

---

## Features

- Helps prevent damaged to clutches / gears and personal injury through accidental non-idle engine starts
- Programmable user-defined idle throttle range
- Includes a pass-through connector
- Accurately indicates battery voltage on start-up
- Ultra-light: 4g (0.14oz)
- Low current consumption: < 3.5mA

## Applications

- Gas-powered RC helicopters / planes / boats / cars

## 1 Description

ThrottleSafe™ is an accessory for gas-powered radio controlled models. It helps prevent unintentional non-idle engine starts which can cause damage to equipment (clutches, gears, etc) and person. ThrottleSafe™ has an audible warning system that informs the user of the throttle position when the receiver is powered on, sounding a confirmation tone when the signal is within the user-programmable range and a warning tone otherwise. ThrottleSafe™ also provides an 'easy-to-determine' audible (100mV resolution) indication of the receiver battery voltage when first powered on.

## 2 Connections

ThrottleSafe™ is connected in-line with the throttle servo. It is connected to the throttle socket of the receiver (in place of the throttle servo) and has a 3-way pass-through connector which the throttle servo plugs in to, eliminating the need for a Y-lead. The 3-way connector is oriented the same way as the RC lead.

## 3 Programming

ThrottleSafe™ is shipped un-programmed from the factory. Whenever un-programmed or when first used, the idle-range detection is done first. The un-programmed state is identified by an initial single- or double-beep followed immediately by an intermittent ramping-up tone lasting 5 seconds, the last second being non-intermittent. An initial single-beep indicates the start-of-range is being recorded and a double-beep indicates end-of-range. The start-of-range (single-beep) is always recorded first. If the throttle stick is moved while ramping up, it starts over (i.e. the stick must remain still for the full 5 seconds before the point is recorded). To ensure correct idle-range detection, 1 – turn on the transmitter, 2 – move the throttle stick to the idle start-of-range position, 3 – power on the receiver and wait for the ramp-up (with initial single-beep) to complete. 4 – move the stick to the idle end-of-range position and wait for ramp-up (with initial double-beep) to complete. In operating mode, any signal outside the idle-range will generate a warning tone.

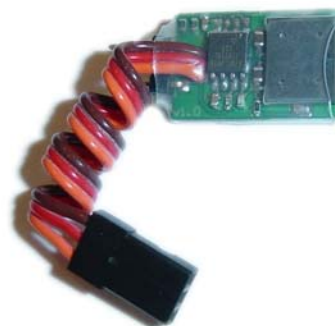
**FIRMTRONICS**

[www.firmtronics.com](http://www.firmtronics.com)  
[info@firmtronics.com](mailto:info@firmtronics.com)

---

## ThrottleSafe™ User Guide

---



## 4 Un-programming / Clearing

To un-program or clear ThrottleSafe™, the following procedure must be followed (note that a channel without throttle curves, exponentials or any other 'computer modifications' must be used):

1. Move the throttle stick to the CENTRE position and centre trims (try to be accurate with the centre position) then turn on the transmitter.
2. Apply power to the receiver. ThrottleSafe™ will beep intermittently for 2 seconds during which time the stick must be moved to the TOP position. See Troubleshooting below if necessary.
3. When the intermittent low-tone is heard, within 2 seconds, move the stick to the BOTTOM point.
4. When the intermittent high-tone is heard, within 2 seconds, move the stick to the TOP point.
5. When the intermittent low-tone is heard, within 2 seconds, move the stick to the BOTTOM point.
6. If you were successful in following instructions 1 to 5, ThrottleSafe™ will continuously sound a fast alternating tone indicating the settings have been cleared (un-programmed). If this did not occur, please see Troubleshooting below.
7. The receiver must be powered off. The next time ThrottleSafe™ is powered on, it will go to the idle detection phase.

**Troubleshooting:** If ThrottleSafe™ starts beeping the battery voltage at any time during this setup, you will need to start again. It means that the stick was not in the expected position at the expected time. You may have a reverse switch enabled so try swap TOP and BOTTOM or switch over the reverse switch.

**Tip:** If the throttle has a computer modification on it (throttle curve, exponentials, etc), use an unmodified channel to un-program ThrottleSafe™ then connect it back to the throttle channel to program idle-range.

## 5 Operation

When power is applied to ThrottleSafe™ and a valid RC signal is present, it will check for the un-programming or clearing start condition (see Un-programming / Clearing). Otherwise normal operation commences by first indicating the battery voltage followed by monitoring mode. Note: When powered-on for the first time, programming mode is immediately entered.

### Battery Voltage Indication

The battery voltage indication is an audible representation of the battery voltage presented in a "number and decimal". It commences with a half-second low-tone followed by 1 second pause then a series of higher-pitched beeps (indicating the voltage) followed by a higher-pitch 'blip' (indicating the decimal point) and another series of beeps (indicating the decimal value). For example, a voltage of 4.8V would have 4 beeps, a high tone blip and another 8 beeps. If the decimal value is 0 (eg 5.0V), a single low-tone is heard after the decimal point. Once the battery voltage has been emitted there is a 1 second pause before monitoring mode commences.

### Monitoring Mode

If the throttle position is not within the idle range at start-up, a continuous warning tone will sound until the stick is moved into the idle range. While the throttle position is in the programmed idle range, a higher tone double-beep will sound every few seconds. This indicates it is safe to start the engine. If the throttle position then moves outside the idle range and remains stationary for approximately 4 seconds, the warning tone will sound.

**Note:** Throttle hold should be set slightly above or below the idle range so that the start tone will not sound if throttle hold is accidentally left engaged.

### Absolute Maximum Ratings

Operation cannot be guaranteed outside the absolute maximum ratings.

|                                  |                 |
|----------------------------------|-----------------|
| Minimum Input Voltage.....       | 2.7V            |
| Maximum Input Voltage.....       | 6.0V            |
| Operating Temperature Range..... | -10°C to +85°C  |
| Storage Temperature Range .....  | -65°C to +150°C |

### WARRANTY

FirmTronics guarantees this product to be free from defects in materials and workmanship for a period of 90 days from the original date of purchase, verified by a sales receipt. This warranty does not cover incorrect application, incorrect installation, components worn by use, reversed voltage, improper voltage, tampering, misuse or shipping. Our warranty liability shall be limited to repairing the unit to our original specifications and in no case shall liability exceed the original cost of the product. By the act of installing or operating this product, the user accepts all resulting liability. We reserve the right to modify the provisions of this warranty at any time without notice.