

CoTASA : User's guide



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CoTASA : COndor True Air Speed Alarm V2.3

CoTASA is a program which computes True Air Speed (TAS) from the data sent by **Condor** (Indicated Air Speed and altitude), assuming either the ISA standard atmosphere model or the **Condor** built-in model, and sounds an alarm above a pre-set threshold.

Optionally, an artificial horizon, the water ballast content and the Netto variometer may be displayed. It also features a long-time integrator variometer, a Netto integrator, a G-meter, a slip indicator and two stopwatches. For flapped gliders it also shows the actual flaps setting and trend according to IAS, wing loading and load factor

It only works with **Condor** version 2 (for **Condor** 1, use version **CoTASA** 1.1)

INSTALLATION

Condor should be configured in “windowed” or “fullscreen emulation” (SETUP / GRAPHICS tab) so that the **CoTASA** windows always remain on top on the screen.

If **Condor** is configured to run in “fullscreen” mode, you will have to manually bring the **CoTASA** windows to the foreground once **Condor** has started (and maybe from time to time).

The first time it runs, you will have to enable **CoTASA** in the firewall so that it can get data from **Condor**

The program will automatically detect if and where **Condor** is installed.

If a new **CoTASA** installation is detected, it will open a dialog box so that you may fill in the access path to the current pilot's folder, usually: **C:\Documents\Condor\Pilots\YOUR_NAME**

If an older version of **CoTASA** is present, the existing **CoTASA.ini** file will not be replaced, **CoTASA** will update it with default values, and it will open it in a text editor.

Condor parameters: UDP.ini file

If **Enabled** and/or **ExtendedData1** are not enabled in the **UDP.ini** file (usually located in **C:\Condor2\Settings**), it will also try to open it with a text editor in order to modify it.

[General]

Enabled=1 **must be set to 1**

[Connection]

Host=127.0.0.1 default = local computer, maybe changed to the IP address of a remote computer

Port=55278 default value, normally adequate.

[Misc]

SendIntervalMs=100 **100 milliseconds is a good value if no other application is used**

ExtendedData=0 or any other value you might need

ExtendedData1=1 **Must be set to 1. This line is not present by default in the file.**
You will have to insert it if needed.

CoTASA will not start until Enabled and ExtendedData1 are enabled

Port forwarding

If another application needs **Condor** UDP data, it is possible to enable UDP port forwarding: specify the port to which the UDP data must be forwarded (and, if needed, the IP address) in the **CoTASA.ini** file.

For example : **Condor** =>Port 55278=> **CoTASA** =>Port 55279=> **Your application**

If your application does not allow changing the UDP port number, you will also have to change the output port of **Condor**, for example: **Condor** => Port 55279 => **CoTASA** => Port 55278 => **Your application**

The **SendIntervalMs** parameter can be adapted to the requirements of the other application.

CoTASA can forward data at multiples of about 25ms

LANGUAGE SUPPORT

CoTASA will try to detect the default language of the computer (currently only English or French, for all other languages English will be used).

The language of the messages can also be modified by changing the value of the **Language** parameter in the **CoTASA.ini** file. For the time being only English (EN), French (FR) and German (DE- Many thanks to Ikarus) are supported.

If you wish, it is possible to add other languages: just create a new file (for Dutch it should be **CoTASA_Lang_NL.txt**) by translating one of the existing files (**CoTASA_Lang_EN.txt** or **CoTASA_Lang_FR.txt**) and adding the corresponding language (Dutch =NL) in the file **CoTASA_Lang_List.txt**

Thanks in advance to the translators!

USAGE

All the settings can be modified by editing the **CoTASA.ini** file (see below in the Files section).

In the following, examples or recommendations can be found in the form: **Parameter=value**.

The file can be edited anytime when **CoTASA** has focus by hitting the “E” key.

CoTASA can be run on the local computer or on a remote one.

However, running on a remote computer requires some IT expertise because **CoTASA** cannot automatically determine the path to the "**Pilots**" folder that will need to be written manually in the **CoTASA.ini** file. In addition, you should also edit the Windows registry so that **CoTASA** can find the **Condor** installation folder. Read access to **Condor** files on the computer on which **Condor** is running is required.

CoTASA may be started by double clicking the icon or from a console window.

The command line syntax can be found in the annexes.

For practical reasons it is recommended to start **CoTASA** before **Condor**, but it is possible to start it at anytime

IMPORTANT NOTE: If **CoTASA** stops when **Condor** starts (or does not start if **Condor** is already running), try to run it as administrator

CoTASA waits for **Condor** to start and then reads files: **Flightplan.fpl**, **controls.ini**¹ and **Setup.ini** in the current pilot's folder in order to determine the glider type, the ballast (fixed & water) and some settings.

If the glider type can be determined, the VNE is set to the corresponding value read in **CoTASA_data.txt**. Otherwise, the user is prompted for a glider type or the VNE.

If in AUTO mode, the velocity unit will be taken directly from **Condor** (km/h or kts only).

AUTOMATIC UPDATE (OPTIONAL)

It is possible to activate the automatic update of the data and the program (**Auto update=1**).

The user is prompted to update if a newer version is available on the website.

The program uses **CURL** (installed as standard on W10) to download (via https) a plain text file with version numbers (Hangar Update and program).

For glider data, the corresponding file is downloaded using **CURL**.

For the program, the web page is opened with the default browser using **START** (Windows) and the programme stops.

¹ The controls.ini file exists only if the Condor commands have been modified.

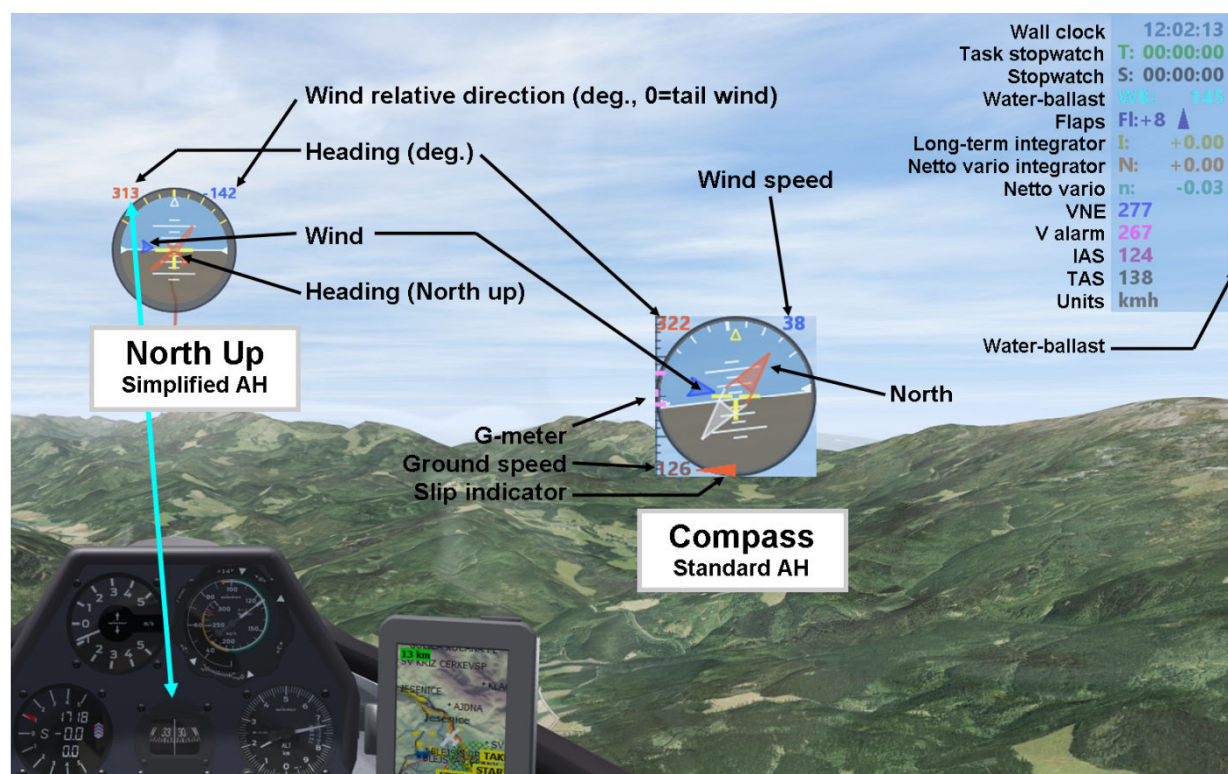
ALARMS

A sound alarm starts beeping at $VA1=VNE-DV1$ and the sound level increases up to $VA2=VA1+DV2$. The alarm volume may be set in the **CoTASA.ini** file and adjusted in flight (see below).

CoTASA uses the default sound device of the system.

It may happen that the alarm sounds are not heard on the same output device as **Condor** (e.g. loudspeakers and headset). In that case, take a look at the beginning of the **CoTASA** log file (**Logs\Logfile.txt**) to see which devices are available and try to find out which one may be used by **Condor**. Input the device number for the “Sound device” parameter in **CoTASA.ini**

DISPLAY



The text window shows (bottom to top): Velocity units, TAS, IAS, Alarm velocity, VNE, Netto Variometer (n), Netto Variometer Integrator (N), Total-energy long-term Integrator Variometer² (I), Water-Ballast (WB), Flaps settings (Fl), Stopwatch (S), Task stopwatch (T) and Wall clock

All these values are optional and will be displayed only if available.

Water-ballast may be displayed even if empty (**Display Ballast = -1 or -3**)

The font and its size can be changed. All text and graphical Water-Ballast colours can be user-defined. The number of decimal digits of climb/sink values may be adjusted.

For detailed options, see the **CoTASA.ini** file description below.

The Netto integrator computes only when 30 seconds average bank is less than 6°

² for the mathematically inclined $I = ((z + v^2/2g) - (z_0 + v_0^2/2g)) / (t - t_0)$

The task timer can only be stopped or reset by using a combination of keys to prevent accidental stopping.

For flapped gliders, there are two ways to display flaps setting:

- current setting and, if it has to be modified, a blinking arrow, up or down (see image above)
- recommended setting, green if it is selected, blinking red if not.

In both modes a sound alarm rings (its initial state is user-defined and it can be activated or muted in flight - see below). The flaps settings alarm volume is defined as a fraction of the general sound level (it may be above 100%).

The flaps setting takes into account the actual water-ballast content and, optionally, the load factor. Sound and blinking are disabled when bank is above a pre-set value (always enabled if = 0 - default = 15° if load factor is disabled, always enabled otherwise).

For the “Landing” position, it is possible to enable/disable the alarm, and also to trigger a specific sound when it is set (**FlapsLandingOpt**)

A simplified artificial horizon may be displayed. Bank graduations can be fixed or mobile (so as not to disturb the habits of IFR pilots: **AH Standard=1**).

It also shows the heading (arrow and/or numerical value) and the wind direction (arrow and/or numerical relative value). The heading display may be North up or in compass mode (see image above)

Wind direction and speed are computed from UDP data (instead of being taken from the FPL in previous versions) except for no-PDA tasks where the FPL data are shown.

Numerical value can be either relative wind direction or wind speed.

It is possible to toggle a speed display in the lower-left corner of the AH window: Nothing/TAS/Ground, default key = 1 (NumPad)

These speeds can be displayed even if they are not displayed in the text window.

As there is very little space available, the only indication is the text colour, make sure the ones used for TAS and ground speed are different enough.

Wind direction and speed (if computed) and ground speed are not reliable in the event of a slip or spin.

The text window background can be transparent or translucent or opaque. The artificial horizon can be translucent or opaque and the corners between it and the (square) window borders can be transparent or have the same opacity as the AH itself. Background and text colours can be adjusted.

For transparent windows, it is recommended to select a background colour close to sky blue (default) as that colour interferes with the edges of the text. Nevertheless you may select another colour if you spend your time flying in the bottom of valleys or canyons.

Known display issues

If the **Aero** theme of **Windows 7** is activated, the **CoTASA** windows will not be transparent (and the artificial horizon will be square)

In some configurations of **Windows 10** (not precisely determined yet), the **CoTASA** windows are not visible if they are transparent (text) or if they have transparent parts (corners of the artificial horizon). In this case, it is necessary to disable the transparency of the text window (**Opacity > 0**) and that of the corners of the artificial horizon (**AH transparent corners=0**).

Transparent or translucent windows may reduce the **FPS** rate of **Condor**.

INTERACTION WITH CoTASA

CoTASA will detect **Condor** shutdown and may close automatically after confirmation (or not) according to the **StopWait** parameter (see description in the **CoTASA.ini** annex below). It is also possible to shut down **CoTASA** with the **ESC** key when it has focus or by closing one of the icons in the Windows taskbar.

If you start a new **Condor** flight, you should restart **CoTASA** in order to have up-to-date parameters.

When Condor (or CoTASA) has focus

It is possible to interact with the program during flight while **Condor** has focus

The number keys listed below are those of the main keyboard, not the numeric keypad.

- **Increase safety margin** before VNE (DV1) : use the "I" key
- **Decrease safety margin** before VNE (DV1) : use the "U" key
- **VNE alarm may be disabled/enabled during flight**
 - to deactivate it, quickly press twice the "U" key
 - to re-enable it, quickly press twice the "I" key
 - when the alarm is off, the true airspeed (TAS) is grayed
- **Toggle artificial horizon visibility and position** (hidden, user defined position, "HUD" position) use the "O" key
- **Activate/mute the flaps settings alarm** : use the "M" key
- **Increase alarm sound level**: use the "8" key (keyboard, not keypad)
- **Decrease alarm sound level**: use the "7" key.
While being adjusted, the level is displayed in the bottom-left corner of the text window
- **Stopwatch start/stop/restart**: use the "0" key
- **Task timer start** : use the "5" key
 - Once it is started, you must use **Ctrl+Shift+KEY** to stop and reset it
- **Long-term integrator start/stop/restart**: use the "9" key
- **Netto integrator**
 - to start, hit the "6" key, then hitting the key toggles display between average netto and integrated height
 - to reset, quickly hit the key twice
- **G meter : you can reset it using the same key that is defined for Condor**
 - This is not possible if a joystick button has been selected

All these keys may be re-defined in the **CoTASA.ini** file and semi-interactively (see below).

The default key definitions have been set up initially for a French (AZERTY) keyboard, and they may conflict with some definition you made or some default Condor keys that have been defined after CoTASA was released. Do not hesitate to review and change them if needed.

Condor messaging is detected; all keystrokes are ignored while you are typing a message. **CoTASA** automatically detects the key used by **Condor**

However, if this command has been mapped to a joystick button, CoTASA cannot detect it.

In this case, it is possible to define a substitute key in the **CoTASA.ini** file, but it's up to you to operate both as synchronously as possible.

Known issues

It may happen that **CoTASA** does not respond to keystrokes anymore.

Until an automatic solution is developed, you will have to manually restart keystrokes detection by giving the focus to **CoTASA** and pressing the "K" key

In more rare situations, it may happen that keystrokes are no longer detected by both **Condor** and **CoTASA**. If this happens, activate the Windows Task Manager by **CTRL-ALT-DEL**, click on the "Processes" tab, then on the "Image Name" column header, select the **CoTASA.exe** line and click on the [End Process] button.

If this happens too often, it is possible to prevent **CoTASA** from accessing the keyboard when it does not have focus. To do so, you must set the **KeyboardHook** parameter to **zero** in the **CoTASA.ini** file.

All functions defined above will be active only when CoTASA has focus.

When CoTASA has focus

CoTASA has focus when it starts, before **Condor** has started.

Once **Condor** has started, you must use **ALT-TAB** to bring one of the **CoTASA** windows to the foreground.

NOTE: as this will make Condor lose focus, it is highly recommended to use Pause or Autopilot before interaction.

Open the settings file CoTASA.ini in a text editor by hitting the “**E**” key.

You will have to restart **CoTASA** so that changes are taken into account.

Change key definitions semi-interactively by hitting the “**D**” key.

It is possible to select any keyboard key including system and function and keypad keys.

A popup window will show, click on the **OK** button

Hit the key you want to select, the key scancode will be copied to the pasteboard.

CoTASA.ini will be opened in a text editor.

Just paste the code obtained after the “=” sign following the key you want to edit, e.g. *Key horizon=SCN81*.

If you want to set more than one key, do not restart **CoTASA** until after the last one is done.

Read the manual by hitting the “**H**” key

Provided that an application is associated with PDF files on your computer

Move the windows

Both windows may be moved about the screen or to another monitor (for the text window, preferably after **CoTASA** has started receiving data), provided that **CoTASA** has focus.

Since version 3.3 monitors located above or below the main ones are also reachable

- **Select the window to move:** click inside the desired window (**not on a transparent part**).
The border turns orange while the window is selected
- **Move selected window:** use the **Left, Right, Up** or **Down** arrows.
The **SHIFT** key speeds up the movement.
- **Save the windows positions** into the **CoTASA.ini** file: hit the “**S**” key.
- **Un-select the selected window:** click again inside the window (same as above)

SUPPORT

Please report any bugs to: cotaco@marc-till.com , with **Logfile.txt** attached

ACKNOWLEDGEMENTS

- The **Condor** atmospheric model has been provided courtesy of UBSoft, editor of Condor.
- The GUI uses components from "tiny file dialogs" under a zlib license
<https://sourceforge.net/projects/tinyfiledialogs/>
- The Cpw library is open-source software, licensed under the Lua License.
<https://mathies.com/cpw/about.html>
- CoTASA uses the BASS sound library which is free for non-commercial use.
<http://www.un4seen.com/>

DISCLAIMER

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ANNEXES

Command line syntax

The command line syntax is:

```
> CoTASA_GUI.exe [-help] [-kmh|-kph|-mph|-kts|-fpf]
-help           displays the command line syntax,
-kmh or -kph    velocities in km/h (default)
-mph            miles per hour
-kts            knots
-fpf            furlongs per fortnight (thousands of)
```

NOTE: The command line arguments are evaluated after the **CoTASA.ini** file has been read.

List of files

README.txt:	README file
LISEZMOI.txt:	French version
changelog.txt:	List of changes
CoTASA.exe:	Executable file
CpwDLL.dll:	Graphical library
bass.dll:	BASS sound library
Settings\CoTASA.ini:	Settings (see file description below)
Settings\CoTASA_default.ini:	Default Settings (this file is read only, please do not modify)
Settings\CoTASA_data.txt:	Glider related data (see file format below)
Settings\silhouette.txt :	Outline of the glider displayed in the artificial horizon
Manual\Manual_EN.pdf:	This file
Manual \Manual_FR.pdf:	French version
Lang\CoTASA_Lang_List.txt:	List of available languages
Lang\CoTASA_Lang_EN.txt:	Messages file (English)
Lang\CoTASA_Lang_FR.txt:	Messages file (French)
Lang\CoTASA_Lang_DE.txt:	Messages file (German)
Logs\Logfile.txt:	Log file
Sounds\VNE_0.wav	VNE alarm (min level)
Sounds\VNE_1.wav	VNE alarm (2nd level)
Sounds\VNE_2.wav	VNE alarm (3rd level)
Sounds\VNE_3.wav	VNE alarm (max level)
Sounds\Flaps_Up.wav	Flaps up alarm
Sounds\Flaps_Dn.wav	Flaps down alarm
Sounds\Landing.wav	Flaps set to "Landing"

Alarm sound files can be replaced by other sound files of comparable length.
It is highly recommended to backup the original files beforehand.
Some extra sound files are available in the **Sounds** folder

CoTASA.ini: Settings

It is possible to open this file with a text editor from CoTASA (“E” key, see above)

NOTE: If you change the units in the .ini file, any velocity values in the file will be read using the selected unit

Lines starting with # are ignored.

If no value is specified, the default value will be used.

- **CoTASA Version** = File version number – **Please do not modify this value**
- **Language** = Language used for messages (EN, FR or DE) default = auto detect
- **Auto update** = Search for updates [0/1] (default=0)
- **Port** = UDP port to listen to (the default value is 55278, see above)
- **Forward Port** = UDP port towards which UDP data must be forwarded (default= none)
- **Forward Address** = UDP forwarding IP address (default: 127.0.0.1 = localhost)
- **Condor 2 path** = Path to the **Condor 2** current pilot's folder
- **KeyboardHook** = Keystrokes detection (0=no, 1=yes, default). **See above**
- **StopWait** = what to do when condor stops :
 - 2 = do nothing
 - 1 = exit without confirmation
 - ≥0 = wait **StopWait** seconds and exit after confirmation

- **Unit** = Speed units: possible pre-sets are: AUTO, kmh or kph, kts, mph, fpf
Otherwise specify name and conversion factor from m/s
e.g. "Unit=m/s=1.0" or "Unit=km/h=3.6" etc.
- **VNE** = Default value of VNE
- **DV1** = Safety margin **before** VNE
- **DV2** = Interval between minimum and maximum beeps
- **Atmosphere Model** = Atmospheric Model used for TAS computation (0=ISA, default; 1=Condor)

- **Flaps Alarm Init** = Flaps alarm initial state (0=muted, default, 1=active)
- **FlapSoundMaxBank** = Maximum bank for flaps indicator sound/blinking (degrees, 0=always, def.=15)
- **Flaps_AverageTime** = Flaps settings averaging time (sec. - default=2.00)
- **Airspeed_AverageTime** = Airspeed averaging time (sec. - default=1.00)
- **Flaps_GFactor** = Take into account G factor for flaps settings (0/1, default =0)
- **FlapsLandingOpt** = “Landing” options (0=disable alarm, 1=enable, 2=warning sound, 3=1+2) def=0

- **Display VNE** = Flag to display VNE value [0/1]
- **Display VA1** = Flag to display VA1 value [0/1]
- **Display Units** = Flag to display velocity units [0/1]
- **Display IAS** = Flag to display Indicated AirSpeed [0/1]
- **Display TAS** = Flag to display Indicated TrueAirSpeed [0/1]
- **Display Netto Vario** = Flag to display the netto vario [0/1]
- **Display Long-term Integrator** = Flag to display the long-term integrator [0/1]
- **Display Stopwatch** = Flag to display the stopwatch [0/1]
- **Display Flaps** = Flag to display the flaps setting (0=No, 1=current, 2= recommended)
- **Display Ballast** = Flag to display water-ballast contents (0=no, 1=digital, 2=graphical,3=both)
Negative value: force display even if empty
- **Display Heading** = Flag to display heading (0=no, 1=digital, 2=graphical,3=both)
- **Display Wind** = Flag to display wind (0=no, 1=digital, 2=graphical,3=both)
-1, -3 = display speed ; 1, 3 = display direction
- **North Up** = Heading display mode (0=compass, 1=North up)
- **Arrow Style** = Arrow style (0=basic, 1=“nice”, default)

- **Horizontal display** = Display text on one line (1) or several lines (0)
- **Opacity** = Text window opacity [0-100] 0=transparent background & opaque text, 100=opaque
- **Hor. position** = L(ef), C(enter), R(ight), or pixel value (Left=0)
- **Ver. position** = T(op), C(enter), B(ottom), or pixel value (Top=0)
- **Font name** = Font to use (default=arialbd - recommended : ebrimabd)
- **Font size** = Font size (default=24)
- **Number of Digits** = number of decimal digits for climb/sink values
In order not to display the + sign in front of positive values, set a negative value

Colours: Black, White, Grey, Red, Green, Blue, Cyan, Magenta, Yellow or HTML style e.g. #007F00 (dark green) - case insensitive

- **ColFlap** = Colour used to display the flaps setting
- **ColWB** = Water ballast content (text and graphical)
- **ColVNE** = VNE
- **ColVA1** = VA1
- **ColTAS** = TAS
- **ColGS** = Ground speed
- **ColHDG** = Heading on the Artificial Horizon (arrow and numerical value)
- **ColWind** = Wind on the Artificial Horizon (same)
- **ColIAS** = IAS
- **ColNetto** = Netto variometer value
- **ColInt** = Long-Term Integrator variometer value
- **ColTimer** = Stopwatch
- **ColNettoInt** = Netto integrator value
- **ColTaskTimer** = Task timer
- **ColClock** = Wall clock
- **ColSlip** = Slip indicator
- **ColGmeter** = G-meter

- **Text Background** = Colour used for the text window background
- **AH Corners Background** = Colour used for the Artificial Horizon corners background

- **AH size** = Artificial horizon window size in pixels. If =0, not displayed
- **AH Standard** = 1: "Standard" (moving) bank graduations, 0: fixed (default)
- **AH opacity** = AH opacity [0-100] 0=transparent, 100=opaque
- **AH transparent corners** = AH corners transparency [0/1] 0=opaque, 1=transparent
- **AH hor. position** = AH horizontal position (same as above)
- **AH ver. position** = AH vertical position (same as above)
- **AH Font size** = AH Font size (-1=auto ; 0=same as text, default ; >0 actual value)

Input key definition (**uppercase, between ""**: "U" or ASCII code: **ASC85** or scan code: **SCN22**)

- **Key increase** = Keyboard key used to increase safety margin (default="I")
- **Key decrease** = Decrease safety margin (default="U")
- **Key horizon** = Toggle artificial horizon visibility (default="O")
- **Key Flaps Sound** = Mute or activate flaps sound alarm (default ="M")
- **Key Sound Up** = Increase alarm volume (default="8" – keyboard)
- **Key Sound Down** = Decrease alarm volume (default="7")
- **Key Stopwatch** = Start/Stop/Restart stopwatch (default="0")
- **Key Task Timer** = Start Task timer ; CTRL+SHIFT+KEY to reset (default="5")
- **Key Integrator** = Start/Stop/Restart long-term integrator (default="9")
- **Key Netto Int** = Start/Toggle display of Netto integrator (default="6")
- **Key HUD Speed** = Toggle HUD Speed display: default=SCN79: 1 (NumPad)

- **Key Chat Open** = Substitution key to activate chat (if needed)
- **Sound device** = Device number [1-N] (default=system default device)
- **General volume** = General alarm volume [0-100] (default=50)
- **Flaps volume** = Flaps alarm volume = percentage of above [0-99999] (default=50)
- **Text editor** = Path to a text editor (default = Windows notepad)

CoTASA_data.txt: List of glider types with VNE and other data

This file may be edited with any text editor in order to add new glider types or update existing ones

Velocities in this file are in km/h, masses are in kg.

Lines starting with # are ignored.

Data for most **Condor1** gliders are missing, except for the **ASW27**

For non-flapped gliders (or if flaps settings data are not available) the format is:

TYPE=VNE,MAX_BALLAST

TYPE = glider name (must be the exactly the same as in Condor)

VNE = VNE (in km/h)

MAX_BALLAST = water-ballast maximal capacity (in litres - or kg - of water)

e.g. : **Blanik=253,0**

For flapped gliders, the format is :

TYPE=VNE,MAX_BALLAST,REF_MASS,MAX_MASS,[FLAP_VELOCITY,FLAP_SETTING],[...,...]

REF_MASS = minimum mass in **Condor** (no ballast, no fixed ballast, no second pilot)

MAX_MASS = mass at which the flap settings are evaluated (usually Maximum Take-Off Weight)

FLAP_VELOCITY = velocity above which the corresponding flap setting is recommended

FLAP_SETTING = character string to display, it is better to copy the corresponding glider data

e.g. : **ASW27=285,190,310,500,50,5,81,4,89,3B,121,3A,156,2,213,1**