



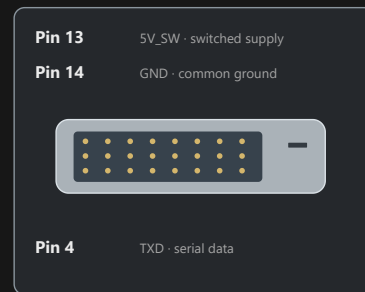
Complete wiring diagram

Trimix Analyser Adapter with Bluetooth Label Printing

www.trimixanalyser.com

DVI plug: selected terminals

Enlarged by function · positions simplified



Find the real solder tails with the numbered plug views.

Direct data wire for a confirmed 3.3 V TXD source.

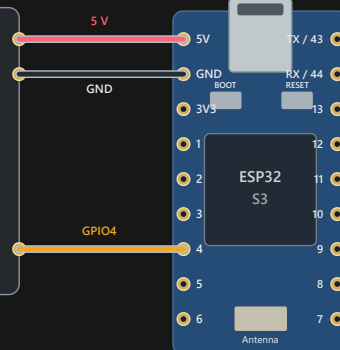
GPIO4 receives data. Leave GPIO5, the TX/RX-labelled pads and DVI pin 12 unused.

Normal use: analyser connected · USB unplugged

Before any USB install or update: unplug the adapter from the analyser.

ESP32-S3-Zero compatible

Component side · USB at the top



Optional connections

Momentary print button

GPIO7 → button → GND

For a fixed installation, if useful.

Normally: Divesoft OK = pause/print.

DS3231 clock

Older analyser without clock/date only.

VCC	→	3V3
GND	→	GND
SDA	→	GPIO1
SCL	→	GPIO2

Keeps the date for offline labels.

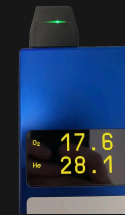
Address 0x68 · set the date.

Most analysers need neither part.

Use analyser time if available.

Use the manual close-ups for actual board and connector views.

Build guide and firmware



trimixanalyser.com

1. Disconnect the analyser.
2. Open /install in desktop Chrome or Edge.
3. Connect USB and select Trimix adapter · Full install.



Scan for firmware

No coding needed.

The full drawing is your quick reference. Enlarge it to read the pin labels. [Full-size diagram online](#)

Most analysers need only three wires

Use the Divesoft keypad's **OK key** to pause and print. A separate button is optional, for example in a fixed installation. The optional DS3231 clock is only for older analysers without date/time when dated labels are needed offline; skip it if your analyser supplies a valid date.

BUILD IT, ONE CONNECTION AT A TIME

Trimix Analyser Adapter with Bluetooth Label Printing

Step-by-step assembly manual



For most analysers, build only the three-wire adapter. Use the Divesoft keypad's OK key to pause and print. The separate button is useful for a fixed installation; the clock is only for older analysers without date/time when you need dated labels offline.

[Firmware installer](#) [Download PDF](#)

- | | |
|--|---|
| 01 Lay out the parts | 02 Identify the DVI solder terminals |
| 03 Wire data and ground | 04 Wire the analyser power supply |
| 05 Add a momentary button if needed OPTIONAL | 06 Add a clock for an older analyser OPTIONAL |
| 07 Inspect and install the firmware | 08 Connect the analyser and enable data |
| 09 Set up the printer and date | 10 Check readings and print a first label |
| 11 Fit the case and keep it ready | Three-wire build photos |

For the Divesoft He/O2 analyser with the rear DVI-style connector and a matching ESP32-S3-Zero-compatible board. This is not the SOLO USB-C model. Disconnect the adapter completely from the analyser before connecting USB.



STEP 1 OF 11

01 Lay out the parts

Most analysers need only this three-wire build. It receives readings and takes power from the analyser; the clock and separate button are not needed for normal use.

1. Use a **Divesoft He/O2 analyser with the rear DVI-style connector**. This adapter does not use the SOLO USB-C connection.
2. Lay out one **ESP32-S3-Zero-compatible board**, a matching male DVI plug with solder terminals, short insulated wires, heat-shrink, and the printed housing. Use the board and connector specified in the [parts list](#); buy the board without fitted headers.
3. Print the [housing set](#). Dry-fit the plug and board with the two specified **M2.5 × 6 mm flat-head screws**. Confirm the USB port and buttons remain accessible.
4. Prepare a soldering iron, cutters, multimeter and USB data cable. For normal printing, use the **OK key on the Divesoft keypad** to pause measurement. A separate momentary button is only an optional extra, for example for a fixed installation.
5. Skip the DS3231 clock if your analyser supplies a valid date and time. It is only useful for **older analysers without a clock/date** when you want dated labels without internet access. Network time is another option when internet Wi-Fi is available.

What the adapter does

The ESP32 receives the analyser's digital readings and sends a label to the Bluetooth printer. The Divesoft still measures and calibrates the gas. This adapter does not need an oxygen cell, ADS1115 or the Nitrox analyser's resistor network.

Check before continuing

The parts fit the housing. Keep the adapter disconnected from both the analyser and USB while soldering.

STEP 2 OF 11

02 Identify the DVI solder terminals

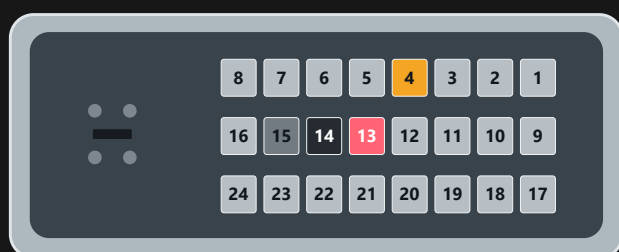
The plug looks different from the pin side and solder side. Find the terminal numbers before attaching any wires.

BEFORE YOU CONNECT

Use only the numbered contacts in this guide. In particular, **pins 16 and 24 are 9 V supplies**, not alternatives to pin 13. Leave pin 12 (RXD) and all other unused contacts unconnected.

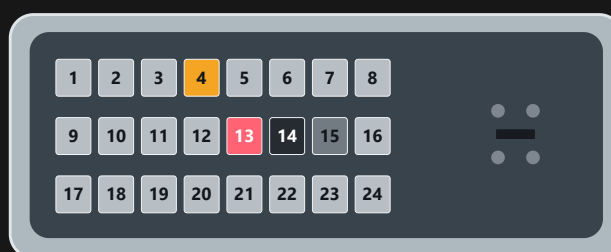
Mating face

Pins point towards you



Solder side

Pins point away from you



Pin 4 = TXD

Pin 13 = 5V_SW

Pin 14 = GND

Same edge uppermost · turn left-to-right to change views

Check contact numbers and continuity to each solder tail before wiring.

The unused blade/extra contacts are shown only for orientation.

Male plug views, same edge uppermost. Turning the plug left-to-right mirrors the pin positions. Check moulded numbers and continuity. [Full-size diagram online](#)

Connections in this step

CONNECT FROM	CONNECT TO
Pin 4: TXD	Data to ESP32 GPIO4
Pin 13: 5V_SW	Switched power to ESP32 5V
Pin 14: GND	Ground to ESP32 GND

1. Use the drawing's **solder-side view** when looking at the back of the male plug, with the mating pins pointing away from you. Keep the same edge at the top when turning the plug around.
2. Confirm each solder terminal against its numbered mating contact with the multimeter. Connector bodies and solder tails vary, so the tail's apparent position alone is not enough. Pin 15 is another GND option; this guide consistently uses **pin 14**.

Check before continuing

You have positively identified pins 4, 13 and 14, including their solder terminals, with no power connected.



STEP 3 OF 11

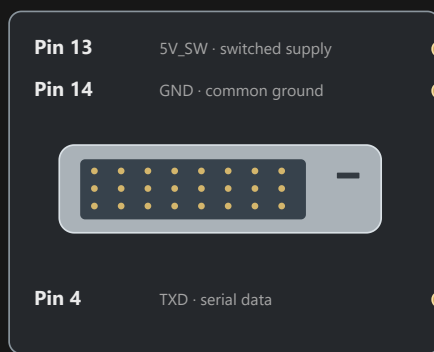
03 Wire data and ground

The data wire carries readings to GPIO4. The ground wire gives the analyser and adapter a common reference.

DVI plug: use the **solder-side view** to identify terminals. [View numbered connector faces 1](#)

DVI plug: selected terminals

Enlarged by function · positions simplified



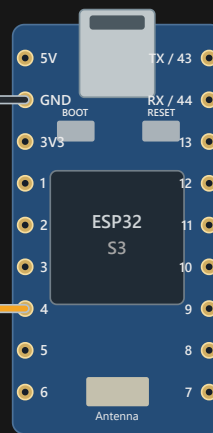
Find the real solder tails with the numbered plug views.

Direct data wire for a confirmed 3.3 V TXD source.

GPIO4 receives data. Leave GPIO5, the TX/RX-labelled pads and DVI pin 12 unused.

ESP32-S3-Zero compatible

Component side · USB at the top



The DVI terminals are enlarged and rearranged for clarity. Use the numbered connector views to find the actual solder tails. [Full-size diagram online](#)

Connections in this step

CONNECT FROM	CONNECT TO
DVI pin 4 (TXD)	ESP32 GPIO4
DVI pin 14 (GND)	ESP32 GND

1. Solder a short data wire from pin 4 to the pad marked **4** on the ESP32. Use GPIO4, not the pad marked RX: the board's RX label refers to a different pin.
2. Solder the ground wire from pin 14 to ESP32 GND. Keep both wires short, with a little slack for fitting the case. Inspect and insulate the joints.

Direct 3.3 V data connection

This build uses a confirmed 3.3 V TXD signal and no series resistor. A lone series resistor is not a voltage converter. If using another analyser or output revision, confirm that its data level is compatible with the ESP32 before connecting it.

Check before continuing

Pin 4 goes to GPIO4, pin 14 goes to GND, and the wires do not bridge adjacent contacts. The serial settings are handled by the firmware: 115200 baud, 8N1.

STEP 4 OF 11

04 Wire the analyser power supply

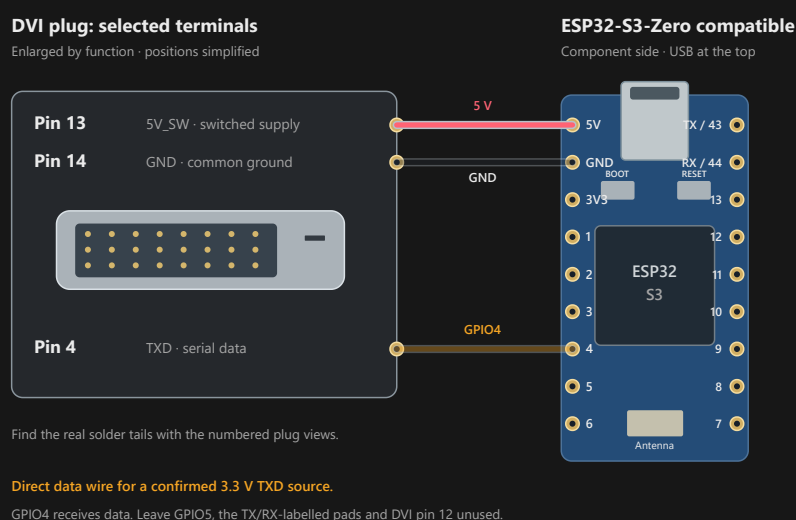
Pin 13 supplies switched 5 V, so the adapter starts and stops with the analyser.

BEFORE YOU CONNECT

Keep the power sources separate

Normal use: analyser connected, USB unplugged. USB installation or updates: adapter completely disconnected from the analyser. Turning the analyser off alone is not a substitute for disconnecting it.

DVI plug: use the **solder-side view** to identify terminals. [View numbered connector faces 1](#)



Three-wire analyser-powered build. USB must be unplugged whenever the adapter is connected to the analyser. [Full-size diagram online](#)

Connections in this step

CONNECT FROM	CONNECT TO
DVI pin 13 (5V_SW)	ESP32 5V

1. Confirm that the selected analyser connection provides switched **5 V between pin 13 and GND**, using suitable insulated meter probes or a breakout. Keep the ESP32 disconnected during this check. Switch the analyser off and disconnect the plug before soldering.
2. Solder the power wire from pin 13 to the ESP32 pad marked **5V**. Do not connect it to 3V3 or to a GPIO. Insulate the connection.

Check before continuing

The basic build now has exactly three connections: 4 → GPIO4, 14 → GND, and 13 → 5V. It is still disconnected from both power sources.

Standard three-wire build: continue to step 7

Most analysers need neither optional part. Steps 5-6 are only for a separate button or an older analyser needing an offline clock.

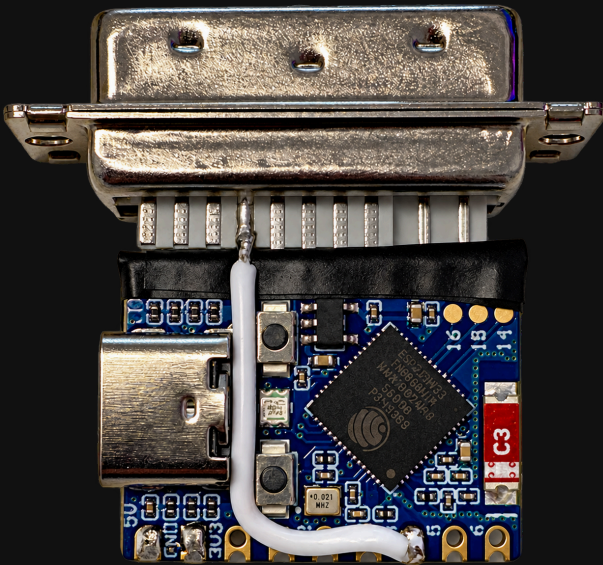


THREE-WIRE BUILD PHOTOS

The three wires on the real build

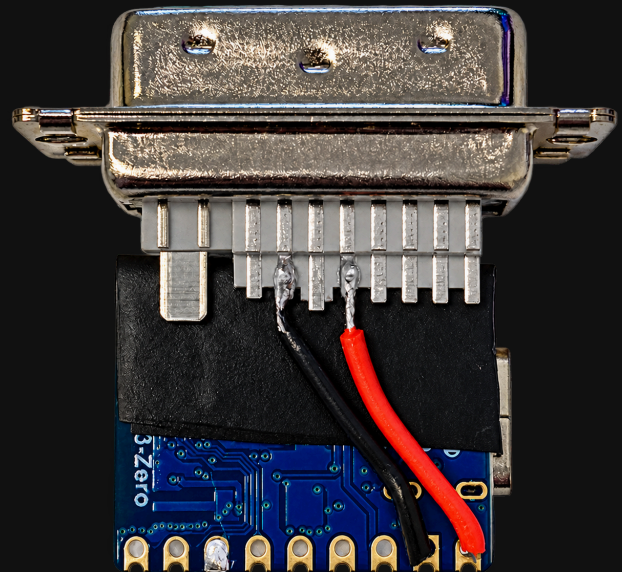
These are two views of the same adapter. The white data wire is on the component side; turn the assembly over to see the red power and black ground wires.

Component side: data



White wire: DVI pin 4 (TXD) to GPIO4.

Reverse side: power and ground



Red: pin 13 to 5V. Black: pin 14 to GND.

Wire colours in these photos

WIRE	DVI PLUG	ESP32 BOARD
White: data	Pin 4 (TXD)	GPIO4
Red: power	Pin 13 (5V_SW)	5V
Black: ground	Pin 14 (GND)	GND

Use the numbered connector views and check continuity to identify pins. Wire colours may differ on your build. The black sheet insulates the board from the connector.



STEP 5 OF 11

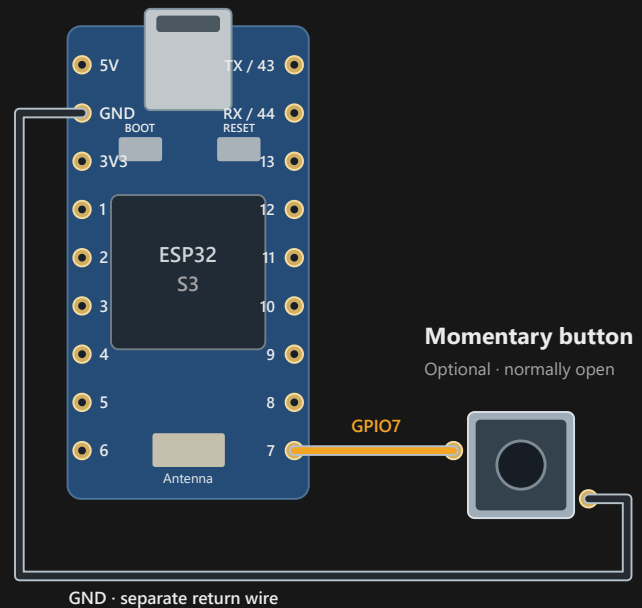
OPTIONAL

05 Add a momentary button if needed

Skip this step for normal use: press the OK key on the Divesoft keypad to pause and print. A separate button is useful for a fixed installation, for example when the analyser keypad is hard to reach.

ESP32-S3-Zero compatible

Component side · USB at the top



Meter-check the chosen contacts:

open when released; connected only when pressed.

Optional button close-up. The three DVI connections remain as wired in the earlier steps. [Full-size diagram online](#)

Connections in this step

CONNECT FROM	CONNECT TO
ESP32 GPIO7	One button contact group
ESP32 GND	The other button contact group

1. Choose a **normally open momentary button**. With a four-leg switch, meter-check two contacts that are open when released and connected only when pressed.
2. Connect one contact to GPIO7 and the other to GND. No external pull-up resistor is needed for this input. The firmware requests a print when you **release** the button and valid gas data are available.

Check before continuing

The switch opens when released and closes when pressed. It fits the case without trapping wires. If omitted, leave GPIO7 unconnected.



STEP 6 OF 11

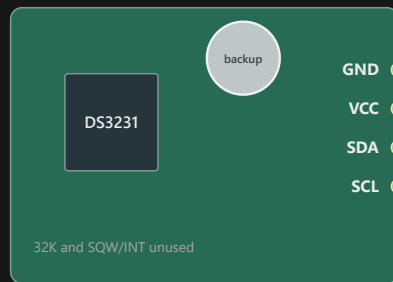
OPTIONAL

06 Add a clock for an older analyser

Most analysers do not need this part. Add a DS3231 real-time clock (RTC) only for an older analyser without a clock/date if you want dated labels offline. It keeps the date while power is off.

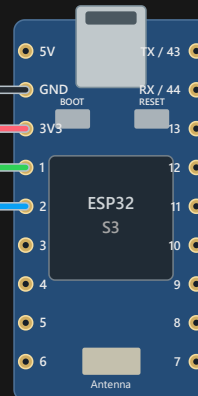
DS3231 clock module

Optional - match pad names



ESP32-S3-Zero compatible

Component side - USB at the top



Pad positions are illustrative; module layouts vary.

I²C address 0x68 - set the date after installation

Optional 3.3 V clock module. Match the printed module labels; pin order varies between DS3231 boards. [Full-size diagram online](#)

Connections in this step

CONNECT FROM	CONNECT TO
DS3231 VCC	ESP32 3V3
DS3231 GND	ESP32 GND
DS3231 SDA	ESP32 GPIO1
DS3231 SCL	ESP32 GPIO2

1. Use a DS3231 module suitable for **3.3 V power and I²C signals**, with the backup cell specified for that module. Keep its exposed contacts insulated from the ESP32 and DVI plug.
2. With all power disconnected, wire the four labelled connections. Leave SQW/INT and 32K unconnected. The DS3231 address is fixed at **0x68**; there is no address jumper to add.
3. Set and verify the clock during browser setup. Fitting the module does not set the date automatically. If your analyser supplies a valid date and time, skip this module and use analyser time. For an older analyser, internet Wi-Fi can supply network time after each power-up instead.

Check before continuing

If fitted: VCC is on 3V3, SDA is on 1, SCL is on 2, and the module is insulated. If your analyser supplies a valid date/time, skip to step 7 and leave these connections unused.

STEP 7 OF 11

07 Inspect and install the firmware

Use USB alone for the first installation. The adapter must be completely unplugged from the analyser.

BEFORE YOU CONNECT

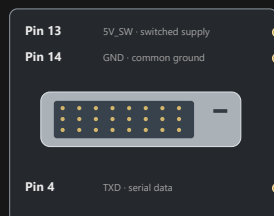
Unplug the adapter completely from the analyser before connecting USB. Turning the analyser off alone is not enough.

Trimix Analyser Adapter with Bluetooth Label Printing

www.trimixanalyser.com

DVI plug: selected terminals

Enlarged by function - positions simplified



Find the real solder tails with the numbered plug views.

Direct data wire for a confirmed 3.3 V TXD source.

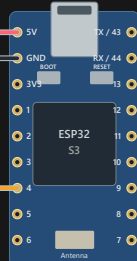
GPIO4 receives data. Leave GPIO5, the TX/RX-labelled pads and DVI pin 12 unused.

Normal use: analyser connected - USB unplugged

Before any USB install or update: unplug the adapter from the analyser.

ESP32-S3-Zero compatible

Component side - USB at the top



Optional connections

Momentary print button

GPIO7 → button → GND

For a fixed installation, if useful.

Normally: Divesoft OK = pause/print.

DS3231 clock

Older analyser without clock/date only.

VCC → 3V3

GND → GND

SDA → GPIO1

SCL → GPIO2

Keeps the date for offline labels.

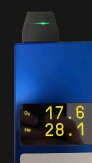
Address 0x68 - set the date.

Most analysers need neither part.

Use analyser time if available.

Use the manual close-ups for actual board and connector views.

Build guide and firmware



trimixanalyser.com

1. Disconnect the analyser.
2. Open /install in desktop Chrome or Edge.
3. Connect USB and select Trimix adapter - Full install.



Scan for firmware

No coding needed.

DVI terminals enlarged and rearranged - use the numbered connector views to identify solder tails - not to scale

Open the full diagram to zoom. Optional parts are shown in separate panels to keep the wiring easy to follow. [Full-size diagram online](#)

1. Compare each joint with the complete wiring drawing and its numbered connector views. Check continuity from the mating pins to the intended ESP32 pads, inspect for solder bridges, and check that 5V is not shorted to GND.
2. Keep the DVI plug disconnected. Open www.trimixanalyser.com/install in desktop Chrome or Edge. Choose **Trimix adapter** and **Full install** for a new board.
3. Connect the ESP32 with a USB data cable and follow **Connect and install**. If the board does not appear, hold its **BOOT** button while connecting USB, then release it and retry the port selection. You can also hold BOOT, tap RESET, then release BOOT.
4. Wait for installation to finish. Press RESET if needed to start the installed firmware. If anything heats abnormally, disconnect USB and inspect the wiring. Unplug USB before the next step.

Check before continuing

Installation completes, the board starts normally, and USB is unplugged before reconnecting the analyser.



STEP 8 OF 11

08 Connect the analyser and enable data

The adapter needs the analyser's serial output to receive live oxygen and helium readings.

1. With USB unplugged and the analyser switched off, fit the adapter plug gently to the rear connector. Do not force it or pull on the wires. Switch the analyser on; the adapter should start from the analyser's supply.
2. On the analyser, enable **Menu** → **Preferences** → **Send Data to USB** → **On**. Some firmware versions use a different data-output label. Although the menu says USB, this setting also enables the rear serial output used here.
3. Follow the Divesoft's own calibration, gas-sampling and stabilisation procedure. This adapter copies readings; it does not calibrate the analyser or establish that a cylinder contains the displayed gas.
4. Keep the lid accessible for setup and testing. If the adapter does not start, switch off and disconnect it before checking pin 13, GND and the ESP32 5V pad. Never add USB while it remains connected to the analyser.

The serial connection is receive-only. Leave GPIO5 and the board pads labelled TX/RX unwired. The analyser's RXD pin 12 also stays unused.

Check before continuing

The adapter is powered from the analyser, USB is absent, and the analyser's data-output setting is enabled.



STEP 9 OF 11

09 Set up the printer and date

Use the adapter's local browser page to choose the printer, label settings, owner and time source.

1. Join setup Wi-Fi

Join **TrimixAdapter-XXXX** with the factory password **12345678**. Stay connected if your phone reports no internet.

2. Open setup

Open **http://192.168.4.1/**. If setup Wi-Fi has timed out, restart the adapter and reconnect. The default idle timeout is five minutes and can be changed in settings.

3. Save the printer

Charge and switch on a supported printer, such as the **Niimbot B1**, and load the intended labels. Under **Print**, scan, select the printer and save it. Bluetooth carries print data; setup Wi-Fi is for configuration.

4. Check label settings

Choose label size, owner initials, units, ppO₂ limit and END settings. Check that the saved values match your procedure.

5. Choose the date source

Under **System** → **Label Date/Time Source**, use **analyser time** if it supplies a valid date. No extra clock is needed. For an older analyser without date/time, use a set DS3231 for dated labels offline, or internet Wi-Fi for network time after each power-up.

6. Verify the date

Choose the device timezone under **Connect**. Check the date now and after restarting. **DATE NOT SET** means no valid date is available; correct it before using dated labels.

Check before continuing

The saved printer connects, the label size and owner are correct, and the date is valid. Check the date again after restarting.



STEP 10 OF 11

10 Check readings and print a first label

Verify that the adapter receives the current reading and that the label says what you intend.

1. Watch the browser's live values and compare **O₂** and **He** with the analyser display. Allow for any configured averaging. If values are missing, stale or inconsistent, stop and check the data setting, wiring and analyser before printing.
2. Start with a known air or Nitrox sample and a **basic Nitrox label**, which needs no Pro licence. With pause-to-print enabled, let valid data flow for at least **five seconds** and confirm the reading has settled. Press the **OK key on the Divesoft keypad** to pause measurement and trigger printing. The default pause delay is **three seconds**.
3. One label should print. Press the **OK key again** to resume measurement. The default automatic-print cooldown is **30 seconds**; a new print also needs fresh readings. No extra button is needed for this normal workflow. A fitted momentary button is an alternative trigger when released, for example in a fixed installation.
4. Check mix, MOD, END, units, date, owner and cylinder identity. Basic Nitrox labels are not a substitute for full helium/Trimix labels. For those, open **Licence**, activate the matching [Trimix Pro licence](#) for this adapter's Device ID, then verify a Trimix label against the analyser.

A loss of incoming data can look like a pause. Confirm the displayed reading before triggering, and inspect every label. Do not use a test label, an unset date or an unverified mix as a cylinder analysis record.

Check before continuing

The current readings agree with the analyser and the first label matches them, with the intended settings and date.



STEP 11 OF 11

11 Fit the case and keep it ready

Secure the finished adapter without trapping wires, then repeat the checks after closing it.

1. Switch the analyser off and unplug the adapter. Leave USB disconnected. Seat the plug and board in the printed housing; insulate every exposed joint and support the wires so they cannot pull on the solder pads.
2. Keep the board's antenna end clear of metal. Fit optional parts only where there is room without pressure. Close the case using the specified screws; stop if it needs force or a screw can touch the circuit.
3. Reconnect with USB absent. Check live readings, button operation if fitted, the date and a label again. Before each use, follow the analyser's checks and compare the printed label with the current analysis.
4. Before any later USB install or update, unplug the adapter completely from the analyser. Keep the [operating manual](#) and [troubleshooting guide](#) available.

Quick fault checks

No power: pin 13, GND, plug orientation and ESP32 5V.

No readings: enable data output; check pin 4 → GPIO4 and common GND.

No print: check saved printer, labels, live data and pause settings.

DATE NOT SET: select and establish a valid time source.

References: [Divesoft He/O₂ manual](#) | [ESP32-S3-Zero pinout and schematic](#) | [DS3231 datasheet](#).

Check before continuing

The case closes freely, the adapter is secure, and the final live-reading and label checks pass.