Introduction to restricted areas (CTRs)

Beginning with firmware v2.21 for the 5030/Compeo and using FlyChart 4.50 (or later) it is possible to load restricted airspace definitions (CTR) into the 5030/Compeo. A stock 5030/Compeo without expanded memory can load one CTR and with SW package 01 released it is possible to load up to 20 areas. With extended memory and with SW package 02 released up to 300 CTRs can be loaded.

CTRs are defined by the end points of lines and arc segments or by the center and radius of a circle. The distance to the nearest CTR can be seen with the user field "Dist. to CTR". The display is limited to distances of 50 km. If you fly within the warning limit (default = 2000m) as defined in the CTR, a warning comment will be given in the 5030/Compeo *Information Display*. The warning will be given with the distance to the CTR (e.g., CTR 0.75 km). If you enter the CTR the “Dist. To CTR” will display 0.

CTR's can be entered into the instrument manually in the Setup menu>Restricted areas, or more easily with FlyChart. The procedure for entering CTRs with FlyChart is detailed below.

Restricted Airspace Files

FlyChart is able to load restricted areas in OpenAir format. You can find these files on the Internet (e.g., http://soaring.gahsys.com/SUA/) usually with the suffix *.txt. These data files are normally derived from an open database called DAFIF (see the disclaimer at the beginning of the *.txt file). FlyChart cannot read these files directly, the *.txt file be renamed to *.fas. FlyChart can be used to open a .fas file and the desired restricted areas can be selected and loaded into the instrument. Some .fas files are available at http://flytec.com/Products/Software.htm. You can create and save different CTR lists for use when flying different flying sites. These saved lists will have the suffix *.fa5.

Below is an example of a restricted area from a DAFI file:

```
*##    (CLASS B) ORLANDO (C1)   ###
AC B
SB 0,150,255
AN MCO: 124.8 MHz
AL 1600AMSL
AH 10000ALT
DP 28:44:00 N   081:25:30 W
DP 28:45:45 N   081:25:00 W
DP 28:47:20 N   081:25:00 W
DP 28:48:40 N   081:25:20 W
DP 28:50:00 N   081:24:30 W
DP 28:50:00 N   081:02:30 W
DP 28:44:00 N   081:02:30 W
```

Note: the starting point and the ending point do not have to be identical.

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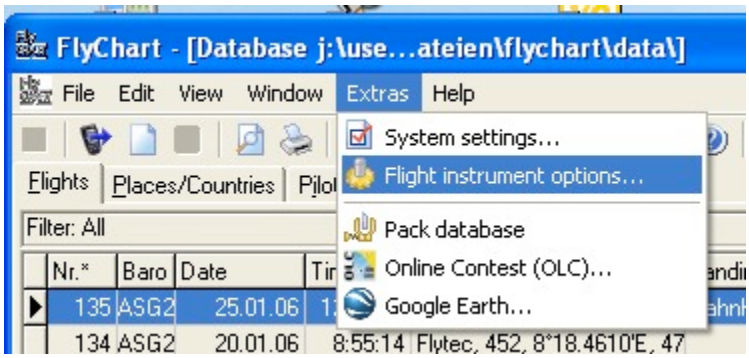
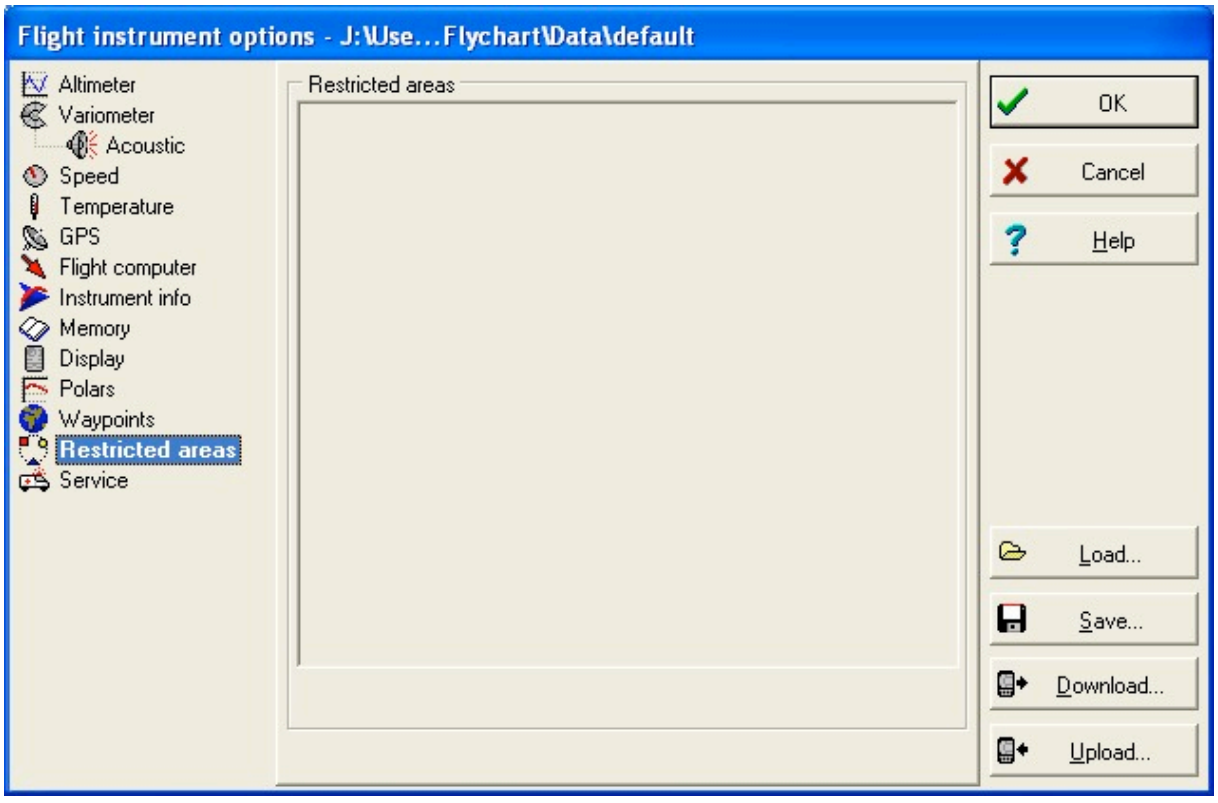
Uploading restricted areas to the 5030/Compeo

1. Select *Extras -> Flight instruments options*.



2. In the *Flight instrument options* window select *Restricted areas* and an empty frame opens.



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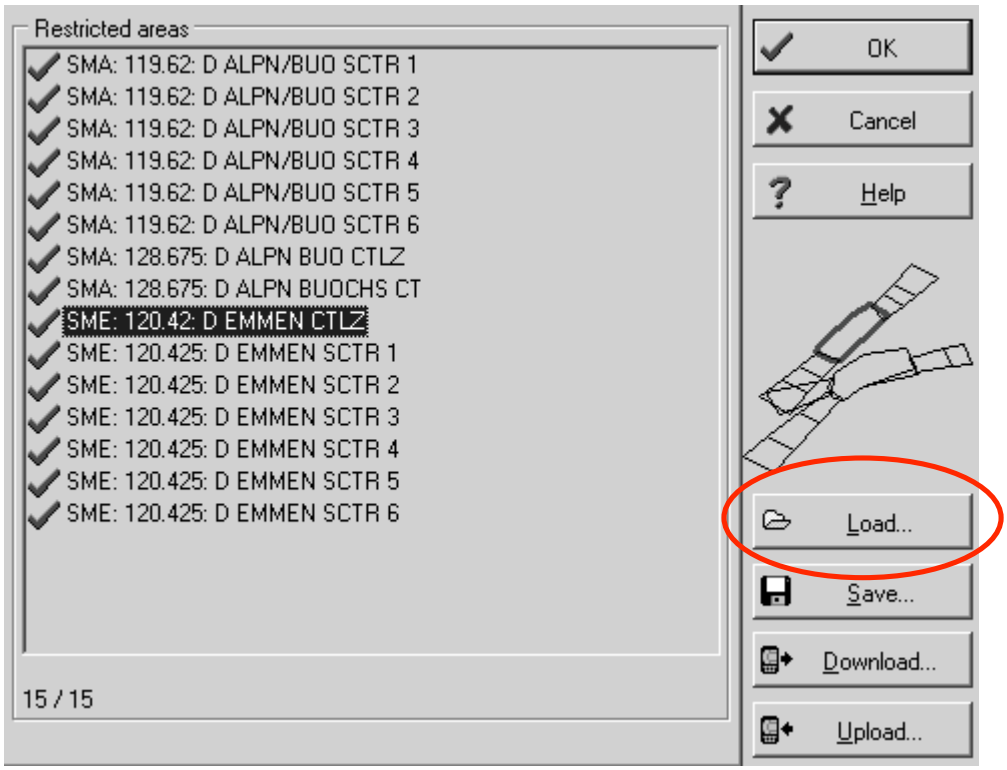
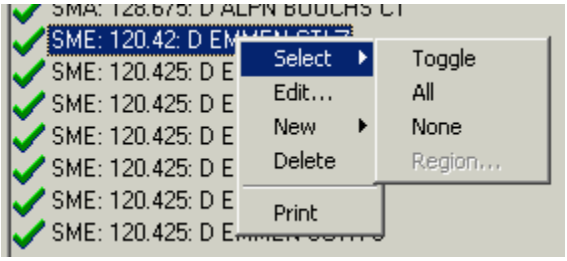
3. Select the desired restricted area file (*.fas or *.fa5) with the "Load" button.



The restricted areas contained in this file will now appear in the *Restricted areas* frame and a complex diagram will be shown in the graphics area (above the load button).

4. Select the restricted areas that you want upload by right clicking>select>toggle on the desired area. Selected areas will be marked with a green check mark and inactive restricted areas are marked with a red X.



By right clicking you can perform the following actions:

- **Select >Toggle:** Status of selected area is reversed (green check changes to a red X and vice versa).
- **Select >All:** All restricted areas will be turned on and are marked with a green check mark.
- **Select >None:** All restricted areas will be turned off and will be marked with a red X.

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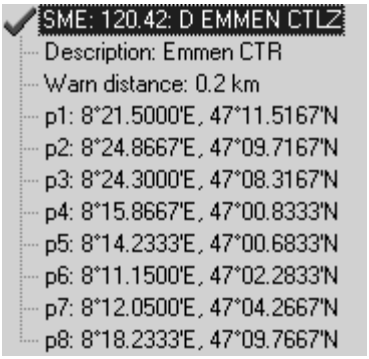
To select a range of restricted areas: left-click the first one and shift-left-click on the last one. To select multiple restricted areas: Ctrl-left-click the desired areas. When selected, the group will be highlighted in blue and can be toggled on with a right-click. The desired areas will now be marked with a green check mark and will be drawn in the graphic area. Clicking on any active (green checked) restricted area and will cause that one to be drawn in red. Hint: When selecting restricted areas to upload, only choose the restricted areas you need since the instrument needs considerable calculation power to refresh the map display and generate distance calculations. It is recommended that you make a user airspace file with all restricted areas in your flight area and that you only upload the restricted areas that you could possibly fly by on a given flight.

Editing restricted areas

It is also possible to edit the details of a restricted area within FlyChart by right clicking on an active restricted area. The following actions can be performed:

- **Edit**: The name, the comment or the coordinates defining the CTR can be edited.
- **New:** restricted areas can be created manually, useful for creating your own restricted area.
- **Delete**: to remove a restricted area from a list.

Double clicking on a restricted area with the left mouse button will bring up the details of the airspace (Name, Description, Warning distance, and the coordinates necessary to define the perimeter) as shown below:



Name: The name can be changed by right clicking on the name and selecting Edit. A name can have up to 17 letters and may appear only once in the list. A clearly understandable abbreviation is recommend. The name in the DAFIF database is the 3-character identifier of the airspace, the radio frequency and the class of airspace. This leads, however, to double names in the list and a less than ideal name. Hint: Edit names and the comments so that you can see what they are with a quick glance.
Description: The description can be up to 17 characters and can be changed (right click > Edit). When flying in the vicinity of a loaded restricted area the CTR description will be shown on the top left corner of the map display of the instrument. We recommend using a clearly understandable abbreviation of the restricted area, as well as additional information like the

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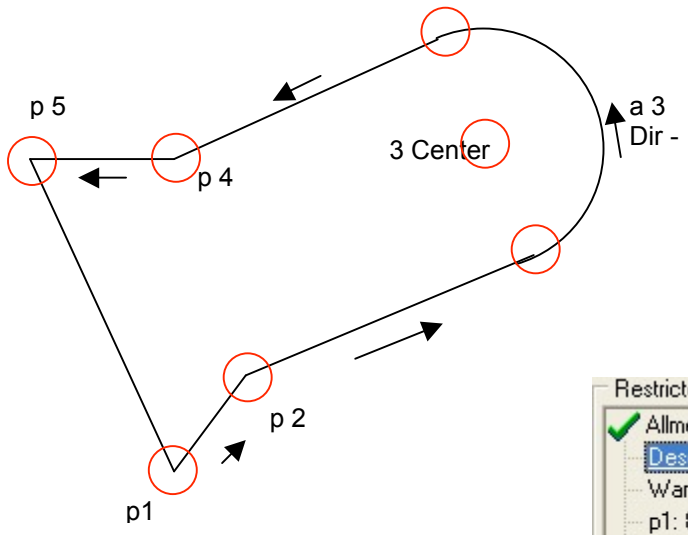
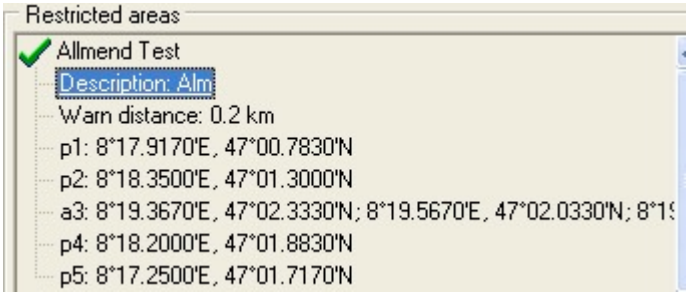
floor or ceiling of the airspace or the radio frequency of the control tower. The standard in the DAFIF is the floor and the ceiling.
Warning distance: The warning distance is perpendicular distance from the restricted area. Within this distance, a warning in the *Information Display* of the instrument will be given. The warning will be an abbreviation of the name and the remaining distance.
Coordinates: The coordinates of the points necessary to define the restricted area are listed in the order (clockwise or counter clockwise) required to define the shape. Hint: Some airspaces are quite complicated and can be simplified by eliminating points (e.g., points on the far side of a CTR that you cannot possible fly around. Consolidate overlapping restricted areas if possible by making a new restricted area with only the outer corner points or arc segments.

There are three different types of coordinates used to define a restricted area:
- P - used for polygon intersections
- A - used to define an arc
- C - used to define a circle

If you click on a coordinate shown within an airspace description that element will be highlighted in blue in the graphic. If you wish to edit the coordinates double click on the element. To delete an element right click on the element and select delete. To add an element to an airspace right click on the element where you want the new element added and select New>Point/Circle/Arc from the pop-up menu.

Sample CTR (Counter clockwise)





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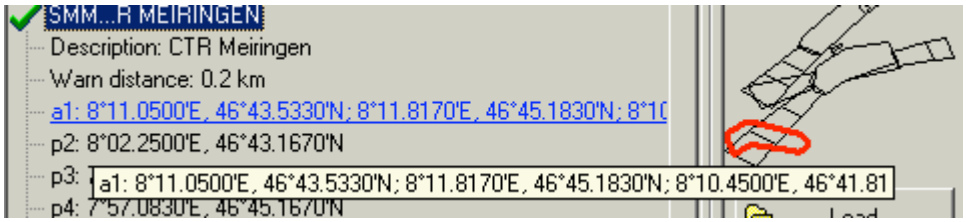
Arc segments



Arc segments need the following format:
Long/Lat of the center; Long/Lon Start point of the arc; Long/Lat Stop point of the arc; Direction (+ Clockwise, - Counterclockwise)

Circles

Circles need the following format
Long, Lat of the center; radius in km

5. After the desired restricted areas are selected (and edited if necessary) click the “Upload” button to send them to the 5030/Compeo. Of course the instrument must be connected to the PC cable and turned on and in the *Restricted areas* menu. If the speaker is turned on the 5030/Compeo will beep once for every successfully loaded CTR. If a problem occurs during transfer a lower pitch beep will be given. After uploading is complete you can confirm that the CTRs have been transferred by clicking "Download" and viewing, in the *Restricted areas* frame, which restricted areas are actually stored in the instrument.