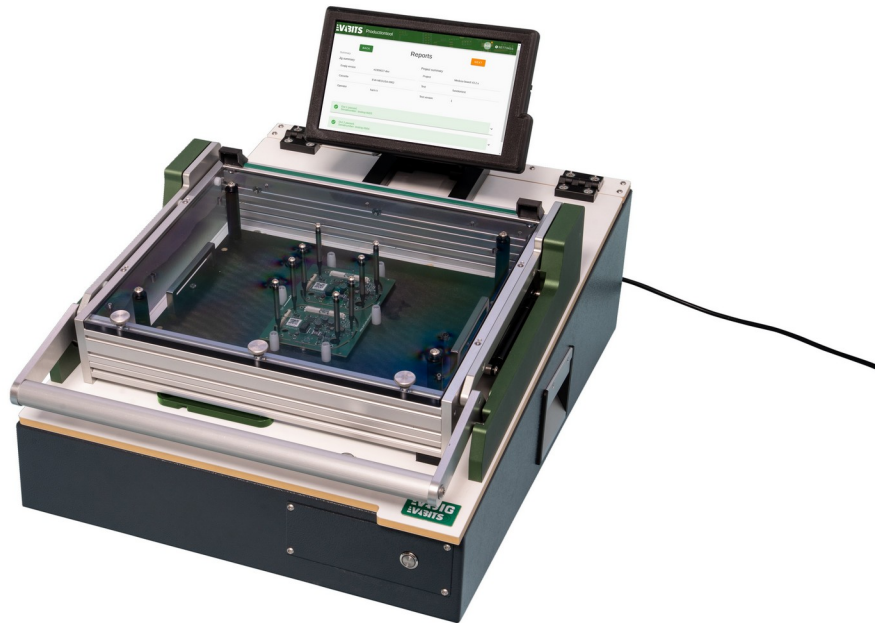


EVAJIG

Turnkey PCBA **testing** & provisioning



Operator Manual

EVAjig 2.0

by
EVA3ITS

June 28, 2026

Purpose of this document

This document describes how to operate the EVAjig 2.0 bed-of-nails functional test apparatus. It is intended for operators who run tests on the machine in a production or laboratory environment. For instructions on assembling, servicing or modifying the hardware, refer to the separate EVAjig 2.0 Assembly Manual.

Revision history

DATE	VERSION	CHANGES
28-06-2026	2.0	Initial document for EVAjig 2.0

Contact information

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Disclaimer

No rights can be derived from the information in this document. The information contained in this document is subject to change without prior notice. Always contact EVAbits when considering the EVAjig test platform. We refer to EVAjig.com for the most recent information.

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Scope of delivery

The EVAjig 2.0 is a bed-of-nails device for functional testing, programming and provisioning of PCBAs. Up to 12 devices (DUTs) can be handled in parallel.

The EVAjig 2.0 is delivered with:

- Fixture (the main body of the machine, with built-in touchscreen)
- Cassette top-plate and cassette base (PCBA-specific)
- Power cord
- Cellular antennas (pre-installed) for built-in 4G connectivity
- This operator manual

Depending on your configuration, the machine may also include a camera module on the cassette top-plate for automatic QR-code reading, and additional PCBA-specific cassettes.

Note The cassette is specific to a particular PCBA panel design. Each panel design you wish to test requires its own matching cassette. See “Switching cassettes” for how to change between them.

Overview of the EVAjig

The EVAjig 2.0 is largely self-contained. Compared with earlier versions, it has a built-in touchscreen and an on-board computer with cellular (4G) connectivity, so it can run without an external monitor or wired network. This chapter introduces the main components and the terms used throughout this manual.



The EVAjig 2.0 with the lid open, ready to load a PCBA.

Parts you handle

During normal operation you mainly interact with the following parts:

- **Touchscreen** – the primary interface for operating the machine, mounted on the front.
- **Lid** – the hinged top that opens to load and remove PCBAs. A lid switch detects when the lid is closed.
- **Cassette handle (twist lock)** – the lever at the front used to slide the cassette base into position and lock it, establishing the electrical connection.
- **Key lock** – secures the machine; the keys are also used to unlock it for service.

Rear connections

- **Power inlet, switch and fuse** – the mains connector with on/off switch and fuse holder.

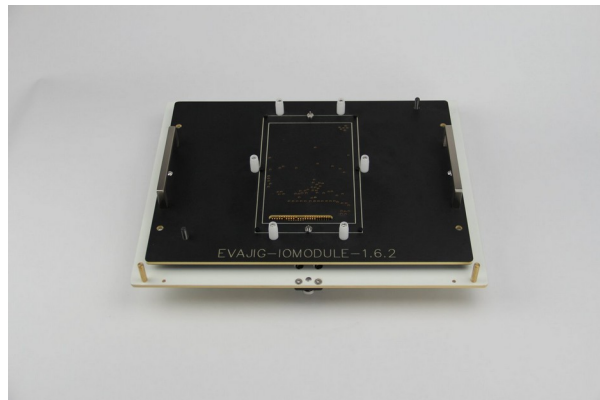
- **Ethernet and HDMI passthroughs** – optional wired network and external display connections.
- **Antennas** – for the built-in 4G cellular connection.

The cassette

The cassette is the PCBA-specific part of the machine. Each panel design you test has its own matching cassette, identified by a label such as EVAJIG-IOMODULE-1.6.2. It is made up of two plates:



Cassette top-plate (push-finger plate): the transparent plate with pushers.



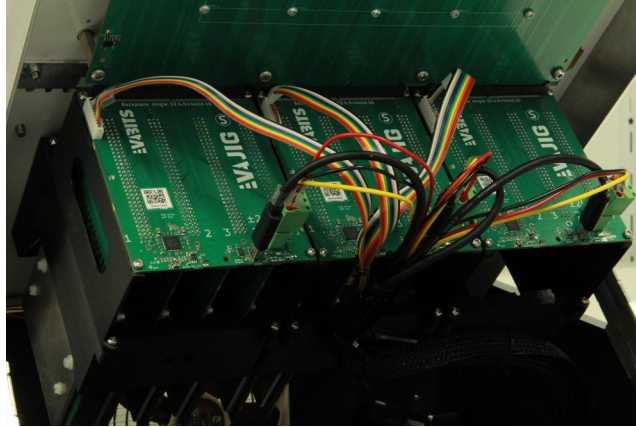
Cassette base (pogo plate): carries the bed of nails that contacts the PCBA.

- **Top-plate (push-finger plate)** – the transparent upper plate. Its pushers press the PCBA down onto the bed of nails when the lid is closed.
- **Base (pogo plate)** – the lower plate carrying the bed of nails (pogo pins) that make contact with the test points on the PCBA.

Note The cassette is specific to a particular PCBA panel design. See “Switching cassettes” for how to change between cassettes.

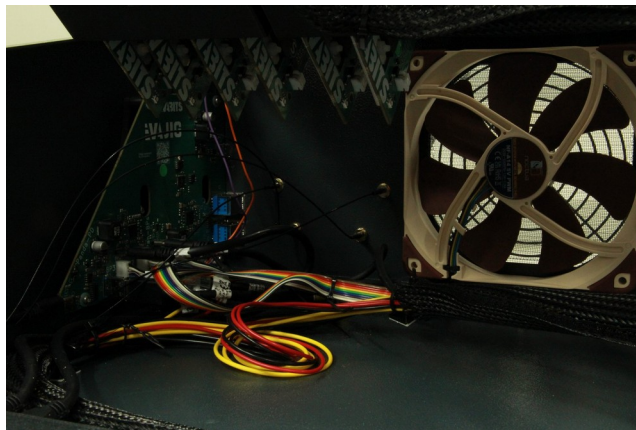
Inside the machine

You do not normally need to open the machine. The internal components below are described only so that the terms used in the troubleshooting chapter are clear.



The row of backplanes inside the machine, each carrying IO-modules.

- **IO-modules** – up to 12 modules, one per DUT location, that drive and measure each device under test.
- **Backplanes** – carry the IO-modules and connect them to the cassette and to power.



The 'mainboard' is a central hub in internal communication. The cooling fan is in the rear.

- **On-board computer** – runs the EVAjig software, with a SIM and 4G module for connectivity.
- **Cooling fan** – draws air through the rear of the machine to keep the electronics cool.

Checks to perform before first startup

Before switching the EVAjig on for the first time, or after it has been transported, open the machine and check the internal connections. During transport the USB cables in particular can work loose. This check takes only a few minutes and helps avoid faults later.

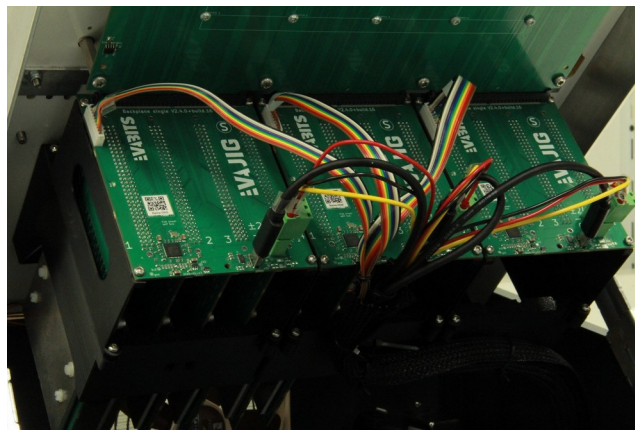
Caution Make sure the EVAjig is switched off and disconnected from mains power before opening it.

Opening the EVAjig

1. Take the keys (stored inside the machine, or supplied separately) and use them to unlock the key lock at the front.
2. Turn the knob that holds the lock to release the cover.
3. Open the EVAjig by pulling the cover panel upwards. The internal boards and cabling are now accessible.

Checking the cables

Check that every USB cable is firmly seated. They are found in three places:



Each backplane has one USB cable (three in total).

- **Backplanes** – one USB cable per backplane, three in total.
- **Mainboard** – five USB cables in total.
- **On-board computer** – four USB cables in total.

Push each connector home gently if any feels loose. Then check the remaining connections – power, flat cables and any other plugs – and look over the inside of the machine for anything that appears out of place, such as a disconnected cable, a loose screw or a component that has shifted during transport.

Note If you find something you are unsure about, do not power the machine on. Contact EVAbits before continuing.

Closing up

Once all connections are secure and nothing looks out of place, close the cover panel, turn the knob to secure the lock, and remove the keys. The EVAjig is now ready to be powered on as described in the next chapter.

Turning on the EVAjig

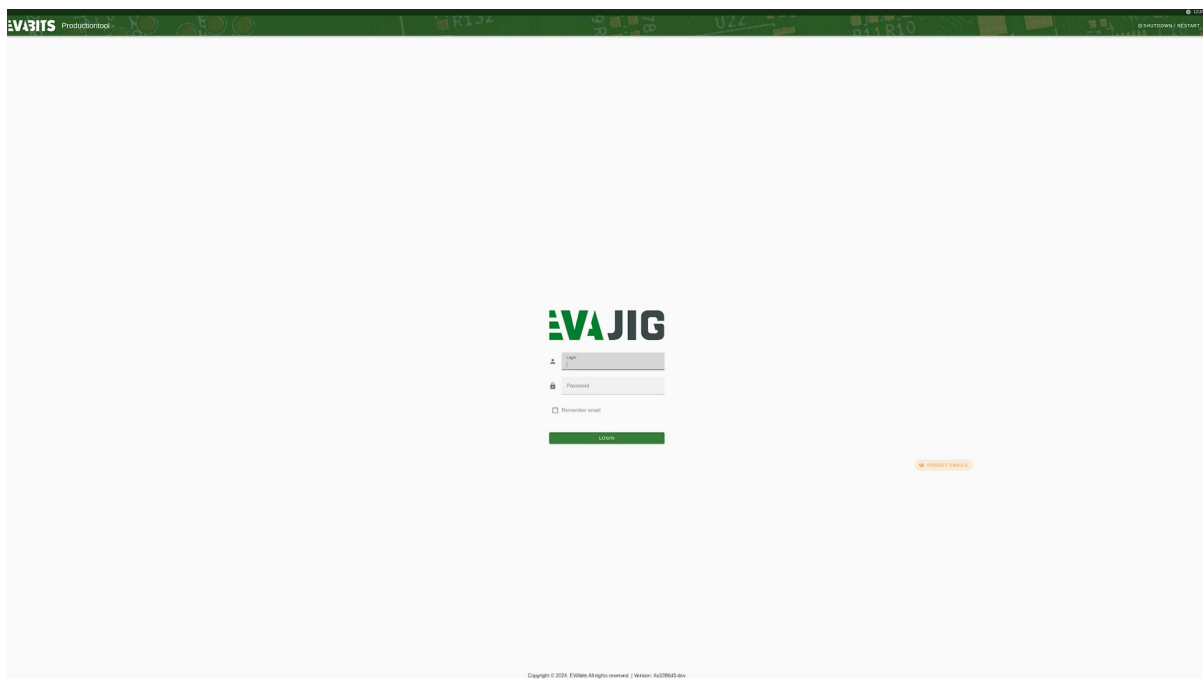
Follow these steps the first time you use the machine and each time it has been fully powered down.

1. Connect peripherals. A keyboard is required, because the on-screen keyboard does not work. The EVAjig 2.0 has a built-in touchscreen and 4G connectivity, so a monitor and mouse are optional. You may still connect HDMI, a mouse and (if you prefer a wired connection) ethernet using the passthroughs at the rear.
2. Place the cassette top-plate (the transparent part with pushers) onto the top of the jig and secure it with the thumb screws.
3. Carefully place the cassette base in the fixture and rotate the handle to establish the connection. Insert the cassette base at the front of the window in the jig, to make absolutely certain that the connectors in the jig are not accidentally hit by the cassette base.

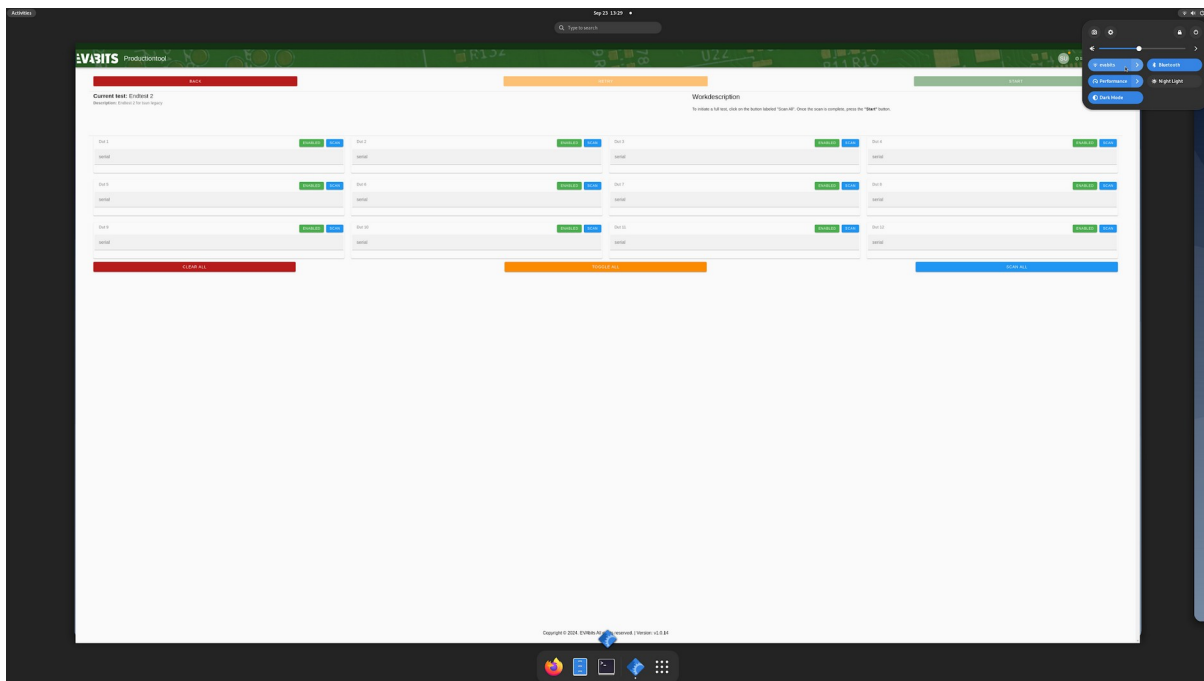
Caution While rotating the handle, make sure the cassette base slides horizontally without obstructions. Forcing it can damage the connectors.

The handle does require some force, so it is normal to feel resistance. If you are unsure whether the cassette is seating correctly, open the EVAjig and insert the cassette base with the lid open. You can then see whether the cassette is aligned with the backplane connectors and whether anything is obstructing the connection before applying force.

4. Turn the machine on with the power switch at the rear. The RGB pushbutton on the front indicates the status: it turns blue once the machine has power, then green while it starts up. Startup takes about 40 seconds, after which a login screen appears on the touchscreen.



5. Log in at the login screen with your operator credentials (these can be created by EVAbits or your company administrator).
6. Check the internet connection. The EVAjig needs to be online to operate. By default it uses the built-in 4G connection, but if an ethernet cable is connected it will switch to that automatically. To use Wi-Fi instead, set it up as follows:
 - Press the CMD or WINDOWS key on the keyboard.
 - Go to the top-left corner of the screen to view the settings.
 - Select a network.
 - Enter the credentials if prompted (credentials can be created by EVAbits or by your company administrator).



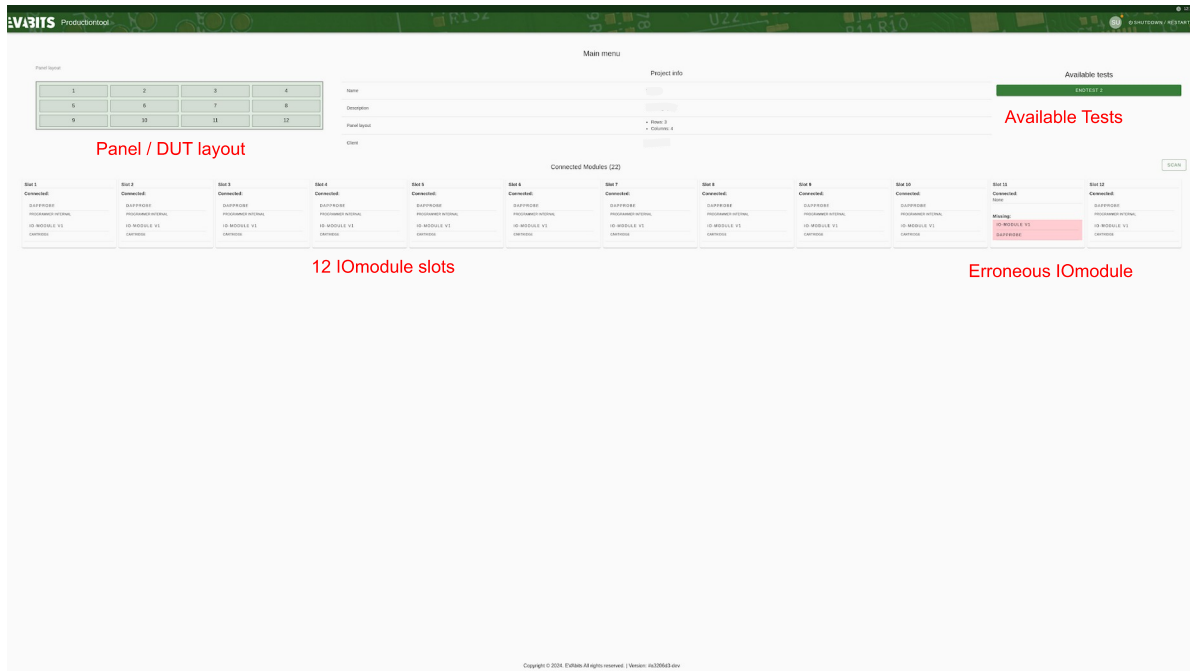
7. The EVAjig reads the ID of the cassette, connects to the IO-modules and, when present, connects to the camera module.
8. The EVAjig is now ready to start testing.

Note If the machine cannot reach the internet, tests that use API calls and report uploads will fail. See “Frequently asked questions” for details.

Running a test

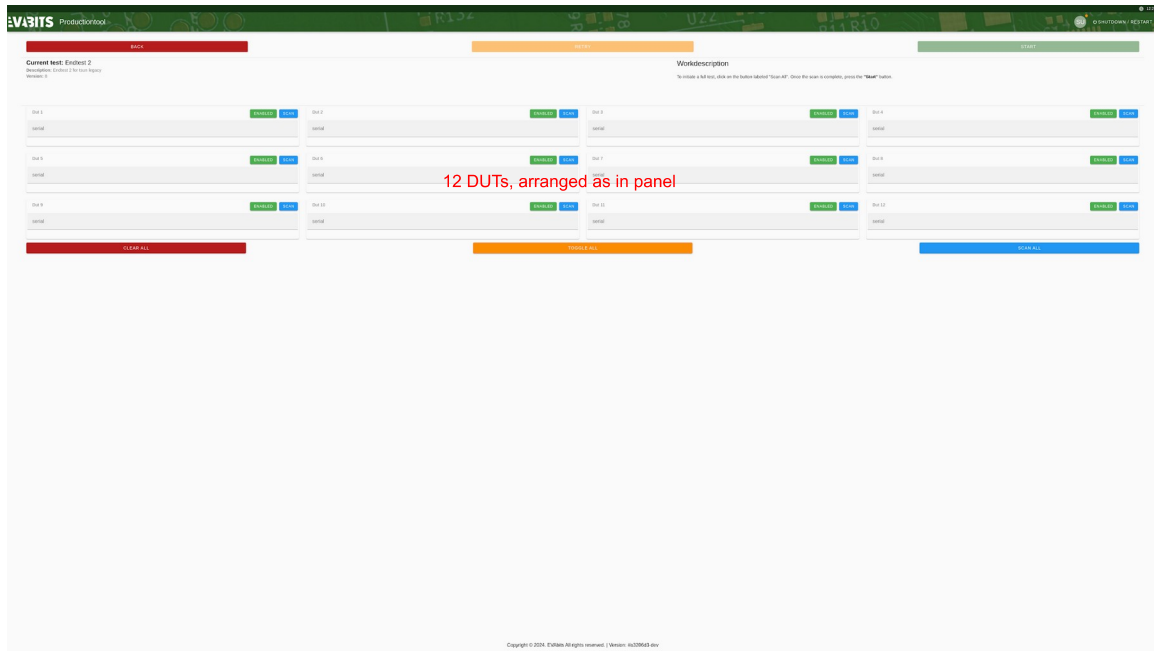
Once the machine is on and ready, run a test as follows.

1. Select one of the testflows. Usually “Endtest” should be selected.

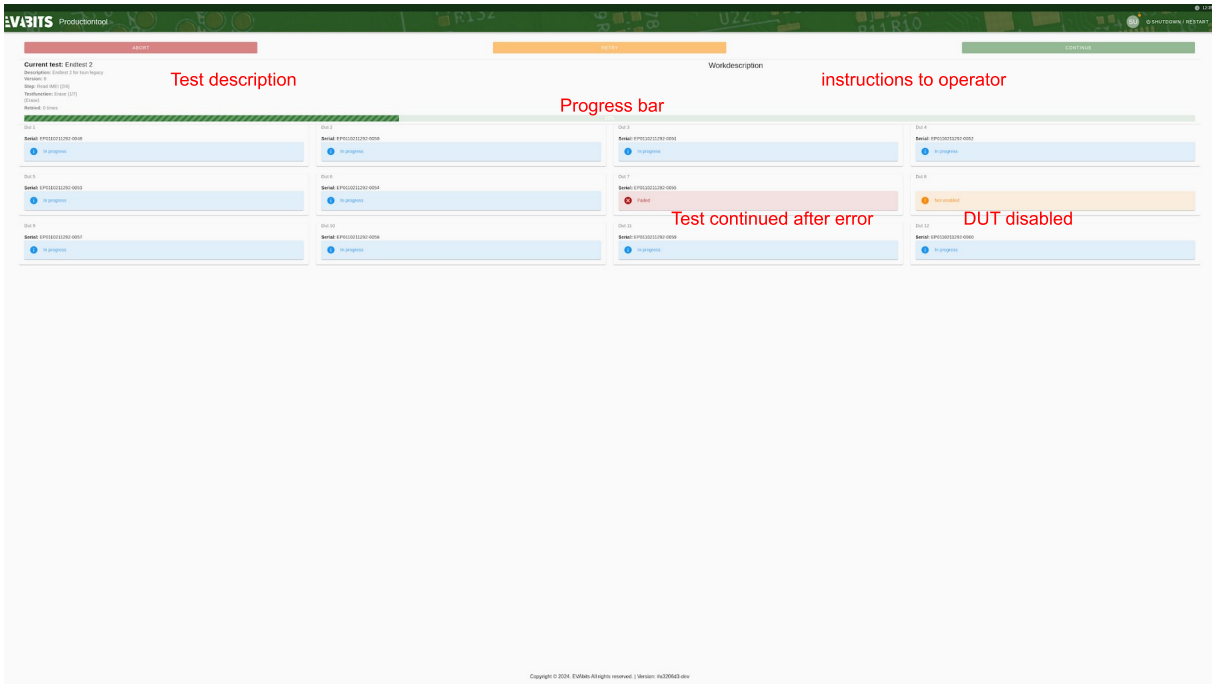


2. Open the lid of the EVAjig.
3. Place a PCBA (or a panel of DUTs, or a cradle with DUTs inserted) onto the cassette.
4. If required, disable one or more DUTs of the panel on the screen (for example, if a position is empty or known to be bad).
5. Identify the DUTs. There are three ways, depending on your machine:
 - If a camera module is present, closing the lid triggers the cameras to read the QR codes on the PCBA automatically.
 - Otherwise, scan the QR codes with an external barcode scanner, in the order indicated on the screen.
 - Or enter the unique identification numbers manually.

Tip: When scanning or typing, the TAB key switches to the next DUT / serial number quickly.



6. Press Start to begin the tests. If a QR-pattern is known, the action of closing the lid will automatically scan the QR codes, validate the QRs using the pattern and start testing if all the QRs match the pattern.
7. Follow the work instructions. The tests run mostly autonomously, but watch the work-instruction pane: there may be instructions such as “Observe whether the LED blinks”, and you may be prompted with a Yes / No question.
8. Handle a failing DUT. When a test on one of the devices in a panel / cradle fails, you can choose:
 - **Retry** – run the test on that device again. This can be done up to 5 times.
 - **Abort** – halt the test procedure for all DUTs in the panel / cradle and generate a report.
 - **Continue** – disable further testing for the failing DUT but continue testing the others.



9. Review the report. On completion, a test report for every DUT is uploaded to the EVAjig portal and the main results are shown on screen. Reports appear as clickable items; click to see the test details.
10. Press Next or open the lid of the EVAjig to return to the ("Endtest") starting screen.
11. Remove the PCBAs, panel or cradle.

Turning off the EVAjig

Always shut the machine down properly before switching off the power. Powering off without shutting down can prevent the computer from starting up automatically next time.

1. Remove the PCBA if one is still present.
2. On the screen, tap “shutdown / restart” in the top-right.
3. Tap “shutdown”.
4. Wait until the screen goes black.
5. Turn the power switch to the “0 / off” position to fully power down the EVAjig.

Caution Do not switch off the mains while the screen is still active. See the troubleshooting chapter if the machine does not start up after an improper shutdown.

Switching cassettes

The EVAjig allows multiple panel designs to be tested by switching the PCBA-specific cassette. The machine must be turned off before swapping cassettes.

1. Turn off the EVAjig (see “Turning off the EVAjig”).
2. Open the lid and remove the cassette base by rotating the lever counterclockwise.
3. With the cassette base removed, close the lid for easy access to the cassette top-plate. Remove the thumbscrews and take out the top-plate. If a camera module is fitted, disconnect its USB cable first.
4. Place both parts in the cassette storage box.
5. Take the new cassette from storage and first place its top-plate on the jig. Fasten the thumbscrews.
6. Carefully insert the new cassette base at the front of the opening in the fixture, to make absolutely certain that the connectors in the jig are not accidentally hit by the cassette base.
7. Rotate the handle to slide the cassette to the back and establish the electrical connection.

Caution While rotating the handle, make sure the cassette base slides horizontally without obstructions.

8. Turn on the jig using the power switch at the rear.

Maintenance and care

The EVAjig needs little routine maintenance. The tasks below may be performed by an operator. Anything that requires opening the machine beyond what is described here should be carried out following the Assembly Manual, or by EVAbits.

Keeping connectors clean

Dust or debris on the cassette card-edge connectors is a common cause of intermittent or location-specific test failures. Periodically, and whenever a particular position fails consistently:

- Remove the cassette and inspect the three card-edge connectors.
- Gently clean them if dust or debris is present, then refit the cassette.

Fan and ventilation

The machine is cooled by a fan at the rear. Keep the fan grille and the surrounding area clear of dust and obstructions so that air can flow freely. Do not block the rear of the machine during operation.

Fuse

A fuse is located in the fuse holder of the power connector at the rear. If you need to replace it, use a fuse of the correct rating: **10A, 5 x 20 mm, slow blow**. Always disconnect mains power before replacing a fuse.

Note If a replacement fuse blows again, stop and contact EVAbits – a repeatedly blown fuse indicates a fault that needs investigation.

What operators should not do

Do not attempt to repair internal electronics, replace IO-modules or modify wiring unless you have been trained to do so and are following the Assembly Manual. When in doubt, contact EVAbits.

Frequently asked questions

Is it possible to switch cassettes with the EVAjig turned on?

No. The state of the IO-modules is not guaranteed to be correct after hot-swapping a cassette. This is especially true when tests include serial communication. Always turn the machine off first.

Are the reports stored locally if the internet connection fails?

No. The EVAjig requires an internet connection to operate. If the connection is lost, a test using API calls will fail and the report upload will also fail. The test will have to be done again if this happens.

Does the EVAjig 2.0 still need a wired network connection?

Not necessarily. The 2.0 has a built-in 4G cellular connection and can operate over it. You may still use the ethernet passthrough at the rear if you prefer a wired connection or if cellular coverage is poor at your location.

Do I need to connect an external monitor, mouse and keyboard?

No. The 2.0 has a built-in touchscreen that serves as the primary interface. An external monitor, mouse and keyboard can still be connected through the rear passthroughs if you prefer.

Troubleshooting

Use the guidance below if the machine does not behave as expected. Some steps involve opening the machine; only carry these out if you are authorised to do so.

The EVAjig does not start up

- Check the fuse. It is located near the power switch at the rear. Replacement fuses should be 5 x 20 mm, slow blow.
- Open the EVAjig to check whether power is OK:
 - Use the keys to unlock the EVAjig.
 - Open the EVAjig by pulling the cover panel upwards.
 - Several LEDs should indicate that the IO-modules have power.
 - If in doubt, check the DC voltages with a multimeter: the red / black / yellow lines should read +24 V, 0 V and –24 V respectively.

If the machine was not shut down properly, the computer may not start automatically and may need to be started manually.

- The processing unit is at the front, in a black casing. The power button is on the right-hand side, towards the front of the casing. A screwdriver or similar tool may be needed to press it.

An IO-module is not found

- Open the IO-module casing to check the status:
 - Unscrew the 6 Torx screws on the rear panel.
 - All IO-modules should have their LEDs lit green if connected properly.

To replace an IO-module:

- a. Turn off power to the EVAjig.
- b. Pull the IO-module straight backwards.
- c. Insert the new IO-module, paying attention to the guides for the correct orientation.
- d. Start the EVAjig normally.

Devices at a specific location consistently fail

- Remove the cassette and check the three card-edge connectors for dust or debris. Clean them if necessary.
- Exchange the IO-module serving the failing location with one serving a location that works correctly. Contact EVAbits for the information required to do this safely.

The touchscreen does not respond

- Check that the machine has completed start-up; the screen can take a few seconds to become active after power-on.

- If the screen stays blank after start-up, an external monitor can be connected through the HDMI passthrough at the rear to continue working.
- If the problem persists, shut the machine down properly, power it off and on again, and contact EVAbits if it does not recover.

The lid does not register as closed

- Make sure nothing is obstructing the lid and that it closes fully.
- If the machine still does not detect the closed lid (for example, the cameras do not trigger), contact EVAbits, as the lid switch may need attention.