, and then transmit that message to the monitoring service. It is recommended that a transmit delay of 10 seconds be programed in the AVL unit in case it receives a cancel from the key-fob.

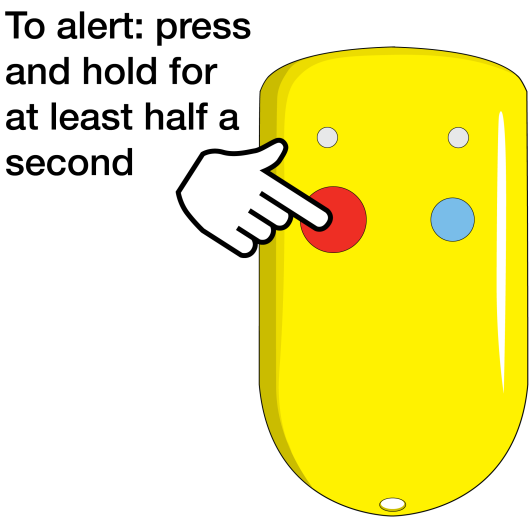
The SGRDA can come with a built in vibrator that provides confirmation back to the holder that a message has been sent to the monitoring station. The base station generates this confirmation after it has activated the Alert Output.

The system can also be set up to provide an “I am OK” response from the key-fob holder. This can be achieved by connecting a digital output from the AVL unit to the vehicle horn or other sounder. The AVL can be programmed to set off the horn on a set period, say an hour, and when the key-fob holder hears the horn they will have another set period to press the Cancel button on the key-fob. If the AVL unit does not get the Cancel signal after a couple of retries then it will send an alert message to the monitoring server.

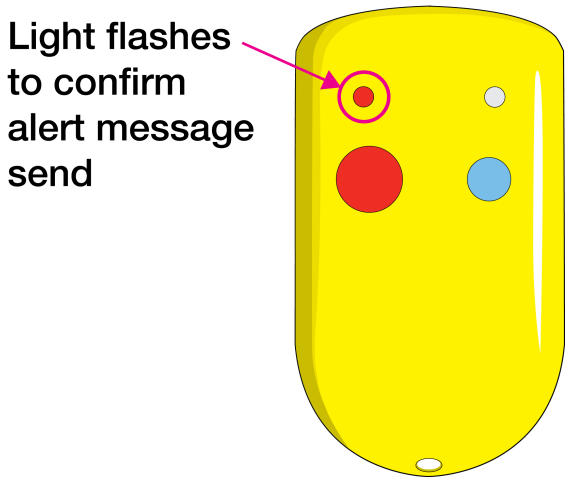
Using the key-fob in the field

Sending an alert message

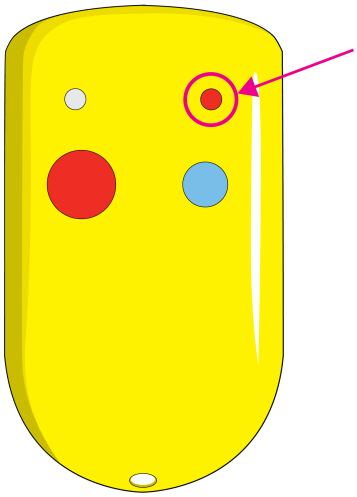
Please note that the key-fob utilises sleep mode when not being used to maximise battery life. To initiate an alert message, the user should press and hold the alert button for at least a half second. Very short presses do not work.



The key-fob will confirm it has sent the alert message to the base station by flashing the left LED light for 0.2 seconds.



The base station will respond to the key-fob if alert received successfully. The key-fob will display alert received by flashing the right LED light for 0.2 seconds. The alert message send and base station confirmation process should complete in one second. If a vibrator version has been selected then the fob will vibrate as acknowledgement from the base station as well.



Cancelling an alert message

Simply press and hold the blue cancel button for at least a half second. The left LED light will flash to acknowledge the cancel request message being sent, and the right LED will confirm the cancel message receipt at the base station.

Key-fob range or line of sight issues

The key-fob has an effective range of 500+ metres when in direct line of sight to the base station. Depending on the users environment, obstructions between base and fob may reduce the effective range. Low key-fob battery level will also compromise the effective range.

If the fob is out of effective range then the user will not receive a base station confirmation message via a flashing right LED light or vibrator. If the user does not receive this confirmation, it is imperative that they move closer to the base station and press the alert button for at least half a second again. The user should keep moving closer until the right LED blinks with the base station confirmation.

If the fob does not display the base station confirmation then the user must assume that no alert message has been sent.

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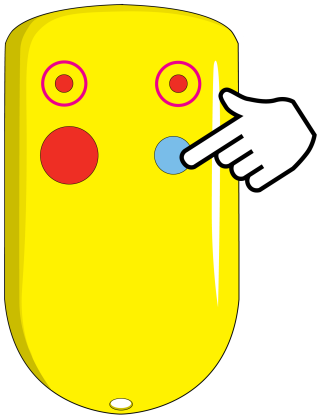
Key-fob battery level warning

When the battery voltage drops below 2.4 volts, the key-fob will blink both LED lights three times when the user presses any button to send a signal.

It is important that batteries are checked before leaving home base as the key-fobs working distance drops significantly as the battery voltage drops.

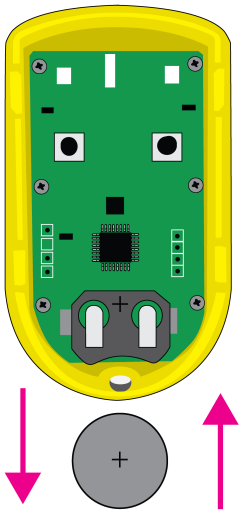


Important
Press any button before leaving home base. If both lights blink three times, replace battery.

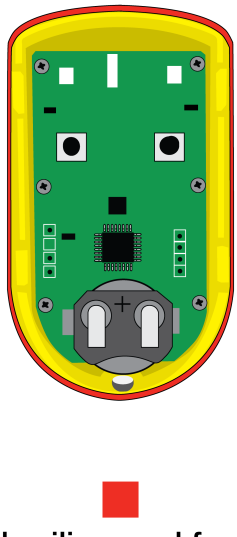
Replacing the key-fob CR2032 battery

To replace the key-fob CR2032 battery, take out the existing one and replace with the new battery positive (+) side up.

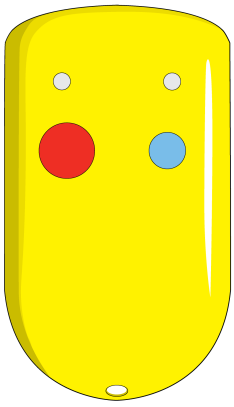
It is important when reassembling the case after replacing the battery that a thin film of silicon gel is dispensed on the edges of the case. This will ensure that the water resistance is maintained.



Replace Battery - Positive Up



Apply silicon gel for seal



Attach cover

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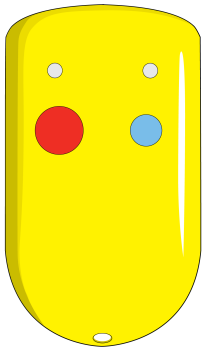
Specifications

Frequency: 915 MHz
Distance: 500 metres in line of sight
Battery size for key-fob: CR2032
Normal battery life: One year



Key-fob

Environmental

Key-fob

- Water resistant enclosure
- Operating temperature range 0-60℃

Base Station

- Internal mounting only
- Voltage supply range = 12/24 V vehicle battery or 3.3 VDC

Installation

Key-fob

- Can be attached to a lanyard, key ring, or kept in pocket

Base Station

- Should be mounted close to the AVL unit
- Do not mount in steel enclosure
- The unit has a 5-position in-line Molex connector for all wiring.

The Molex 3-mm pitch 5-position connector has the following pin connections (from left to right as indicated in the photo).

Pin	Description
VIN (red)	12 or 24V vehicle battery input
VCC (orange)	3.3V power source to other equipment (500mA)
GND (black)	Common ground level
Output1 (blue)	Pulled low for 0.5 second for Alert button (default pulled High to 12/24V)
Output2 (green)	Pulled low for 0.5 second for Cancel button (default pulled High to 12/24V)

Base Station

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