

# **RENSCHLER INSTRUMENTS**

**OWNERS MANUAL**

**SOLARIO**

The only Solar-powered acoustic variometer as used by:  
Ex-World Hang Gliding champion Guido Gehrman, Bruce Goldsmith,  
Justin Needham, Fiona MacCaskill, Bob Drury and many less famous free flyers!

# RENSCHLER SOLARIO.

“The Solario is all you need to learn to thermal and is a tool you will keep forever. You’ll never sell it, as it is the ultimate back-up vario”.

Ian Blackmore

*Vario Test, Sports in the Sky Magazine, January 1999*

## TECHNICAL DETAILS

The Solario is a solar-powered acoustic-only variometer employing a buffer condensor to store unused energy. Up-to-the-minute components mean that solar power is feasible in an instrument which is about the size of a match box.

The absence of any batteries means that the Solario is the perfect back-up vario. Alternatively, you can use it with an altimeter watch to provide minimum-volume, minimum-hassle instrumentation.

In 100% sunshine the solar cell delivers up to 40 times the current needed to power the unit. Surplus power charges the buffer condensor, which can provide up to 45 minutes of normal operation when the sunlight itself is insufficient to power the Solario.

The primary design brief was that the Solario will always operate when it is bright enough to fly in thermals. The buffer provides sufficient power for those tricky times – when there are cloudy skies around sunset, and the sun disappears behind a mountain!

Adequate sunlight is found outdoors – for indoor demonstration the unit may need to be charged under a lamp for a minute or so. After switching on, you will hear the descent tone, rising until it switches off after between 10 and 60 seconds (depending on the sink rate threshold you have selected). This warm-up period is due to charging of certain internal components, so if you want to demonstrate the Solario you should always wait for about a minute after turn-on.

## USER INSTRUCTIONS

- 1) Give the Solario as much sunlight as possible. Place it in the sun as soon as you begin to prepare your equipment for take off in order to fully charge the buffer. The instrument does not need to be switched on to charge the buffer. A fully-discharged Solario will work within 45 seconds of being placed in direct sunlight – longer if the weather is overcast.
- 2) Turn on the Solario about one minute before you take-off in order to ensure it has reached full sensitivity before you are airborne. It will need about 30-60 seconds to warm up.
- 3) If there is no acoustic tone after switching on, there is insufficient power in the buffer. Turn the unit off and place it in the sunlight.

## USER INSTRUCTIONS (continued)

- 4) The instrument is not normally sensitive to changes in light conditions during operation. If, in exceptional circumstances, the buffer is drained during flight, the Solario will give about one minute warning of shutdown

by going into "Wild" acoustic mode. This erratic audio is the signal to switch off and allow the buffer to recharge.

- 5) Remember to switch off after use! This will retain charge in the buffer, and reduce charging time next time you switch on.

## OPERATING MODES

Although the Solario is a fairly basic instrument, it provides twelve different operating modes, allowing the pilot to choose an ideal combination of volume and sink-tone threshold.

Three switches control the Solario functions:

- 1) The On/Off switch. This prominent round button is mounted on one of the smallest faces of the instrument. Push in to switch On, push again to release the button, switching Off. When mounting the vario, ensure this button is remote from any object which might touch it in flight.
- 2) The Rotary switch. This switch is recessed into one corner of the back of the instrument. This tiny pot is adjustable using a small screwdriver. Twelve positions allow you to select any of the following combinations of volume and sink tone threshold (as also shown on the instrument):

<i>Switch Position</i>	<i>Volume</i>	<i>Sink Threshold</i>
0	Low	Immediate
1	Low	1 m/s
2	Low	3 m/s
3	Low	3.5 m/s
4	Medium	Immediate
5	Medium	1 m/s
6	Medium	3 m/s
7	Medium	3.5 m/s
8 or C	Loud	Immediate
9 or D	Loud	1 m/s
A or E	Loud	3 m/s
B or F	Loud	3.5 m/s

As an approximation, 1 meter per second equates to about 200feet per minute, 3 m/s to 600fpm, and 3.5 m/s to 700fpm.

## OPERATING MODES (continued)

- 3) Damping pot. Located adjacent to the On/Off switch, this pot is recessed behind a tiny hole. It can be adjusted with a fine jewellers screwdriver. Gently rotate the screwdriver in either direction in order to achieve the setting you prefer. With very low damping settings you will have audio signals each time you move your head, which isn't always desirable.

**Note:** This pot is set at the factory, to a level of damping which seems to satisfy most pilots. If you want your Solario to be generally more or less responsive than the factory setting, you can fine-tune it using this switch. However, it is not intended for frequent adjustment, and will not necessarily survive repeated heavy-handed attacks with a large blunt instrument. Treat it gently!

## MOUNTING

The Solario was designed to be mounted on your crash helmet, near the ears. However, the volume is sufficient to permit satisfactory operation when mounted further away – say on your harness or flying suit - if you prefer. The round adhesive-backed Velcro patch provided is ideal for helmet-mounting, and should not damage the shell of the helmet. It will be less than ideal for mounting the instrument on softer surfaces, such as cloth or harness webbing.

A back-up cord is provided on the case - if you don't use it you WILL lose it!

## TECHNICAL DATA: (subject to alteration)

Dimensions:	53 x 37 x 19mm.
Weight:	38gm.
Power Source:	Entirely Solar-powered
Operating limitations:	Satisfactory up to 20,000feet
Run time with fully-charged buffer condensor:	approx 45 minutes.
Charge time from zero power in direct sunlight:	approx 45 seconds
Temperature compensated	
Frequency and interval modulated acoustic signal	

### RENSCHLER SOLARIO:

*"If you haven't got a vario, get one tomorrow. If you have, get one tomorrow anyway....simply brilliant"*  
Joe Schofield, Solario review, Skywings August '99