

I need a mechanical vario in the panel

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Or do I?

It is still very common to see mechanical varios in the instrument panels of modern sailplanes, yet when questioned, pilots can often give only vague reasons for this.

One reason given is that you still have a vario when the glider electrical power system fails completely.

This problem can be overcome by proper design of the electrical system in the glider. So much equipment now depends on electrical power being available at all times that one backup mechanical vario may not be much use on its own.

How well will you fly with no audio, no speed command information, no GPS, no flight computer, no transponder, no Flight recorder? How much fun will it be?

By using two avionics batteries, either of which is capable of running all the electrical loads for the longest flight, you are unlikely to suffer complete electrical failure. Proper fusing of the circuits - a 5 amp fuse at the battery, lower rated fuses in the individual service circuits will prevent a failure in one piece of equipment blowing the main battery fuse. Alternatively, resettable circuit breakers may be used and a fault isolated. Please note: some low current circuit breakers may have relatively high resistance which can cause problems with voltage sensitive circuitry when the battery is low so fuses may be a better option here. B40/B50/B400/B500 varios all have fuses installed on the rear of the instrument.

In the unlikely event that, despite these precautions, electrical power is unavailable, a B400 variometer can be run from the 4*AA 6 volt alkaline battery pack mounted on the back of the instrument. This will provide not only a vario but also audio and averager for about 10 hours.

This variometer also has the following advantages -

Altitude compensation to 35000 feet - the calibration is correct at all altitudes from sea level to 35000 feet.

Accurate linear calibration (not always true of mechanical variometers)

Stable zero point which does not shift with time, temperature or altitude.

No flask - installation is easier and the vario does not have any effect on other varios in the Total Energy circuit. Note that other instruments with flasks can affect the response of the B400 which can be avoided by splitting the TE line well aft from the instrument panel. Under the rear of the seat pan will work well. This does not apply for instruments without flasks like the B21/B40/B50/B100/B400/B500 and other variometers which work on the silicon pressure sensor principle.

The B400 is available in both 57mm and 80mm sizes at the same price.

The response is fast and smooth and the speed of response can be adjusted electrically on the instrument without restrictors, filter bottles and such.

The price is comparable to that of mechanical varios which do not have audio or an averager.

Much more rugged than a mechanical variometer.

A digital averager (B400DAD-L or DAD-S) may be fitted in addition to the built in, on demand, analog averager.

On the 2009 firmware revision the B400 audio may be customised by the factory or some dealers. Currently the default audio has a silent zone on full range (climb and sink) audio between 1 and 4 knots of sink. This is the sink rate band normally present when in inter thermal cruise so the audio will warn of significant sink or impending lift and remain silent in normal inter thermal cruise.

So perhaps a mechanical vario is not really required in a modern glider cockpit ?