# DA62 Oxygen Pressure Gauge with Raspberry Pi Pico and 1.28-inch LCD Screen
## (Implemented as a Mobiflight Community Board)



**Hardware:**

- Raspberry Pi Pico
  - o https://tinyurl.com/2h8rs7u3
  - o https://tinyurl.com/4s2kzhkw
- 1.28 in round LCD (GC9A01)
  - o https://tinyurl.com/cvtb823y
  - o https://tinyurl.com/3nby3jny
  - o Note: If you want to use the simple case I designed, get the one with the specific form factor below.
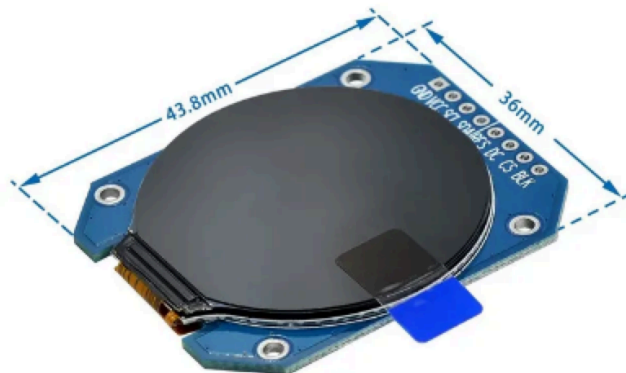
- USB connectors, wires, etc.

- Raspberry PI Pico and LCD Screen PIN connections. Connect your Raspberry Pi Pico and the LCD screen according to the pins below:

| LCD Screen PIN | Raspberry Pi Pico PIN |
|---|---|
| GND | GND |
| VCC | 3V3 |
| SCL | 18 |
| SDA | 19 |
| RES | 21 |
| DC | 20 |
| CS | 17 |
| BLK | 16 |

**Software:**
- Mobiflight
  - https://www.mobiflight.com/en/index.html
  - Official documentation on how to add Mobiflight Community Boards:
    - https://github.com/Mobiflight/MobiFlight-Connector/wiki/User-guide-%E2%80%90-Community-Board-and-Custom-Devices

**Instructions**
1. Download the DA62 Project Oxygen Gauge Mobiflight Community Template Project as a Zip file from Github.
   - https://github.com/savesabanal01/CommunityTemplate

2. Unzip the project in your local folder. The DA62 Oxygen Gauge Mobiflight Community is in the folder "dist." It is a file called "DA62_Oxygen_Gauge_2.5.1.zip"
3. Install the DA62 Oxygen Gauge Mobiflight Community Board.
   - The official documentation to install a Mobiflight Community Board can be found here: https://github.com/Mobiflight/MobiFlight-Connector/wiki/User-guide-%E2%80%90-Community-Board-and-Custom-Devices
   - Detailed Steps:
     i. Open you Windows Explorer, using Win+E
     ii. In the file path window, paste %LocalAppData%\MobiFlight\MobiFlight Connector\Community
     iii. Unzip the "DA62_Oxygen_Gauge_2.5.1.zip"
     iv. Restart MobiFlight Connector

4. Upload the DA62 Oxygen Gauge Mobiflight Community Board
   - Start the Mobiflight Connector

- o Connect the Raspberry Pi Pico to your computer
- o Ignore any firmware update notification by MobiFlight
- o Select the "Raspberry Pi Pico" from the list of boards
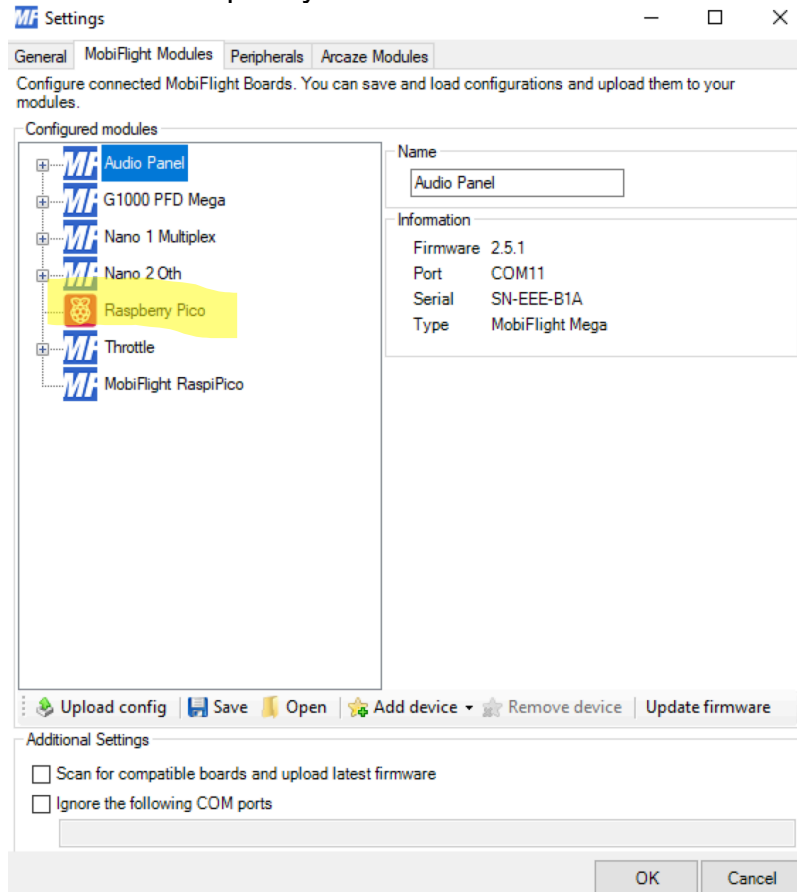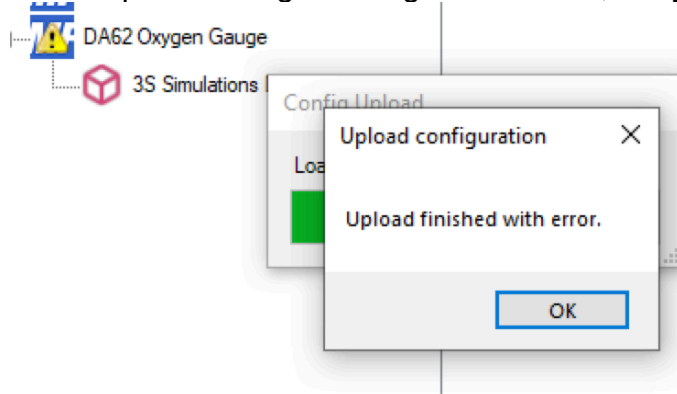


- o **Optional step:** In case the board currently has official MobiFlight firmware installed, "Reset Board" first.
- o Right-click on the board again, now you will have additional options available. Choose to update the firmware with "Community" -> "DA62 Oxygen Gauge RaspiPico"
- o Confirm the update firmware dialog

5. Adding Custom Devices
   - o Right click on the "DA62 Oxygen Gauge" Community Board
   - o Choose "Add device" -> "Custom Devices" -> 3S Simulations DA62 Oxygen Gauge"

## Settings (Top Window)

**Tabs:** General | MobiFlight Modules | Peripherals | Arcaze Modules

Configure connected MobiFlight Boards. You can save and load configurations and upload them to your modules.

**Configured modules**

- Audio Panel
- G1000 PFD Mega
- Nano 1 Multiplex
- Nano 2 Oth
- Throttle
- DA62 ...

**Name**
DA62 Oxygen Gauge

**Information**

| | |
|---|---|
| Firmware | 2.5.1 |
| Port | COM18 |
| Serial | SN-E46320165B5A2E26 |
| Type | DA62 Oxygen Gauge RaspiPico |

**Context menu:**
- Add device ▶
  - LED / Output
  - LED 7-Segment
  - Servo
  - Stepper
  - LCD Display
  - Shift Register
  - Button
  - Encoder
  - Analog Input
  - Input Shift Register
  - Digital Input Multiplexer
  - Custom Devices ▶
    - 3S Simulations DA62 Oxygen Gauge
- Remove device
- Upload Config
- Open
- Save As...
- Update Firmware
- Regenerate Serial
- Reload Config
- Reset Board
- Ignore COM port

**Toolbar:** Upload config | Save | Open | Add de... | Add de...

**Columns (right panel):** Flight Sim Value | Output Value | Edit

**Additional Settings**
- ☐ Scan for compatible boards and upload latest firmware
- ☐ Ignore the following COM ports

TR=>True).

[ OK ] [ Cancel ]

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## Settings (Bottom Window)

**Tabs:** General | MobiFlight Modules | Peripherals | Arcaze Modules

Configure connected MobiFlight Boards. You can save and load configurations and upload them to your modules.

**Configured modules**

- Audio Panel
- G1000 PFD Mega
- Nano 1 Multiplex
- Nano 2 Oth
- Throttle
- ⚠ DA62 Oxygen Gauge
  - ⬡ 3S Simulations DA62 Oxygen Gaug

**Pin settings**

**Name**
3S Simulations DA62 Oxygen G

**Toolbar:** Upload config | Save | Open | Add device ▾ | Remove device | Update firmware

**Additional Settings**
- ☐ Scan for compatible boards and upload latest firmware
- ☐ Ignore the following COM ports

[ OK ] [ Cancel ]

- o Click "Upload config". It will give and error, but you can ignore it.



- o Click "Ok" in the "Settings" menu to close it. It will give a warning but you can ignore this also.
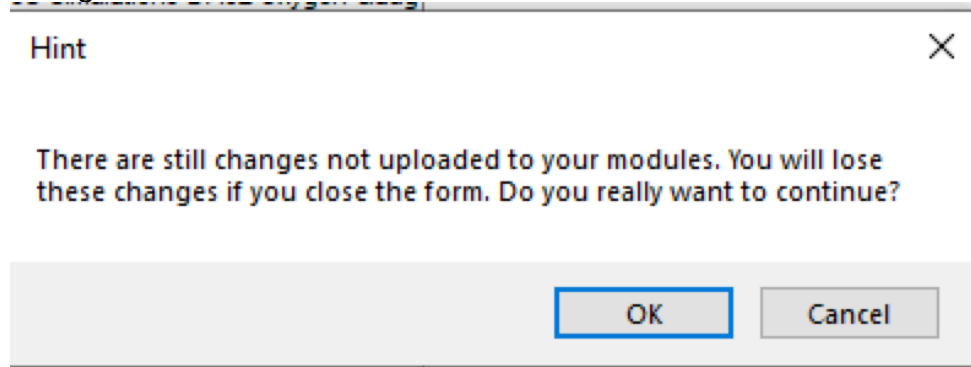


6. Using the DA62 Oxygen Gauge Custom Device
   - o Create a new Output Config. Please see the examples below:

- Click on the Edit-Button (...) to open the `Output Config Wizard`
- In the `Output Config Wizard`, click on `Display` tab
- Select "DA62 Oxygen Gauge…." from the list of "Module"
- Select "CustomDevice" from "Use Type of"
- Under the "Display Settings", choose "3S Simulations DA62 Oxygen Gauge"
- Under "Message Type", choose the following:
  - For the Oxygen Gauge PSI value, choose "Oxygen Gauge PSI Value"
    - ***Important Note:*** *The Oxygen PSI Value needs to be the actual value. Please do a transformation if your simulator does not return the actual value.*
  - For the brightness settings, choose "Instrument Brightness"
    - ***Important Note:*** *The "Instrument Brightness" value needs to be ration between 0 and 1. Please do a transformation if your simulator does not return the brightness ratio between 0 and 1.*
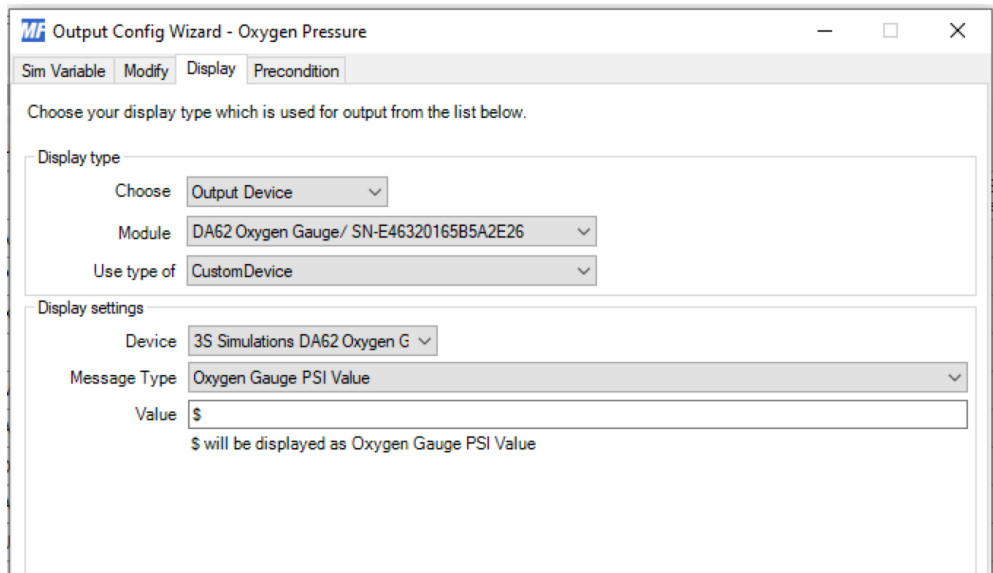


- For X-Plane (tested with X-Plane 11) the following Datarefs can be used:
  - For Oxygen PSI Value:
    sim/cockpit2/oxygen/indicators/o2_bottle_pressure_psi
  - For Instrument Brightness:
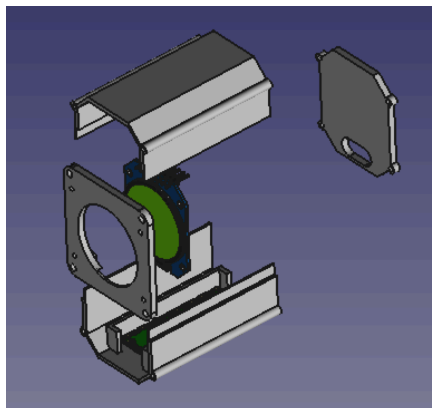    sim/cockpit2/electrical/instrument_brightness_ratio_manual[1]
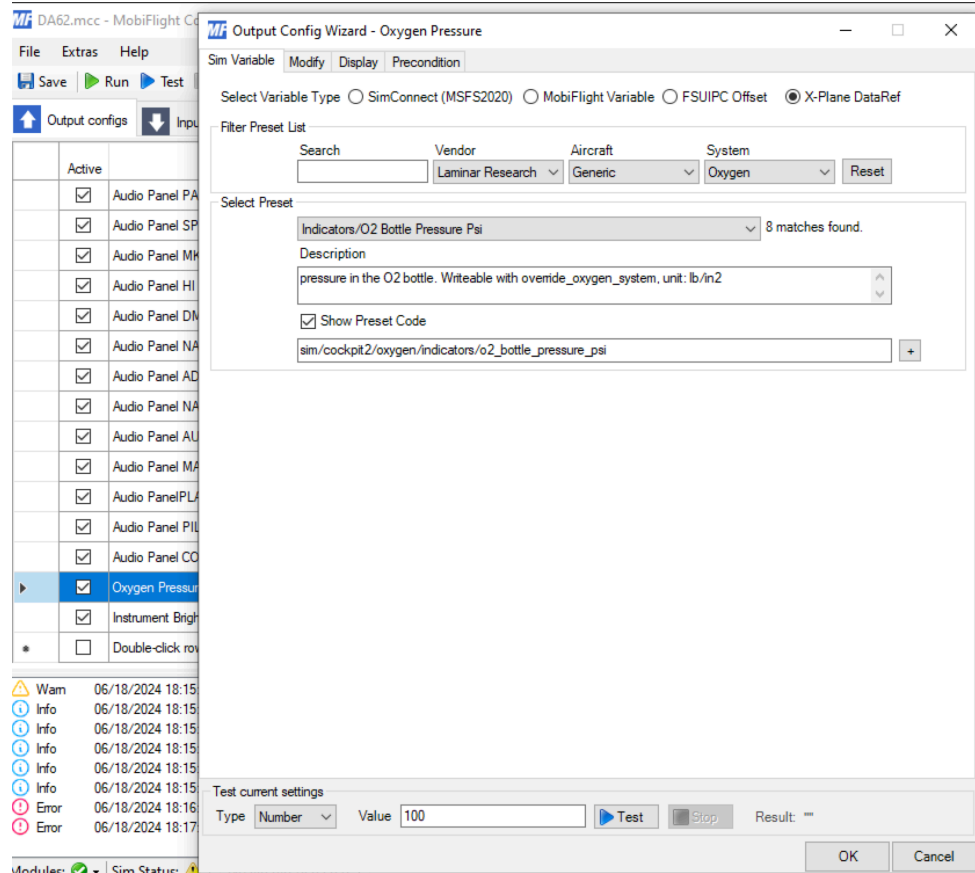
- o This is not tested with MSFS2020 since I don't have it, but you can try with MSFS2020 variables such as "Oxygen Pressure PSI" and "LIGHT BACKLIGHT INTENSITY"

**Optional:**
If you want to print the simple casing I designed, the STLs for 3D printing it are located in the "Casing Design" folder.

**Casing Assembly**:

**And most important of all:**

- Have fun!!
- Mobiflight Rocks!!