MAESTRO plugin for EuroScope

- version 1.0 -

Developer Guide

EuroScope | power of control

Table of Contents

1 Installation

- In EuroScope, open the “OTHER SET” menu, then click on the “Plug-ins…” item
- Check if the “MAESTRO plugin” is already loaded
    - If not, click on “Load” and select the plugin file (MAESTRO.dll)
- Select the MAESTRO plugin in the list and check if “Standard ES radar screen” is listed in the “Allowed to draw on types”
    - If not, move it there
- Close the Plug-ins Dialog with “Close”
- If the plugin wasn’t already loaded or you needed to give the drawing permission, save the profile to avoid having to do all this again the next time:
    - Open the “OTHER SET” menu and click on “Save profile”. This will automatically load the plugin with the profile when it’s used the next time. You can also select “Save profile as” if you want to create a different profile for this plugin for some reason.

2 External data files

This chapter gives guidance on developing the external data files used by the plugin for various features. Even though the plugin does its best to check the data for errors, some errors may get through and cause all kinds of issues, possibly leading to ES crashing, so it's important to be careful to provide correctly formed data when creating the files. Errors in these files discovered by the plugin are reported in a "MAESTROplugin" chat tab when the files are loaded.

2.1 MAESTROsettings.txt

This file is used for adjusting the plugin settings. Each setting in the file must be on its own line, and the syntax is *SettingName=Value*, for example *System_Wind_Sfc_Auto=0* to disable the automatic wind setting. The available settings, default values, short descriptions and the acceptable values are listed below.

To use certain settings as airport-specific, enter a setting line *[ICAO]* where ICAO is the desired airport ID. Any settings below that line up to the next *[ICAO]* line are used only at that airport. All settings to be used at all airports (or when no airport is selected) must be at the beginning of the file before any *[ICAO]* lines.

Setting name	Default value	Description
System_Version	0	Selects the modelled GUI version, old(0)/new(1)
System_TrueColorMode	1	Windows shown during move&resize(1)/only outline shown(0)
System_RateTime	30	Past landing rate calculation range (10-120min)
System_RateDisplayType	0	Displayed rate type, seconds(0)/ops per hour(1)
System_DisplayWinds	1	Show(1)/hide(0) Winds tab
System_DisplayRates	1	Show(1)/hide(0) Actual Rates tab
System_LandingSpeed	140	Average airspeed on final approach (50-200kts)
System_Default_Feeder_Time	15	Default time from feeder to threshold (1-600min)
System_Default_Rate	150	Default rate value between arrivals (1-600sec)
System_Default_Slot	2	Default length of a new slot (1-999min)
System_Minimum_EET	10	Minimum time to destination (0-999min) forced for new flights
System_Max_Final_Length	15	For frozen flights on final, sequence forced on order within this distance (0-999nm)
System_Lost_Time	15	Track age (1-9999sec) to use lost track color
System_Remove_Time	600	Track age (1-9999sec) to automatically remove
System_Delay_Time_0	1	Delay (1-9999min) to use Delay 0 color
System_Delay_Time_1	2	Delay (1-9999min) to use Delay 1 color
System_Delay_Time_2	5	Delay (1-9999min) to use Delay 2 color
System_Delay_Time_3	10	Delay (1-9999min) to use Delay 3 color
System_Time_Frozen	5.0	Time to destination (0.0-999.9min) to use "Frozen" color
System_Time_SuperStable	6.0	Time to feeder fix (0.0-999.9min) to use "SuperStable" color
System_Time_Stable	15.0	Time to feeder fix (0.0-999.9min) to use "Stable" color
System_Wind_Sfc_Auto	1	Set(1)/Don't set(0) surface wind automatically from METAR
System_Web_Path_DL		Path (without filename) to web server for downloading data
System_Web_Path_UL		Path (without filename) to web server for uploading data
System_Web_User_DL		Username to download web server
System_Web_User_UL		Username to upload web server

System_Web_Password_DL		Password to download web server
System_Web_Password_UL		Password to upload web server
System_Web_Auth_DL	0	Authentication required(1)/not required(0) to download data
System_Web_Auth_UL	1	Authentication required(1)/not required(0) to upload data
System_LoadInterval_Local	15	Interval (5-600sec) to load local data in slave mode
System_LoadInterval_Web	60	Interval (30-600sec) to load web data in slave mode
System_SaveInterval_Local	15	Interval (5-600sec) to save local data in master mode
System_SaveInterval_Web	30	Interval (30-600sec) to save web data in master mode
Label_Highlight_Type	0	0 No box around label 1 Box around ASEL aircraft label 2 Box around aircraft showing detailed tag (*

*) this also needs the plugin's "Dummy item – correlated detailed tag" item to be present in all of the used tag family's correlated detailed tags.

Label_DelayItem_ColorType	1	0 No specific coloring 1 Sector state coloring as in the TopSky plugin 2 Delay coloring as in the MAESTRO/AMAN Window
Label_DelayItem_ShowGain	1	Show(1)/hide(0) delay item when there is no delay
Label_DelayItem_Unsel_Uncon	0	Show(1)/hide(0) delay item for unconcerned unselected tracks
Label_DelayItem_Uncon	1	Show(1)/hide(0) delay item for unconcerned selected tracks

The following settings define the flight labels' coloring and default item visibility. A positive value will show the item, a negative value will hide it by default (the callsign item is mandatory to be displayed, so only positive values are accepted for it). The available color values are as follows:

- 1 Custom label color 1
- 2 Custom label color 2
- 3 Custom label color 3
- 4 Custom label color 4
- 5 Custom label color 5
- 6 Custom label color 6
- 7 Flight state color (unstable, stable, etc.)
- 8 Runway specific color
- 9 Feeder specific color
- 10 Current delay color
- 11 Total delay color

Label_Rwy_FeederTime	7	Feeder time in Runway mode label
Label_Rwy_Callsign	7	Callsign in Runway mode label
Label_Rwy_ATYP	-7	ATYP in Runway mode label
Label_Rwy_WTC	-7	WTC in Runway mode label
Label_Rwy_Feeder	-7	Feeder ID in Runway mode label
Label_Rwy_Delay_Total	11	Total delay in Runway mode label
Label_Rwy_Delay_Now	10	Remaining delay in Runway mode label
Label_Feeder_FeederTime	7	Feeder time in Feeder mode label
Label_Feeder_Rwy	-7	Runway in Feeder mode label
Label_Feeder_Callsign	7	Callsign in Feeder mode label
Label_Feeder_ATYP	-7	ATYP in Feeder mode label
Label_Feeder_WTC	-7	WTC in Feeder mode label
Label_Feeder_Delay_Total	11	Total delay in Feeder mode label
Label_Feeder_Delay_Now	10	Remaining delay in Feeder mode label

When the System_Version setting is set to “1”, some of the default color values are different, and are shown in the below list with square brackets.

Color_ActiveText	255,255,255	RGB value for Active text color	[0,0,0]
Color_Button	120,120,120	RGB value for Button color	[192,192,192]
Color_Button_Active	120,120,120	RGB value for Active Button color	[96,160,224]
Color_Highlight	236,228,108	RGB value for Highlight color	[255,255,255]
Color_InactiveText	168,168,168	RGB value for Inactive Text color	
Color_MenuBackground	120,120,120	RGB value for Menu Background color	[0,128,255]
Color_MenuBorder	50,50,50	RGB value for Menu Border color	[255,255,255]
Color_MenuText	0,0,0	RGB value for Menu Text color	[255,255,255]
Color_SliderBackground	96,96,96	RGB value for Slider Background color	
Color_Slot	192,0,0	RGB value for Slot color	
Color_WindowBackground	120,120,120	RGB value for Window Background color	
Color_WindowText	255,255,255	RGB value for Window Text color	
Color_Delay_Negative	0,224,0	RGB value for Delay Negative color	
Color_Delay_0	255,255,255	RGB value for Delay 0 color	
Color_Delay_1	0,0,224	RGB value for Delay 1 color	
Color_Delay_2	224,224,0	RGB value for Delay 2 color	
Color_Delay_3	255,128,0	RGB value for Delay 3 color	
Color_Delay_4	192,0,0	RGB value for Delay 4 color	
Color_Unstable	80,220,100	RGB value for Unstable color	[128,255,128]
Color_Stable	255,128,0	RGB value for Stable color	[192,255,128]
Color_SuperStable	255,255,255	RGB value for SuperStable color	
Color_Frozen	0,255,255	RGB value for Frozen color	[128,255,255]
Color_Landed	0,0,224	RGB value for Landed color	[255,128,255]
Color_Lost	96,96,96	RGB value for Lost color	
Color_Label_Custom_1…6	255,255,255	RGB value for custom label colors 1 to 6	
Color_Feeder_Default	255,255,255	RGB value for the default feeder label color	
Color_Runway_Default	255,255,255	RGB value for the default runway label color	

The following color settings are used for the same purpose as the corresponding ones in the TopSky plugin, and should be set to the same values for a uniform graphical appearance. The default values are the same ones as in the “non-COOPANS” version of the TopSky plugin.

There are two settings that can be used to activate a specific color set related to the TopSky plugin. One sets the current COOPANS build colors and the other a set used earlier in Denmark and Sweden. The settings and the affected color values are shown below.

	Default value	Color_COOPANS=1	Color_NUAC=1
Color_Arm	97,97,97	97,97,97	97,98,97
Color_Background	162,160,145	73,80,85	127,127,127
Color_Concerned	124,1,124	110,153,110	80,93,159
Color_Foreground	0,1,0	209,210,210	0,0,0
Color_WM_Active_Fg	230,230,231	255,254,254	255,254,255
Color_WM_Bg	128,127,127	100,100,105	148,133,130

Color_WM_Border	50,50,50	88,95,99	153,153,153
Color_WM_Frame	1,1,0	88,95,99	1,0,0
Color_WM_Fg	1,1,1	180,184,181	1,0,1

There are two specific format setting lines to set up airport-related things. These must appear after an *[ICAO]* line to link them to the correct airport.

FEEDER:FeederName:FeederID:FixList[:Color]

The FEEDER line is used to set up a feeder fix. An airport can have any number of feeder fixes defined. An aircraft is connected to a specific feeder fix when its flightplan includes any of the defined waypoints.

- FeederName Feeder name
- FeederID String to display in flight labels (an abbreviation perhaps)
- FixList Comma-separated list of waypoints associated with the feeder fix
- Color Optional color value to use as a feeder-specific color (format: R,G,B)

For aircraft not routing via any of the defined feeder fixes, a “floating” feeder point is used to trigger the state changes. The setting System_Default_Feeder_Time controls its position in time from the landing threshold.

RUNWAY:RunwayID:Rate:Color

The RUNWAY line is used to define a runway-specific default landing rate and/or a specific color to use for this runway in the flight labels. To set only one of these, enter “*” for the other to use the default value.

- RunwayID Runway ID
- Rate Default landing rate (seconds between landings, 1-600)
- Color Color value to use as a runway-specific color (format: R,G,B)

2.2 MAESTRO_data.txt

This file contains the sequence data when the Master or Slave mode is used. It does not contain any other data so it can be safely deleted after the session if necessary.

Warning: Do not store any data in a file with this name in the same folder as the plugin. The plugin will overwrite the file without any warning!

The file format is not guaranteed to stay the same in possible future versions of the plugin, but currently is as follows:

General data:

DATA:<icao>:<timestamp>
SOURCE:<vatsim_login>
WIND:<10k_deg>:<10k_kts>:<sfc_deg>:<sfc_kts>:<sfc_wind_auto_flag>

Wind values contain "-1" for unknown data. Direction "0" means variable.

Runway data:

RUNWAY:<id>:<active_for_arr_flag>:<landing_rate>
or, if a runway-specific color has been set
RUNWAY:<id>:<active_for_arr_flag>:<landing_rate>:<color_r>:<color_g>:<color_b>

SLOT:<timestamp_begin>:<timestamp_end>

<landing_rate> is in seconds, slots are for the preceding runway.

Feeder data:

FEEDER:<name>:<short_id>
or, if a feeder-specific color has been set
FEEDER:<name>:<short_id>:<color_r>:<color_g>:<color_b>

The final "FEEDER:*:*" is for aircraft not routing via the defined feeders.

Sequence data:

SEQ:<seq_number>:<callsign>:<type>:<wtc>:<feeder_name>:<time_to_feeder>:<rwy_id>:<time_to_dest>:<state>:<delay_remaining>:<delay_total>:<lost_flag>

All times in minutes, time to feeder "-1" if already passed. <time_to_dest> includes calculated delay. <lost_flag> is set if the track is currently not online. <state> is as follows:

0 – unstable
1 – stable
2 – superstable
3 – frozen
4 – landed

3 Using the sequence data in other applications

The easiest way to use the sequence data is to put the plugin into local master mode so it saves the sequence data into a local file which can then be read by any other application. For the file format, see above.

While it is technically possible to use other software to create the sequence file and have the plugin read it in slave mode, such use is not supported and may lead to unexpected results or crashes if the provided data is not exactly what the plugin expects.

Another option for direct access only to the delay values is to use the .lib and .h files in the Developer folder. They are untested and provided “as-is”, with no support.