

Dawnmist Throttle Minder 100 Instruction Manual

Radio Control System Failsafe

Revision 1.0: May 2004

Introduction

The **Throttle Minder 100** from Dawnmist Studio is an economical, simple-to-use failsafe system for radio controlled models such as boats and cars. It is based upon the very sophisticated technology of Dawnmist Studio's successful UltiMix 5000 microcomputer R/C upgrade unit, but trimmed down to just a single-channel failsafe, and available for a fraction of the price of the full UltiMix.

In operation, Throttle Minder 100 connects between the receiver (Rx) and the throttle servo (or electronic speed controller, for an electric model). It passes the signal coming from the Rx to the servo, while continuously checking that it is free from glitches, interference or signal loss. As soon as signal integrity is lost, the Throttle Minder takes direct control of the servo and moves it to a user-selected 'failsafe' position. This is usually set to be the 'stop' position, and puts the model quickly into a known, safe state. If a valid signal returns, the Throttle Minder simply passes it through to the servo again. Although this is a fairly simple, single-channel failsafe, it is quite sufficient to ensure the safety of most non-flying models.

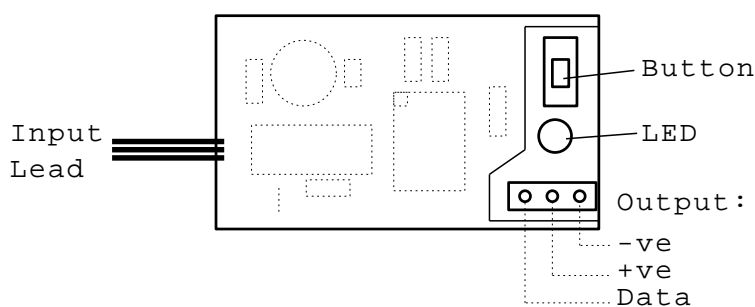


Fig. 1: Layout of Throttle Minder

Connecting Up

Please refer to Fig. 1 to find your way around the Throttle Minder unit.

You will see that the unit provides a single input cable and a single output connector similar to those on a receiver. Connection is very simple: the input cable plugs into the throttle output of the receiver, and the servo (or speed controller) plugs into the output of the Throttle Minder. No other connections are required; the unit obtains the very small amount of operating power it requires from the receiver.

In order to ensure compatibility of connectors with all makes of R/C equipment, the connectors used on the Throttle Minder are non-polarized. Therefore it is necessary to observe the correct polarity when connecting up — accidental reversal of a plug is unlikely to cause any damage, however.

Looking at the Rx's battery socket, you will see that the centre pin is positive (usually red), and one of the side pins is negative (usually black), the remaining pin being unconnected on the battery pack — this becomes the 'data out' pin on a servo socket. Plug the input lead of the Throttle Minder in to the Rx such that the black lead corresponds to battery negative and the white lead to 'data out'.

In a similar way, the servo (or speed controller) is plugged in to the male connector on the Throttle Minder. This connector is oriented such that the negative pin is towards the edge of the board and the 'data out' pin towards the black microchip visible on the board. Fig. 1 illustrates this.

Normal Operation

When first powered-up, the unit flashes its LED on and then off to indicate that it is operating. From that point onwards, any valid signal is passed to the servo, with the LED off, and a corrupted or absent

signal causes the LED to light and the servo to adopt its 'failsafe' position. The failsafe position is initially factory-set to mid-travel but can easily be reconfigured as described next.

Configuring Throttle Minder 100

This is very straightforward as the unit has only one configurable parameter, being the 'failsafe' position that the servo adopts when signal is lost. To adjust this, it is necessary to have the Transmitter (Tx) switched on and transmitting a valid signal. Then all that is required is to move the throttle stick on the Tx to the desired failsafe position (which will be confirmed by the servo moving to that position), then pressing (and releasing) the button on the unit. The LED will flicker rapidly to confirm that the new position has been memorized. The memorized position is remembered indefinitely, even in the absence of power, by a special memory circuit — but can be changed as often as desired simply by clicking the button again.

Technical Specifications

Product Title:	Dawnmist Throttle Minder 100
Dimensions:	36×20×12 mm
Weight:	8 gram (including cables/connectors)
Power:	4.5–6V at less than 25mA (LED on)
Input:	1 channel from Rx
Output:	1 servo or speed controller
Memory type:	Non-volatile FLASH memory
Memory life:	40 years typical
Button:	Single, 'learn' button
LED:	Daylight-visible Red
Failsafe:	Configurable position, 1 channel
Processor:	20MHz RISC
Approvals:	Meets relevant CE specifications

Warranty and Support

The Throttle Minder comes with a limited warranty against defects in parts and workmanship for a period of one year after purchase. This does not cover damage caused by overload, misuse, impact or unauthorised modification, and is limited to the repair or replacement of the defective unit. Consequential losses of any sort are not covered, and it is stressed that it is the purchaser's responsibility to ensure that this product is used safely and properly. This does not affect your statutory rights.

Dawnmist products are engineered to a high standard, and we want you to get the best out of them. If you have any difficulties, please email tech@dawnmist.demon.co.uk.

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