

## Usage of the test rig

1. Unpacking and Preparation for Turning On
2. Test running locally (even without Internet)
3. Running tests remotely (the test rig should be connected to the same network as your device)
4. Pairing/unpairing the watches

### 1. Unpacking and Preparation for Turning On

1. Please remove the packaging and find the keys on the top of the cabinet, as shown in the picture below. These keys are for the front cabinet door.
2. Cut the plastic ties that hold the cables.



3. Open the front door with the key and take out two white cables with white plugs, as shown in the picture below. These plugs are wrapped in bubble film and attached to the metal frames by plastic ties. Please cut the plastic ties and remove the bubble wrap.

As result, you should have the following cables:

- 3x plugs



- 1x HDMI cable that should be connected to the monitor



- 1x USB port for keyboard/mouse



- 1x RJ45 cable that should be connected to the router or switch from the Internet provider



4. Please check all cables inside and boards. Ensure everything is connected properly and all boards and speakers are mounted securely.
5. Connect the HDMI cable to the monitor, the mouse and keyboard to the USB ports, the RJ45 cable to the router or switch, and the 3x plugs to the power sockets. After powering on, the system should boot up

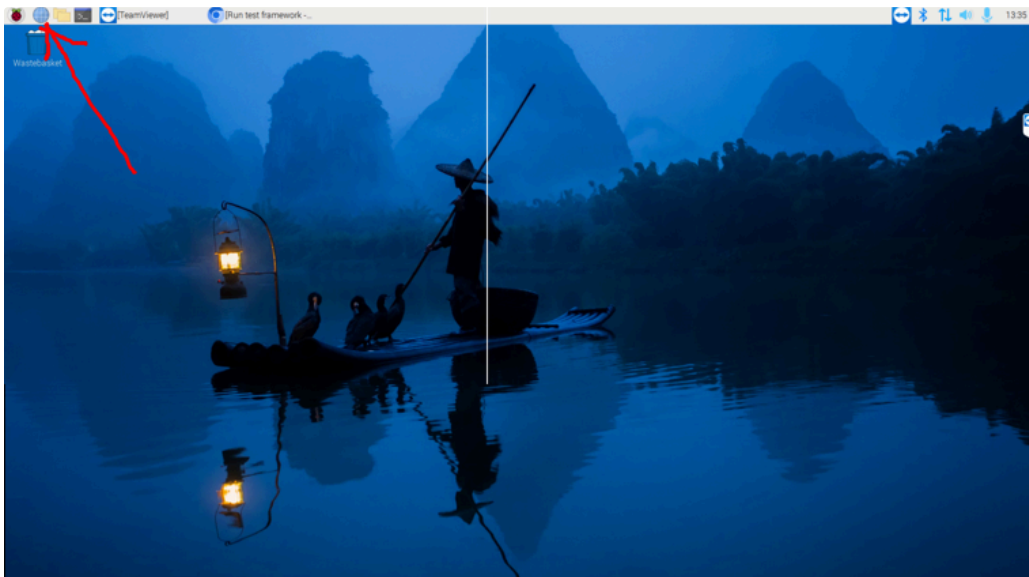
## 2. Test running locally (even without Internet)

1. Open the front door and locate the watches in the designated slots in the foam. Connect the power cables. After connecting the power cables, the charging symbol should be displayed on the watch screen.



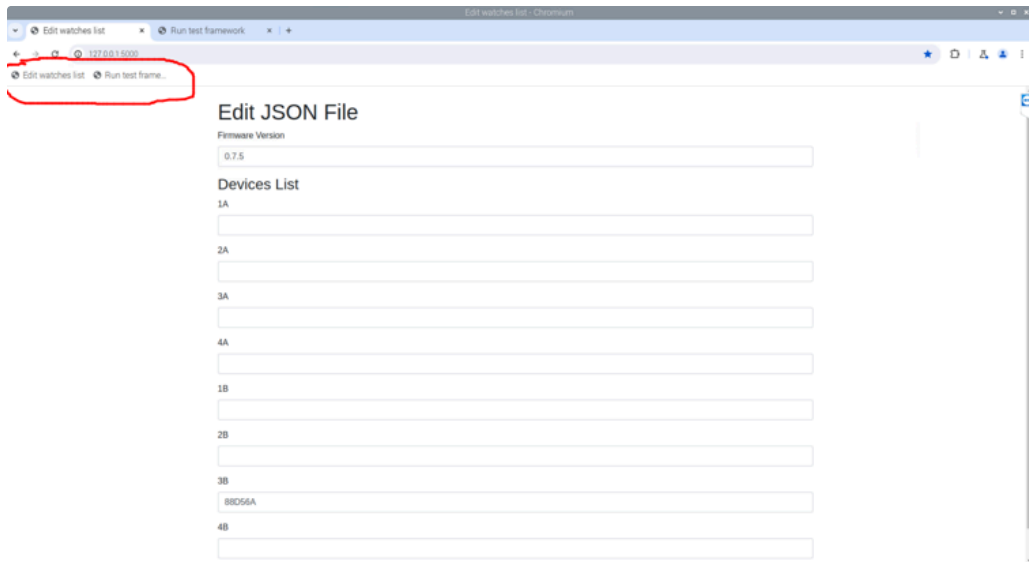


2. Launch the web browser.



3. Open two pages from the bookmarks bar: 'Edit watches list' and 'Run test framework.'

Alternatively, the web addresses may be entered manually: 127.0.0.1:5000 and 127.0.0.1:5001



4. Fill the device list fields with the SN number from the watch display according to the slots where the watches are located. For example, if the watch is located in slot 4B and the watch has SN number '6A213C' on the screen, then we put '6A213C' in the 4B field. Repeat this process for all watches in their designated slots. Finally, press the 'SAVE' button.



5. Open the second page 'Run test framework' and press run tests.



6. After pressing 'Run Tests' you should see the testing progress. For each test, you will see the results for each watch. It should be 'PASSED'.

## Run tests

Run tests

Terminate tests

```

===== test session starts =====
platform linux -- Python 3.11.2, pytest-6.2.5, py-1.11.0, pluggy-1.5.0 -- /home/pi/git/hyfe-embedded-testing/env/bin/python
cachedir: pytest_cache
rootdir: /home/pi/git/hyfe-embedded-testing
plugins: dependency-0.6.0
collecting ... collected 314 items

tests/test_basic.py::Tests_basic::test_check_bt_advertising[H206_3D34A5] PASSED [ 0%]
tests/test_basic.py::Tests_basic::test_check_bt_advertising[H206_37FC3F] PASSED [ 0%]
tests/test_basic.py::Tests_basic::test_check_bt_advertising[H206_75C943] PASSED [ 1%]
tests/test_basic.py::Tests_basic::test_check_bt_advertising[H206_CBF3D6] PASSED [ 1%]
tests/test_basic.py::Tests_basic::test_check_bt_advertising[H206_741557] PASSED [ 1%]
tests/test_basic.py::Tests_basic::test_check_bt_advertising[H206_658176] PASSED [ 1%]
tests/test_basic.py::Tests_basic::test_check_bt_advertising[H206_E57AE9] PASSED [ 2%]
tests/test_basic.py::Tests_basic::test_check_bt_advertising[H206_A74952] PASSED [ 2%]
tests/test_basic.py::Tests_basic::test_check_bt_connect[H206_3D34A5] PASSED [ 2%]
tests/test_basic.py::Tests_basic::test_check_bt_connect[H206_37FC3F] PASSED [ 3%]
tests/test_basic.py::Tests_basic::test_check_bt_connect[H206_75C943] PASSED [ 3%]
tests/test_basic.py::Tests_basic::test_check_bt_connect[H206_CBF3D6] PASSED [ 3%]
tests/test_basic.py::Tests_basic::test_check_bt_connect[H206_741557] PASSED [ 4%]
tests/test_basic.py::Tests_basic::test_check_bt_connect[H206_658176] PASSED [ 4%]
tests/test_basic.py::Tests_basic::test_check_bt_connect[H206_E57AE9] PASSED [ 4%]
tests/test_basic.py::Tests_basic::test_check_bt_connect[H206_A74952] PASSED [ 5%]
tests/test_basic.py::Tests_basic::test_check_update_fw[H206_3D34A5] PASSED [ 5%]
tests/test_basic.py::Tests_basic::test_check_update_fw[H206_37FC3F] PASSED [ 5%]
tests/test_basic.py::Tests_basic::test_check_update_fw[H206_75C943] PASSED [ 6%]
tests/test_basic.py::Tests_basic::test_check_update_fw[H206_CBF3D6] PASSED [ 6%]
tests/test_basic.py::Tests_basic::test_check_update_fw[H206_741557] PASSED [ 6%]
tests/test_basic.py::Tests_basic::test_check_update_fw[H206_658176] PASSED [ 7%]
tests/test_basic.py::Tests_basic::test_check_update_fw[H206_E57AE9] PASSED [ 7%]
tests/test_basic.py::Tests_basic::test_check_update_fw[H206_A74952] PASSED [ 7%]
tests/test_basic.py::Tests_basic::test_check_fw_version[H206_3D34A5] PASSED [ 7%]
tests/test_basic.py::Tests_basic::test_check_fw_version[H206_37FC3F] PASSED [ 8%]
tests/test_basic.py::Tests_basic::test_check_fw_version[H206_75C943] PASSED [ 8%]
tests/test_basic.py::Tests_basic::test_check_fw_version[H206_CBF3D6] PASSED [ 8%]
tests/test_basic.py::Tests_basic::test_check_fw_version[H206_741557] PASSED [ 9%]
tests/test_basic.py::Tests_basic::test_check_fw_version[H206_658176] PASSED [ 9%]
tests/test_basic.py::Tests_basic::test_check_fw_version[H206_E57AE9] PASSED [ 9%]
tests/test_basic.py::Tests_basic::test_check_fw_version[H206_A74952] PASSED [ 10%]
tests/test_basic.py::Tests_basic::test_check_status_code[H206_3D34A5] PASSED [ 10%]
tests/test_basic.py::Tests_basic::test_check_status_code[H206_37FC3F] PASSED [ 10%]
tests/test_basic.py::Tests_basic::test_check_status_code[H206_75C943] PASSED [ 11%]

```

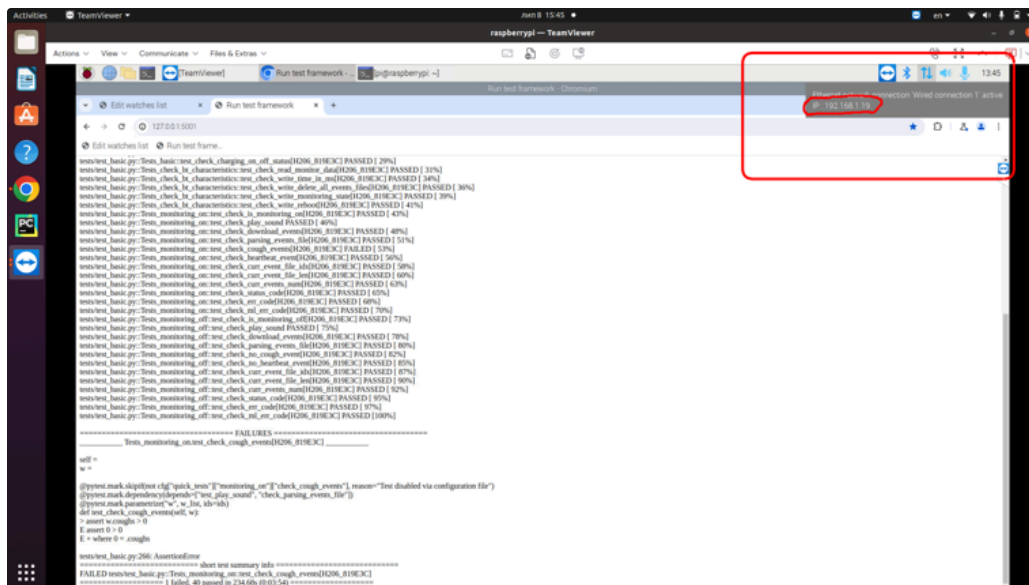
7. After finishing the tests, you will see the final result. In the picture below, 314 tests were passed successfully and it took around 34 minutes. If some watches fail the tests, we can repeat the tests for these watches again.

```
tests/test_basic.py::Tests_monitoring_off::test_check_curr_event_file_idx[H206_75C943] PASSED [ 93%]
tests/test_basic.py::Tests_monitoring_off::test_check_curr_event_file_idx[H206_CBF3D6] PASSED [ 85%]
tests/test_basic.py::Tests_monitoring_off::test_check_curr_event_file_idx[H206_741557] PASSED [ 86%]
tests/test_basic.py::Tests_monitoring_off::test_check_curr_event_file_idx[H206_658176] PASSED [ 86%]
tests/test_basic.py::Tests_monitoring_off::test_check_curr_event_file_idx[H206_E57AE9] PASSED [ 86%]
tests/test_basic.py::Tests_monitoring_off::test_check_curr_event_file_idx[H206_A74952] PASSED [ 87%]
tests/test_basic.py::Tests_monitoring_off::test_check_curr_event_file_len[H206_3D34A5] PASSED [ 87%]
tests/test_basic.py::Tests_monitoring_off::test_check_curr_event_file_len[H206_37FC3F] PASSED [ 87%]
tests/test_basic.py::Tests_monitoring_off::test_check_curr_event_file_len[H206_75C943] PASSED [ 88%]
tests/test_basic.py::Tests_monitoring_off::test_check_curr_event_file_len[H206_CBF3D6] PASSED [ 88%]
tests/test_basic.py::Tests_monitoring_off::test_check_curr_event_file_len[H206_741557] PASSED [ 88%]
tests/test_basic.py::Tests_monitoring_off::test_check_curr_event_file_len[H206_658176] PASSED [ 89%]
tests/test_basic.py::Tests_monitoring_off::test_check_curr_event_file_len[H206_E57AE9] PASSED [ 89%]
tests/test_basic.py::Tests_monitoring_off::test_check_curr_event_file_len[H206_A74952] PASSED [ 89%]
tests/test_basic.py::Tests_monitoring_off::test_check_curr_events_num[H206_3D34A5] PASSED [ 90%]
tests/test_basic.py::Tests_monitoring_off::test_check_curr_events_num[H206_37FC3F] PASSED [ 90%]
tests/test_basic.py::Tests_monitoring_off::test_check_curr_events_num[H206_75C943] PASSED [ 90%]
tests/test_basic.py::Tests_monitoring_off::test_check_curr_events_num[H206_CBF3D6] PASSED [ 91%]
tests/test_basic.py::Tests_monitoring_off::test_check_curr_events_num[H206_741557] PASSED [ 91%]
tests/test_basic.py::Tests_monitoring_off::test_check_curr_events_num[H206_658176] PASSED [ 91%]
tests/test_basic.py::Tests_monitoring_off::test_check_curr_events_num[H206_E57AE9] PASSED [ 92%]
tests/test_basic.py::Tests_monitoring_off::test_check_curr_events_num[H206_A74952] PASSED [ 92%]
tests/test_basic.py::Tests_monitoring_off::test_check_status_code[H206_3D34A5] PASSED [ 92%]
tests/test_basic.py::Tests_monitoring_off::test_check_status_code[H206_37FC3F] PASSED [ 92%]
tests/test_basic.py::Tests_monitoring_off::test_check_status_code[H206_75C943] PASSED [ 93%]
tests/test_basic.py::Tests_monitoring_off::test_check_status_code[H206_CBF3D6] PASSED [ 93%]
tests/test_basic.py::Tests_monitoring_off::test_check_status_code[H206_741557] PASSED [ 93%]
tests/test_basic.py::Tests_monitoring_off::test_check_status_code[H206_658176] PASSED [ 94%]
tests/test_basic.py::Tests_monitoring_off::test_check_status_code[H206_E57AE9] PASSED [ 94%]
tests/test_basic.py::Tests_monitoring_off::test_check_status_code[H206_A74952] PASSED [ 94%]
tests/test_basic.py::Tests_monitoring_off::test_check_err_code[H206_3D34A5] PASSED [ 95%]
tests/test_basic.py::Tests_monitoring_off::test_check_err_code[H206_37FC3F] PASSED [ 95%]
tests/test_basic.py::Tests_monitoring_off::test_check_err_code[H206_75C943] PASSED [ 95%]
tests/test_basic.py::Tests_monitoring_off::test_check_err_code[H206_CBF3D6] PASSED [ 96%]
tests/test_basic.py::Tests_monitoring_off::test_check_err_code[H206_741557] PASSED [ 96%]
tests/test_basic.py::Tests_monitoring_off::test_check_err_code[H206_658176] PASSED [ 96%]
tests/test_basic.py::Tests_monitoring_off::test_check_err_code[H206_E57AE9] PASSED [ 97%]
tests/test_basic.py::Tests_monitoring_off::test_check_err_code[H206_A74952] PASSED [ 97%]
tests/test_basic.py::Tests_monitoring_off::test_check_ml_err_code[H206_3D34A5] PASSED [ 97%]
tests/test_basic.py::Tests_monitoring_off::test_check_ml_err_code[H206_37FC3F] PASSED [ 98%]
tests/test_basic.py::Tests_monitoring_off::test_check_ml_err_code[H206_75C943] PASSED [ 98%]
tests/test_basic.py::Tests_monitoring_off::test_check_ml_err_code[H206_CBF3D6] PASSED [ 98%]
tests/test_basic.py::Tests_monitoring_off::test_check_ml_err_code[H206_741557] PASSED [ 99%]
tests/test_basic.py::Tests_monitoring_off::test_check_ml_err_code[H206_658176] PASSED [ 99%]
tests/test_basic.py::Tests_monitoring_off::test_check_ml_err_code[H206_E57AE9] PASSED [ 99%]
tests/test_basic.py::Tests_monitoring_off::test_check_ml_err_code[H206_A74952] PASSED [100%]

===== 314 passed in 2048.80s (0:34:08) =====
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### 3. Running tests remotely (the test rig should be connected to the same network as your device)

1. Find out the IP address of the test rig. Point the mouse arrow at the network symbol in the top right corner, and a pop-up window should appear as shown in the picture below. In this case, the IP address is 192.168.1.19, and you need to remember it or note it down.



2. Launch a web browser on your device and manually enter the IP address and port number. For example, in the picture above, the IP address is 192.168.1.19. Therefore, you need to enter the URL as '192.168.1.19:5000' to access the webpage 'Edit watches list', and '192.168.1.19:5001' to access the webpage 'Run test framework'.

#### 4. Pairing/unpairing the watches

In the new firmware version (v0.9.x and above), a secure Bluetooth protocol (BLE level 4) was introduced, requiring the device to be paired before use. During the pairing process, the watch displays a passcode on the screen, and the user must enter this passcode on the host device. For this purpose, a new web page, “Device Manager,” was created to manage the pairing/unpairing process, including passcode entry.

The new webpage can be accessed at: <http://127.0.0.1:5002> (if running locally) or <http://{ipaddress}:5002> (if connecting remotely).

Below is the content of the web page when accessed remotely.

## Device Manager

### Devices

Position	Device ID	Actions	Status
1A	H206_6A2D41	<a href="#">Pair</a> <a href="#">Unpair</a>	-
2A	None	<a href="#">Pair</a> <a href="#">Unpair</a>	-
3A	None	<a href="#">Pair</a> <a href="#">Unpair</a>	-
4A	None	<a href="#">Pair</a> <a href="#">Unpair</a>	-
1B	None	<a href="#">Pair</a> <a href="#">Unpair</a>	-
2B	None	<a href="#">Pair</a> <a href="#">Unpair</a>	-
3B	None	<a href="#">Pair</a> <a href="#">Unpair</a>	-
4B	None	<a href="#">Pair</a> <a href="#">Unpair</a>	-

Enter the passcode from the watch display.

Done

Current FW version	The new FW version	Required actions
v9.x.x, v0.7.x, v0.8.x	0.9.x and above	<ol style="list-style-type: none"> <li>Follow steps 2 or 3 of this document.</li> <li>After updating the firmware from the old version to the new one, the pairing process is required. There are two options: <ol style="list-style-type: none"> <li>Enter the passcode displayed on the watch screen into the passcode field on the “Device Manager” web page.</li> <li>Don’t take any action and wait for all tests to complete. After the tests are finished, most of them will have failed or been skipped, which is expected. Then, go to the “Device Manager” page and press the “Pair” button. Wait for the passcode to appear on the watch screen, and once it appears, enter the passcode into</li> </ol> </li> </ol>

		<p>the field on the webpage and press “Done.” After a short while, the status should change to “The watch with version X.X.X has been paired successfully,” where the version should match the one currently on the watch. After pairing, please rerun the tests, and all tests should pass in this case.</p> <p>c. If no more testing is required, unpair the device by pressing “Unpair”</p>
0.9.x and above	v0.7.x, v0.8.x	<ol style="list-style-type: none"> <li>1. Follow steps 2 or 3 of this document.</li> <li>2. After updating the firmware from the old version to the new one, the unpairing process is required. Don’t take any action and wait for all tests to complete. After the tests are finished, most of them will have failed or been skipped, which is expected. Then, go to the “Device Manager” and press the “Unpair” button. After a short while, the status should change to “Unpaired device 1A”. After unpairing, please rerun the tests, and all tests should pass in this case.</li> </ol>
0.9.x and above	0.9.x and above	<p>If device the new or it was unpaired before, then before start testing need to pair device. Go to the “Device Manager” page and press the “Pair” button. Wait for the passcode to appear on the watch screen, and once it appears, enter the passcode into the</p>

		<p>field on the webpage and press “Done.” After a short while, the status should change to “The watch with version X.X.X has been paired successfully,” where the version should match the one currently on the watch. After pairing, please run the tests, and all tests should pass in this case.</p>
v9.x.x, v0.7.x, v0.8.x	v0.7.x, v0.8.x	No actions are required.