

JARDesign Group

CoPilot Plugin for X-Plane 12

Installation and User Manual

Features:

Animated 3D CoPilot model

Voice, menu, and widget command recognition and execution

Text-to-speech (TTS) capabilities

Interactive checklist execution

Event-based operations (triggered by flight parameters and situations)

Standard Operating Procedure (SOP) execution (Normal Procedures, Limited)



LICENSE AGREEMENT

You can find all license agreements included with this product in the **"Licenses"** folder within the distribution package.

SYSTEM REQUIREMENTS

To use the CoPilot add-on, the following requirements must be met:

Required Software

- A licensed copy of X-Plane 12, installed and properly configured.
- A compatible aircraft add-on designed for this CoPilot package.

Operating System The CoPilot add-on is designed to run on:

- Windows 10 / Windows 11
- macOS (tested up to macOS Sequoia)
 - Note: On macOS, the add-on is fully compatible with both Intel-based and Apple Silicon (ARM) systems.

Hardware Requirements

- A computer capable of running X-Plane 12 smoothly.
- Minimum 8 GB RAM (16 GB recommended).
- Multi-core CPU.
- SSD storage is highly recommended.

Audio

- Speakers or headphones (required to hear the CoPilot's voice).

Internet Connection

- Required for initial activation (serial key validation).
- Required to download models for certain AI features (e.g., LLM-based free conversation).

Free Conversation (LLM) Requirements The free conversation feature (LLM-based interaction) requires significantly higher system performance. For an optimal experience:

- A modern dedicated GPU (graphics card) with sufficient VRAM is highly recommended.
- Systems without a dedicated GPU may experience reduced performance, increased response times, or limited functionality.
- Overall performance depends entirely on your hardware configuration and the specific local LLM setup used.

Text-to-Speech (TTS) Requirements The CoPilot's voice relies on your operating system's built-in text-to-speech functionality. To ensure proper operation:

- The English language must be installed on your operating system.
- At least one English voice package must be downloaded and available.

- Note: If your system does not have an active English voice installed, the CoPilot will not be able to speak.

Optional (Recommended)

- A microphone (required for voice interaction features).

SPEECH & VOICE SETUP

CoPilot uses the operating system's built-in text-to-speech system. If you do not hear the CoPilot speaking, please verify your OS settings.

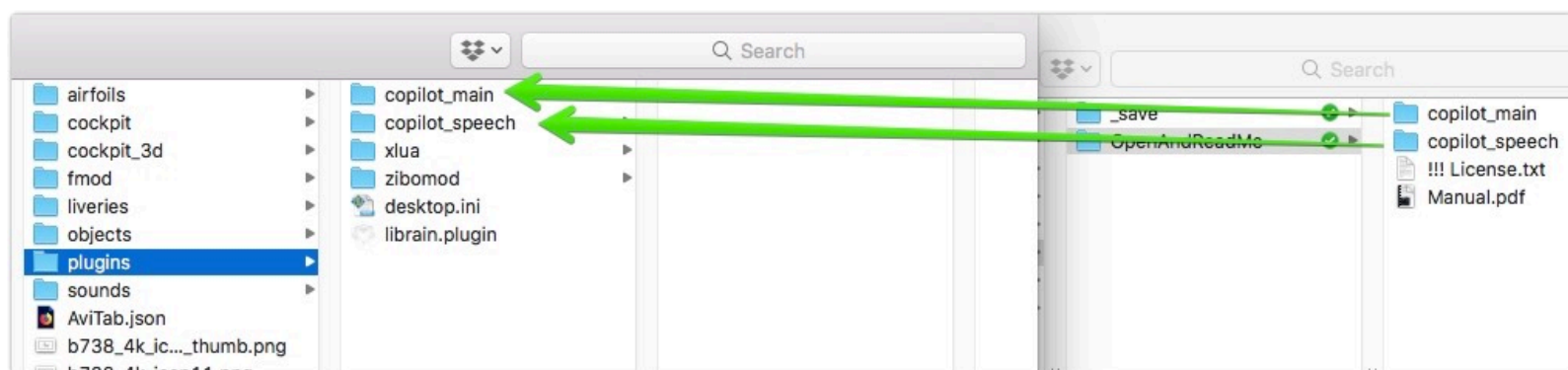
Windows

1. Go to Settings → Time & Language → Speech.
2. Install an English (US/UK) voice pack.
3. Select it as the default voice if necessary.

macOS

1. Go to System Settings → Accessibility → Spoken Content.
2. Add and download an English voice.
3. Select the voice as your system default.

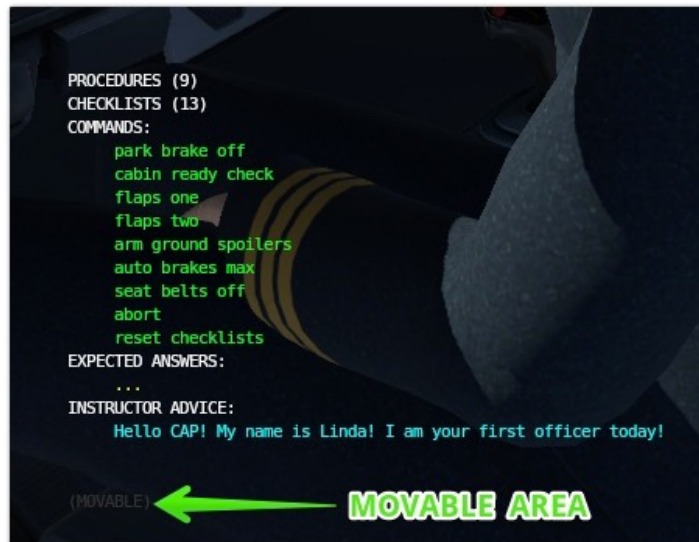
INSTALL PLUGIN



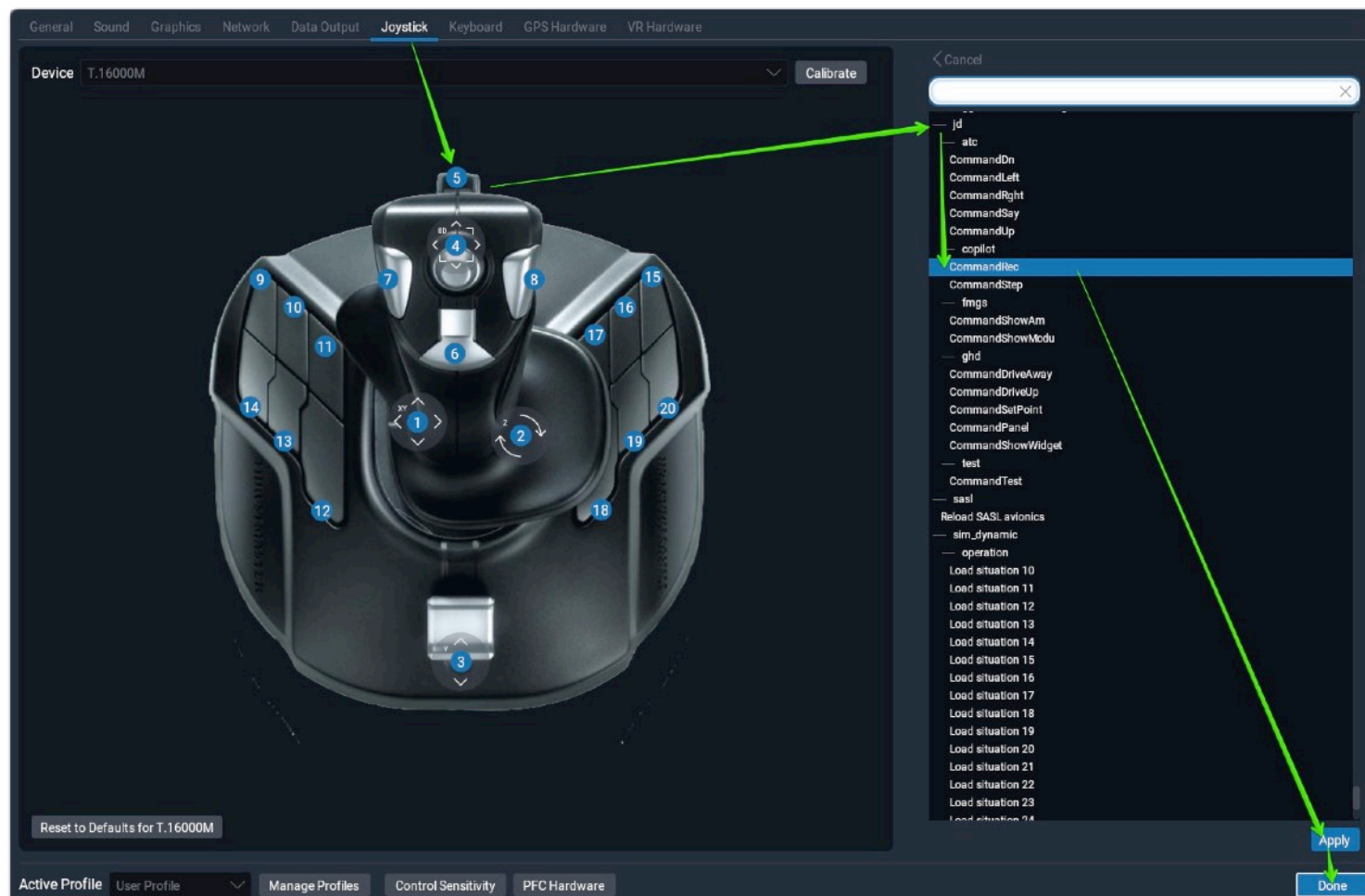
1. Find your aircraft plugins folder inside "../X-Plane_12/Aircraft/<Your Aircraft Name>/plugins/" or path like this.
2. Download more fresh version of CoPilot for Your Aircraft from official website www.jardesign.org
3. UnZip copilot distributive and Put "copilot_main" and "copilot_speech" folders from your ZIP pack to "../<Your Aircraft Name>/plugins/" folder
4. Run X-Plane and load Your Aircraft. Select "Setup" to complete installation. Obj file will be update.
5. Reload X-Plane.

HOW TO USE

You can interact with the CoPilot using voice commands, the drop-down menu, or the on-screen widget. When running a checklist, expected interactive responses are highlighted in yellow and can be clicked.



Voice Control Setup If you prefer voice control, you need to assign a specific joystick button (or a keyboard key) to the custom command: `jd/CommandRec`.



Voice Interaction Pattern:

1. Look towards the CoPilot.
2. Press and hold your assigned Push-to-Talk button.
3. Speak your command (e.g., "Hello!").
4. Release the button.

Discovering Available Commands

Navigate to **Menu → CoPilot → Commands** to view the full list of actions that can be triggered via voice, menu, or the widget.



WIDGET

The On-Screen Widget The widget displays a dynamic shortlist of commands relevant to your current flight phase. However, any valid command can still be executed at any time via voice or the main menu.

- You can show or hide the widget by assigning a custom command to your keyboard or joystick.
- You can reposition the widget on your screen by dragging the "MOVABLE" zone.



COPILOT MENU OVERVIEW

Move your mouse to the top of the X-Plane 12 window to reveal the standard menu bar. Click on your aircraft's name to open the drop-down menu. Here, you will find the **"CoPilot"** and **"CoPilot Audio"** submenus.

"CoPilot" Submenu:

- **Commands:** Displays a list of currently available commands.
- **Options:** Allows you to define how the CoPilot performs their duties. You can choose whether the CoPilot strictly performs only their own FCOM/SOP duties, or if they should also assist with pilot-flying responsibilities.
- **Select Voice:** Choose your preferred CoPilot voice from the TTS voices installed on your operating system.
- **Voice Volume:** Adjust the output volume of the CoPilot's voice.
- **Voice Rate:** Adjust how quickly the CoPilot speaks.
- **Restart Speech Engine:** Restarts the background speech engine. Use this if the voice recognition becomes unresponsive or experiences errors.
- **Widget Font:** Adjust the text size displayed within the on-screen CoPilot widget.
- **Update:** Check your currently installed version and open the download page for the latest updates.
- **Setup / Registration:** (Only visible if the product is not yet activated) Use these options to enter your serial key.

"CoPilot Audio" Submenu:

Here you can configure your audio hardware:

- Select the **Microphone** input you are using for voice commands.
- Select the **Voice Output Device** (speakers/headphones) where you want to hear the CoPilot's responses.

GENERAL USAGE PATTERN

```
PROCEDURES (10)
CHECKLISTS:
  before start checklist
  before start checklist below the line
  after start checklist
  flight control check
  before takeoff checklist
  before takeoff checklist below the line
  after takeoff checklist
  after takeoff checklist below the line
  approach checklist
  approach checklist below the line
  landing checklist
  after landing checklist
  parking checklist
  securing the aircraft checklist
COMMANDS (6)
EXPECTED ANSWERS:
COPILLOT ANNOUNCES:
  Ready for preliminary cockpit preparation procedure!
(MOVABLE)
```

After assigning a key or joystick button to the speech recognition command, you can issue direct orders.

Standard Commands

- Press and hold the button, say "Flaps 2", and release. The CoPilot will set the flaps to position 2.
- In Boeing aircraft, you might say "Flaps 15", and the CoPilot will set them accordingly.
- You can also use commands like "Landing gear down".

Checklists

1. Select a checklist name from the widget.
2. Once initiated, interact with the CoPilot step-by-step to complete the items. The widget's "Expected Answers" section will guide you on what to say or click.

Procedures Procedures can be executed similarly to checklists. You can start a procedure by clicking it in the widget or by stating its name via voice command. *Note: The requested procedure must be logical for your current phase of flight.*

Interaction Feedback

- Expected responses from you are shown in the **"Expected Answers"** section of the widget.
- The CoPilot's spoken dialogue is displayed in the **"CoPilot Announcements"** section.

Free Conversation If configured, the CoPilot supports natural, free-flowing conversation. You can ask casual questions, such as what their plans are for the evening, what their mother's name is, or anything else you'd like to discuss during cruise.

Installing Ollama on Windows for Copilot AI Features

(Advanced Users Only)

CoPilot support two operating modes:

1) Standard Command Mode

- Executes predefined cockpit commands.
- Works without any additional software.

2) Free Conversation Mode (LLM Mode)

- Enables natural free conversation.
- Allows contextual dialogue with the Co-Pilot.
- Requires a locally installed Large Language Model (LLM).

To enable Free Conversation Mode, you must install a local LLM runtime.

The recommended solution is: OLLAMA (Local LLM Runtime)

WHAT IS REQUIRED

To enable free conversation capability, you must:

1. Install Ollama on your computer.
2. Download and install a compatible language model locally.
3. Ensure Ollama is running while using the simulator.

STEP 1 - INSTALL OLLAMA

Download Ollama from the official website:

<https://ollama.com>

Install it following the standard Windows installation procedure.

After installation, verify that Ollama works by opening

Command Prompt and typing:

```
ollama --version
```

If the version number is displayed, installation was successful.

STEP 2 - INSTALL A LANGUAGE MODEL

Visit this page:

<https://huggingface.co/microsoft/Phi-3-mini-4k-instruct-gguf/blob/main/Phi-3-mini-4k-instruct-q4.gguf>

Download file:

Phi-3-mini-4k-instruct-q4.gguf

Open Terminal (right mouse click on white space when you open folder with Phi-3-mini-4k-instruct-q4.gguf in File Explorer

Paste in terminal

```
"FROM ./Phi-3-mini-4k-instruct-q4.gguf" | ollama create phi3-local -f -
```

Enter in terminal:

```
ollama list
```

You should get something like:

| NAME | ID | SIZE | MODIFIED |
|-------------------|--------------|--------|-------------------|
| phi3-local:latest | e44d7785a172 | 2.4 GB | About an hour ago |

Enter in Terminal (to decrease GPU load):

```
setx OLLAMA_NUM_GPU_LAYERS 20
```

Enter in Terminal (to decrease CPU load):

```
setx OLLAMA_NUM_THREADS 4
```

Open file LLM_name.txt in /copilot_speech folder and be sure LLM name is correct there, like:

```
phi3-local
```

In fact you may install another LLM model with the same procedure, include checking LLM_name.txt

You may find models here:

<https://huggingface.co/models>

Installing Ollama on macOS for Copilot AI Features

(Advanced Users Only)

To enable AI-based free speech in Copilot, you need to install and run Ollama locally on your Mac.

1. Download and Install Ollama

Go to the official website: <https://ollama.com>

Click ****Download for macOS****

Open the downloaded `.dmg` file

Drag ****Ollama**** into the ****Applications**** folder

2. Launch Ollama

Open **Applications**

Run **Ollama**

The app will start in the background (menu bar icon)

3. Open Terminal

You will need Terminal to download and run a language model.

* Open **Terminal** (Applications → Utilities → Terminal)

4. Install a Language Model

Run the following command:

```
``bash
ollama pull llama3
``
```

This will download the model to your computer.

(The download size may be several gigabytes.)

5. Test Ollama

After installation, test it with:

```
``bash
ollama run llama3
``
```

Type a simple question, for example:

```
``
hello, what is your name?
``
```

If you receive a response – Ollama is working correctly.

Press `Ctrl + C` to exit.

6. Keep Ollama Running

Copilot connects to Ollama locally at:

```
``
http://127.0.0.1:11434
``
```

Make sure:

- * Ollama is running in the background
- * No firewall is blocking local connections

7. Notes

- * Internet connection is required **only for downloading models**
- * After installation, everything works **fully offline**
- * Performance depends on your Mac (CPU/GPU/RAM)

8. Troubleshooting

No response from Copilot:

- * Make sure Ollama is running
- * Restart Ollama
- * Restart X-Plane

****Model not found:****

```
``bash  
ollama list  
``
```

If the model is missing, run again:

```
``bash  
ollama pull llama3  
``
```

Once Ollama is installed and running, Copilot will automatically enable AI-based free speech.

HOW TO UNINSTALL PLUGIN

In the simulator, navigate to Menu → CoPilot → Uninstall CoPilot.

Reload your aircraft (the CoPilot will immediately stop functioning).

Delete the `copilot_main` and `copilot_speech` folders from your aircraft's `plugins` directory (e.g., `../Your Aircraft Name/plugins/`).

PRODUCT WEBPAGE AND PRODUCT SUPPORT

For updates, downloads, and technical support, please visit: <http://www.jardesign.org>