Source script „Integral Vario“
2024 by Udo Nowakowski
(draft // beta 0.81)

Ethos 1.5 needed !

The script allows you to create a "custom" telemetry sensor that outputs an averaged vario value.
A so called "integral vario"

This makes it possible to generate a variometer that provides information averaged over a longer period of time (e.g. 3..4 thermal circles) to determine whether a "long-term" climb can actually be achieved under very weak conditions.

Finally, the respective altitude difference is determined via a time constant and the average climb is calculated from this

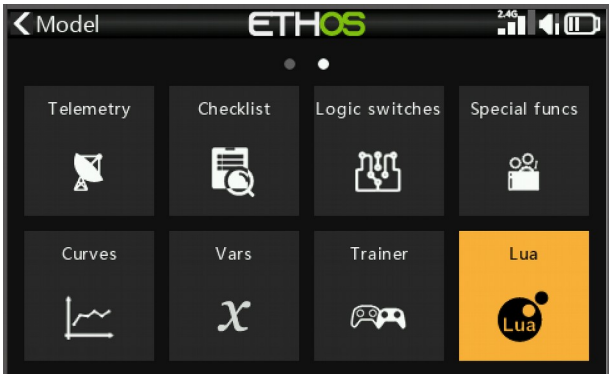
Ethos 1.5 introduces a special function "playVario", which makes it possible to convert any sensors of the unit "m/s" as a variotone.
The script can therefore only be used from 1.5 onwards.

It is also possible to convert any sensor to the unit m/s in real time

Quick guide:

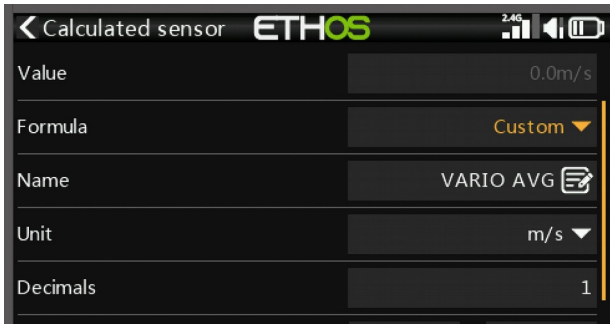
(1) Copy the script under the "/scripts" folder into a separate directory

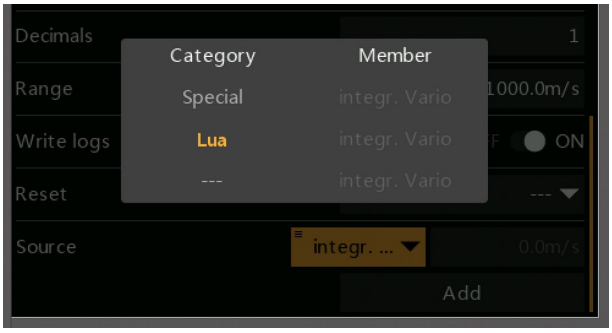
(2) Restart the transmitter and activate the source script in the model memory > Model >> lua



(3) Create a user-specific sensor in the telemetry menu

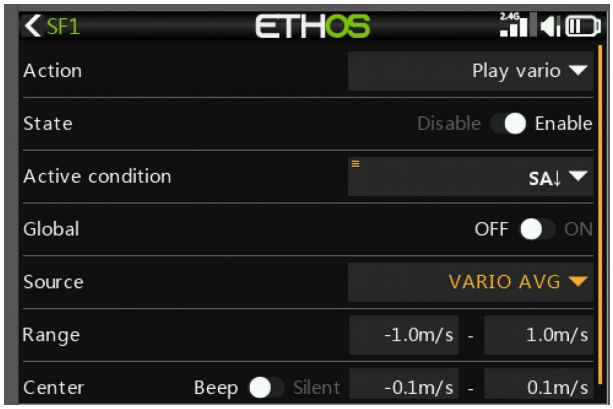
Specify the script as the source under Lua category
With only one "armed" source script, you will automatically receive this selection:





(4) Now create the SF "play Vario" with the source of the above-mentioned sensor

Configure so, that, for example, you can select between
" Vario off <> Vario normal <> Vario integral " by using a 3-pos switch,
or let the intVario play by using a momentary



User configuration

Depending on the user, some may want a longer time constant, others a shorter one.
Some may even want to customize the sampling rate (1 data sample/second is standard)
Depending on the hardware/configuration, it may also be necessary to adapt the source-label of the phys. vario.

There are 3 lines of code in the script for this:

```
-- ****************************************
-- user personalized config / customizing
-- ****************************************
local sensor                    = "Altitude"    -- please change in case altitude sensor has another label
local RECORDduration <const>    = 20            -- duration in seconds for building average
local RESOLUTION <const>        = 1             -- save/datapoint-interval in seconds


```

- "sensor" may have to be adapted to the label / naming of the vario
- RECORDduration is the time constant / the recording duration in seconds
- RESOLUTION specifies how often (interval / every x seconds) a value is saved.

Please adapt this to your individual requirements

„Sensor“ - realtime Konverter

The script can also be used to convert a sensor that does not offer a "m/s" unit directly and without averaging into the "m/s" unit.

If necessary, the output value can also be scaled

Enter the corresponding telemetry sensor under sensor,
and set the constant "RESOLUTION" to the value -1

```
35
36  local RECORDduration <const>    = 20
37  local RESOLUTION <const>        = -1
```

As shown above, a user-specific sensor with the unit m/s can now be added manually under the Ethos telemetry section.

If scaling is necessary, the value can be changed in the coding by a factor, for example:

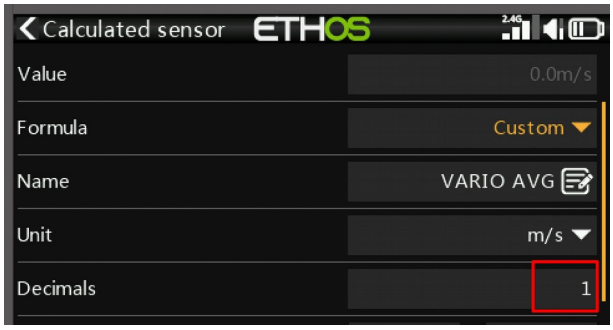
```
141     else
142         local sensVal       = input:value()
143         source:value(sensVal * 1.0 )
144     end
```

(shown is a factor of 1.0)

Tips:

A)
In weak thermals, the Integral Vario will deliver small values.
The SF can be configured in the minimum value range from -1m/s to +1m/s.
This produces a rather coarse "acoustic resolution".

If you want a "finer" resolution, the following trick can be used:
by setting the "decimals" from 1 to 0, the sensor value is virtually tenfold
this is the field:



0.25m/s becomes 2.5m/s
Then spread the range to the individually preferred values

B)
In flight, it will be difficult to adjust the variotone to the individual desired behavior
I have therefore installed a "simulation mode".

The throttle stick is used to simulate the "current" altitude between 0 and 20m (center corresponds to around 10m)
Slow movement simulates a change in altitude of the model
If you set the constant "SIM" from false to true as shown below, you are working in simulation mode and can also set the varioton without a model.

```
19
20  local SIM <const>                    = true
```

As an aid / example, I have included a 1.5 model "IntVario" in the files
(its based on actual nightlies, so today, Jan.31, i won't work on Ethos sim until a newer Sim is published)

The "Integralvario" can be operated / activated via switch SD.

have fun & greetings

Udo Nowakowski