

Dawnmist ReverSafe 100 Instruction Manual

Servo Reverser with Failsafe

Revision 1.0a: Mar 2007

Introduction

The **ReverSafe 100** from Dawnmist Studio is an economical, simple-to-use servo reverser for radio controlled models such as aircraft, boats and cars with a built-in failsafe. 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 reverser and failsafe, and available for a fraction of the price of the full UltiMix.

In operation, ReverSafe 100 connects between the receiver (Rx) and the chosen servo. It passes the exact reverse of the incoming signal 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 unit takes direct control of the servo and moves it to a user-selected 'failsafe' position. If a valid signal returns, the unit simply passes it through to the servo again.

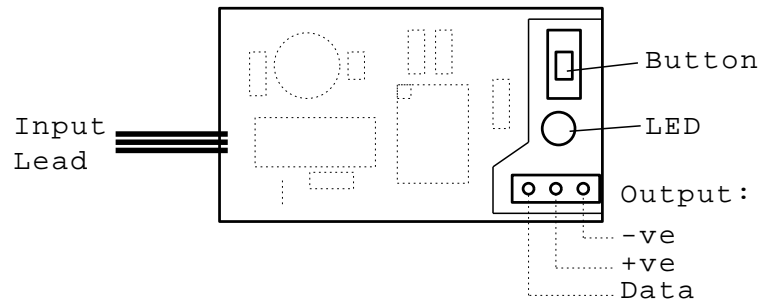


Fig. 1: Layout of ReverSafe

Connecting Up

Please refer to Fig. 1 to find your way around the ReverSafe 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 chosen output of the receiver, and the servo (or speed controller) plugs into the output of the ReverSafe. 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 ReverSafe 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 ReverSafe 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 is plugged in to the male connector on the ReverSafe. 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.

An operating configuration worth a separate mention is that of two opposed servos, i.e. ones that rotate in opposite directions based upon the same control stick. This is often found in aileron systems. To create a pair of opposed servos, simply hook the receiver output to the 'forward' servo *and* the ReverSafe's input by means of a Y-cable, and plug the 'reverse' servo into the ReverSafe's output.

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 reversed and 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 ReverSafe 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 relevant 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 ReverSafe 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
Reverse Latency:	Guaranteed less than 20 millisecond
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 ReverSafe 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.org.

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