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puls*AIR* User Manual

Rev 0.2 May 2026

- *Quick Start Guide*
- *Blueprint & dimensions*
- *How it works*
- *Datasheet*

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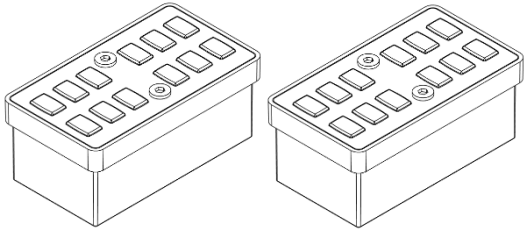
pulsAIR module

Quick Start Guide – Rev. 0.0 April 2026

PACKING LIST

2x pulsAIR module (type-1 and type-2)



2x USB-C to USB-A cable

4x rear brackets

8x phillips bolts M4x8

4x Knurled bolt M3x25

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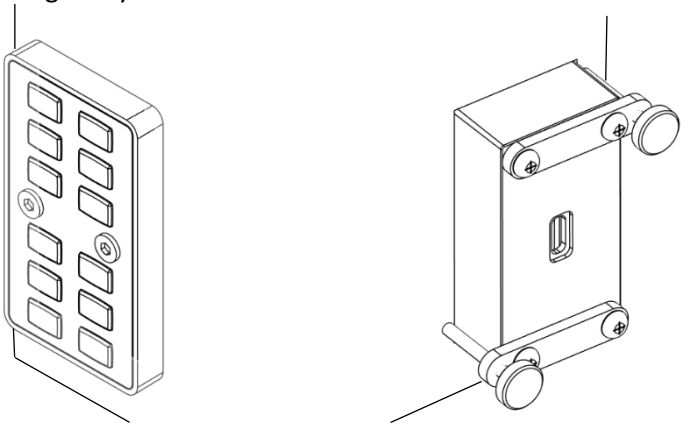
MOUNTING IN A HOME COCKPIT SETUP

FLUSH MOUNTING SYSTEM

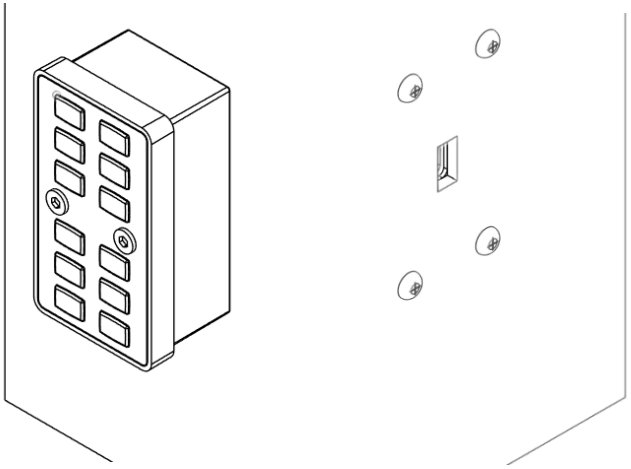
By utilizing the rear mounting bracket, the **pulsAIR** modules can be installed as follows.

Mount the rear brackets with M3x25 knurled bolts diagonally.



SURFACE MOUNTING SYSTEM

By utilizing the rear Phillips bolts, the **pulsAIR** modules can be installed as follows.



USER's MANUAL: To check the complete User manual, see this section of our website:
https://simflightservices.com/docs/manuals/pulsair_manual.pdf

Or scan the QR code:

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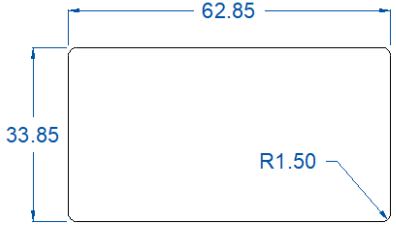
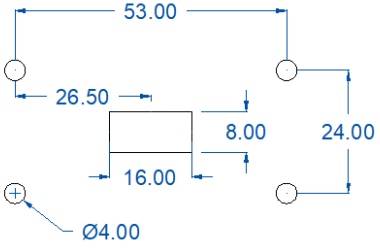
puls*AIR* module Blueprint – full module dimensions are provided at the end of this document

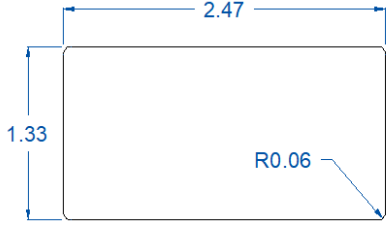
FLUSH MOUNTING SYSTEM (mm)



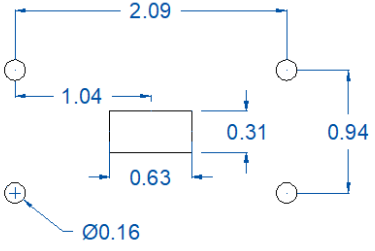
SURFACE MOUNTING SYSTEM (mm)



FLUSH MOUNTING SYSTEM (inch)



SURFACE MOUNTING SYSTEM (inch)



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pulsAIR module

How it works

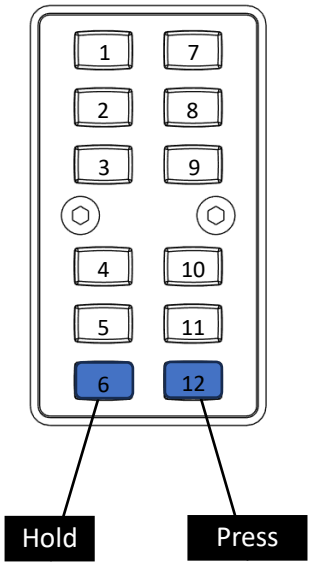
1. BACKLIGHT CONTROL

To adjust the backlight intensity of the **pulsAIR**, perform these actions:

- Press and **hold** button 6.
- **Press** button 12 to cycle through intensity levels.

The backlight cycles sequentially in one direction only:

0: Off → 1: Low → 2: Medium → 3: High → 0: Off → …



2. USB CONNECTIONS

Each **pulsAIR** module is equipped with a **USB-C connector**, allowing for the following connection options:

- **Direct connection** to the computer.
- **Connection via a USB hub**, whether **powered** or **non-powered**.

The pulsAIR modules will be recognized by the computer as HID devices.

The pulsAIR backlight system is highly efficient with very low power consumption. Modules can be connected directly to the computer without requiring a powered USB hub, although its use is still recommended.

Backlight current consumption (per module):

- **Level 0**: ~35 mA *(backlight off)*
- **Level 1**: ~50 mA
- **Level 2**: ~75 mA
- **Level 3**: ~105 mA

USB POWER LIMITATIONS ON COMPUTERS (reference)

- ***USB 2.0:*** *Up to 500 mA*
- ***USB 3.0 and later:*** *Up to 900 mA (or more with specific power delivery features)*
- ***USB-C:*** *Up to 3000 mA*

*At intensity level 2, the consumption is approximately **~75 mA per module**. With two modules, the total is **~150 mA**. This level provides clear visibility in the dark while ensuring USB ports are not overloaded.*

3. INTRODUCTION

pulsAIR is recognized as a standard HID device — similar to a joystick — and works immediately with compatible software. It consists of two modules, each with 24 buttons: B1–B12 triggered by **short press**, B13–B24 by **long press** (Type 1) or B26–B37 by **long press** (Type 2).

Each key has two functions (see chapters 4 & 6):

- **short press** for the **basic function** (as printed on the key)

- **long press** for the **secondary function**

TYPE-1 – Autopilot Module

Consistent across all aircraft types.

TYPE-2 – Display Module

Display keys — the 6 upper keys (enclosed within the white frame on the panel) adapt to three avionics configurations:

- For X-Plane and MSFS **G1000** users:
  — **MFD →** G1000 Multi-Function Display (default) – MFD key lights up.
  — **PFD →** G1000 Primary Flight Display – PFD key lights up.

- For X-Plane **GNS** users:
  — **PFD + MFD simultaneously →** GNS-530 mode. PFD & MFD keys light up.

- For MSFS **GNS** users:
  — **PFD →** GNS-530 – PFD key lights up.
  — **MFD →** GNS-430 – MFD key lights up.

Lower keys also adapt to GNS-530 or GNS-430 accordingly.

Plug & fly users:
- For MSFS go to section 6.2 (rotAIRmonitor — recommended).
- For X-Plane, go to section 6.1.

SPAD.neXt users: see section 6.3.

Advanced users seeking full custom control: see the HID button mapping reference in section 6.4.

4. BASIC & SECONDARY FUNCTIONALITIES:

pulsAIR modules feature standard push-button functions, along with additional hidden capabilities for enhanced control.

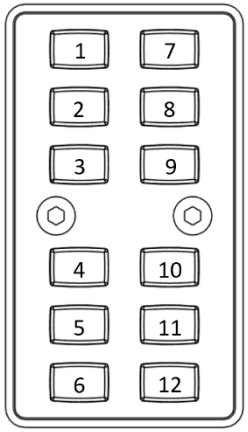
- **Basic** functions **(short press):** indicated by the legend printed on each key.

- **Secondary** functions **(long press):** activated by pressing and holding a key for more than 1.5 seconds. Not printed on the device. By default, these are pre-assigned to the 12 G1000 softkeys:

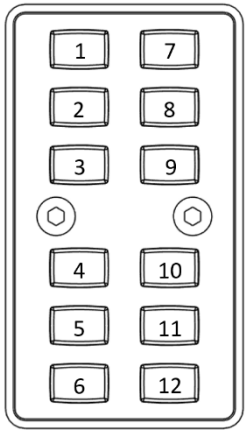
    - PFD softkeys on TYPE-1,
    - MFD softkeys on TYPE-2

This is for **G1000** and **G3000**

Type-1 for PFD



Type-2 for MFD



5. SETTING UP functions for Glass & Analogue cockpits:

pulsAIR is a HID (Human Interface Device), meaning that users can customize the button mappings to their preference within their chosen flight simulation software. However, at **SimFlight Services**, we have carefully prepared a default mapping that corresponds to the legends printed on each key.

The following examples provide a clear visual reference of all functions assigned to the **pulsAIR** in both **Glass Cockpit** and **Analogue Cockpit** configurations.

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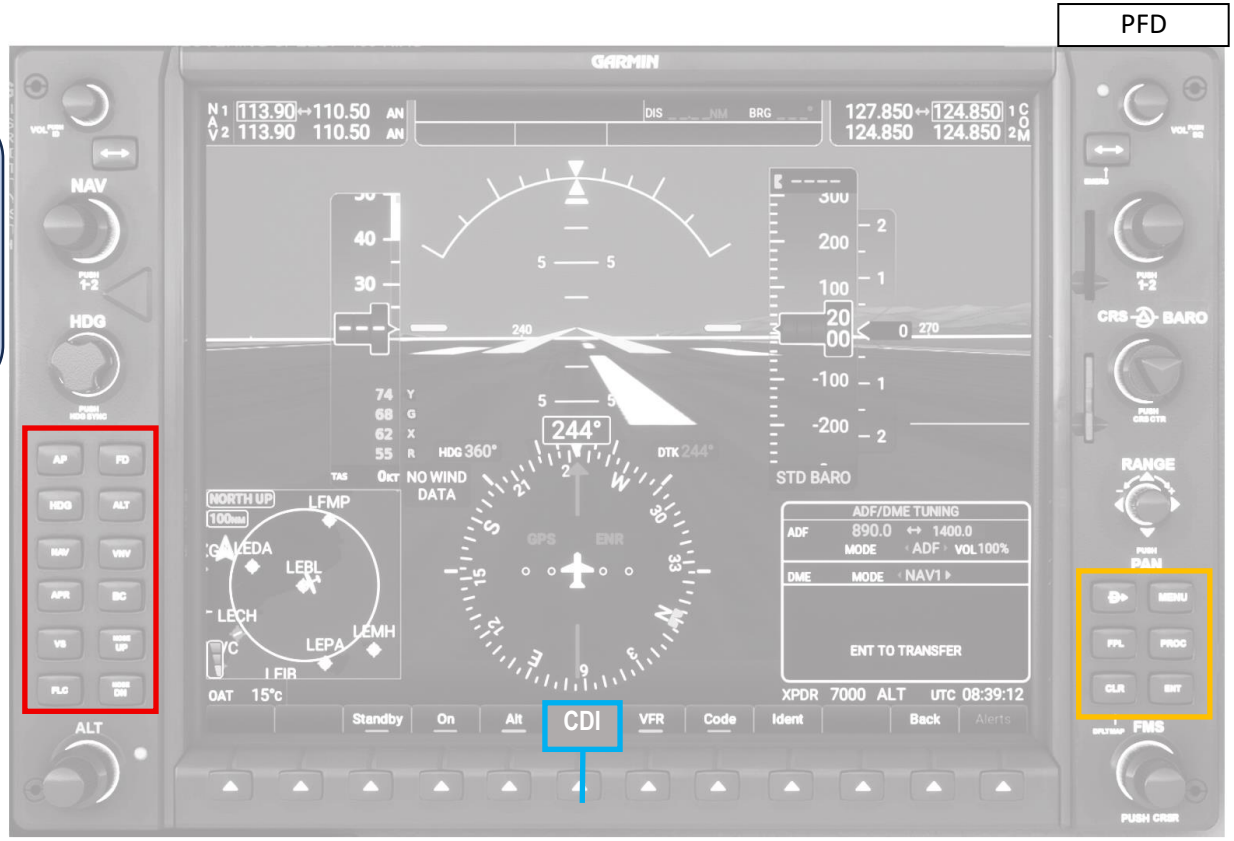
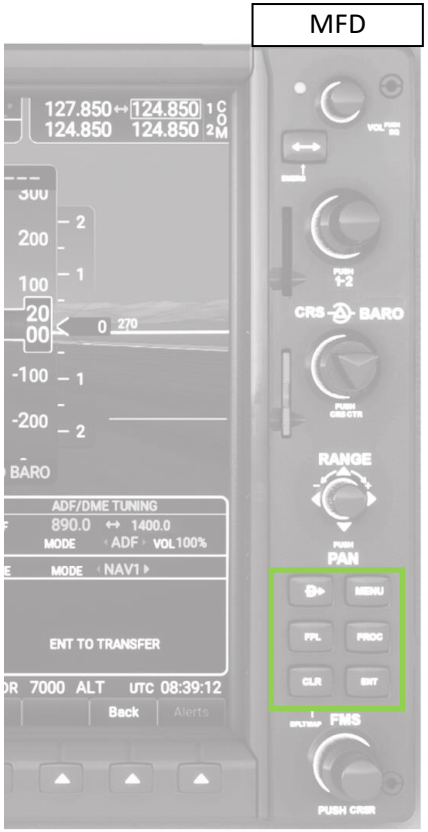
Example: G1000 cockpit

For both: X-Plane & MSFS users





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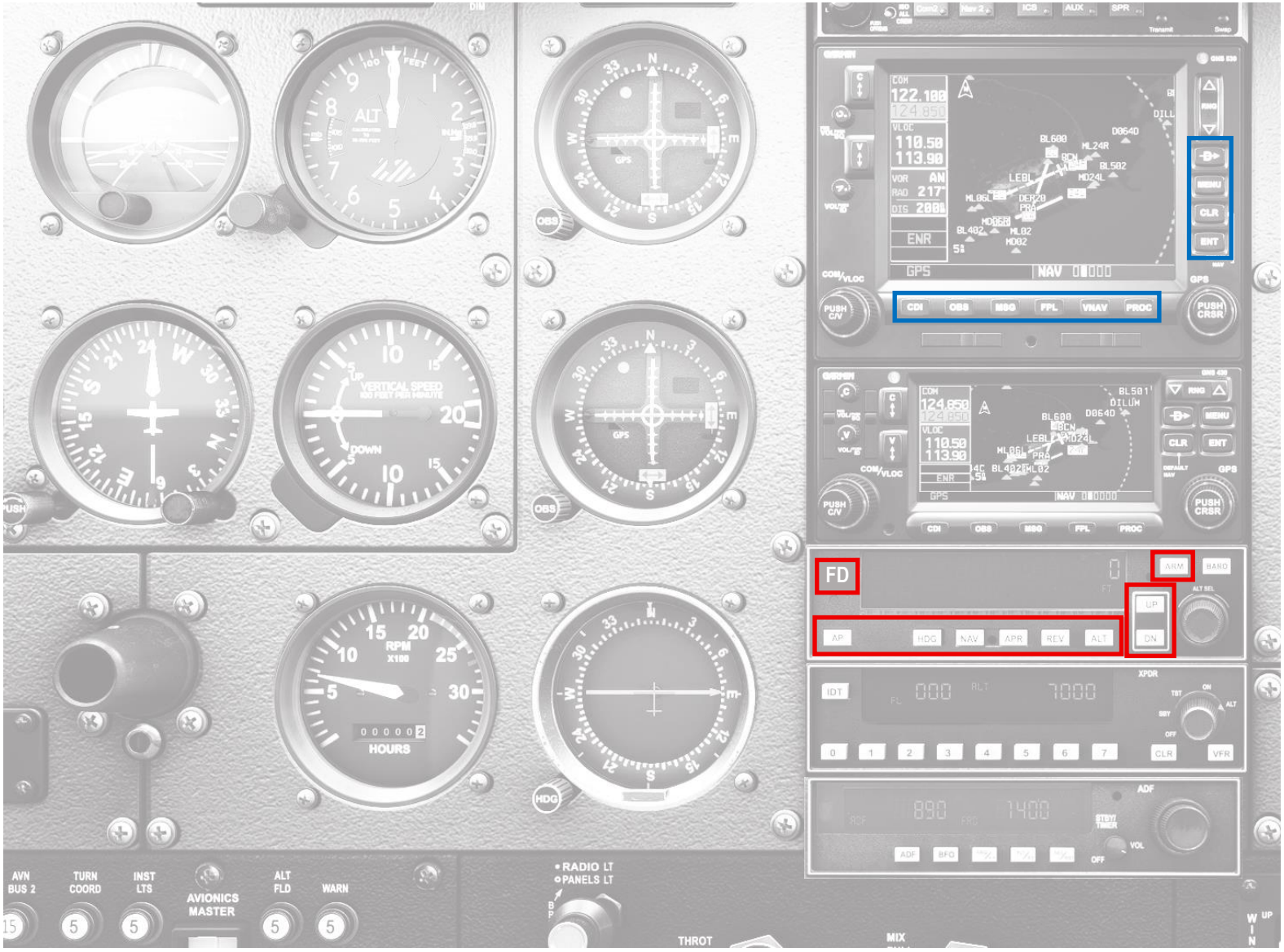
Example: Analogue cockpit with GNS-530

Only for X-Plane users!

Using Native Joystick Settings

with .joy files.



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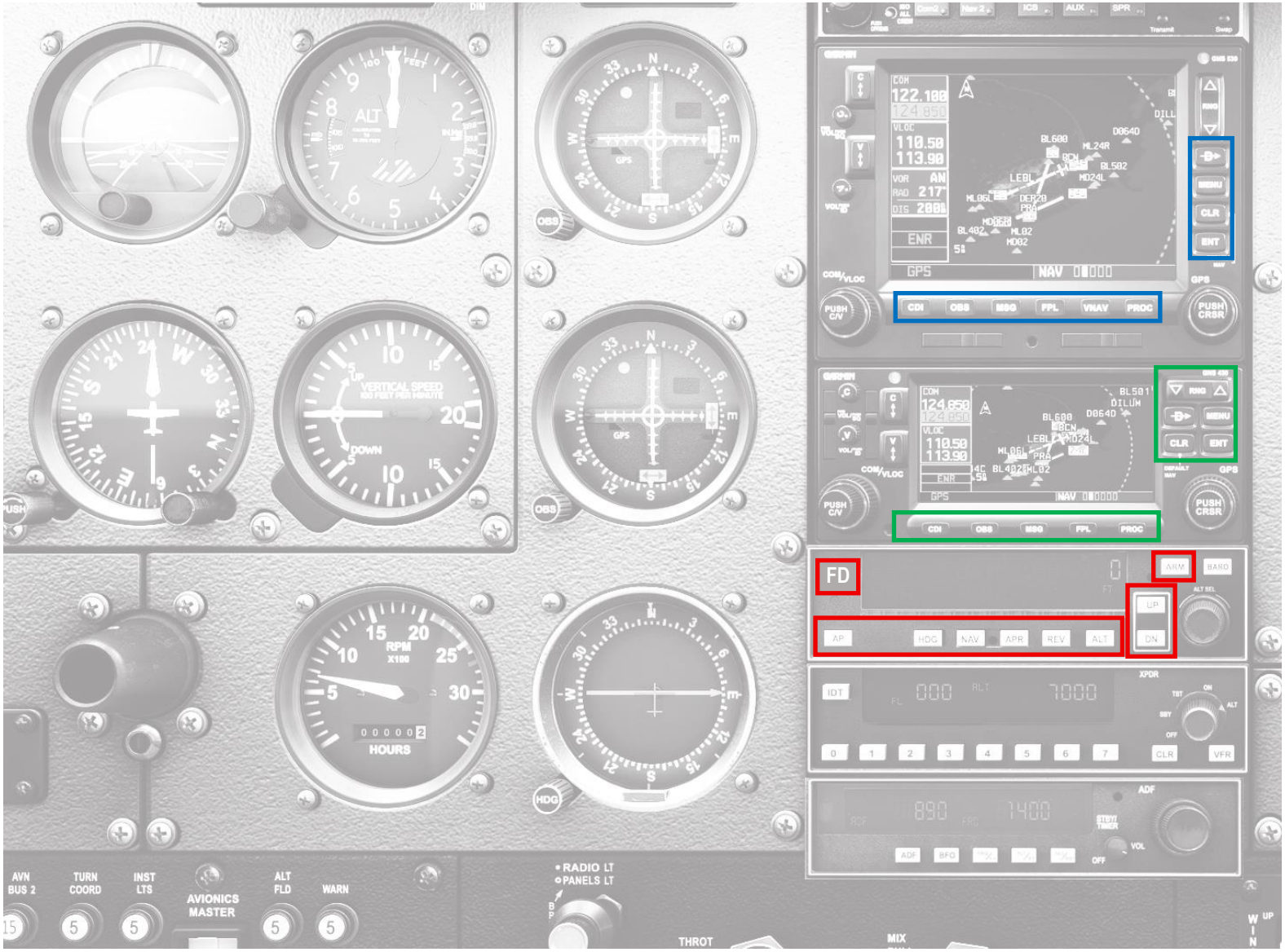
Example: Analogue cockpit with GNS-530

Only for MSFS users!

Using **rotAIRmonitor**

or

SpadNext with 1L2P snippets



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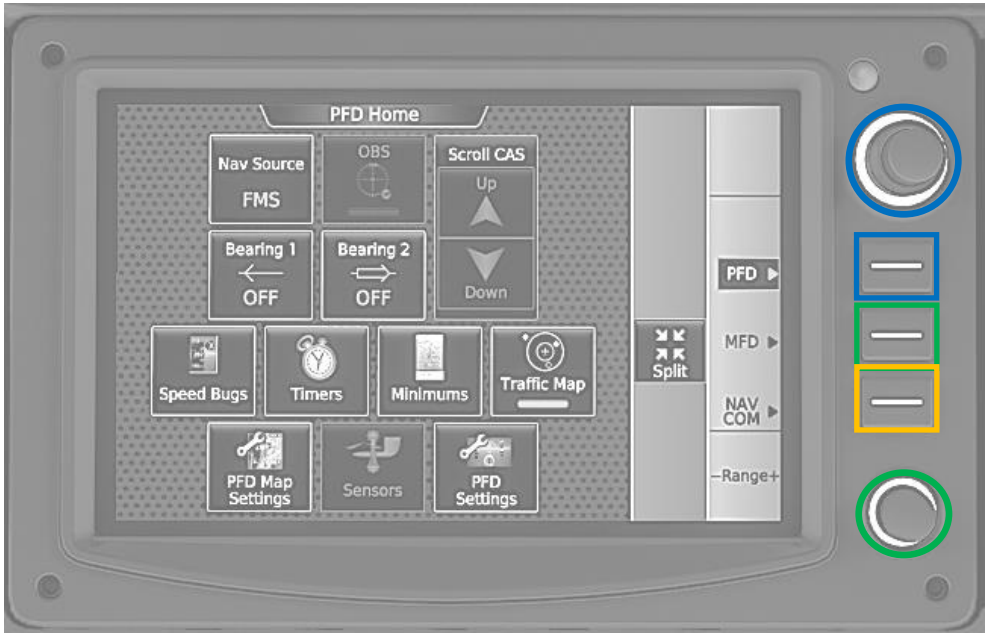
Example: G3000 cockpit

Only for MSFS users!
Using **rotAIRmonitor**
or
SpadNext with 1L2P snippets
(on **SpadNext,** button assignments may vary - explore your profile)

Module 1
controls all AP functions of the G3000



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Example: G3X cockpit

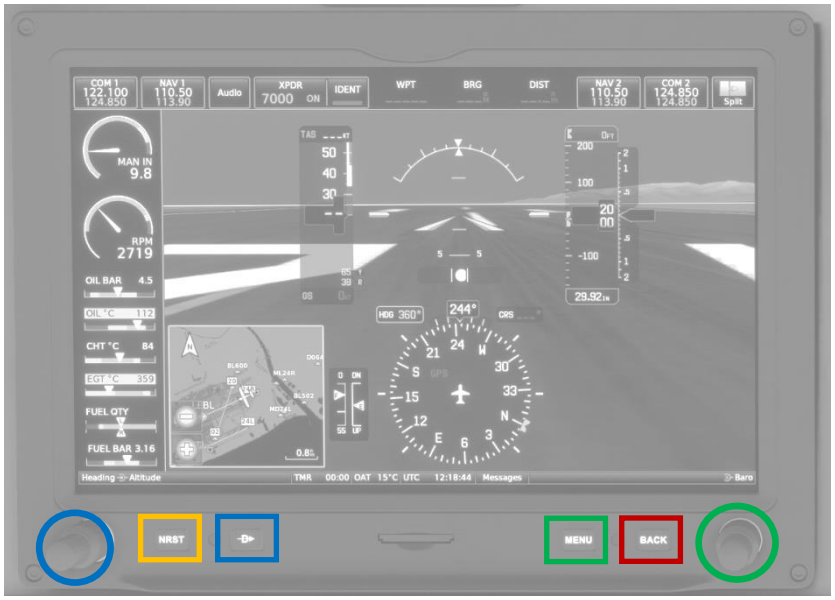
Only for MSFS users!

Using **rotAIRmonitor**

or

SpadNext with 1L2P snippets

(on **SpadNext,** button assignments may vary - explore your profile)



Module 1

controls all AP functions of the G3000

6. INTERFACING WITH FLIGHT SIMULATOR PLATFORMS (MSFS, X-plane)

For MSFS users: *We recommend* ***rotAIRmonitor*** *as the simplest and most automatic configuration method.*

For X-Plane users: *Native configuration via the Joystick Settings menu requires no additional software.*

pulsAIR *is a standard HID device — similar to a joystick with buttons — and is also fully compatible with third-party input management tools such as:*

- SPAD.neXt
- FSUIPC
- Air Manager
- MobiFlight
- Axis & Ohs

6.1 For X-Plane (native configuration)

Download the **pulsAIR_SFS_XPlane_joy** package from the **pulsAIR\DOWNLOADS** section on our website. This package includes:
— SimFlight Services pulsAIR type-1.joy
— SimFlight Services pulsAIR type-2.joy
— SimFlight Services pulsAIR type-1.png
— SimFlight Services pulsAIR type-2.png
Note: Native automatic recognition of pulsAIR by X-Plane 12 is expected in a June 2026 update, developed by the X-Plane team. Once available, the .joy files will no longer be required for X-Plane 12 users, but will remain available for X-Plane 11.

Installation steps:

— Close X-Plane before proceeding.
— Copy the downloaded files to the Xplane xx\Resources\joystick configs folder.
— Restart X-Plane and go to the **Joystick Configuration** menu.
Both modules will appear as TYPE-1 and TYPE-2 with all controls preassigned.

6.2 For MSFS 2020 & MSFS 2024 (using rotAIRmonitor — recommended)

rotAIRmonitor automatically detects all connected pulsAIR and rotAIR units and loads all default functions without requiring any configuration inside the simulator.

The software and its user manual can be downloaded from:
https://simflightservices.com/shop/air-modules/rotairmonitor/

6.3 For MSFS (using SPAD.neXt)

SPAD.neXt Snippets by **1L2P** (recommended)
Two snippets are available, covering all button mappings automatically across multiple avionics systems (G1000, G3000, GNS530/430, GTN750/650, etc.):

SFS pulsAIR TYPE-1 → Snippet ID: #16631
SFS pulsAIR TYPE-2 → Snippet ID: #16632

In SPAD.neXt, go to Controls → select your pulsAIR module → click Online Snippets → search for pulsAIR or the snippet ID → ensure "Only for current aircraft" is unchecked → apply. Repeat for the second module.

6.4 HID button mapping reference (advanced users)

Each module operates as a standard HID joystick. The table below shows the complete button mapping for both TYPE-1 and TYPE-2.

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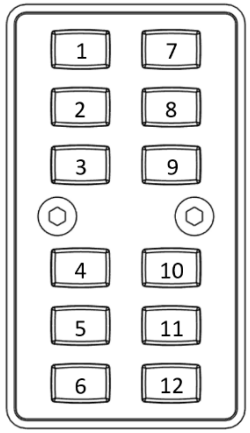
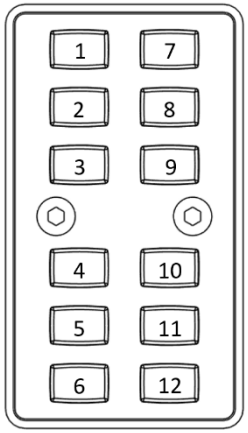


pulsAIR JOYSTICK MAP — TYPE-1 (Autopilot module)		
KEY	SHORT PRESS	LONG PRESS
1	B1	B13
2	B2	B14
3	B3	B15
4	B4	B16
5	B5	B17
6	B6	B18
7	B7	B19
8	B8	B20
9	B9	B21
10	B10	B22
11	B11	B23
12	B12	B24



pulsAIR JOYSTICK MAP — TYPE-2 (Display module)				
KEY	SHORT PRESS (varies by active display)			LONG PRESS
	MFD mode (press MFD)	PFD mode (press PFD)	GNS-530 mode (press PFD+MFD)	
1	B1	B13	B19	B26
2	B2	B14	B20	B27
3	B3	B15	B21	B28
4	B4	B4	B4	B29
5	B5	B5	B25	B30
6	B6	B6	B6	B31
7	B7	B16	B22	B32
8	B8	B17	B23	B33
9	B9	B18	B24	B34
10	B10	B10	B10	B35
11	B11	B11	B11	B36
12	B12	B12	B12	B37

7. COMMON ISSUES AND SOLUTIONS

1. The pulsAIR module is not recognized by the computer

- Ensure the total power consumption does not exceed the USB port's capacity, especially when rotAIR and pulsAIR backlight are enabled.
- Refer to Chapter 2: section **USB POWER LIMITATIONS.**

2. The backlight does not work or is too dim

- Refer to Chapter 1: BACKLIGHT CONTROL.

3. GNS-530 mode is not working on TYPE-2

- Make sure you are pressing **PFD and MFD simultaneously** until both keys light up. Only when both keys are lit is GNS-530 mode active.

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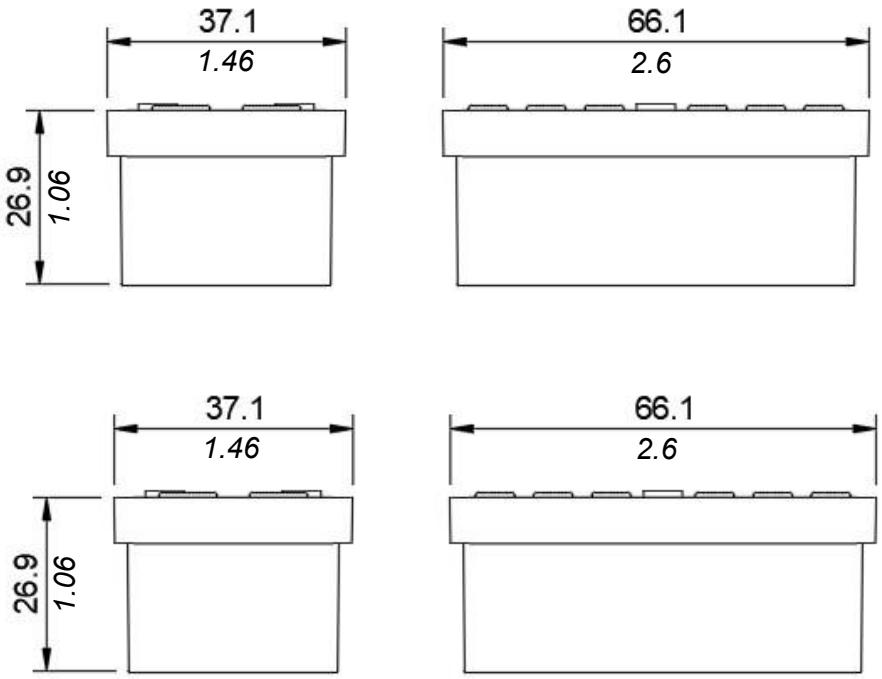
PulsAIRmodule

Datasheet & Dimensions

DIMENSIONS (mm - *inch*)



Datasheet

Power Supply	5V via USB-C
Current Consumption (per module)	Level 0: ~35 mA (backlight off) Level 1: ~50 mA Level 2: ~75 mA Level 3: ~105 mA
USB Compatibility	USB 2.0 / 3.0 / USB-C
Communication Protocol	HID (Human Interface Device)
Software Compatibility	MSFS, X-Plane, Prepar3D
Third-party Integration	rotAIRmonitor, SPAD.neXt, FSUIPC, Air Manager, MobiFlight, Axis & Ohs
Mounting Options	Flush Mount / Surface Mount Side mounting on display edges
Build Material	Housing & Front Panel: Polycarbonate (PC) Keypad: silicone rubber keys