

Prepar3D Data Display (P3D3) v 3.4.1

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Introduction

Prepar3D Data Display displays the Prepar3D default data via a SimConnect interface. It cannot display user-defined variables or client-server data. I wrote it originally so that I could track the state of the sim each time I updated a dll during project development. It wasn't originally planned for release, so although it has been tidied up I'm aware that it's still a bit rough around the edges. It is a developer's tool; it has no use for an end-user (except perhaps curiosity).

There is no installation routine - simply unzip into a convenient folder.

Changelog

V 2.0.1

- New** *General debugging and tidying to make it more suitable for use*
UI updated to make it clear when required dataset options or data are missing
Additional restrictions on display e.g. fuel tanks won't show if engine type = none
Some speed options have KmH (kilometres per hour) added
Glider/sailplane specific data added
Reciprocating engines updated to display Master Ignition Switch on engine 1 only
Additional reciprocating engine data displayed
'Fuel Oil Systems' and 'Fuel Tanks' consolidated under 'Fuel and Oil Systems'
Because of the amount of additional data now included on the 'Fuel and Oil Systems' page, it has been divided into subsections and it has no main column headers
- Bugs** *'Aircraft Status | Realism settings' renamed to 'Aircraft Status | Realism (percent)'*
Realism now correctly shows as a percentage and not as a number between zero and one
Turbine engines 'Generator Active' engines 2 and 3 were being written to engine 4
Cabin data would display information when no options were selected
Control Surfaces deflection display option added for degrees or radians (was missing)
Landing lights display option added for degrees or radians (was missing)
Fuel tank selector was showing incorrect data if multiple tanks were connected to it
Emergency boost was only displaying the correct status for engine 3
Reciprocating engines radiator temperature displayed absolute zero with no coolant

V. 3.0

- New** *'Facilities' information added. 'Facilities' includes airport, VOR, NBD, TACAN and waypoint information. Included in this is the ability to recognise and use Pete Dowson's makerwys if it is made available. This was done to (possibly) help scenery designers discover if new airfields etc. are being correctly recognised by the sim within the reality bubble. Please read the makerwys documentation.*

V3.1

- Bugs** *Interim bugfix release*
Fixed a bug where airport default information didn't show if makerwys wasn't available
Not fixed: *decimal separator needs to be a full stop (point). Using a comma (e.g. for French language) will cause an error when doing a lat-lon conversion. This is being worked on*

V3.2.5

New *P3D3 will now automatically reconnect to SimConnect if it disconnected to run a database update and the update was successful*
Database update will not be available if the version of makerwys.exe is less than 5.13 and/or LorbyExportScenery.exe is missing
Minor change to the airport details page layout to make it more legible
Traffic data added
On the More Details grid for avionics etc. there is now an option to select Deg-Min or Decimal for the latitude and longitude display
On the More Details grid for avionics etc. there is now an option to select metres or feet for altitude
On the GPS page there is now an option to select Deg-Min or Decimal for the latitude and longitude display
On the Aircraft Status page there is now an option to select Deg-Min or Decimal for the latitude and longitude display
Minor QOL changes to the GUI
Minor code optimisation to speed up some data load times

Bugs *Decimal separator localisation problem fixed*
TACAN was displaying the VOR test routine
On running a database update the connection status information was not being updated to show that P3D3 was disconnected

V3.3.0

New *Auto-restart when debugging added. See new topic*

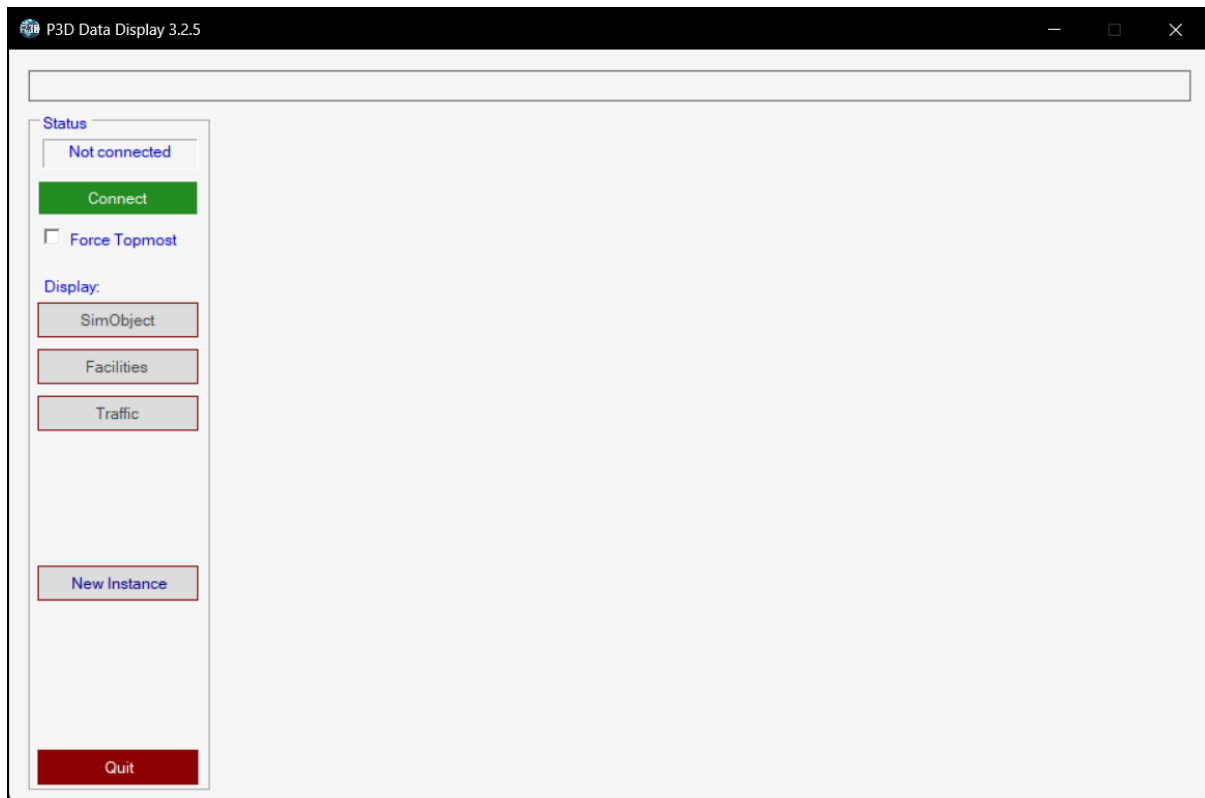
Bugs *Ground traffic was not displaying because of a typo in the 'fetch traffic' code*

V3.4.1

New *Payload data moved to Cabin page*
Doors added to Cabin page

Bugs *Cabin Differential Pressure removed from Cabin page because there appears to be a bug in SimConnect. Data is always returned as an exponent instead of an expected double.*
Fuel flow calculations corrected. US/UK flow rate was incorrectly based on gallons and not pounds per hour.

Startup Screen



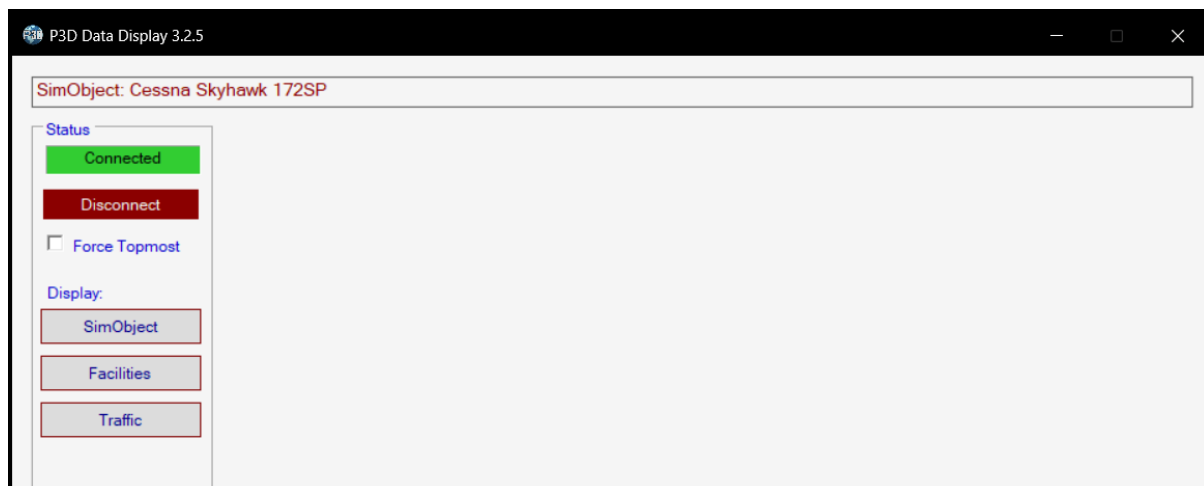
You connect to Prepar3D using the green 'Connect' button. The Status label can have one of the following states:

- Status will show 'Waiting' and the button will change to white-on-black 'Abort'. You will get this while waiting for a response from P3D.
- Selecting 'Abort' will bring you back to the default startup screen. This may take a few seconds to respond depending on where it is in the SimConnect check cycle, so please be patient.
- On a successful connection the Status display will change to black-on-green 'Connected' and the button will change to white-on-red 'Disconnect'.
- During the connection sequence but before a SimObject has been registered the title bar will display 'Waiting for SimObject'
- Selecting 'Disconnect' will also drop you back to the startup screen.

When a SimObject has been registered the active SimObject title will be displayed in the bar at the top of the screen. At this point other options become available:

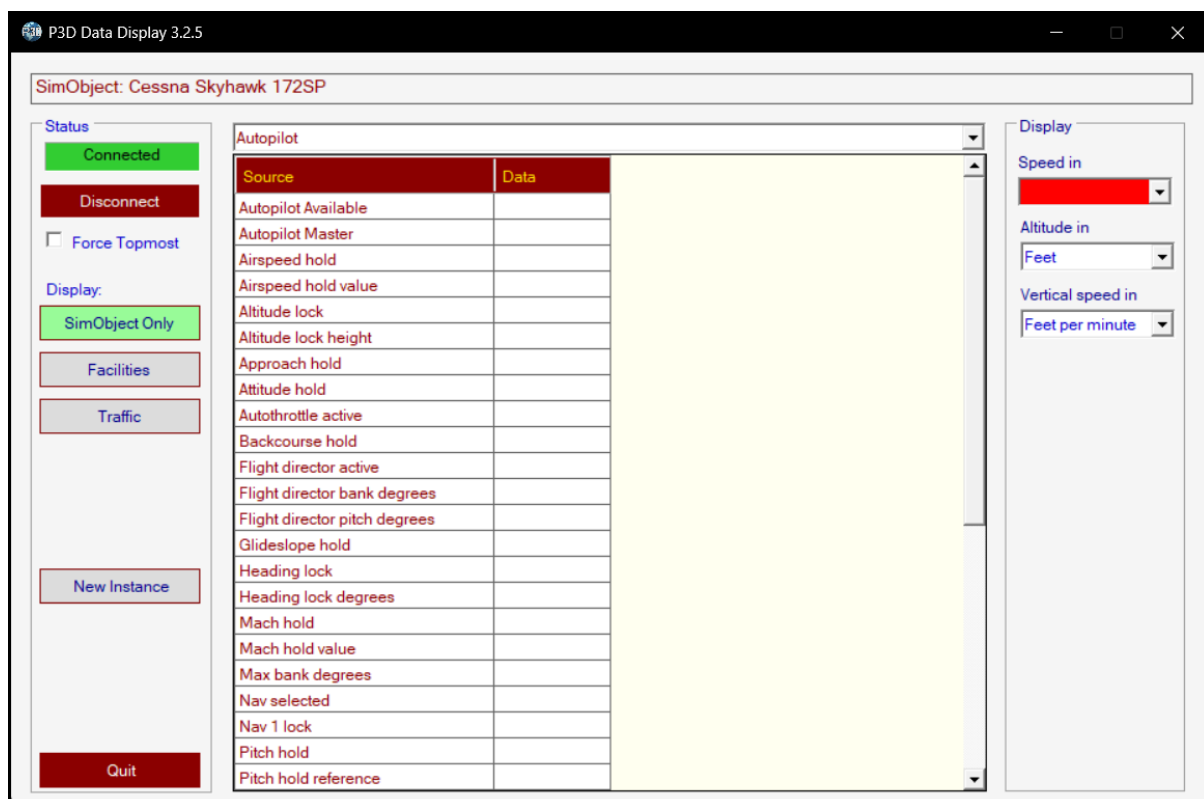
- 'Force Topmost' will cause P3D3 to be the topmost application, allowing you to move it over the running sim and still remain visible. This is really only useful if you have a single monitor.
- Selecting the SimObject button below the 'Displaying:' label in the status panel will switch between displaying data that is relevant to the SimObject that is loaded (button text will change to 'SimObject Only') and all available data ('All Data'). For example: if you have a helicopter loaded you may not want to see data for turbines or reciprocating engines.
- The 'New Instance' button will launch another completely independent instance of P3D3.
- The 'Update Database' button will appear if makerwys.exe is in the same folder as P3DD.

Usage - SimObject



Once the SimObject has registered the option buttons will be set to enabled. Select 'SimObject' and the dropdown will be populated with the available data as requested by the 'Displaying:' option.

To the right of the display panel for each dataset are options that are specific to that dataset. Until you have selected a full set of display options no data will be displayed. The selection boxes will be black-on-red until an option is chosen. Note that the data displayed may not all be relevant to that SimObject as everything that P3D can return is shown. Your options are saved on shutdown.



The aircraft illustrated here (the Cessna 172) has one reciprocating engine:

P3D Data Display 3.2.5

SimObject: Cessna Skyhawk 172SP

Status

Connected

Disconnect

☐ Force Topmost

Display:

SimObject Only

Facilities

Traffic

New Instance

Quit

Reciprocating Engines

Source	Engine 1
Master Ignition Switch	on
Anti-ice	off
Alternate air	0
Braking power	0.00
Carb temperature	16.97
Combustion	false
Coolant reservoir	0.00
Coolant available (percent)	0.00
Cowl flaps	0.00
Cylinder head temp	16.97
EGT	16.97
Generator active	false
Generator switch	off
Hydraulic pressure	0.00
Hydraulic quantity	0.00
Magneto (left)	off
Magneto (right)	off
Manifold pressure	29.91
Mixture lever	0.00
Mixture ratio	0.0000
Master alternator switch	off
Primer	false

Display

Air pressure in
mm/hg

Hydraulic pressure in
Psi

Temperature in
Celsius

If you select a new SimObject in Prepar3D, P3D3 will automatically allow for it.

P3D Data Display 3.2.5

SimObject: B314-A G-AGCB Bangor

Status

Connected

Disconnect

☐ Force Topmost

Display:

SimObject Only

Facilities

Traffic

New Instance

Quit

Reciprocating Engines

Source	Engine 1	Engine 2	Engine 3	Engine 4
Master Ignition Switch	on	-	-	-
Anti-ice	off	off	off	off
Alternate air	0	0	0	0
Braking power	0.00	0.00	0.00	0.00
Carb temperature	15.02	15.02	15.02	15.02
Combustion	true	true	true	true
Coolant reservoir	0.00	0.00	0.00	0.00
Coolant available (percent)	0.00	0.00	0.00	0.00
Cowl flaps	100.00	100.00	100.00	100.00
Cylinder head temp	15.02	15.02	15.02	15.02
EGT	-273.15	-273.15	-273.15	-273.15
Generator active	true	true	true	true
Generator switch	on	on	on	on
Hydraulic pressure	0.00	0.00	0.00	0.00
Hydraulic quantity	0.00	0.00	0.00	0.00
Magneto (left)	on	on	on	on
Magneto (right)	on	on	on	on
Manifold pressure	29.92	29.92	29.92	29.92
Mixture lever	100.00	100.00	100.00	100.00
Mixture ratio	0.0000	0.0000	0.0000	0.0000
Master alternator switch	on	on	on	on
Primer	false	false	false	false

Display

Air pressure in
mm/hg

Hydraulic pressure in
Psi

Temperature in
Celsius

Some datasets will display a light-green background e.g. nav aids.

P3D Data Display 3.2.5

SimObject: B314-A G-AGCB Bangor

Status: **Connected** (green box)

Display: **SimObject Only** (green box)

Avionics

Source	Channel 1	Channel 2
ADF available	true	-
ADF name	SHANNON	FOYNES
ADF ident	OL	FOY
ADF sound	false	false
ADF active freq	339.0	395.0
ADF standby freq	1400.0	1400.0
ADF radial	90.00	-31.20
ADF signal	0.00	2584.27
ADF card	0.00	0.00
COM available	true	true
COM receive all	ok	ok
COM status	false	false
COM test	off	off
COM transmit	true	false
COM active freq	118.000	118.000
COM standby freq	128.250	127.900
NAV available	true	true
NAV ident	-	-
NAV name	-	-
NAV sound	-	-
NAV signal	-	-
NAV active freq	-	-
NAV standby freq	-	-

Display: Speed in **Knots**, Distance in **Nautical Miles**

Clicking on the green box will change the background to the 'Selected' colour (light yellow) and display additional data:

P3D Data Display 3.2.5

SimObject: B314-A G-AGCB Bangor

Status: **Connected** (green box)

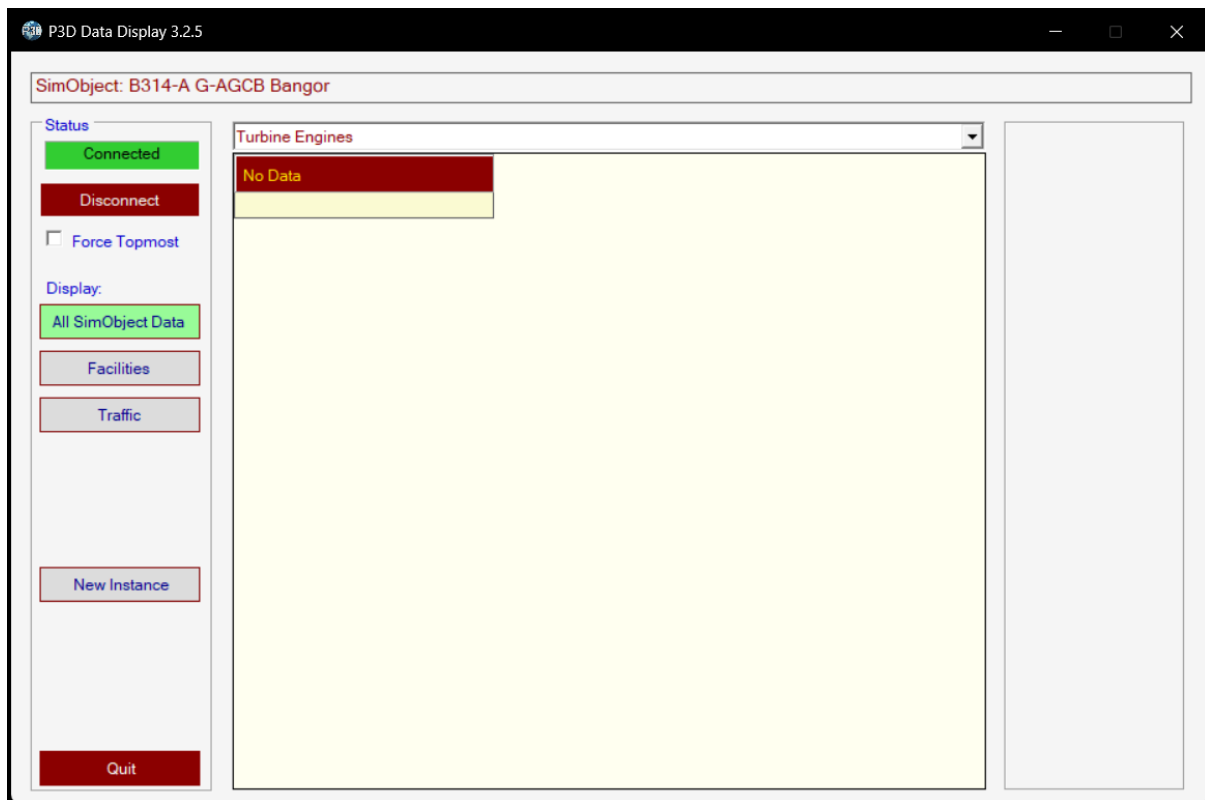
Display: **SimObject Only** (green box)

Avionics

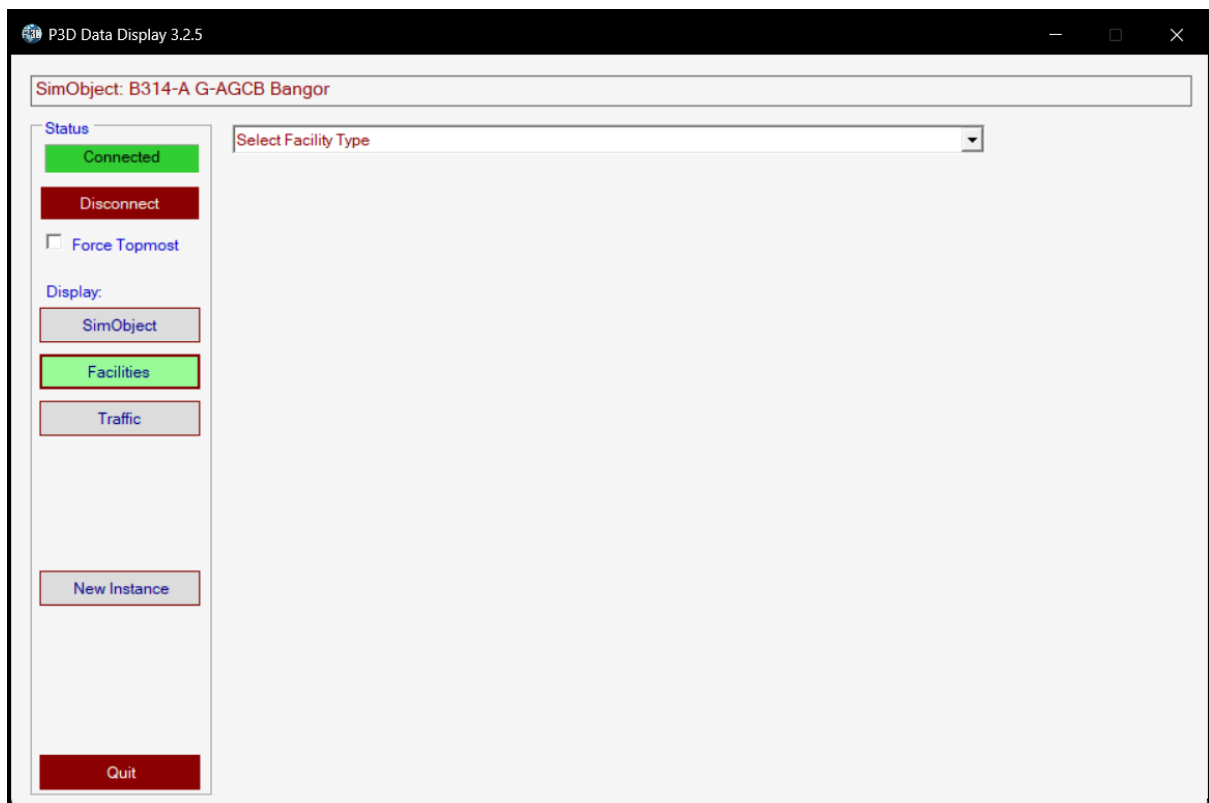
Source	Channel 1	Channel 2	ADF	Data
ADF available	true	-	Name	FOYNES
ADF name	SHANNON	FOYNES	Ident	FOY
ADF ident	OL	FOY	Latitude	52.56625011...
ADF sound	false	false	Longitude	-9.19541671...
ADF active freq	339.0	395.0	Altitude	0
ADF standby freq	1400.0	1400.0		
ADF radial	90.00	-31.20		
ADF signal	0.00	2584.27		
ADF card	0.00	0.00		
COM available	true	true		
COM receive all	ok	ok		
COM status	false	false		
COM test	off	off		
COM transmit	true	false		
COM active freq	118.000	118.000		
COM standby freq	128.250	127.900		
NAV available	true	true		
NAV ident	-	-		
NAV name	-	-		
NAV sound	-	-		
NAV signal	-	-		
NAV active freq	-	-		
NAV standby freq	-	-		

Display: Speed in **Knots**, Distance in **Nautical Miles**

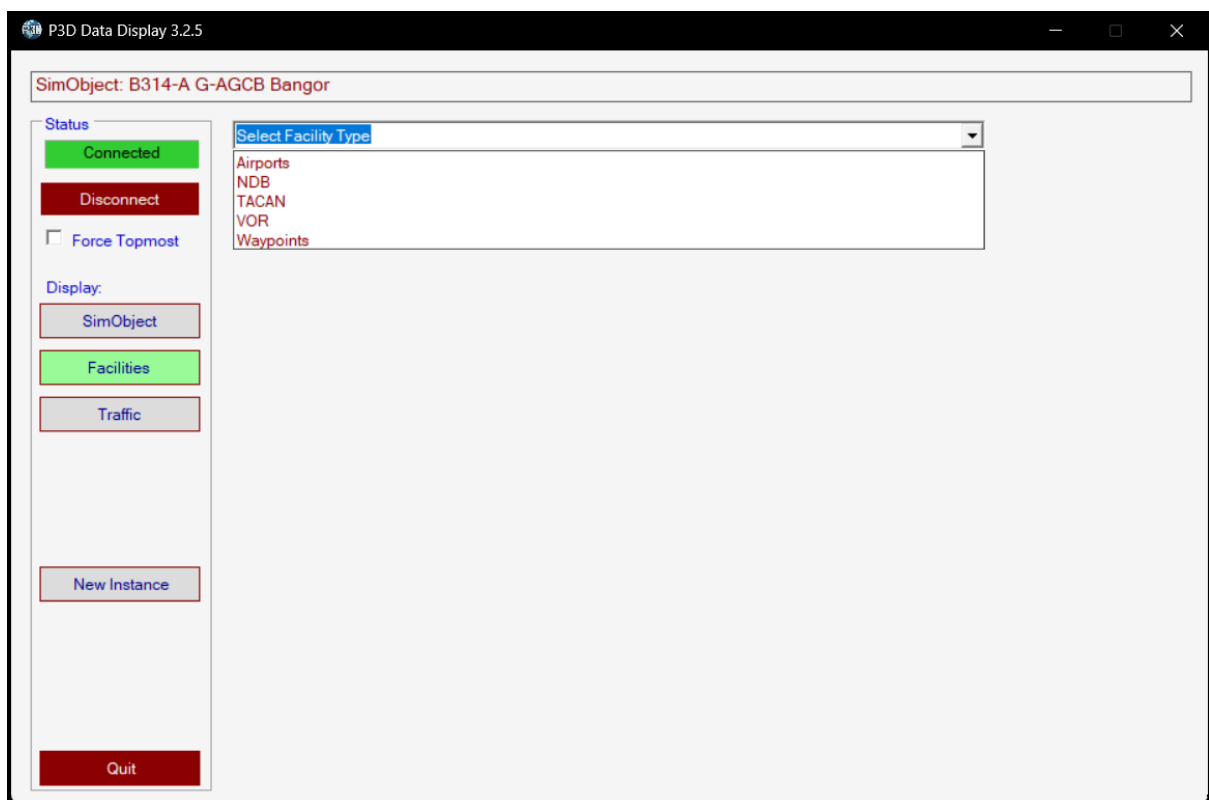
When you click away from the box (by selecting another cell or page) it will revert to light-green. If you select a dataset that does not apply to the current SimObject you will see a screen similar to this:



Usage - Facilities



Selecting 'Facilities' will revert the SimObject button to the default text of 'SimObject'. Select the facility type you want to view from the dropdown:



The resulting data is fetched from the 200Km reality bubble around your SimObject.

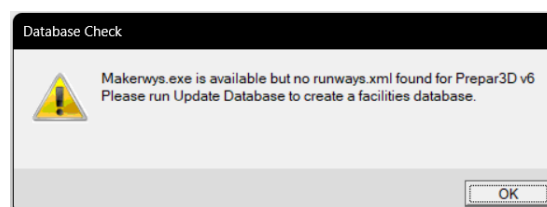
The screenshot shows the P3D Data Display 3.2.5 application window. At the top, it says 'SimObject: B314-A G-AGCB Bangor'. On the left, there's a 'Status' section with 'Connected' (green), 'Disconnect' (red), and 'Force Topmost' (checkbox). Below that is a 'Display' section with buttons for 'SimObject', 'Facilities' (green), and 'Traffic'. At the bottom left is a 'New Instance' button and a 'Quit' button. The main area displays a table of VOR stations. The table has columns: ICAO, Latitude, Longitude, Altitude, MagVar, and Frequency. The data is as follows:

ICAO	Latitude	Longitude	Altitude	MagVar	Frequency
ISY	N55° 40.58'	W7° 45.2'	21	0	109.000
GOW	N55° 52.13'	W5° 33.15'	14	2	115.000
DUD	N55° 33.32'	W5° 23.54'	154	0	115.000
IUU	N55° 52.51'	W5° 35.0'	8	2	110.000
IOO	N55° 51.38'	W5° 32.44'	8	2	110.000
IFN	N55° 2.15'	W9° 39.17'	9	5	110.000
IEGN	N55° 2.43'	W8° 50.50'	7	3	108.000
IEGT	N55° 2.21'	W8° 49.7'	7	3	108.000
MAC	N55° 25.48'	W6° 20.58'	29	3	116.000
TRN	N55° 18.48'	W5° 12.58'	183	3	117.000
IKK	N55° 31.1'	W5° 22.58'	20	2	110.000
IPP	N55° 30.0'	W5° 25.56'	20	2	110.000
SLG	N54° 16.45'	W9° 23.59'	9	0	109.000
BEL	N54° 39.40'	W7° 46.12'	68	4	117.000
IAG	N54° 39.2'	W7° 45.32'	82	2	109.000
IFT	N54° 38.28'	W7° 46.50'	82	2	110.000
IBFH	N54° 36.38'	W6° 7.7'	5	3	108.000
IHBD	N54° 37.36'	W6° 8.16'	5	3	108.000
ICK	N53° 54.28'	W9° 9.40'	203	5	110.000
CON	N53° 54.28'	W9° 10.47'	213	5	117.000
MCM	N53° 54.37'	W7° 5.55'	335	0	114.000
GMN	N53° 38.48'	W7° 45.54'	30	0	112.000
DUB	N53° 29.57'	W7° 41.34'	61	4	114.000

On the right side, there's a 'Display' section with 'Lat / Lon in' set to 'Deg-Min', 'Distance / height in' set to 'Feet', and an 'Update Database' button.

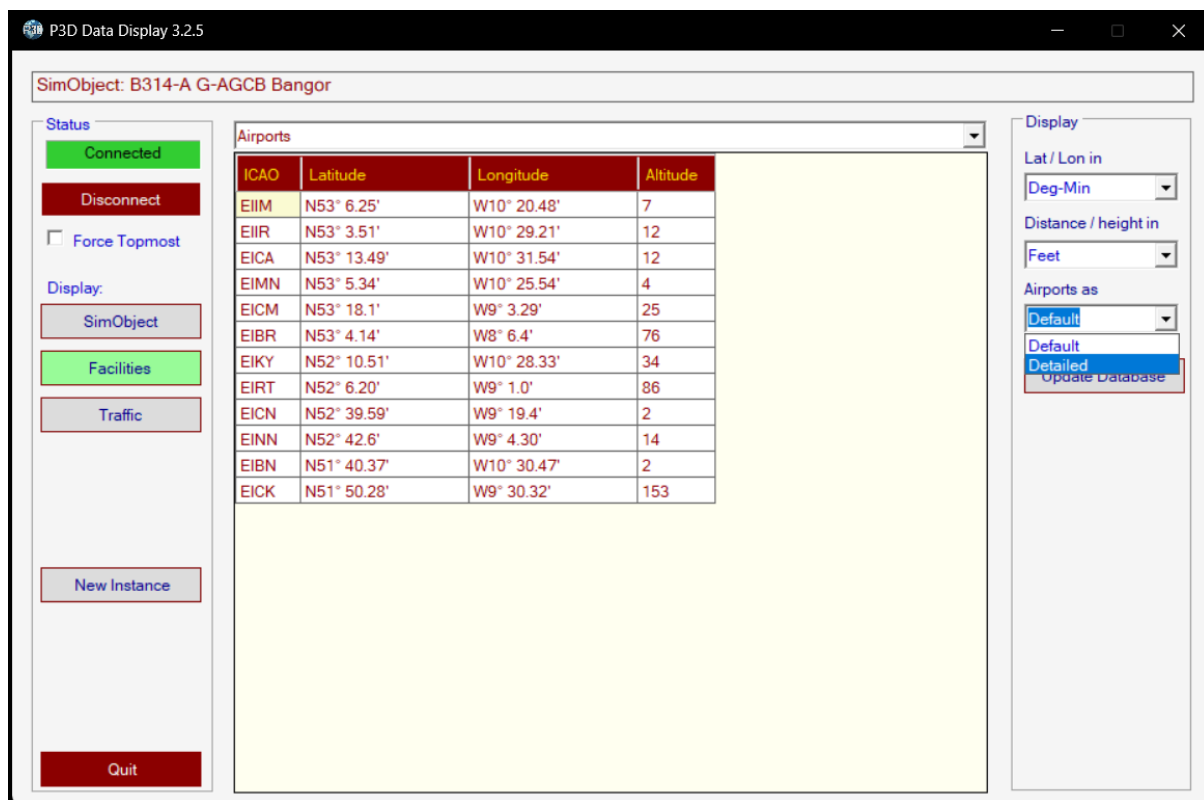
You can select whether to display distance and height in feet or metres and to display altitude and longitude as degrees, minutes and seconds or degrees decimal.

If you have Pete Dowson's makerwys package (version 5.13.1), copy both makerwys.exe and LorbySceneryExport.exe to the same folder as P3D Data Display.exe. If this is done, when you select 'Facilities' the 'Update Database' button will be visible. See screenshots above. If the version of makerwys.exe is less than v5.13 then a message will popup up directing you to download the latest version and the Update Database button will be disabled. You cannot create/update a new facilities database until you have connected to Prepar3D. This is to allow P3D Data Display to query the running simulator for its version. Different facilities databases are kept for different versions of Prepar3D. If this is the first time the connection is made the following message will appear and the Update Database button will be enabled:

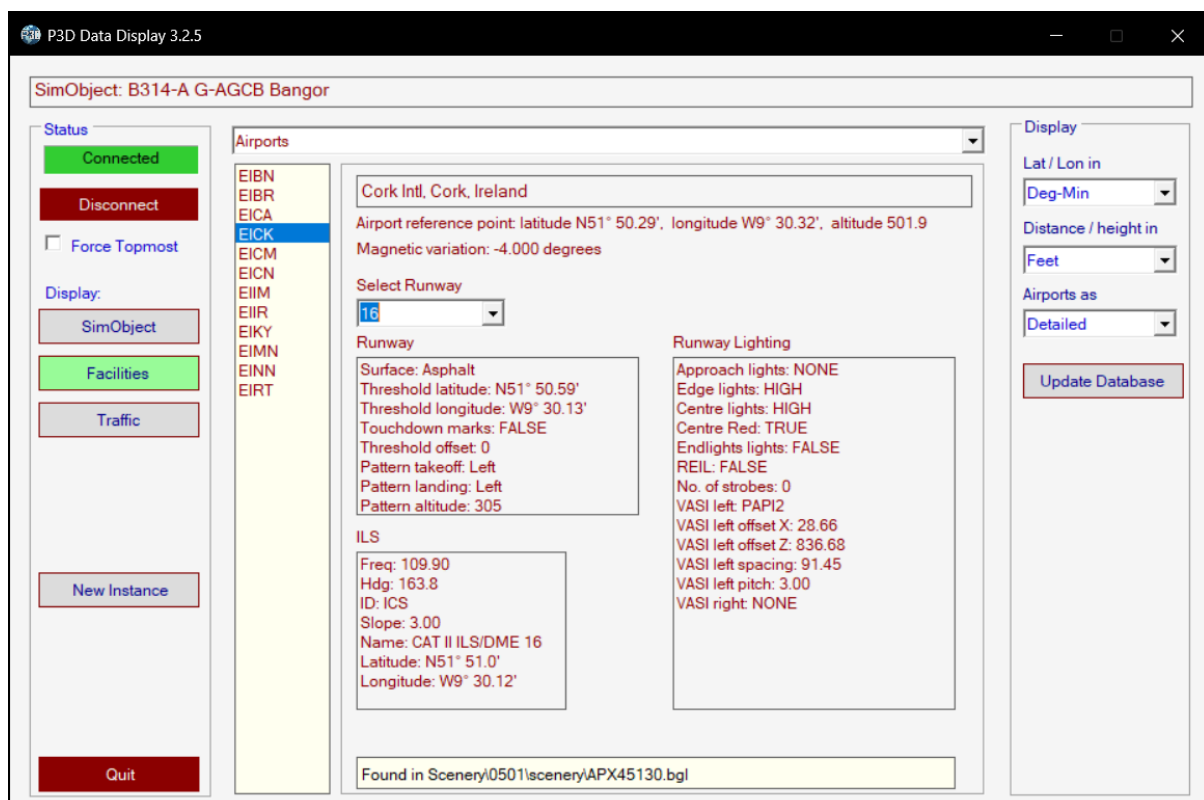


Clicking on 'Update Database' will trigger makewys.exe to create the relevant database. Makerwys.exe creates multiple versions of the database in the root folder of Prepar3D; the only one we want is runways.xml. Once the process is complete, runways.xml is copied back to P3D Data Display and a number representing the version is appended to the file name. All other unwanted database files are deleted. As per Pete Dowson's documentation, if you add a new scenery area you will need to 'Update Database' each time to pick up the new scenery.

If you now select 'Airports' from the Facilities dropdown, you will be given a new option.



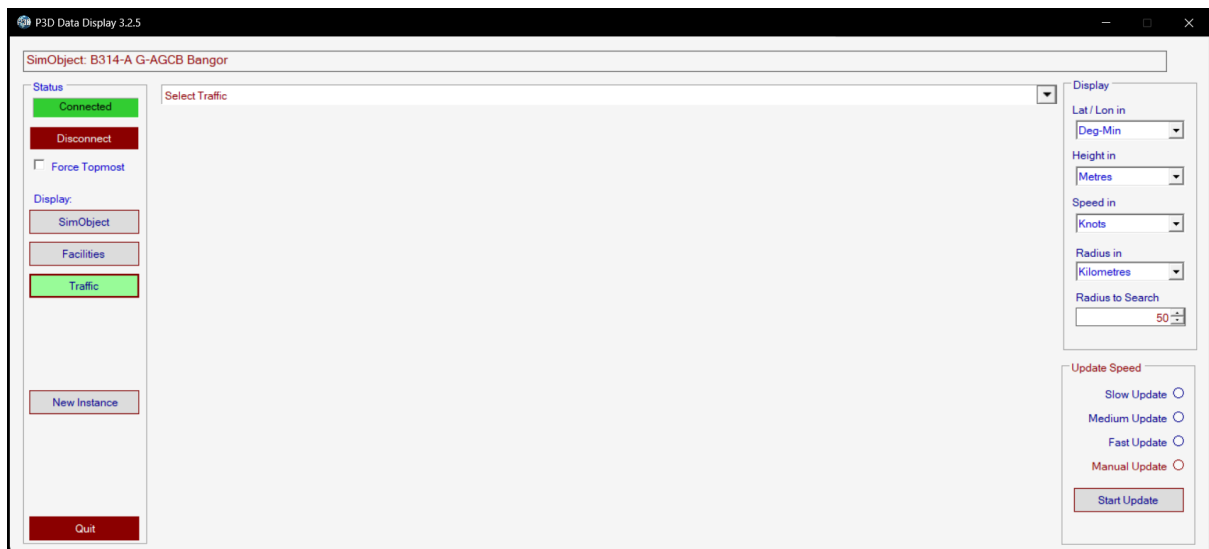
Airport facilities selection defaults to 'Default'. When you select 'Detailed' view you will need to select the airport ICAO code from the lefthand list and then the runway you wish to view.



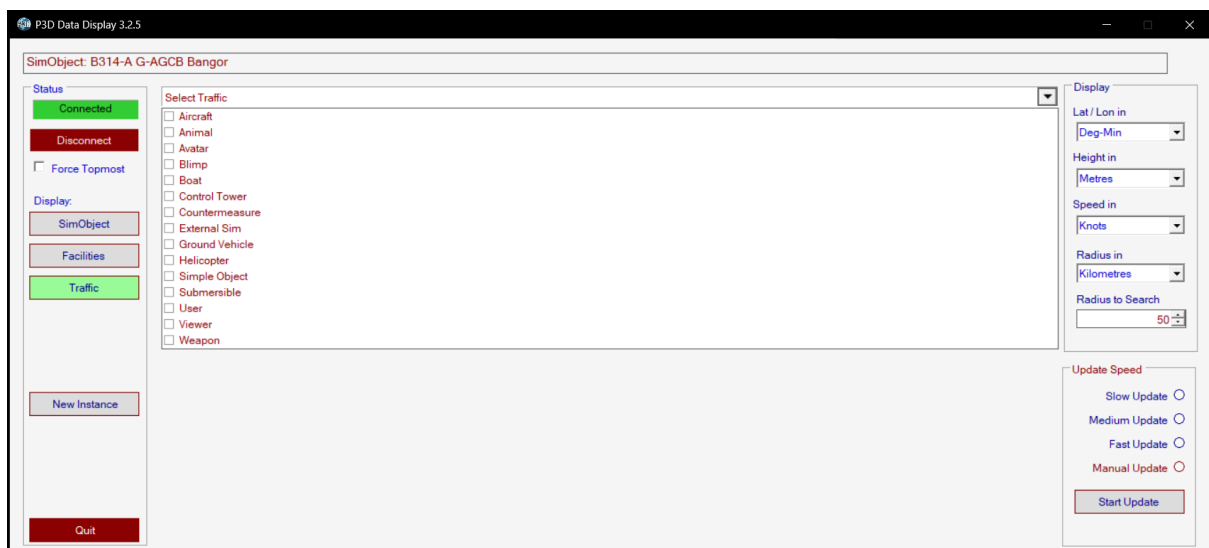
Again, the data is only drawn from airfields within the reality bubble.

Usage - Traffic

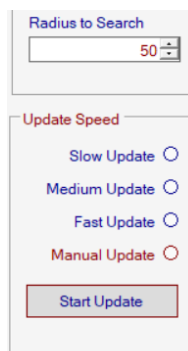
Selecting 'Traffic' will cause the GUI to expand to around 60% more than its original width to accommodate the traffic detail that is returned.



'Select Traffic' will give you a checklist of items to search for.



The checklist will either auto-close when another option is selected or it can be manually closed by clicking on the down arrow again. The normal display options box has a few options that are unique to this screen:



The maximum 'Radius to Search' is based on the 'Radius' option e.g. 200 for kilometres, 108 for nautical miles, etc..

The update speeds are not shown as specific times because an object data request and the associated data response run on asynchronous threads. These two threads have to be manually synchronised to ensure that the data is written to screen before another request is sent. As an exaggerated example, if the request timer was set to one second and the time taken to receive and display the data was 1.5 seconds, the next data request would not be honoured until three seconds after the initial request. Press 'Start Update' to retrieve data. The text will change to 'Stop Update'. The screen will not clear until you select 'Start Update' again, giving you time to check the last returned data.

'Manual Update' sends a one-off request for data when you press the button. As a result of the timings involved, selecting 'Manual Update' may not return all data on first request. If the displayed data doesn't match your expectations, try 'Start Update' again. 'Manual Update' is useful if you need to sort the data to find a specific traffic object as an auto-update overwrites the current data on the next cycle. Traffic will also track AI objects as they are created and destroyed.

The following screenshot shows Aircraft and Boats requested.

The screenshot shows the P3D Data Display 3.2.5 application window. The title bar reads 'P3D Data Display 3.2.5'. The main window has a menu bar with 'SimObject: B314-A G-AGCB Bangor'. Below the menu bar is a 'Status' section with 'Connected' (green), 'Disconnect' (red), and 'Force Topmost' (checkbox). To the right of the status section is a 'Display' section with 'Lat / Lon in' (dropdown), 'Height in' (dropdown), 'Speed in' (dropdown), 'Radius in' (dropdown), and 'Radius to Search' (input field with '50'). Below the display section is an 'Update Speed' section with radio buttons for 'Slow Update', 'Medium Update', 'Fast Update', and 'Manual Update', and a 'Stop Update' button. The main area is a table titled 'Select Traffic' with columns: Category, Title, Model, ID, Airline, Flt No, Speed, Latitude, Longitude, Altitude, and Hdg. The table contains data for various boats (PBoat_22ft_*, PBoat_25ft_*, PBoat_30ft_*, PBoat_57ft_*, PBoat_75ft_*) and one airplane (B314-A G-AGCB Bangor). The 'Airline' column for the airplane shows 'BOAC' and '314'.

Category	Title	Model	ID	Airline	Flt No	Speed	Latitude	Longitude	Altitude	Hdg
Boat	PBoat_22ft_Blackstripe_sm					20	N0° 55.8'	W1° 50.32'	0.9	2
Boat	PBoat_25ft_Bluehull_sm					0	N0° 55.7'	W1° 50.26'	0.3	0
Boat	PBoat_30ft_Wayhull_sm					0	N0° 55.8'	W1° 50.36'	0.6	4
Boat	PBoat_25ft_Bluehull_sm					0	N0° 55.6'	W1° 50.27'	0.3	5
Boat	PBoat_57ft_Bluehull_sm					20	N0° 55.10'	W1° 50.42'	0.6	6
Boat	PBoat_75ft_Redhull_sm					20	N0° 55.9'	W1° 50.44'	1.2	3
Boat	PBoat_22ft_Bluehull_sm					20	N0° 55.6'	W1° 50.26'	0.6	3
Boat	PBoat_22ft_Brownhull_sm					20	N0° 55.7'	W1° 50.27'	0.6	0
Boat	PBoat_57ft_Goldhull_sm					0	N0° 55.6'	W1° 50.25'	0.6	2
Boat	PBoat_75ft_Redhull_sm					0	N0° 55.6'	W1° 50.28'	1.2	0
Boat	PBoat_25ft_Bluehull_sm					0	N0° 55.9'	W1° 50.33'	0.3	3
Boat	PBoat_25ft_Wayhull_sm					0	N0° 55.6'	W1° 50.27'	0.3	6
Boat	PBoat_22ft_Bluehull_sm					0	N0° 55.6'	W1° 50.25'	0.6	1
Boat	PBoat_22ft_Brownhull_sm					0	N0° 55.6'	W1° 50.28'	0.6	2
Boat	PBoat_22ft_Goldhull_sm					0	N0° 55.5'	W1° 50.25'	0.6	0
Boat	PBoat_57ft_Goldhull_sm					20	N0° 55.7'	W1° 50.33'	0.6	0
Boat	PBoat_22ft_Bluehull_sm					20	N0° 55.3'	W1° 50.12'	0.6	5
Airplane	B314-A G-AGCB Bangor	B-314A	G-AGCB	BOAC	314	0	N0° 55.6'	W1° 50.25'	1.7	4

Auto-restart When Debugging

P3D3 will now automatically go into wait mode if you are in a debug session in Visual Studio and you stop debugging. Previously it would just hang and you had to manually disconnect and reconnect it once you had restarted your debug session. On restarting the Visual Studio debug session, P3D3 will automatically reconnect and display the last requested page.

When Prepar3D starts up, it goes through a series of check procedures that cause it to connect and disconnect from SimConnect multiple times until Prepar3D is 100% loaded. This causes the P3D3 Status label and Connect button to cycle between 'Waiting/Connected' and 'Abort/Disconnect' during the Prepar3D startup process. At one point you may see the last requested page in its entirety before it is hidden again; this happens because Prepar3D is actually fully loaded at 8% on the 'Loading Scenario' dialog box, but the scenario is then immediately unloaded again. Previously P3D3 simply checked the SimConnect 'SimStart' status to indicate 'True' but this is not possible when running the auto-reconnect procedure as 'SimStart' is not reliable.

Notes

If the displayed data is not updating, columns are missing (e.g. you have a four-engine aircraft loaded but less than four engines are displaying data) or the data just looks 'wrong', check that Prepar3D is not in Pause mode.

Occasionally you will select a SimObject page and no data will appear. If this happens, select another page and come back to the one you want. I have traced this to a bug in the code that is quite deeply buried and would take days to correct. I might get round to it one day...

Changing simulator options (Menu | Options) in Prepar3D may cause P3D3 to hang. To avoid this, disconnect from the simulator and then reconnect when you have set your new options.

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