TDM production test

(pre-)Production tests

- Hardware tests (impedance, voltage) → See Stefano's note
- Board initialisation procedure: make sure the board is identified, given a IP etc
- Automatic test for validation
  - Use Robot framework
  - Tests to be discussed

- MIDAS running ?

Initialisation procedure

procedure to identify each board before they are tested

1. Connect to the board (either serial or ethernet static IP)
2. Get the MAC address, MCU chip ID
3. Fill the TDM database (json file)
4. Update the DHCP config file (PC) and restart DHCP server (PC)
5. Restart TDM ethernet connection (TDM)
6. Test the connection with updated IP address
7. Rsync / Git push the TDM database

TDM database

```
{'tdm': {'01': {'ip_address': '192.168.1.101',
                'mac_address': 'd6:fc:1d:1f:9a:6f',
                'mcu_id': 123457,
                'tdm_id': 1,
                'version': 2},
         '02': {'ip_address': '192.168.1.102',
                'mac_address': 'd6:fc:1d:1f:9a:6f',
                'mcu_id': 123458,
                'tdm_id': 2,
                'version': 2}}}
```

Include other device:
     TDK power supply,
     RS485 adapter

Robot Framework is an open source automation framework for test automation and robotic process automation (RPA). It is supported by the Robot Framework Foundation and widely used in the industry.

Its human-friendly and versatile syntax uses keywords and supports extending through libraries in Python, Java, and other languages.

Example tests with robot framework

```
*** Settings ***
Documentation          Robot Framework test script
Library                SSHLibrary

*** Variables ***
${host}                192.168.1.116
${username}            root
${password}            
${alias}               remote_host_1
${expected_host}       Zynq

*** Test Cases ***
Test SSH Connection
    Open Connection      ${host}              alias=${alias}
    Login                ${username}       ${password}       delay=1
    Execute Command      hostname
    ${stdout}=           Execute Command       hostname
    Should Be Equal      ${expected_host}      ${stdout}
    Log                  ${stdout}
```

```
hyperk@lpnws5083:~/TDM/robot/test$ robot TestSSH.robot
==============================================================================
TestSSH :: Robot Framework test script
==============================================================================
Test SSH Connection                                                   | FAIL |
Zynq1 ≠ Zynq
------------------------------------------------------------------------------
TestSSH :: Robot Framework test script                                | FAIL |
1 test, 0 passed, 1 failed
==============================================================================
Output:   /home/hyperk/TDM/robot/test/output.xml
Log:      /home/hyperk/TDM/robot/test/log.html
Report:   /home/hyperk/TDM/robot/test/report.html
hyperk@lpnws5083:~/TDM/robot/test$ emacs TestSSH.robot
hyperk@lpnws5083:~/TDM/robot/test$ robot TestSSH.robot
==============================================================================
TestSSH :: Robot Framework test script
==============================================================================
Test SSH Connection                                                   | PASS |
------------------------------------------------------------------------------
TestSSH :: Robot Framework test script                                | PASS |
1 test, 1 passed, 0 failed
==============================================================================
Output:   /home/hyperk/TDM/robot/test/output.xml
Log:      /home/hyperk/TDM/robot/test/log.html
Report:   /home/hyperk/TDM/robot/test/report.html
```

TestSSH Log

Test Statistics

Total Statistics	Total	Pass	Fail	Skip	Elapsed	Pass / Fail / Skip
All Tests	1	1	0	0	00:00:03	

Statistics by Tag	Total	Pass	Fail	Skip	Elapsed	Pass / Fail / Skip
No Tags						

Statistics by Suite	Total	Pass	Fail	Skip	Elapsed	Pass / Fail / Skip
TestSSH	1	1	0	0	00:00:03	

Test Execution Log

SUITE TestSSH

Full Name:	TestSSH
Documentation:	Robot Framework test script
Source:	/home/hyperk/TDM/robot/test/TestSSH.robot
Start / End / Elapsed:	20250305 09:51:40.462 / 20250305 09:51:43.234 / 00:00:02.772
Status:	1 test total, 1 passed, 0 failed, 0 skipped

TEST Test SSH Connection

Full Name:	TestSSH.Test SSH Connection
Start / End / Elapsed:	20250305 09:51:40.551 / 20250305 09:51:43.233 / 00:00:02.682
Status:	PASS

+ KEYWORD SSHLibrary.**Open Connection** ${host} alias=${alias}

+ KEYWORD SSHLibrary.**Login** ${username} ${password} delay=1

+ KEYWORD SSHLibrary.**Execute Command** hostname

+ KEYWORD ${stdout} = SSHLibrary.**Execute Command** hostname

− KEYWORD BuiltIn.**Should Be Equal** ${expected_host} ${stdout}

Documentation:	Fails if the given objects are unequal.
Start / End / Elapsed:	20250305 09:51:43.231 / 20250305 09:51:43.232 / 00:00:00.001

− KEYWORD BuiltIn.**Log** ${stdout}

Documentation:	Logs the given message with the given level.
Start / End / Elapsed:	20250305 09:51:43.232 / 20250305 09:51:43.233 / 00:00:00.001

09:51:43.232 INFO Zynq

Automatic test definition

- Test external connections: ethernet, serial, rs485
- Test vital parameters (voltage, temperature)
- Test internal connections: MCU
- Test performances :
    - Phase delay ?
    - Other ?
- Stability test ?
- Ventilateur
- Add SFP information
- Nom du testeur
- Git repo.
- Liste des choses a acheter