

ATC QUICK GUIDE

TOPSKY-NATCON NORWAY FIR

Version 1.0

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1. TopSky Introduction

The TopSky plugin (a.k.a. The Plugin Formerly Known As “EUROCAT 2000 E”) started out as a very small project to create a couple of customized aircraft tag items, but as more information about the real system and the possibilities with the plugin development became available, it slowly grew to include an almost complete set of tag items, tag menus, graphical elements on the radar display and some additional functionality.

Although - as its name suggests - the plugin is based on the TopSky ATM system, it is in no way affiliated with or endorsed by Thales Group.

This manual is based on the reader having at least a basic understanding of ATC procedures and terminology, and being familiar with the operation of the EuroScope program itself. Refer to the EuroScope documentation for the most current information on the program's features. Because of the complexity of the plugin, some offline practice is recommended before attempting to control online traffic with it.

Norway FIR is implementing TopSky as its primary and supported system for ATCOs using Euroscope. TopSky is a plugin that allow controllers to utilise a number of technologically advanced features, everything from holding lists and conflict alert and resolution display, to Arrival management and vertical descent profile windows.

The following features are included in TopSky-NATCON:

- Realistic NATCON-layout as per Norwegian ATM system 2020;
- Realistic datablock labels (as per NATCON ATM 2020);
- Departure sequence list;
- Personal notepad/free-text window;
- Pre-Departure Clearances (PDC) at selective aerodromes;
- Real World METARs, TAFs, NOTAMs, SNOWTAM and SIGMETs;
- Vertical Aid Window;
- Arrival Manager (AMAN)
- New Flight Plan Display Window;
- Operations Rate;
- Predicted Traffic and Sector workload;
- Short/Medium term conflict detection system;
- Conflict and Resolution Display;
- Controller Pilot Data Link Communications (CPDLC).

For exhaustive list of plugin features, please refer to the General TopSky Guide (available on the VATSIM Scandinavia Forum, and in the TopSky-NATCON Euroscope folder)

For more information on the TopSky plugin, please see the TopSky plugin General Manual, available in the TopSky folder for Euroscope (ENOR-Norway-NC-Full-Package).

2. Acknowledgements

This plugin contains code and/or ideas from the following sources:

- The RDF feature is based on Claus Hemberg Jørgensen's work on his [RDF](#) plugin
- File transfers use the [Libcurl](#) library
- Weather radar images are parsed using the [libpng](#) and [zlib](#) libraries

TopSky-NATCON developers:

- Jakob Arne Brønstad
- Sebastian Rekdal
- Adrian Bjerke

TopSky-NATCON beta-testers:

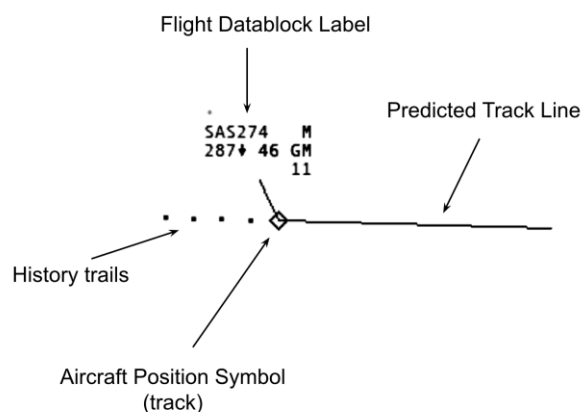
- Adrian Bjerke
- Kascper Kosiorek
- Mats Edvin Aarø
- Sebastian Rekdal
- Werner Rafteseth

3. TopSky Track Labels

3.1. Track Presentation

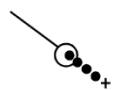
The presentation of radar and Flight Plan tracks consist of the following elements:

- Airport position symbol (track, radar return symbol)
- History trails
- Prediction Track Line
- Flight Datablock Label



3.1.1. Track Symbols

The position symbol is drawn at the latest known position of the aircraft. The colour of the symbol is the flight sector colour for an unselected track and "Track Highlight" for a selected one. A number of different symbols are available. To begin with, there are five basic shapes that tell what kind of track is in question:



Coasted Track (no position updates in over 30 seconds, position no longer reliable)



Primary Surveillance Radar (PSR) Target only



Uncontrolled, correlated mode A+C mode, PSR-SSR track



Controlled and correlated mode A+C mode, PSR+SSR track

An indication of an SPI (transponder ident) can be added to either of the two last symbols. It draws a cross over the symbol and prints the text “SPI” above and to the right of the symbol:



Uncontrolled secondary or combined radar track with Special Position Indication



Controlled secondary or combined radar track with Special Position Indication

3.1.2. History Trails

The history trails show the previous positions of the track. The number of displayed dots can be changed via the Track Control Window. The color of the dots is the flight sector color for an unselected track and “Track Highlight” for a selected one. History dots are not displayed for flight plan tracks.

Standard number of history trails are 4.

3.1.3. Predicted Track Line

The predicted Track Line (*TopSky name: Prediction line*) draws the predicted ground track of the aircraft, based on its current track and ground speed. It is a two colour line, starting with “Track Default” at the position symbol and then alternating with “Track Highlight”, with every segment representing one minute of flying time.

The length of the prediction line can be changed for all tracks via the Track Control Window, or for a single track via the PRL menu. The example below shows a selected track with 5 history dots and a 3-minute prediction line. Prediction lines are not displayed for flight plan tracks.



3.1.4. Flight Track Datablock



There are four types of datablock labels that can be displayed:

- NATCON FDB-1-REAL (Standard label)
- NATCON FDB-2-EXTD (Extended label)
- NATCON FDB-3-FULL (Full label)
- COOPANS_NO (TopSky Norway full label)



Note: the developers of TopSky-NATCON Norway suggest using one of the NATCON FDB labels.

3.1.4.1. NATCON FDB-1-REAL





This track label represents the real NATCON labels used in Norway FIR. It contains only the most essential information to the controller. Additional information such as STARs, landing runway, COPN, COPX, etc, can be found in the appropriate sector list (inbound/exit list).

| Unselected Track | Selected Track |
|--|--|
| CALLSIGN ALT SPD WAKE /RT DEST VS | CALLSIGN ALT SPD CFL ASPD WAKE /RT DEST AHDG/WPT VS TXT |
|  <p>AR SAS274 M 274+ 45 GM 24</p> |  <p>AR SAS274 M 262+ 43 GM 120 ASP AHDG 23 TXT</p> |

3.1.4.2. NATCON FDB-2-EXTD

| Unselected Track | Selected Track |
|--|--|
| CALLSIGN ALT SPD WAKE /RT DEST ARWY VS AHEAD/WPT | CALLSIGN ALT SPD CFL ASPD WAKE /RT DEST ARWY AHDG/WPT VS TXT |
|  <p>AR SAS274 M 260+ 42 GM 19R 23 BAVAD</p> |  <p>AR SAS274 M 255+ 42 GM 19R 120 S300 BAVAD 22 TXT</p> |

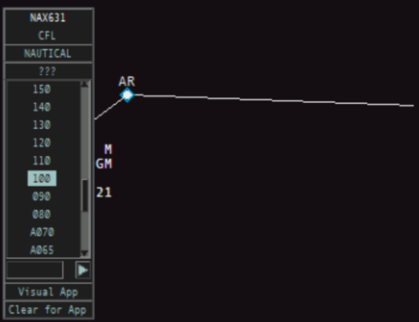
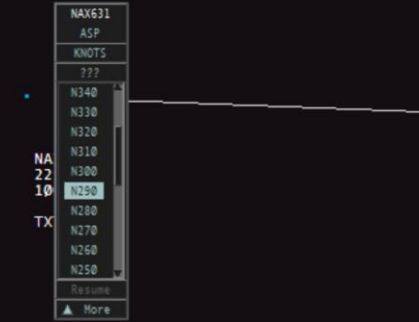
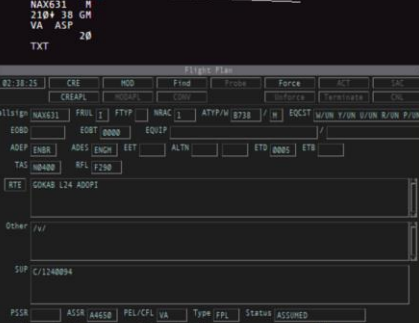
3.1.4.3. NATCON FDB-3-FULL

| Unselected Track (with ATC command inputs) | Selected Track |
|---|--|
| CALLSIGN WAKE /RT ALT SPD DEST ARWY CFL ASPD AHDG/WPT SFL TYPE VS | CALLSIGN WAKE /RT ALT SPD DEST ARWY CFL ASPD AHDG/WPT SFL TYPE TXT |
|  |  |
| Unselected Track (with ATC command inputs) | Selected Track |
| CALLSIGN WAKE /RT ALT SPD DEST ARWY CFL ASPD AHDG/WPT SFL TYPE VS | CALLSIGN WAKE /RT ALT SPD DEST ARWY CFL ASPD AHDG/WPT SFL TYPE TXT |
|  |  |

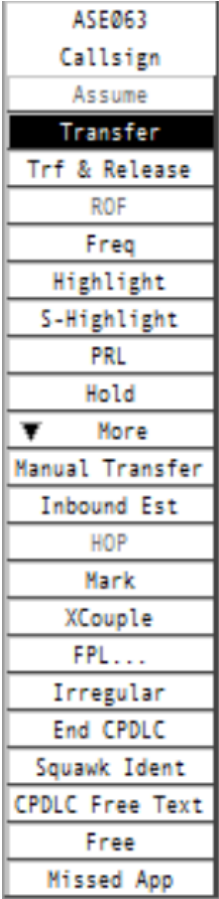
3.2. Mouse Functions in Track Label

| Data Field | Left-Click Action | Right-Click Action |
|-------------------|--------------------------|---------------------------|
| CALLSIGN | Open callsign menu | Toggle route draw |
| WAKE CAT | | |
| RT | Opens voice comm setup | |
| ALT | | |
| SPD | | |
| DEST | Open Flight Plan window | Toggle route draw |
| ARR RWY | Open runway setup | |
| CFL | Open Altitude/Level menu | |
| ASPD | Open Speed/Mach menu | Clear assigned Speed/Mach |
| AHDG | Open Heading menu | Open Waypoint menu |
| Sector ALT | | |
| ACFT TYPE | | |
| VERT SPD | | |
| TXT | Open remark window | Open remark window |

3.2.1. Electronic Label Strip System

| Menu | Action |
|---|---|
|  | <p>LEFT CLICK on the CFL column to open the CFL menu.</p> <p>TopSky-NATCON will automatically find the COPX altitude.</p> <p>Manual level input is available in the free-text column below the altitude list. Type desired altitude in hundreds (e.g. 120)</p> |
|  | <p>LEFT CLICK on the ASP column to open the speed/Mach menu.</p> <p>RIGHT CLICK to delete assigned speed/Mach</p> |
|  | <p>LEFT CLICK on the DEST column (GM) to open the Flight Plan window.</p> <p>For more information on the FPL window, see TopSky General Guide.</p> |

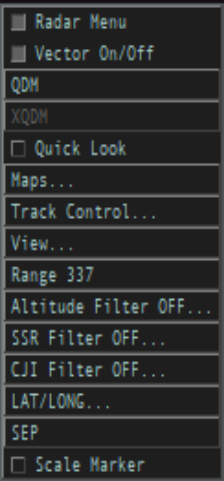
3.3. Extended Callsign Menu

| Menu | Data Field | Description |
|--|--------------------------|---|
|  | Assume | Assumes track |
| | Transfer | Normal/Automatic Transfer to next sector (according to CJI) |
| | Trf & Release | Transfer and Release – normal/automatic transfer to next sector, including a release indication (full, descent, climb, turn) |
| | ROF | Request On Frequency (ROF) message has been received from the next sector. |
| | Freq | Frequency |
| | Highlight | Toggles the Callsign field highlight <i>Note: highlighted tags will only be visible for the ATCO initiating the highlight.</i> |
| | S-Highlight | Toggle the callsign + AFL fields highlight |
| | PRL | Opens the Prediction Line menu |
| | Hold | Opens the Hold menu. “XHold” cancels a given holding clearance |
| | More | Extends callsign menu. Shows additional less frequently used options (see below) |
| | Manual Transfer | Opens the Manual Transfer menu. To be used when normal transfer is unavailable. |
| | Inbound Est | Toggles the “Inbound Est” manual alert |
| | HOP | Proposition to the next sector. |
| | Mark | Toggles the Mark indicator |
| | Xcouple | Uncorrelate/correlate the flight plan |
| | FPL... | Opens the Flight Plan Window |
| | Irregular | Toggles the “Irregular” manual alert |
| | Start/End CPDLC | Opens the CPDLC Free Text menu <i>Note: not implemented in TopSky-NATCON</i> |
| | Squawk Ident | CPDLC message to aircraft to squawk IDENT. |
| | CPDLC Free Text | Opens the CPDLC free text menu |
| | Free | Release datablock label |
| | Missed App | Toggles the “Missed App” manual alert |

3.4. Radar Menu

To open Radar menu, hold **ALT + Right mouse click**.

Ref. TopSky plugin General Manual 5.1.

| Menu | Data Field | Description |
|--|----------------------------|--|
|  | Radar Menu | Toggles keeping the menu permanently displayed |
| | Vector On/Off | Toggles all prediction lines on/off |
| | QDM | Starts a new QDM vector |
| | XQDM | Deletes all QDM vectors |
| | Quick Look | Toggles function to bypass all filters and show all track labels |
| | Maps ... | Opens the Maps Window |
| | Track Control ... | Opens the Track Control Window |
| | - View ... | Opens the View Window |
| | - Range xxx | Opens the Zoom Window (xxx = distance: centre -> right edge) |
| | Altitude Filter OFF | Opens the Altitude Filtering Window, displays the filter status |
| | SSR Filter OFF | Opens the SSR Code Filtering Window, displays the filter status |
| | CJI Filter OFF | Opens the CJI Filtering Window, displays the filter status |
| | LAT/LONG ... | Opens the Cursor Lat/Long Window |
| | SEP | Starts a new Minimum separation tool |
| | Scale Marker | Toggles the Scale Marker on/off |

3.5. Keyboard Shortcuts

Some plugin functions can be accessed using a keyboard shortcut. By default, each shortcut is a combination of two keys, with the first key needing to be down while the second is pressed to activate the function. The available shortcuts and their default keys are:

- Open FPL Window for the selected flight **<ALT> + <F>**
- Open FPL Selection Window **<ALT> + <E>**
- Start new QDM line **<ALT> + <Q>**
- Remove all QDM lines **<ALT> + <X>**
- Inhibit active filters for 5 seconds (Quick Look) **<ALT> + <U>**
- Display the Flight Leg for the selected flight for 5 seconds **<ALT> + <L>**
- Start a new minimum separation line **<ALT> + <S>**
- Reposition cursor at the centre of the radar screen **<ALT> + <C>**

It is possible to disable some or all of the shortcuts or adjust the key assignments for each function (to define both keys, or just a single key) by changing the plugin settings.

3.6. Flight Lists

3.6.1. Departure List (DEP)

| Data Field | Description | Left-Click Action | Right-Click Action |
|-------------|-------------------------|---|-----------------------------|
| FR | Flight Rule (I, V) | | |
| RWY | Departure Runway | Open runway setup | |
| ACID | Aircraft Callsign | Open callsign menu | |
| TYPE | Aircraft Type | Toggle aircraft type highlight | |
| ADEP | Departure Aerodrome | | |
| ADES | Destination Aerodrome | Open flight plan window | Open flight plan dialog box |
| SID | Standard Departure | Open SID setup list | |
| CFL | Cleared Level/Altitude | Open CFL menu | Toggle route draw |
| ASSR | Assigned SSR | Open ASSR menu | Send CPDLC Squawk |
| RFL | Requested Flight Level | Open RFL menu | |
| EOBT | Est.Off-Block Time | Open Time menu | |
| XCOP | Coordination Exit Point | Open waypoint menu | Toggle route draw |
| XFL | Exit Flight Level | Open COPN/COPX altitude coordination list | Toggle route draw |
| CLR | Clearance Flag | Clearance Mark OK | |
| CJI | Next Sector/Frequency | Toggle next sector ID | Open next controller popup |
| STS | Ground State | Open Ground State menu | |
| DSQ | Departure Sequence | Open DSQ menu | |
| RMK | Remark/Free text | Edit scratch pad | |

3.6.2. Sector Exit List (SEL) – Active List

| Data Field | Description | Left-Click Action | Right-Click Action |
|-------------|---------------------------|---|-----------------------------|
| FR | Flight Rule (I, V) | | |
| ACID | Aircraft Callsign | Open callsign menu | |
| TYPE | Aircraft Type | Toggle aircraft type highlight | |
| ADES | Destination Aerodrome | Open flight plan window | Open flight plan dialog box |
| ETA | Estimated Time of Arrival | Open estimate popup | |
| SID | Standard Departure | Open SID setup list | |
| CFL | Cleared Level/Altitude | Open CFL menu | Toggle route draw |
| ASSR | Assigned SSR | Open ASSR menu | Send CPDLC Squawk |
| RFL | Requested Flight Level | Open RFL menu | |
| XFL | Exit Flight Level | Open COPN/COPX altitude coordination list | Toggle route draw |
| DCT | Assigned Routing | Open waypoint menu | Open AHDG menu |
| XCOP | Coordination Exit Point | Open waypoint menu | Toggle route draw |
| ASSR | Assigned SSR | Open ASSR menu | Send CPDLC Squawk |
| STAR | Standard Arrival Route | Open STAR setup popup | |
| RWY | Arrival Runway | Open runway setup | Open runway setup |
| CJI | Next Sector/Frequency | Toggle next sector ID | Open next controller popup |
| RMK | Remark/Free text | Edit scratch pad | |

3.6.3. Sector Inbound List (SIL)

| Data Field | Description | Left-Click Action | Right-Click Action |
|-------------|---------------------------|--------------------------------------|-----------------------------|
| FR | Flight Rule (I, V) | | |
| ACID | Aircraft Callsign | Open callsign menu | |
| TYPE | Aircraft Type | Toggle aircraft type highlight | |
| ADEP | Departure Aerodrome | | |
| ADES | Destination Aerodrome | Open flight plan window | Open flight plan dialog box |
| ETA | Estimated Time of Arrival | Open estimate popup | |
| DCT | Assigned Routing | Open waypoint menu | Open AHDG menu |
| SPD | Assigned Speed | Open ASPD menu | |
| CFL | Cleared Level/Altitude | Open CFL menu | Toggle route draw |
| ASSR | Assigned SSR | Open ASSR menu | Send CPDLC Squawk |
| PEL | Planned Entry Level | Open COPN altitude coordination list | Toggle route draw |
| COPN | Coordination Entry Point | Open waypoint menu | Toggle route draw |
| XCOP | Coordination Exit Point | Open waypoint menu | Toggle route draw |
| STAR | Standard Arrival Route | Open STAR setup popup | |
| RWY | Arrival Runway | Open runway setup | Open runway setup |
| CJI | Next Sector/Frequency | Toggle next sector ID | Open next controller popup |
| RMK | Remark/Free text | Edit scratch pad | |