

Aviation Trainer User's Guide

Launcher v2.4.0.0



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Introduction

Thank you for using the Garmin Aviation Trainer. The Trainer operates much like actual Garmin avionics, providing an on-the-ground environment to learn the basic operation of both the GTN series Navigator and the G500/G600 TXi Series GDU.



Overview

A physical GTN or TXi has a touchscreen that is used in conjunction with knobs and buttons for operation. When using the Aviation Trainer, touchscreen controls, knobs, and buttons are operated with a mouse. For convenience, many operations have keyboard shortcuts that can be used in lieu of a mouse. The accompanying Launcher allows easy access to various airframe and model configurations and enables one or more avionics systems to be used simultaneously in a connected fashion. Several databases are distributed with the Aviation Trainer, including Jeppesen Worldwide Navigation, Garmin Navigation, Basemap, Obstacles, Terrain, SafeTaxi, Airport, and FliteCharts, allowing simulation of most flight scenarios. Simulated GDL88 TargetTrend traffic, GWX 70 Radar, GDL 69 SiriusXM, FIS-B, and Connex weather data are also provided with the trainer to further recreate the flight experience.

For additional information regarding GTN or TXi functionality, refer to the accompanying Pilot's Guides and Cockpit Reference Guides listed under Manuals in the [Trainer Launcher](#).

The latest version of the Garmin Aviation Trainer and manuals can be found at www.garmin.com, TXi Flight Familiarization demos can be found at <https://www.garmin.com/en-US/learning-center/TXi>, and full-featured training for Garmin avionics, including self-study materials, eLearning courses, and instructor-led courses can be found at <https://fly.garmin.com/training/>.

Demos

To provide a more complete preview of Garmin avionics, each trainer includes demos using simulated and prerecorded data. Some demos, such as Connex weather, are location specific (see [Demo Simulation Features](#)).

System Requirements

The following is required to install and operate the Garmin Aviation Trainer:

- 2.4GHz dual core processor or equivalent
- Windows 7 or later
- 10GB free hard disk space; 12-13GB during installation
- Microsoft DirectX 9.0 or later
- 256MB 3D accelerated graphics card or higher
- Screen resolution: 1280 x 1024 or higher recommended

Installation

Note: It is recommended that the Aviation Trainer be installed with antivirus software disabled.

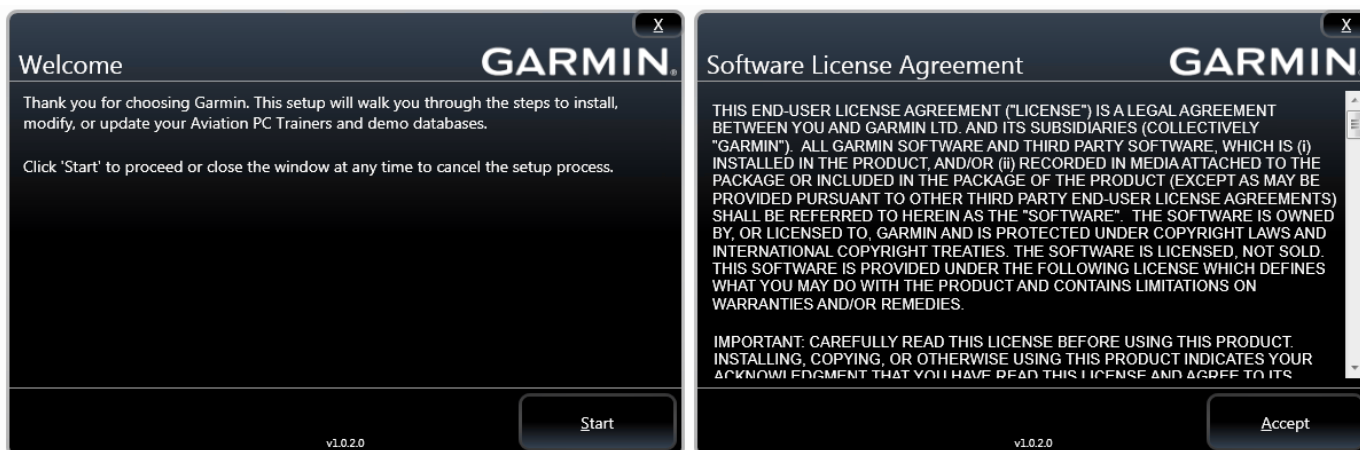


Figure 1 – First Installation Pages

When running GarminTrainerSetup.exe, the first thing displayed is a welcome page (Figure 1 left). After selecting Start, accept our Software License Agreement (Figure 1 right).

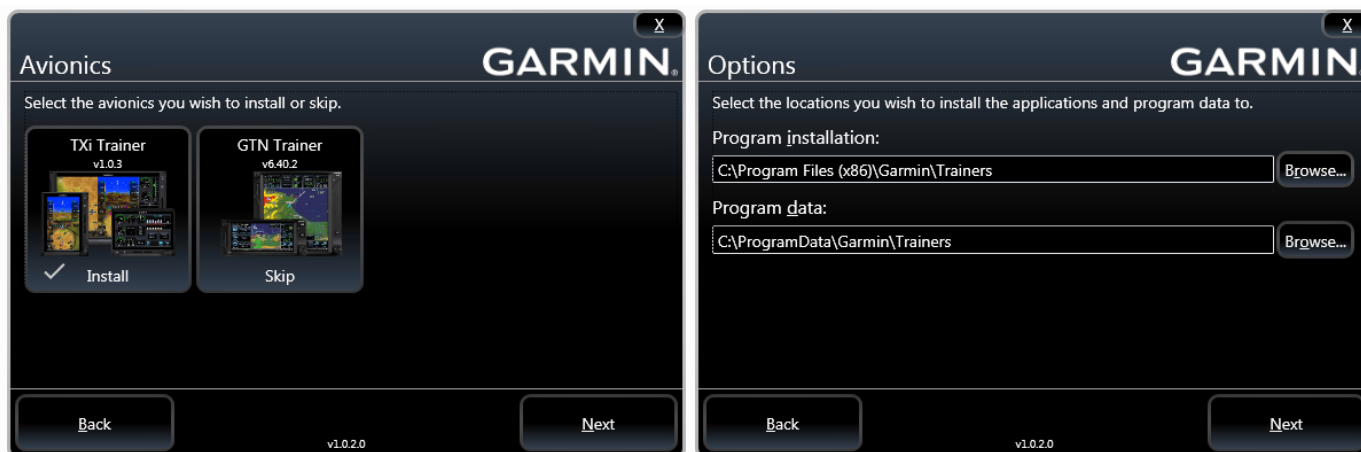


Figure 2 – Custom Installation Pages

Next, select the desired Avionics Trainers from the Avionics page (Figure 2 left). By default, all units are set to install. To skip the installation of a trainer, select the undesired avionics to toggle between Install and Skip. On the following page (Figure 2 right), select a desired installation folder and data folder.

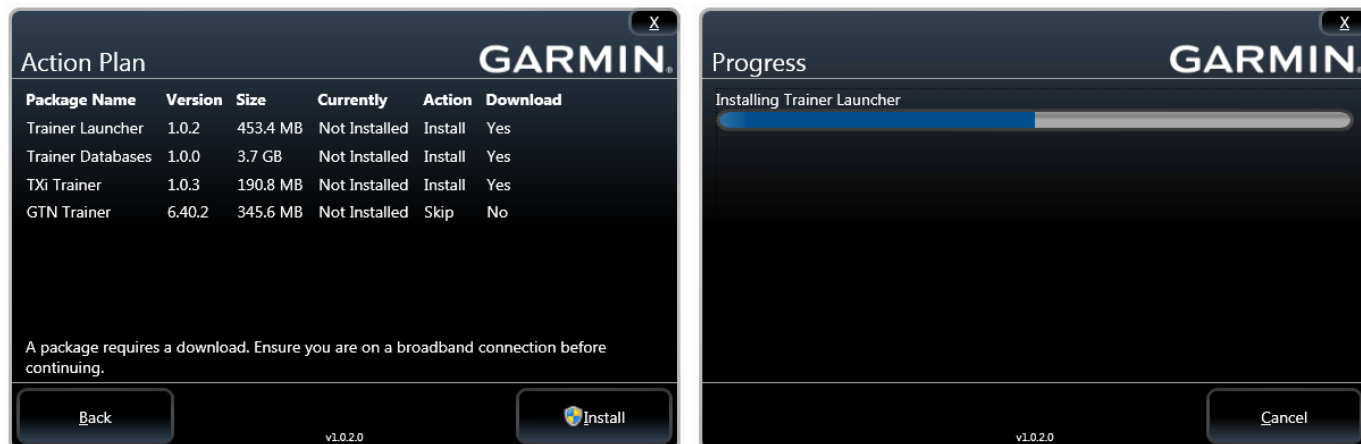


Figure 3 – Action Plan & Progress Pages

Review the installation summary and select Install to proceed (Figure 3 left).

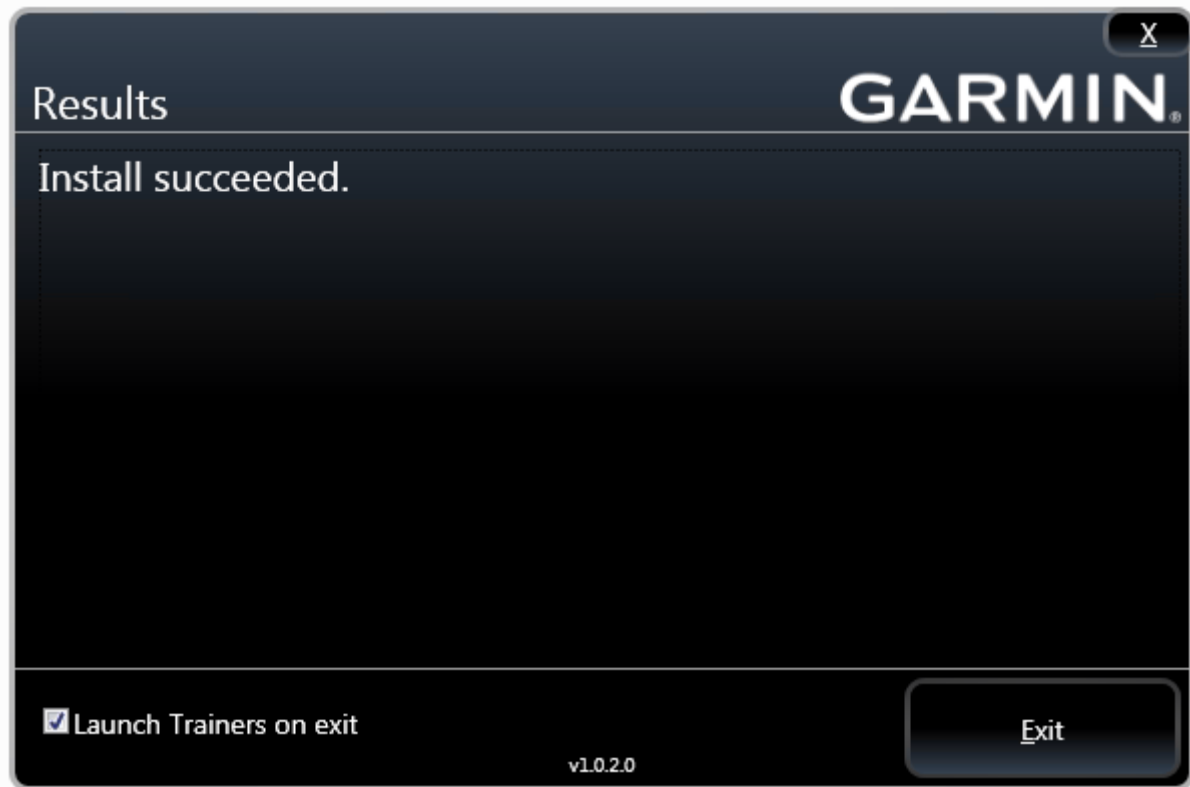


Figure 4 – Results Page

If everything is successful, the Garmin Aviation Trainer will then be installed. The application can then be accessed by selecting “Garmin Aviation Trainers” from the Start menu.

Trainer Launcher

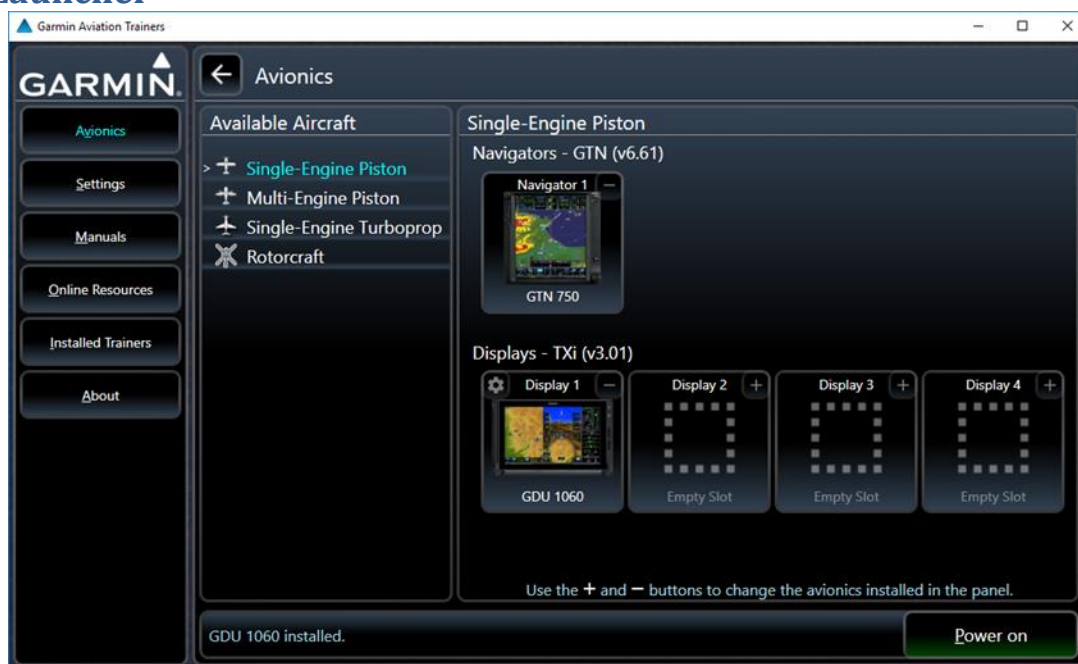


Figure 5 – Launcher Avionics Screen

The Trainer Launcher provides a convenient location to select retrofit avionics simulators, configure them, and launch them. The Launcher can run a Navigator and a Display Unit at the same time or individually.

Avionics

Available Aircraft

The first step to setting up an Aviation Trainer is to select the Aircraft. The Launcher provides four generic aircraft options (Single-Engine Piston, Multi-Engine Piston, Single-Engine Turboprop, and Rotorcraft). Each aircraft comes preloaded with avionics that can be swapped out for other Line Replaceable Units (LRUs). This allows easy selection between different models and display layouts where available.

Selecting/Changing a Model

If no trainer unit is selected for an available slot, an empty slot button with a smaller “+” button in the corner will be displayed (Figure 6). Click either button and choose from the available options (Figure 7) to fill the slot. **Note:** Only trainers that have been installed will be available.



Figure 6 – Navigator add button



Figure 7 – Navigator options

Remove a Model

To remove a unit model, select the remove icon in the upper right corner of a slot. Another model may then be added as described above.



Figure 8 – Remove Unit Button

Configure a Unit

To configure a unit, press the configure button in the upper left corner of a slot. This will open the unit's settings page.



Figure 9 – Configure Unit Button

Note: Not all units have a settings that can be configured. The button will not be shown on those units.

Power On Trainers

After selecting the desired aircraft, avionics, and configurations, power on the Trainers by selecting the Power On button in the bottom right corner of the Launcher window (Figure 11 A). This will launch and power on all requested units.

Resetting a Unit

Once a unit has been powered on any changes made to that unit are kept for the next time it is powered on. Resetting the unit will reset all changes back to the default trainer setup provided by Garmin. The demo features explained in this guide provide step by step instructions based on the default setup. Resetting a unit is guaranteed to get the unit ready to follow those guides.

Pressing the reset button in the lower right corner of a slot will display a confirmation because there is no way to recover data after a reset.



Figure 10 – Reset Unit Button

Note: The reset button is only visible after the unit has been powered on and when no Trainers are currently running.

Settings

Some settings apply to all units across all aircraft types. These options are located under the Settings tab on the left-hand side (Figure 11 B).

Manuals

All Pilot's Guides, Cockpit Reference Guides, and other manuals related to any of the installed trainers can be opened from the Manuals page. This can be found under the Manuals tab on the left-hand side (Figure 11 C).

Online Resources

A collection of online familiarization, tutorial, and training resources have been grouped together in the Online Resources page. This can be found under the Online Resources tab on the left-hand side (Figure 11 D).

Installed Trainers

The installed trainer software packages are displayed on the Installed trainers page (Figure 11 E). This page can also be used to launch the installer to add or remove trainers.

About

Information about use of third party software can be found on the About page found on the left-hand side (Figure 11 F). A feedback form on this page can be used to report errors or suggestions to Garmin. This page can also be used to check for software updates.



Figure 11 – Launcher Actions



Figure 12 - GTN Trainer Application

Startup

To start the GTN Trainer:

1. Select a GTN series navigator from the [Trainer Launcher](#) and select Power On.
2. Two windows should appear, the GTN Trainer and the [Trainer Navigation Control](#) (Figure 12). Once the startup page has loaded on the GTN Trainer (Figure 13 left), click anywhere on the startup page to continue to the next page.
3. Click the Continue button through the remaining startup pages shown in Figure 13 until the Home page is reached.



Figure 13 - System Startup Pages

GTN Controls

To use the large and small knobs located in the bezel area, click on an arrow pointing in the direction of the desired knob rotation. Press the inward pointing arrow to simulate the knob button press.

Clicking the HOME button returns the unit to the Home page (Figure 14). It is the main screen for accessing GTN features and Demo mode features. Clicking on the Direct-To key provides access to the direct-to function, which allows a waypoint to be entered and establishes a direct course to the selected destination.

System features, including moving maps, flight plan, charts, communications, and transponder can be accessed from the Home page. For more information about the GTN's features and usage, please refer to the GTN Pilot's Guide and GTN Cockpit Reference Guide.

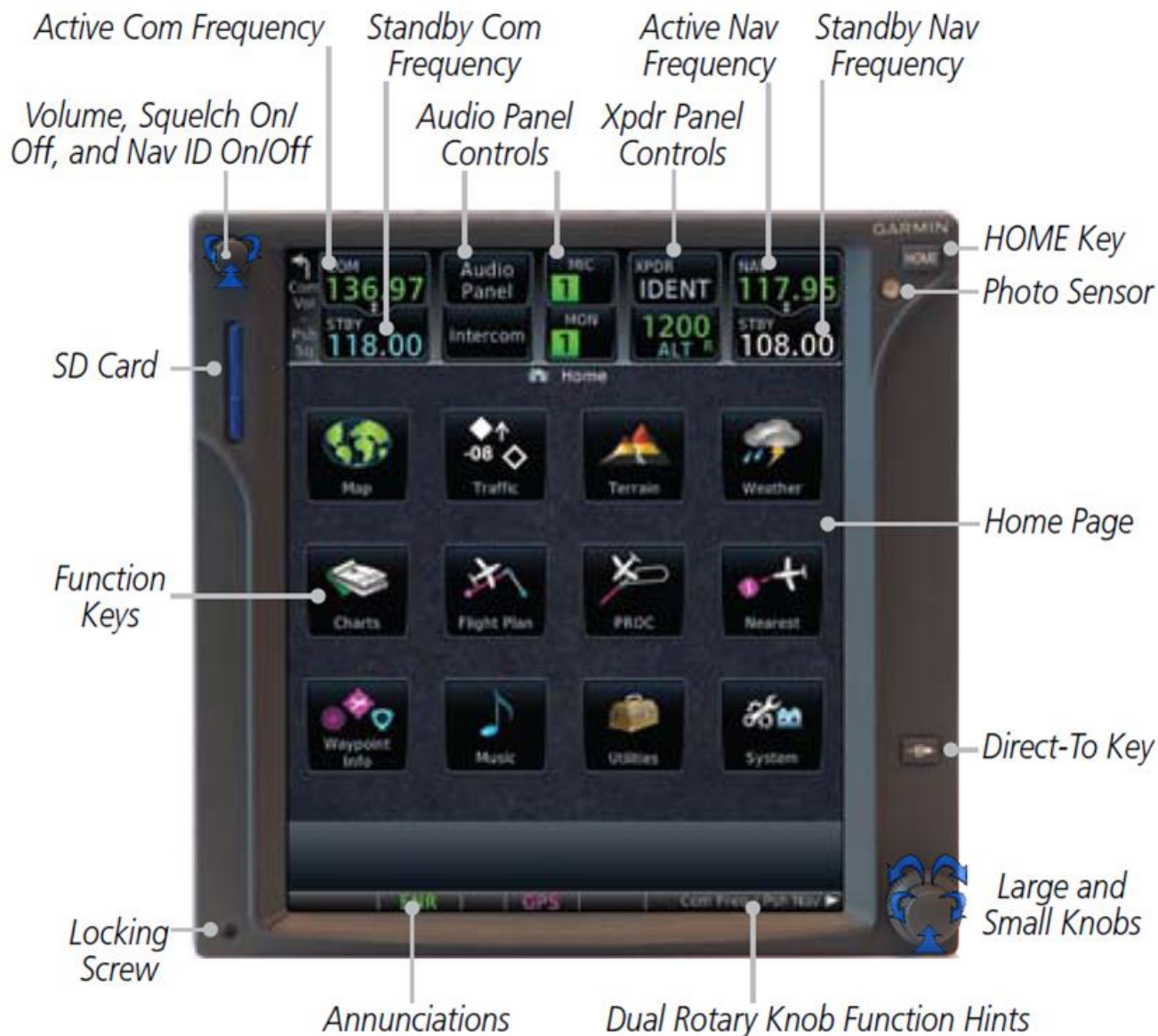


Figure 14 - GTN 750 Home Screen

Keyboard Shortcuts

The following keyboard commands are used to manipulate the GTN controls:

	Shortcut	Action
Main Knobs	Left Arrow	Inner Knob Turn Counter-Clockwise
	Right Arrow	Inner Knob Turn Clockwise
	Up Arrow	Outer Knob Turn Counter-Clockwise
	Down Arrow	Outer Knob Turn Clockwise
	Space Bar	Press Inner Knob
Volume Knob	[	Decrease Volume
	]	Increase Volume
	\	Press Volume Knob
Press Keys	Home	Press HOME key
	Esc	Press Back/Cancel Key
	D	Press Direct-To Key
Pinch Zoom	+	Zoom-In Map (Map Views only)
	-	Zoom-Out Map (Map Views only)

Table 1 - Keyboard Shortcuts

When entering a waypoint identifier or NAV/COM frequency, the keyboard may be used as an alternative to the onscreen keypad.

GTN Demo Mode

Feature Overview

The GTN Trainer is configured for Demo Mode. Demo Mode allows the position, air speed, vertical speed, altitude, and heading to be controlled by the user. Flight plans can also be entered and flown using the Demo Mode controls. Demo Mode operations are accessed using the Demo button located on the Home page, as shown in Figure 15 or with the [Trainer Navigation Control](#).



Figure 15 - Demo Mode Button

Accessing Demo Mode Features

To access the Demo Mode menu:

1. Click the Demo Mode button located on the Home Page.
2. The Demo Setup Page will appear (Figure 16).
3. Use the GPS Position panel to set the demo ownship position to a specified airport or waypoint.
4. Navigate to the GPS menu to change GPS solution and Position error.
5. Navigate to the NAV menu to set the desired demo vertical speed.



Figure 16 - Demo Mode Setup Page

Setting Initial Position

The initial position of the aircraft can be set by entering latitude and longitude values, by entering a waypoint, or by picking a location on the map page. When the Map Page is displayed, it will be centered on the position that was entered.

To set the initial position of the plane using latitude and longitude:

1. Click the Coordinates button located on the Demo Setup page.
2. A keypad will appear that allows latitude and longitude values to be entered using the keyboard and mouse.
3. Click the Enter button to save changes, or press the Back or Cancel button to leave the page without saving changes.

To set the initial position of the plane using a waypoint:

1. Click the Waypoint button located on the Demo Mode page. This will open the Waypoint Identifier Page (Figure 17).
2. The Waypoint Identifier field will be active for selection. Click the required keys on the alphanumeric keypad or type with the computer keyboard to enter the desired waypoint identifier.
3. Click the Enter button to save changes, or press the Back button to leave the page without saving changes.



Figure 17 - Waypoint Identifier Selection Page

To set the initial position on the map page:

1. Go to the Map page by clicking the Map button on the Home page. The map will be centered on the current ownship position.
2. Pan the map until the cursor is over the desired position. Press the Set button on the bottom bar to move the ownship to the current position of the cursor.



Figure 18 – Set Position Button

Setting Vertical Speed

Vertical speed can be set from the Demo Navigation Settings page.

To set the vertical speed:

1. Click the Nav button located on the Demo Mode page.
2. The Demo Navigation Settings page will appear (Figure 19 left).
3. Click the button labeled Vertical Speed.
4. A keypad will appear that allows the values to be entered using the keyboard and mouse (Figure 19 right).
5. Click the Enter button to save changes, or press the Back button to leave the page without saving changes.

Note: The airspeed, altitude, heading, and track mode can be adjusted using additional on-screen controls. See [Trainer Navigation Control](#) for more information.



Figure 19 - Demo Navigation Settings Page (left) Numeric Keypad Pages (right)

RAIM/FDE

Demo Mode contains a shortcut to Garmin's RAIM/FDE Prediction online utility.

Note: RAIM/FDE Prediction requires an internet connection.

To use the RAIM/FDE Prediction online utility:

1. Enter a Flight Plan.
2. Set the Airspeed and Altitude on the [Trainer Navigation Control](#).
3. Click the RAIM/FDE button located on the Demo Mode page.
4. The utility will open in the default web browser automatically filling in your Route, Altitude, and Ground Speed.
5. Fill out all the remaining fields.
6. Select Perform Prediction.

Visual Approaches

The GTN PC Trainer can simulate a visual approach in the navigation database. Once activated the GTN will intercept the final approach course of the visual approach. **Note:** Wait to activate the visual approach until the final approach course can be intercepted at no more than a 45-degree angle. Activating the approach too soon will overshoot the runway.

Trainer Navigation Control

Overview

The Trainer Navigation Control window provides an interface for setting speed, altitude, and heading as well as set the autopilot navigation behavior (Figure 20).



Figure 20 – Navigation Control Window

Airspeed, Altitude, and Heading Controls

The Airspeed, Altitude, and Heading controls (Figure 21) are used to control their respective aspects of flight. The GTN PC Trainer does not simulate wind speed, so the SPEED control may be used to achieve the desired true airspeed or ground speed by dragging the control up or down. Similarly, The UP and DN buttons may be used to adjust the altitude and heading (HDG).

Note: When the GTN is run alongside a Display Unit with a PFD, the heading is instead controlled by the Display Unit's HDG bug (see [Autopilot](#)).

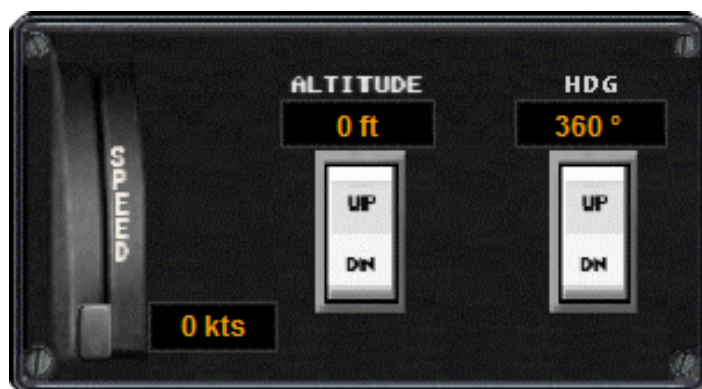


Figure 21 – Speed, Altitude, and Heading Controls

Autopilot

The autopilot panel (Figure 22) provides basic controls that simulate autopilot navigation behavior.



Figure 22 - Autopilot panel

The autopilot simulator operates in three modes:

NAV Mode

While in this mode, the GTN Trainer will automatically adjust its heading to follow a flight plan that has been entered on the Flight Plan page. Please refer to the GTN Pilot's Guides for more information on entering flight plans.

HDG Mode

While in this mode, the desired heading can be set using the Heading control described above. When the GTN Trainer is running alongside a Display Unit with a PFD, the Heading is instead controlled by that unit's Heading bug.

GS Capture Mode

The PC Trainer can be used to simulate basic approach operations that use GPS guidance. This mode allows the PC Trainer to intercept and follow the glide path of an active RNAV approach.

To capture a glide path:

1. Activate the desired approach. For detailed instructions on activating an approach, refer to the accompanying GTN Pilot's Guides.
2. Engage the autopilot glideslope capture mode by pressing the GS key on the autopilot panel near the Final Approach Fix.
3. GS will be displayed on the autopilot panel to indicate that it is engaged. The autopilot will command a descent following the glide path, as show in Figure 23.

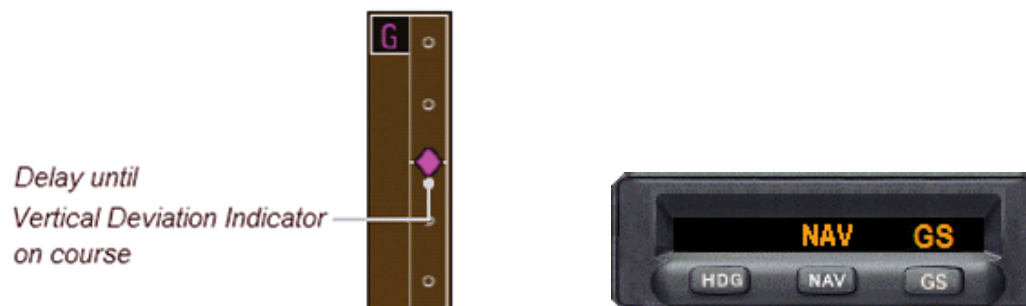


Figure 23 - Engaging GS Mode

Note: The PC Trainer simulates approaches using GPS guidance only. ILS, VOR, NDB, and non-precision localizer-based approaches may be flown using GPS guidance for monitoring and situational awareness, but non-GPS approaches during actual flight still require use of the appropriate radio navigational aid for primary approach course guidance.

GPS 175/ GNX 375 Trainer

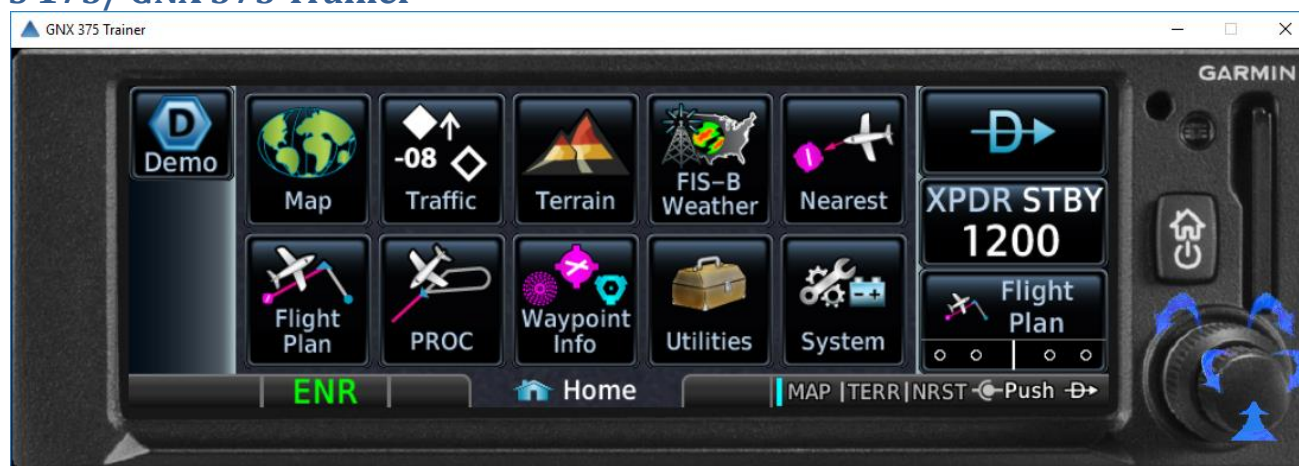


Figure 24 – GPS Trainer Windows

Startup

To start the GPS Trainer:

1. Select a GPS series navigator from the [Trainer Launcher](#) and select Power On.
2. Two windows should appear, the GPS Trainer and the [Trainer Navigation Control](#) (Figure 24). Once the startup page has loaded on the GPS Trainer (Figure 25), click anywhere on the startup page to continue to the next page.
3. Click the Continue button through the remaining startup pages shown in Figure 25 until the Home page is reached (Figure 26).

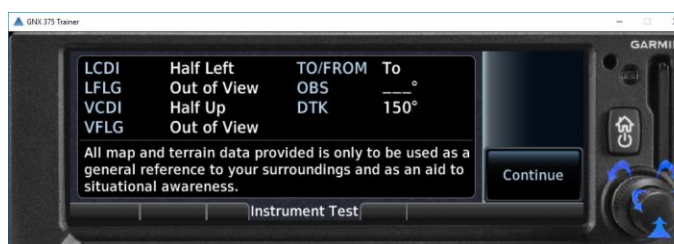
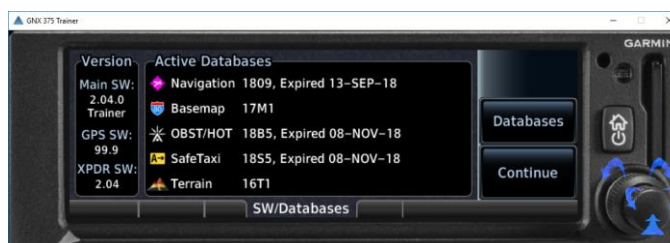
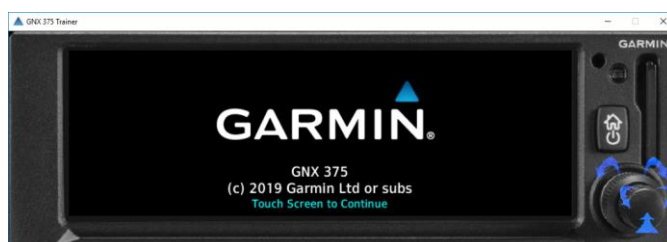


Figure 25 - GPS Trainer Startup Pages

GPS Controls

To use knobs located in the bezel area, click on an arrow pointing in the direction of the desired knob rotation. Press the inward pointing arrow to simulate the knob button press.

Clicking the HOME/Power button returns the unit to the Home page (Figure 26). It is the main screen for accessing GPS features and Demo mode features.

System features, including moving maps, flight plan, terrain, weather, and transponder can be accessed from the Home page. For more information about the GPS trainers’ features and usage, please refer to the GPS Pilot’s Guide and GPS Cockpit Reference Guide.



Figure 26 - GPS Home Page

Keyboard Shortcuts

The following keyboard commands are used to manipulate the GPS controls:

	Shortcut	Action
Knobs	Left Arrow	Inner Knob Turn Counter-Clockwise
	Right Arrow	Inner Knob Turn Clockwise
	Up Arrow	Outer Knob Turn Counter-Clockwise
	Down Arrow	Outer Knob Turn Clockwise
	Space Bar	Press Inner Knob
Press Keys	Home	Press Home/Power key
	Esc	Press Back/Cancel button

Table 2 - GPS Keyboard Shortcuts

GPS Demo Mode

The GPS Demo menu page can be accessed from the home page.

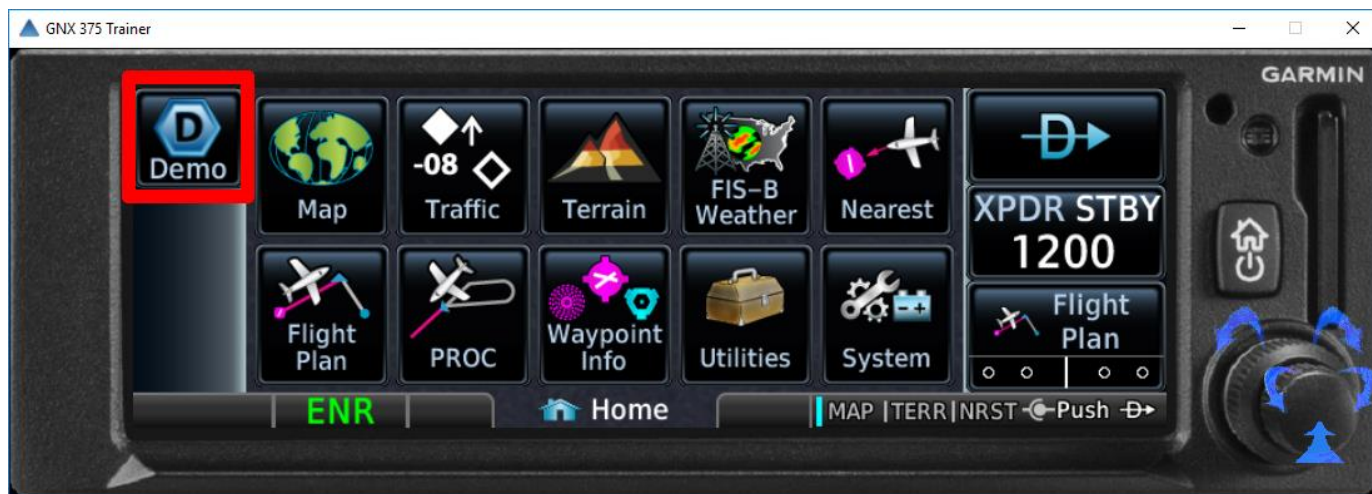


Figure 27 - GPS Demo Menu Button

The GPS Demo mode menu behaves very similar to the GTN Demo controls with the following exceptions:

- The buttons are in different locations due to the screen size.
- The demo pages are accessed by swiping the entire screen left and right.
- The RAIM/FDE page provides a shortcut to the flight plan page to enable quicker access to the prediction result.

Please refer to the GTN Demo Mode section for full details on demo controls.

Trainer Navigation Control

The GPS Trainer uses the same Navigation Control as the GTN. Please refer to the GTN Trainer Navigation Control section for more details.

TXi Trainer

The TXi comes in many different configurations. The GDU 1060 display (Figure 28 left) simultaneously supports a PFD and MFD as well as an optional EIS. The 700 Portrait display (Figure 28 center) supports either a PFD, MFD, or EIS display. The 700 Landscape display (Figure 28 right) currently only supports an EIS display.



Figure 28 – Different TXi Units

Display Options

PFD – The Primary Flight Display presents graphical flight instrumentation (attitude, heading, airspeed, altitude, vertical speed) and replaces the traditional flight instrument cluster. Garmin Synthetic Vision Technology (SVT) is also an available feature provided with the TXi Trainer.

MFD – The Multi-Function Display provides a full-color moving map and other supplemental data such as aviation, topographical, terrain, and obstacles, as well as FliteCharts, and SafeTaxi information.

EIS – The Engine Information System provides gauge information, fuel computer information, and lean assist functions. GDU 700P and GDU 700L present engine instrumentation on a full screen dedicated display when configured for EIS. The GDU 1060 presents two views of engine instrumentation: a dedicated MFD Engine page and a vertical gauge strip.

Startup

To start the TXi Trainer:

1. Select a TXi model Display Unit from the [Trainer Launcher](#) and select Power On.
2. If the selected model contains an MFD, that display will show a splash screen listing all the included databases. Click the Continue button shown in Figure 29 to show the Home page.



Figure 29 – TXi 1060 MFD splash screen

TXi Controls

Bezel Knobs

Although everything on the TXi can be accessed through easy-to-use touchscreen controls, most features can also be accessed through concentric Bezel Knobs. On the Trainer, turning the outer or inner knob and pressing the knob inward are represented by 5 blue arrow icons (Figure 30).



Figure 30 – TXi Knob

PFD Knobs

Turning the PFD inner knob adjusts the value for the mode selected by turning the PFD outer knob. The selectable modes are Heading (HDG), Altitude (ALT), Vertical Speed (V/S), Indicated Airspeed (IAS), Course (CRS), and Barometric Setting (BARO).

Heading (HDG)

Heading Select mode is the default mode for the PFD.

Altimeter (ALT)

Turn the outer PFD knob one time to enter Altitude Select mode.

Vertical Speed (V/S)

Turn the outer PFD knob two times to enter Vertical Speed (V/S) mode.

Indicated Airspeed (IAS)

Turn the outer PFD knob three times to enter Indicated Airspeed mode.

Course (CRS)

Turn the outer PFD knob four times to enter Course Select mode.

Barometer (BARO)

Turn the outer PFD knob five times to enter Barometric Setting Select mode.



Figure 31 – TXi PFD

MFD Knobs

The concentric MFD knobs are used to quickly navigate through important pages listed at the bottom of the MFD display interact with the display.

Larger (Outer) MFD Knob

This knob toggles through the available pages specified at the bottom of the MFD display.

Small (Inner) MFD Knob

In most cases, this knob is used to zoom in and out on current map page.



Figure 32 – TXi MFD (left) and EIS (right)

Touch Controls

PFD, MFD, and EIS displays can all be interacted with via touchscreen controls.

Keyboard Shortcuts

The following keyboard commands may be used to manipulate the TXi controls:

	Shortcut	Action
Right Side Knobs	Left Arrow	Inner Knob Turn Counter-Clockwise
	Right Arrow	Inner Knob Turn Clockwise
	Up Arrow	Outer Knob Turn Counter-Clockwise
	Down Arrow	Outer Knob Turn Clockwise
	Space Bar	Press Inner Knob
Left Side Knobs	F	Inner Knob Turn Counter-Clockwise
	H	Inner Knob Turn Clockwise
	T	Outer Knob Turn Counter-Clockwise
	G	Outer Knob Turn Clockwise
	Shift	Press Inner Knob
Simulation Data	F11	Heading (-1°)
	F12	Heading (+1°)
	Insert	Airspeed (+10kts)
	Delete	Airspeed (-10kts)
	Home	Altitude (+100ft)
	End	Altitude (-100ft)
	Page Up	Vertical Speed (+100fpm)
	Page Down	Vertical Speed (-100fpm)

Table 3 - TXi Keyboard Shortcuts

TXi Demo Mode

Feature Overview

The TXi Trainer is configured for Demo mode. Demo mode allows the position, airspeed, vertical speed, altitude, and heading to be controlled by the user. Flight plans can also be entered and flown using the Demo Mode controls if the TXi is connected to a Navigator. Demo Mode operations are accessed using the Demo button located on the Home page of a configured MFD, as shown in Figure 33, or the on-screen PFD bugs described in TXi Controls.



Figure 33 - Demo Mode Button

Accessing Demo Mode Features

To access the Demo Mode menu:

1. Click the Demo Mode button located on the Home Page of any MFD.
2. The Demo Setup Page will appear (Figure 34).
3. Use the GPS Position frame to set the demo ownship position to a specified airport or waypoint.
4. Navigate to the NAV menu to set the desired demo airspeed, vertical speed, altitude, or heading.
5. Navigate to the Fuel menu to set Fuel on Board and Fuel Flow.



Figure 34 - Demo Mode Setup Page

Running with a Navigator

When using a Navigator alongside a TXi Display Unit, all GPS, altitude, and airspeed controls are driven by the Navigator. When heading/track is not following a flight plan and the TXi has a PFD configured, heading/track are driven by the TXi PFD controls. This is done to simulate an autopilot system following the heading bug of the TXi. In all other cases, heading/track is also driven by the Navigator.

Setting Initial Position

The initial position of the aircraft can be set by entering a waypoint, or by picking a location on the map page. When the Map Page is displayed, it will be centered on the position that was entered.

To set the initial position of the ownship using a waypoint:

1. Click the Waypoint button located on the Demo Mode page. This will open the Waypoint Identifier Page (Figure 35).
2. The Waypoint Identifier field will be active for selection. Click the required keys on the alphanumeric keypad or type with the computer keyboard to enter the desired waypoint identifier.
3. Click the Enter button to save changes, or press the Back button to leave the page without saving changes.



Figure 35 - Waypoint Identifier Selection Page

To set the initial position on the map page:

1. Go to the Map page by clicking the Map button on the Home page. The map will be centered on the current ownship position.
2. Pan the map until the cursor is over the desired position. Press the Set button on the bottom bar to move the ownship to the current position of the cursor.

Navigation Settings

Most navigation settings can be set in the same way from the Demo Navigation Settings page.

To set the airspeed:

1. Click the Nav button located on the Demo Mode page.
2. The Demo Navigation Settings page will appear (Figure 36 left).
3. Click the button labeled Airspeed.
4. A keypad will appear that allows the values to be entered using the keyboard and mouse (Figure 36 right).
5. Click the Enter button to save changes, or press the Back button to leave the page without saving changes.

Note: MFD navigation controls are disabled when the TXi is connected to a Navigator.



Figure 36 - Demo Navigation Settings Page (left) Airspeed Numeric Keypad Pages (right)

GDU 620 Trainer



Figure 37 - GDU 620 Trainer

GDU 620 Controls

GDU 620 Bezel Keys

Primary Flight Display (PFD)

Heading (HDG)

Selects Heading Select mode. Pressing the PFD knob in Heading mode will center the Heading Bug on the current Heading. This is the default mode for the PFD knob. If the Heading is invalid, the PFD knob will revert to Course mode. Set the heading on the HSI by turning the PFD knob after pressing the HDG key.

Course (CRS)

Selects Course Select mode. Pressing the PFD knob in Course mode will center the CDI for a VOR or OBS mode course.

Altimeter (ALT)

Selects Altitude Select mode. Pressing the PFD knob in Altitude mode will enter the current altitude in the Altitude Select window. Set the Altitude Bug by turning the PFD knob after pressing the ALT key.

Vertical Speed (V/S)

Selects Vertical Speed (V/S) mode. Pressing the PFD knob in V/S mode will synchronize the bug to the current vertical speed.

Barometer (BARO)

Selects Barometric Setting Select mode. Pressing the PFD knob in Baro mode will enter the standard pressure (29.92 in) value.

PFD Knob

Turning the PFD knob adjusts the values for the mode selected by the PFD bezel keys, such as, Heading (HDG), Course (CRS), Altitude (ALT), Vertical Speed (V/S), and Barometric Setting (BARO). The values are shown in a window to the left of the HSI (see Figure 38). Pressing the PFD knob reverts to the default value of the selected mode.



Figure 38 - PFD Altimeter and Vertical Speed Indicators

Soft Keys

The soft keys are located along the bottoms of the displays below the soft key labels (see Figure 39). The soft key labels shown depend on the soft key level or page being displayed. The soft keys can be used to select the appropriate soft key function.



Figure 39 - GDU 620 Bezel Soft Keys

When a soft key is selected, its color changes to black text on gray background and remains this way until it is turned off, at which time it reverts to white text on black background. When a soft key function is disabled, the soft key label is subdued (dimmed). Soft keys revert to the previous level after 45 seconds of inactivity.

Multifunction Display (MFD)

Range (RNG)

Pressing the Range arrow keys changes the range on the Map pages. The Up arrow zooms out. The Down arrow zooms in. The keys also aid in scrolling up and down text pages.

MENU

Displays a context-sensitive list of options. This list allows the user to access additional features or make setting changes that relate to particular pages.

Enter (ENT)

Validates or confirms a menu selection or data entry.

Clear (CLR)

Erases information, cancels entries, or removes page menus. Pressing and holding the CLR key displays the Navigation Map 1 page.

MFD Knobs

The MFD knobs are used to navigate through and select information on the MFD pages.

Small (Inner) MFD Knob

Selects a specific page within a page group. Pressing the small MFD knob turns the selection cursor ON and OFF. When the cursor is ON, data may be entered in the applicable window by turning the small and large MFD knobs. In this case, the large MFD knob moves the cursor on the page and the small MFD knob selects individual characters or values for the highlighted cursor location.

Larger (Outer) MFD Knob

Selects the MFD page group. When the cursor is ON, the large MFD knob moves the cursor to highlight available fields.

Keyboard Shortcuts

The following keyboard commands may be used to manipulate the GDU 620 controls:

Key	Maps To	Description
+	RNG Up	Zoom Out
-	RNG Down	Zoom In
1	HDG	Heading
2	CRS	Course
3	ALT	Altitude
4	V/S	Vertical Speed
5	BRO	Barometric
Esc	CLR	Undo changes made in current selection.
Enter	ENT	Confirm; on MFD, enters information page for highlighted airport, obstruction, etc.; apply current menu option and move to next.
M	MNU	Menu
F1 – F10	Soft key 1-10	
C	PFD knob button	Usually sets a HDR/CRS/ALT/VS/BRO setting on the PFD.
X	Rotate PFD knob dial clockwise	Changes HDG, ALT, and other PFD bug settings
Z	Rotate PFD knob dial counter-clockwise	Changes HDG, ALT, and other PFD bug settings
Space	MFD knob button	Toggle highlight while on a configuration page.
Up Arrow	MFD outer knob rotate clockwise	Changes MFD page category (MAP, AUX, FPL, etc.); changes current menu item selection in menus; move cursor to the <i>left</i> in “panning” mode.
Down Arrow	MFD outer knob rotate counter-clockwise	Changes MFD page category (MAP, AUX, FPL, etc.); changes current menu item selection in menus; move cursor to the <i>right</i> in “panning” mode.
Left Arrow	MFD inner knob rotate clockwise	Changes MFD page under current category; changes current menu item value; move cursor down in “panning” mode.
Right Arrow	MFD inner knob rotate counter-clockwise	Changes MFD page under current category; changes current menu item value; move cursor up in “panning” mode.

Table 4 - GDU 620 Keyboard Shortcuts

GDU 620 Demo Mode Menu

Feature Overview

The GDU 620 demo mode menu enables the GDU 620 PC Trainer application to simulate flight when there is no GTN PC Trainer application running at the same time providing navigation data. This page is inoperable once a GTN PC Trainer is detected. It is recommended to run a GDU 620 with a GTN for easier control of the flight simulation via the [Navigation Control window](#).

Accessing the Menu

The menu can be accessed once the MFD is visible by pressing the MENU key next to the MFD twice in a row without pressing anything else. Use the MFD knobs, ENT and CLR keys to interact with the fields in the menu.

Closing the Menu

Once finished making changes to the demo mode setup press the CLR key or the MFD knob with no field activated to exit the menu. Note: Pressing either when a field is activated will cancel any changes to the field and will not exit the menu.

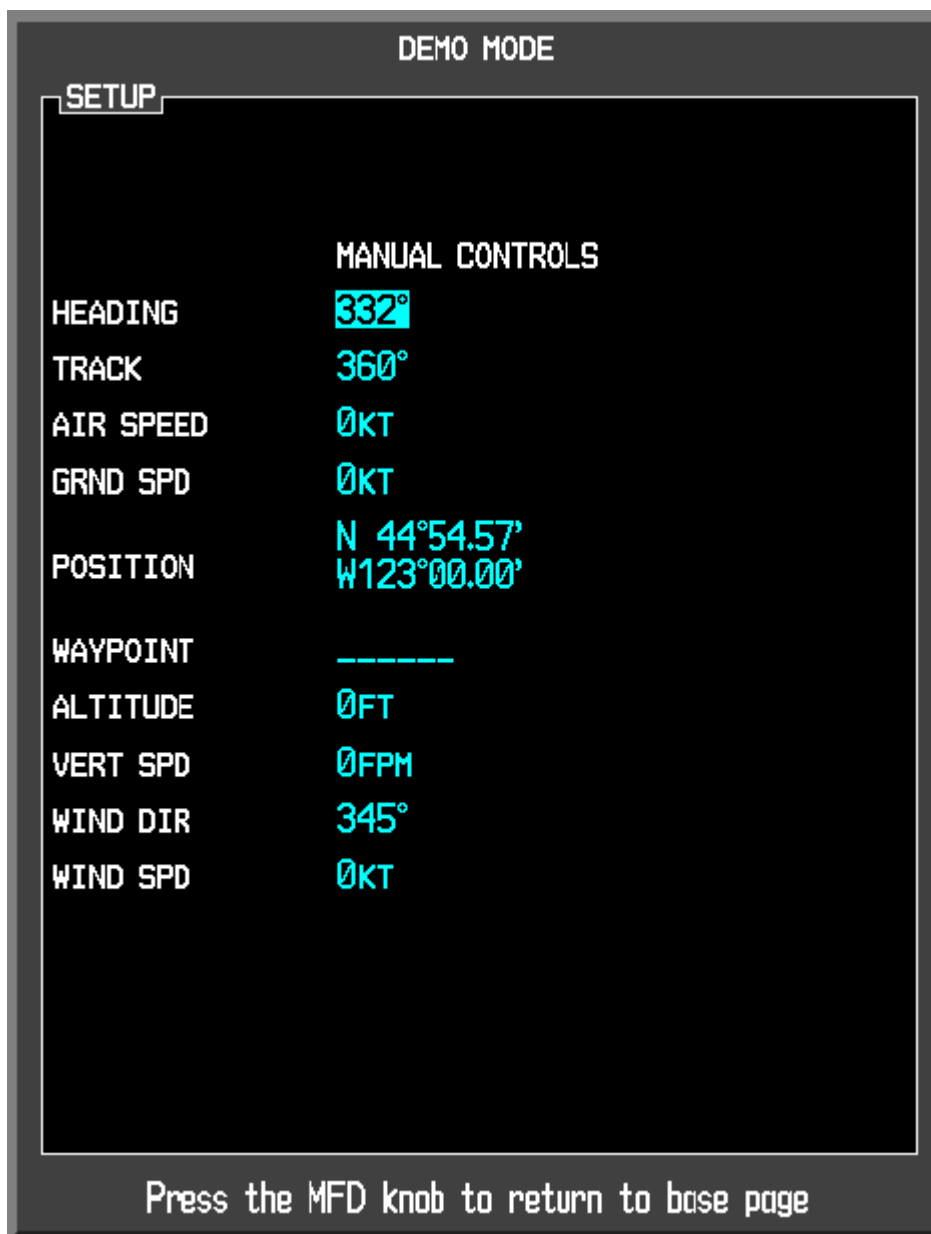


Figure 40 – GDU 620 Demo Mode Menu

Demo Simulation Features

Overview

The Garmin Aviation Trainer provides several simulation features such as GDL88 Target Trend traffic, GWX 70 Radar, GDL 69 SiriusXM, FIS-B, Connex weather data, and EIS. Most simulations are available via the MFD of the corresponding navigator or display unit.

Note: Most demo simulations are depicted below for a GTN Navigator but will behave similarly in a TXi with MFD configured.

ADS-B Traffic Targets

1. Set the waypoint to KSLE using the Waypoint button located on the Demo GPS page.
2. Set the Altitude to 5300 and Airspeed to 168 KT.
3. After a brief period, traffic targets will be displayed on the Map (Figure 41), and Traffic (Figure 42) pages.
4. Different Target Trend and traffic scenarios may be created by changing the aircraft's speed, heading, and altitude.

Note: The availability of ADS-B traffic targets may vary depending on location. Traffic display symbology depends on any of the following: equipment configuration, region of the world, and other aircraft equipage. Please reference the Compatible Devices tab on the respective Garmin traffic solution used in the current configuration for more details.



Figure 41 - Traffic targets on Map page



Figure 42 - Traffic targets on Traffic page

GWX 70 Radar

1. Navigate to the Weather Radar page.
2. Click the Mode button located on the bottom left of the Radar page, then select Weather or Ground.
3. After the Warm Up period, radar data will be displayed on the Weather Radar page (Figure 43), and on the Map page (Figure 44).



Figure 43 - Weather Radar page



Figure 44 - Map page Radar overlay

GDL 69 XM Weather

1. Set the waypoint to KSLE using the Waypoint button located on the Demo GPS page.
2. Navigate to the SiriusXM Weather page (Figure 45).



Figure 45 - SiriusXM Weather page

FIS-B Weather

1. Set the waypoint to KSLE using the Waypoint button located on the Demo GPS page.
2. Navigate to the FIS-B Weather page (Figure 46).
3. Toggle between Regional, Continental US (CONUS), and Combined NEXRAD coverage to note the differences in these services.



Figure 46 - FIS-B Weather page

Connex Weather

GTN

1. Click on the Waypoint button located on the Demo GPS page.
2. Enter EDCD and select Cottbus Drewitz by pressing Enter.
Note: Jeppesen Navigation Database (Worldwide) must be selected in the launcher settings.
3. Navigate to the Flight Plan page.
4. Use the Add Waypoint button to add the following waypoints:
 1. EDCD
 2. EDAV
 3. ETNL
5. Navigate to the Connex Weather page.
6. Click on the Menu button, and select Connex Settings.
7. Click on the COV Diameter button, and select between:
 1. 50 NM
 2. 80 NM
 3. 300 NM
8. Click on the Request Data button.
9. Click the Back button twice to return to the Connex Weather page (Figure 47).



Figure 47 - Connex Weather page

GDU 620 GFDS

1. Follow steps 1 – 4 under the GTN Connex Weather section in order to place the trainer at waypoint EDCD.
2. With the MAP page displayed on the MFD (see **Error! Reference source not found.**), press the clockwise arrow on the outer MFD concentric knob twice. This will display the External Video page (see **Error! Reference source not found.**).
3. With the External Video page displayed, press the clockwise arrow on the inner MFD concentric knob. This will display the System Setup page (see **Error! Reference source not found.**).
4. Press the up arrow on MFD concentric knob to activate the page, and then press the arrows on the outer MFD concentric knob until it highlights the “DATA LINK” field.
5. Press the MFD clockwise arrow on the inner MFD concentric knob to display the options for the “DATA LINK” field.
6. Press the arrows on the outer MFD concentric knob to highlight “GFDS” and then press ENT (see **Error! Reference source not found.**).
7. Press the up arrow on the MFD concentric knob to deactivate the page.
8. With the System Setup page displayed on the MFD (see **Error! Reference source not found.**), press the counter-clockwise arrow on the outer concentric knob. This will display the WX page (see **Error! Reference source not found.**).



Figure 48 - MAP page



Figure 49 – External Video page



Figure 50 – System Setup page



Figure 51 - WX page

9. With the WX page displayed, press the MENU button.
10. Use the arrows on the MFD outer concentric knob to highlight “GFDS Data Request” (see **Error! Reference source not found.**), and then press the ENT button.



Figure 52 - Display GFDS Weather option

11. With the GFDS DATA REQUEST page (see **Error! Reference source not found.**) displayed, press the counter-clockwise arrow on the outer concentric knob twice in order to highlight the DIAMETER / RTE WIDTH field (see **Error! Reference source not found.**). Then press the clockwise arrow on the inner concentric knob in order to select between:
 - a. 50 NM
 - b. 80 NM
 - c. 300 NM
 Press the ENT button.



Figure 53 - GFDS DATA REQUEST page



Figure 54 - DIAMETER / RTE WIDTH field

12. Press the clockwise arrow on the outer concentric knob twice in order to highlight the SEND REQ (see **Error! Reference source not found.**) field. Then press the ENT button.



Figure 55 - SEND REQ field

13. Press the CLR button to return to the WX page.
14. If the GFDS weather data (see **Error! Reference source not found.**) is not visible, use the RNG button to zoom out.



Figure 56 - GFDS weather data

Fuel Range Ring

1. Click the Utilities button on the Home page.
2. Click the Fuel Planning button on the Utilities page.
3. Click the Fuel on board button and enter a number of gallons to simulate on board.
4. Click the Fuel Flow button and enter the rate of gallons per hour to simulate.
5. Increase the airspeed above 30 knots.
6. Go to the Map Page.
7. Zoom out to see yellow maximum range ring and green dashed ring for the start of the reserve which defaults to 45 minutes. (Figure 57)



Figure 57 – Map page with Range Ring

Engine Information Systems (TXi with EIS configuration only)

The TXi Trainer demonstrates different aspects of EIS functionality depending on the aircraft type that is selected in the Trainer Launcher prior to startup. To access EIS demo functionality, an aircraft and layout must be selected that includes EIS as part of its configuration.



Figure 58 – Launcher aircraft selection

Available gauges, layouts, and markings will vary between piston and turboprop aircraft, single- and multi-engine configurations, and across GDU 1060, 700P, and 700L unit types. Most gauges show a typical range of values by default.



Figure 59 – Sample GDU 1060 EIS configurations for Single-Engine Piston, Multi-Engine Piston, and Single-Engine Turboprop

Additional system behaviors can be accessed from the EIS page of the Demo Menu. The demo options that are available may also vary depending on engine type.

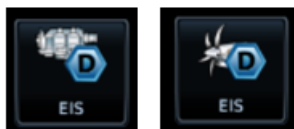


Figure 60 – Piston and Turboprop EIS buttons found in Demo menu

In piston engine configurations, Fuel on Board and Fuel flow may be adjusted to drive the corresponding gauges.



Figure 61 – Piston Fuel on Board and Fuel Flow demo controls

The Turboprop configuration includes additional demo options to aid in familiarization with gauges and annunciators. Fuel on Board is not currently available.

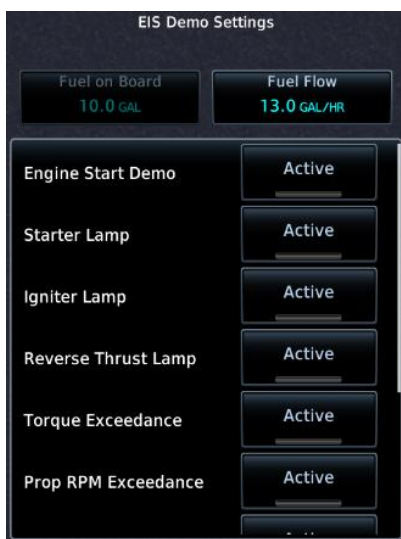


Figure 62 – Turboprop EIS demo controls

Turboprop Engine Start

The Engine Start Demo simulates a turboprop engine startup sequence. While active, other EIS demo options are unavailable. To return to normal Demo mode operation, the Engine Start Demo should be set back to inactive.

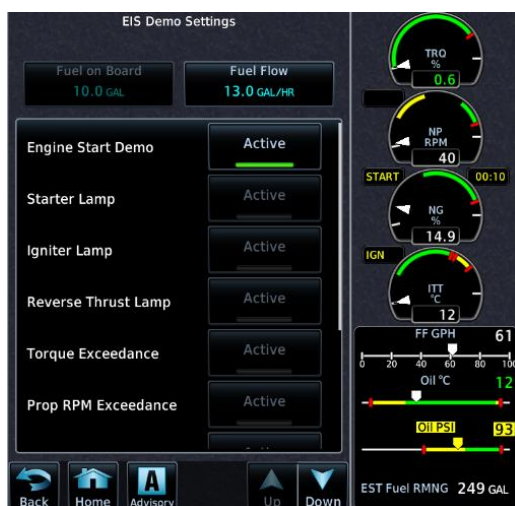
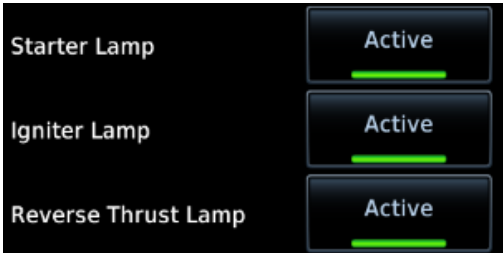


Figure 63 – Engine Start Demo

Text Lamps

Starter, Igniter, and Reverse Thrust (BETA) text lamps may also be activated from the EIS demo menu. These are provided for familiarization of the corresponding text lamp indicators only. Other demo gauge behaviors are not affected.



Exceedances

Exceedance demo options simulate gauge behavior when a corresponding engine system exceeds its operating parameters. This may include exceedance timers and dynamic gauge marking behavior.



Figure 64 – Turboprop Torque and Prop RPM Exceedance demos

Exceedance logs would normally be generated by such behavior and be available for review and acknowledgement from the System, Logs, Exceedances menu. The exceedance demos do not currently create new log entries; however, some demo exceedance log entries are available in the system logs to view for familiarization.

System - Exceedances (Demo)				Exceedance Details	
Date	Gauge	Exceed	Advisory	Source: Pilot PFD	
22-MAY-19 20:56 UTC	NP	25.2 sec	ACK Alert	Gauge: Propeller RPM	
22-MAY-19 20:56 UTC	TRQ	16.4 sec	ACK Alert	Limit: Above 2050 RPM for 20 sec	
22-MAY-19 20:56 UTC	NP	17.0 sec	ACK Alert	Date: 22-MAY-19	
22-MAY-19 20:56 UTC	TRQ	68.6 sec	ACK Alert	Time: 20:56 UTC	
22-MAY-19 20:56 UTC	NG	42.0 sec	ACK Alert	Exceedance: 25.2 sec	
22-MAY-19 20:55 UTC	ITT	77.8 sec	ACK Alert	Max: 2499 RPM	
				Value at Exceedance End: 2035 RPM	
				Complete: Yes	
				Acknowledged: No	
				Power Cycle: 23 / -1	
				Torque at Exceedance Start: 125 %	
				Ng at Exceedance Start: 101 %	
				ITT at Exceedance Start: 944 C	
				NP at Exceedance Start: 2216 RPM	
				ADC1 Airspeed at Start: Unknown	
				ADC1 Density Altitude at Start: -12 ft	
				ADC1 Pressure Altitude at Start: -12 ft	
				ADC1 OAT at Start: 15 C	

Figure 65 – Demo Exceedance Logs

Troubleshooting

This section provides basic troubleshooting for issues that may be encountered during installation and use of the Garmin Aviation PC Trainer.

During Installation

Installation of the PC Trainer software requires sufficient free disk space and will require administrator-level permissions to add contents to the Program Files (x86) folder, modify the Windows registry, and add rules to the Windows Firewall to allow communication between the GTN and TXi PC Trainer software. Windows offers a feature called User Account Control (UAC) that informs the user when an application requires administrator-level permissions. Depending on the version of Windows and the permissions available to the user account, several different dialogs may be displayed to request permissions during installation. If there is not enough free disk space or permissions are denied to the installation exe, the installation may not complete successfully, or the software may not run properly.

If the installation appears to have failed, uninstall any previous versions of the PC trainer software, ensure that there is sufficient free disk space (see [System Requirements](#)) and reinstall using the following steps:

Note: If UAC is disabled and the account being used to install the software does not have administrator privileges, Windows may not display a prompt to request elevated privileges, and the software may not install properly. In this situation, first log in to the administrator account, and then follow the directions above. If the UAC settings for the system are not known, they can be checked in the User Accounts Control Panel.

For more information on UAC, visit <http://technet.microsoft.com/en-us/library/cc709691%28WS.10%29.aspx>.

If another installation error is occurring that seems unrelated to installation privileges or disk space requirements, try to install the software on another PC if possible. This may help determine whether there is an issue with the installation USB or download itself, or the configuration of the PC (e.g., an Antivirus application may be preventing the installation).

Application Crashes and Performance Issues

Reproducible or intermittent application crashes can be caused by many different issues. Following are a few general troubleshooting steps that may help resolve some of these issues or provide further insight into what the cause of an issue might be.

Ensure that the computer meets minimum system requirements

The PC Trainer applications simulate a real-time avionics system that can require considerable system resources to run smoothly. For the best experience possible, it is recommended that the PC Trainer applications be used on PCs that meet the minimum system requirements listed at the beginning of this document. Also note, reducing the number of avionics in the virtual aircraft panel may alleviate performance problems by powering up fewer PC Trainer applications at the same time.

Close background applications

PCs that meet the minimum system requirements may still experience issues if the computer's hardware resources are in use by other applications, or if another application is preventing the PC Trainer applications from running. Close all other applications, including any antivirus software, system tray utilities, and non-essential background applications, and then launch the PC Trainer applications again.

Perform system maintenance and ensure that system software and graphics chipset drivers are up-to-date

Freeing up hard disk space, running the Disk Defragmenter, and performing other general system maintenance can sometimes improve system performance and may also improve the performance of the PC Trainer applications.

Out-of-date drivers, especially for the computer's graphics card or chipset, are a common cause for application crashes, lockups, and power-on failures of the PC trainer applications. Checking for and installing graphics, audio, and other system software updates may alleviate these issues or help resolve compatibility issues between the PC Trainer applications and other hardware or software on the PC. Check with the system administrator, graphics chipset manufacturer, or computer manufacturer for further information on performing these maintenance and update activities. Creating a System Restore point before attempting updates is advised.

For more information on System Restore, please visit <https://support.microsoft.com/en-us/help/17127/windows-back-up-restore>.

Check for newer versions of the PC Trainer software

Software updates for the Aviation Trainer applications may contain bug fixes and improve compatibility with different PC hardware and software configurations. [Trainer Launcher](#) provides a manual update check button on the about page.

Contacting Customer Support

If you have any questions, visit <https://fly.garmin.com/support> or contact the Garmin Product Support department either by email at aviation.support@garmin.com, or by telephone, Monday through Friday, 7:00 AM to 7:00 PM Central Time (US and Canada), 8:00 AM to 5:00 PM GMT/UTC (UK).

US: 913-397-8200

US Toll Free: 1-866-739-5687

Canada Toll Free: 1-866-429-9296

UK: +44 (0) 87 0850 1243

If you are experiencing issues with your PC Trainer software, having some or all the following information ready will help us to further assist you:

- A detailed description of how and when the issue occurs and any steps to reproduce, e.g., during installation, when launching the application, when clicking on a specific button or performing a specific flight operation.
- What the error message is, if any. If possible, take a screenshot of the issue by pressing the “Print Screen” key on the keyboard and pasting the contents into an email.
- Whether the issue occurs with the GTN Trainer, the TXi Trainer, or both.
- What steps from the Troubleshooting section of this guide have been performed and what the results of those actions were.
- The make and model of the PC, version of Windows installed, graphics chipset, if known, and any other available system information.

The DirectX Diagnostic Tool can capture basic information about the system configuration, operating system, hardware resources (e.g., installed vs. available memory), as well as information about the software environment and driver versions that may provide valuable insights for product support. To gather a DxDiag file:

- Click on the Windows icon on the lower left-hand side of the desktop and type “dxdiag” and click OK.
- Click Save All Information... and save out to a text file. Please include this in your support request.