

Hybrid Flyback Controller XDPS22-Series
- Parameter test and burn with .dp Vision
- FW and Parameter burn with .dp OTP burner

Dr. J. Hu

Overview

- Hybrid flyback controller series XDPS22*
  - Leading products in the industry
  - Digital core based solution for design flexibility and platform approach
  - Parameterization with .dp Vision tool

- .dp Vision tool
  - Version 2.1.1.0 for XDPS2201, XDPS2221 and XDPS2222
  - Version 2.1.3.7 for XDPS2201E and XDPS2221E
  - Download and install
  - Application
    - Taking version 2.1.3.7 for illustration

- dp OTP burner (check here or ask Infineon FAEs for access)
  - Burn FW + parameter set: .ahex file
  - Check a burnt device for correctness

- Q&A

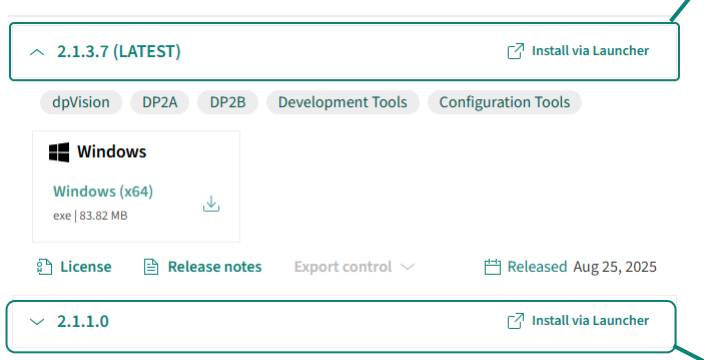
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.dp Vision tool
- Download and install

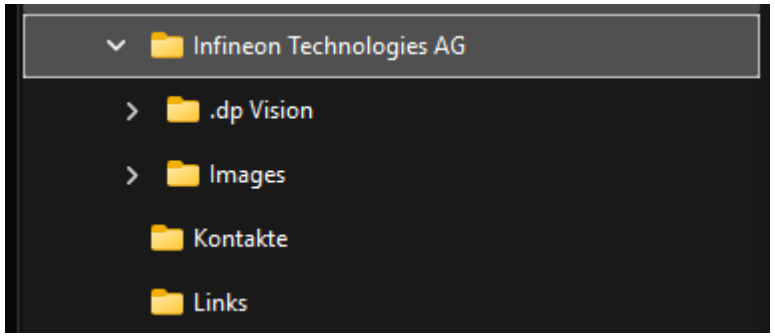
– Download
  – https://softwaretools.infineon.com/tools/com.ifx.tb.tool.dpvision

XDPS2201E
XDPS2221E



XDPS2201
XDPS2221
XDPS2222

– Install
  – Install the downloaded .exe file or
  – Via Launcher
  – Under the folder Windows username





  – Installation of both versions: ok
  – Run **only** one version at a time

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Application
- Required means for parameterization

- **Computer**
  - Windows operating system
- **.dp Vision tool**



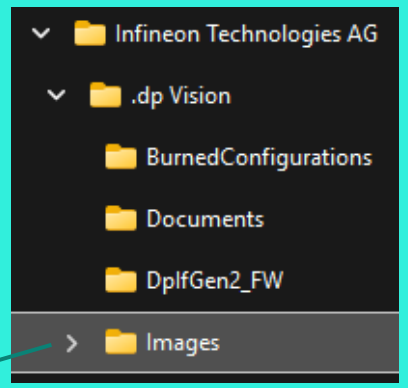
≤ 0.5 m

Type A

Type Mini-B

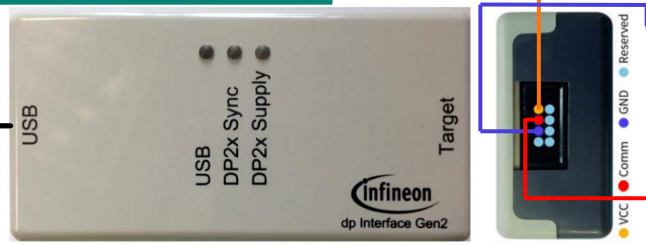
- **.csv parameter file**
- **Images**

Folder for all images

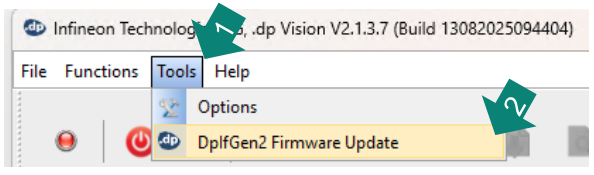


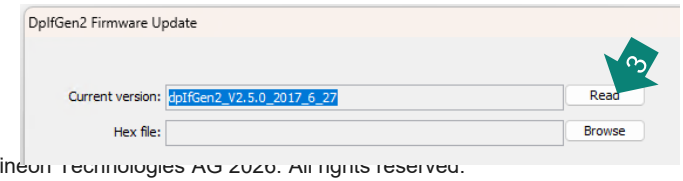
- **Interface board**

Sideview



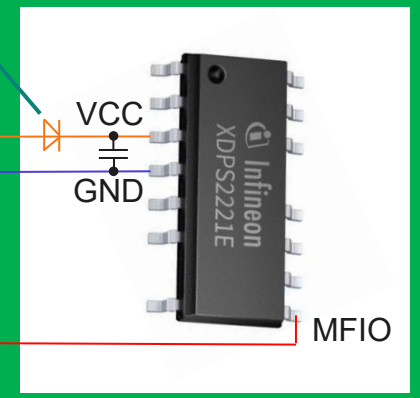
- Gen 2,
- FW 2.5.0
- Check FW
  - Step 1-3 check FW
  - Step 4-6 update FW





VCC blocking diode

Power board



- **Power board**
  - Three connection points
  - VCC block diode
  - Connections to IC pins

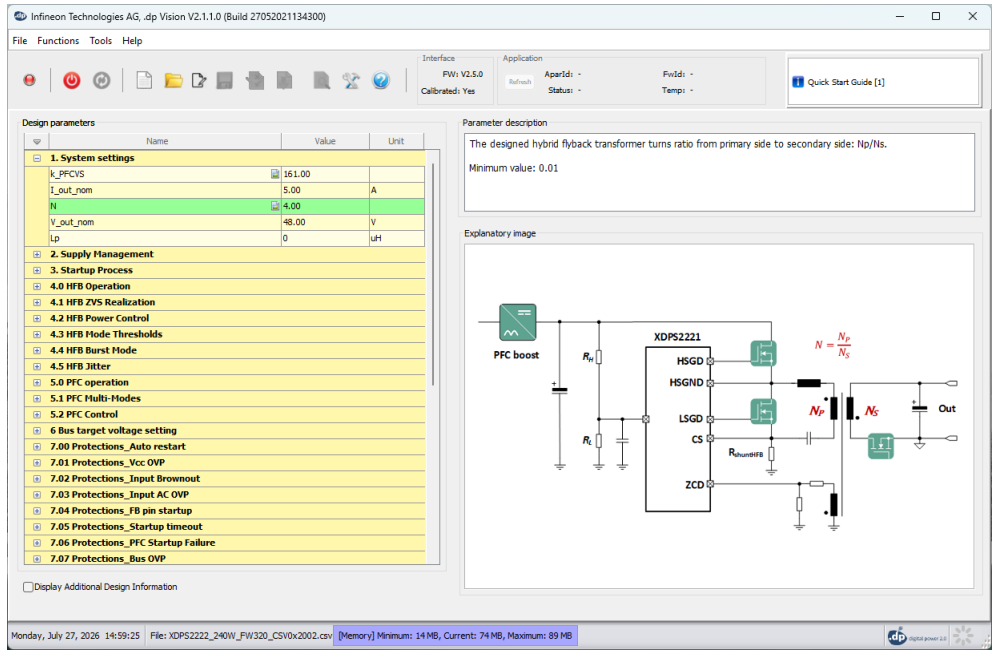


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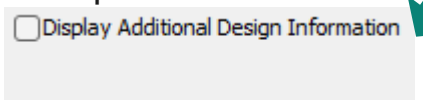
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Application
- Version 2.1.1.0. vs. 2.1.3.7

- Version 2.1.1.0
  - For XDPS2201, XDPS2221 and XDPS2222

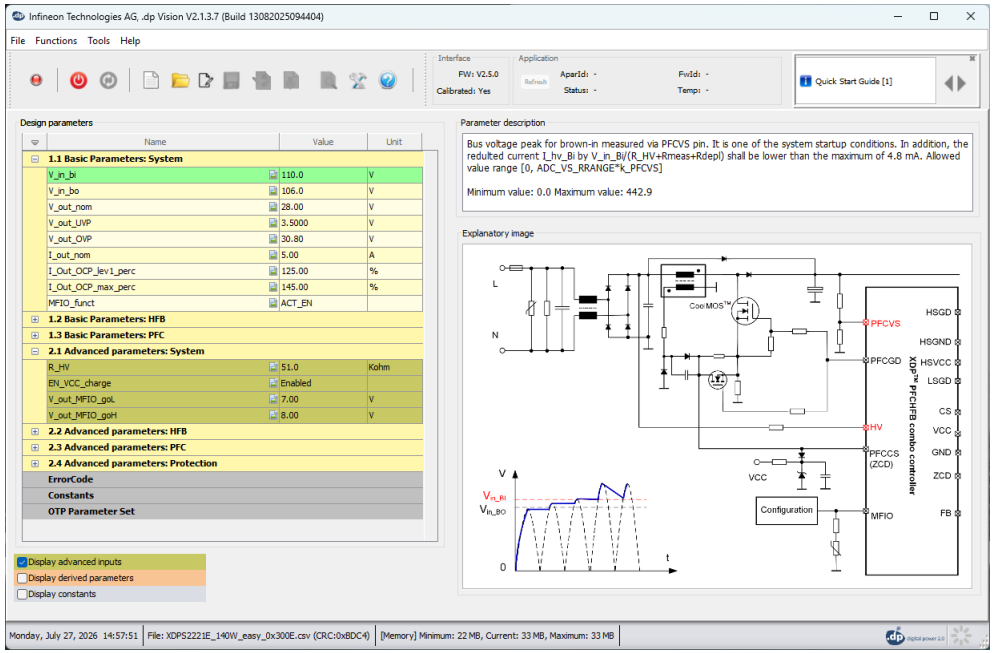


  - Basic features
    - All inputs at the same level

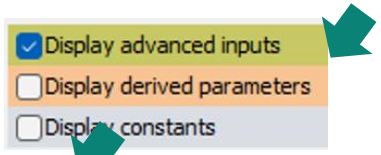


    - Import from .csv file

- Version 2.1.3.7
  - For XDPS2201**E** and XDPS2221**E**



  - New features supporting improved .csv parameter structure
    - Parameter groups



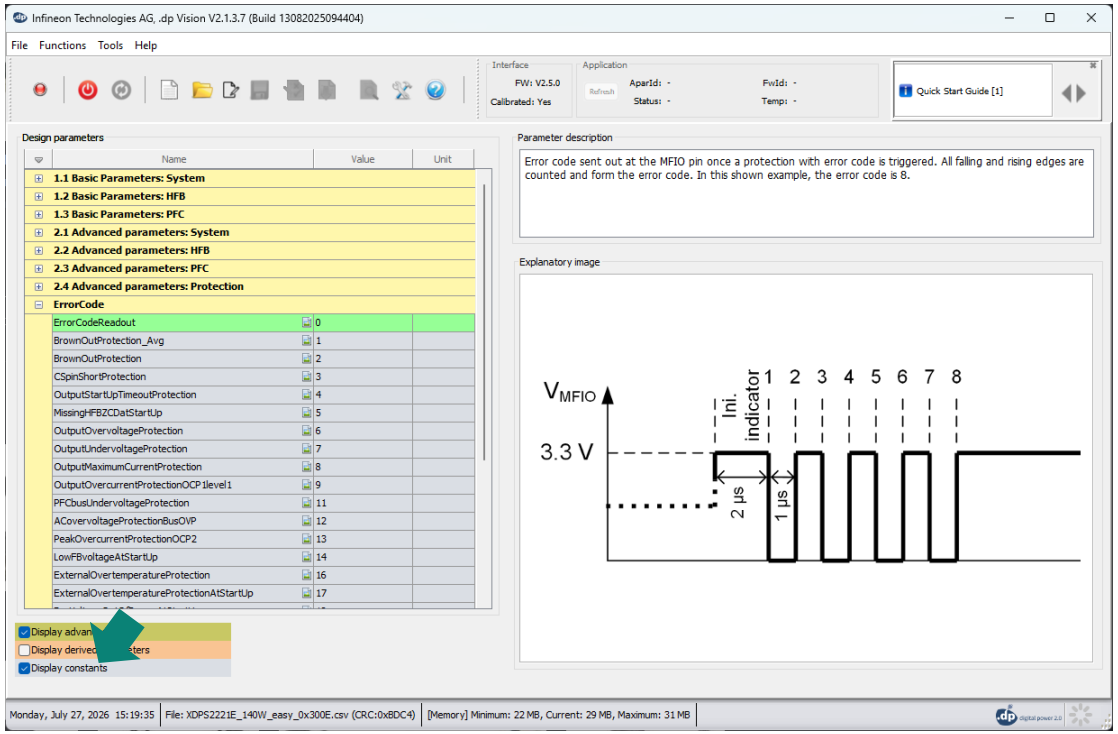
    - Import from .csv and .txt file

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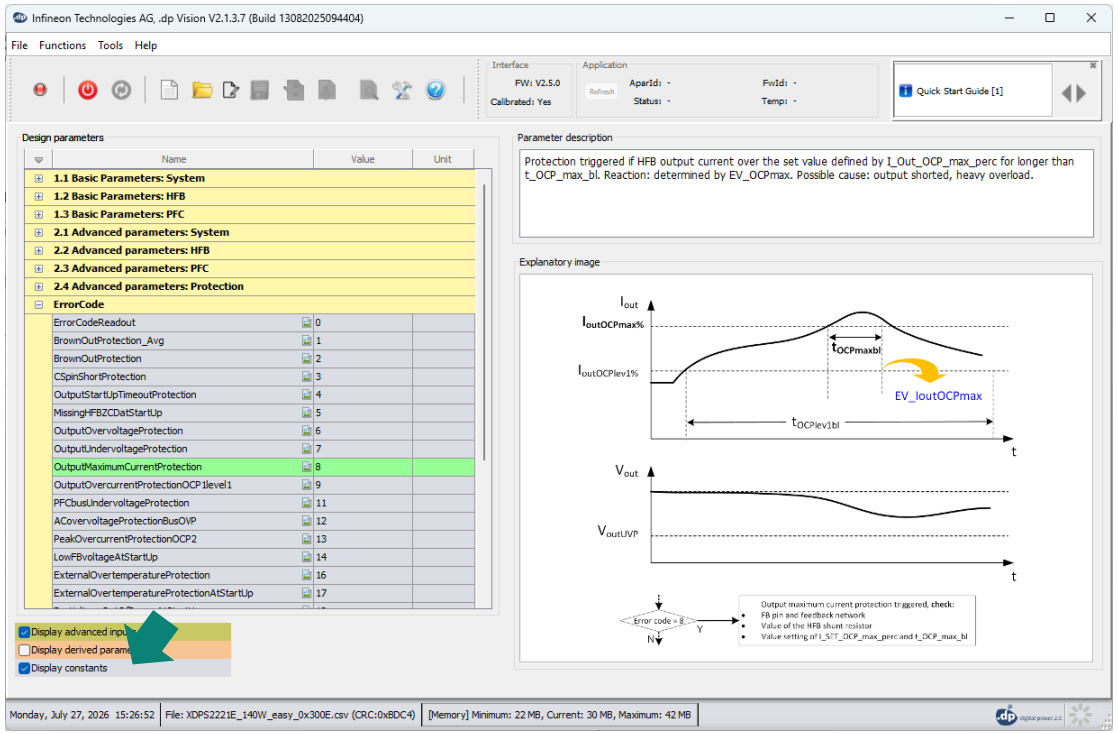
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Application
- Error code @ MFIO pin

- Embedded in .csv file for E-version controllers
- Check the box for Display constants



- Error code example
  - #8



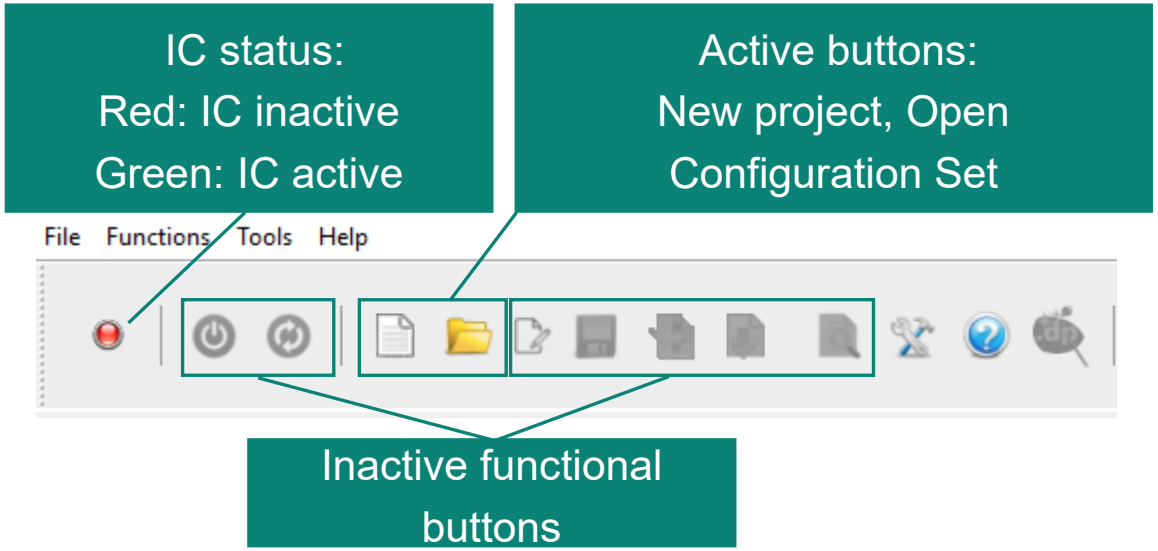
- Pattern
  - Initial pulse of 2 µs, followed by 1 µs pulses
  - All rising and falling edge counted = Error code

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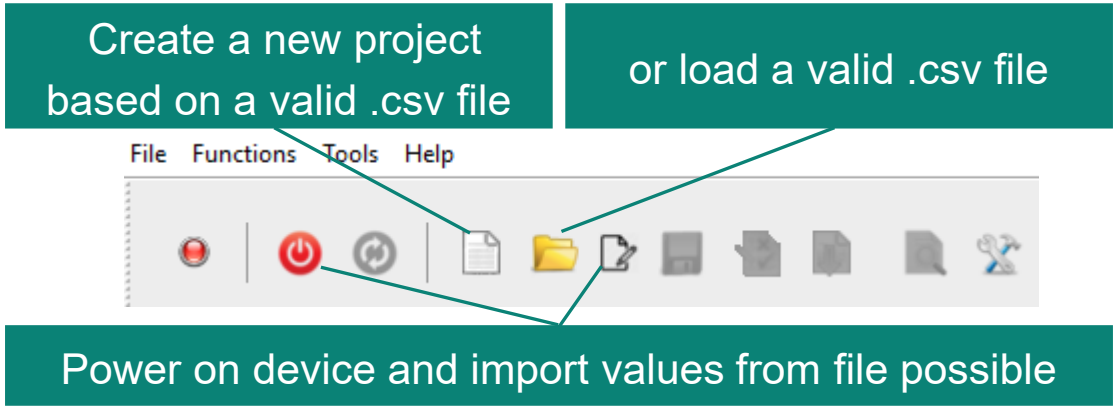
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Application
- Test configuration set (1/3)

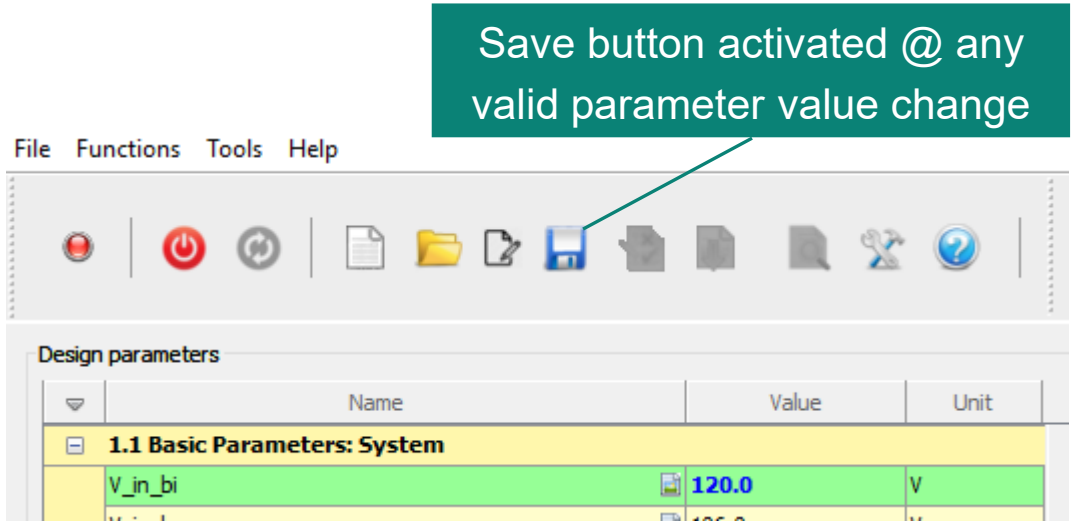
– Step 1: dp vision opened



– Step 2: create new project or load a .csv file



– Step 3: Change and save parameter values



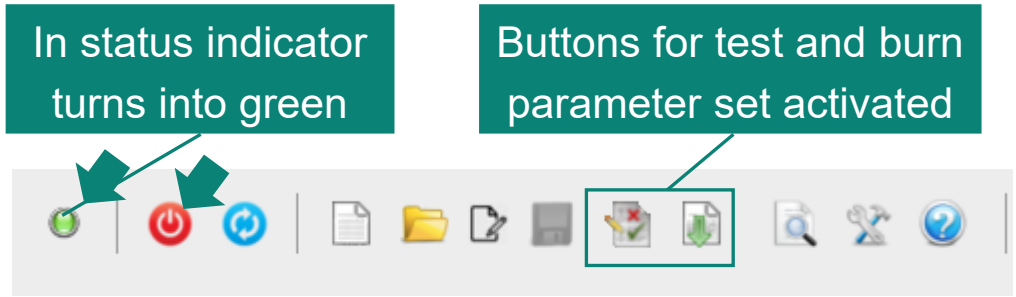
– Save the parameter value set under another name with indicator, i.e., with project information, date and/or time stamp
– Recommended to use file\Save As
– Pop-up window with information about outcome of the file save activity

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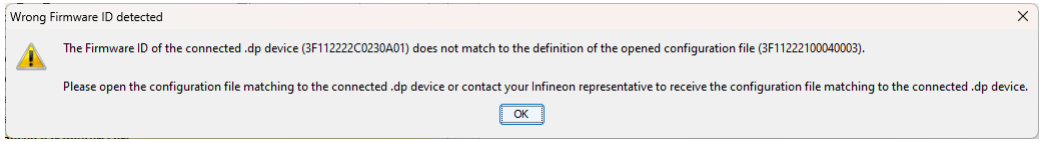
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Application
- Test configuration set (2/3)

- Step 4: Power on device
  - Cross check of the FW ID in the .csv file and IC
  - Case 1: match of FW ID in the loaded .csv file and inside the IC

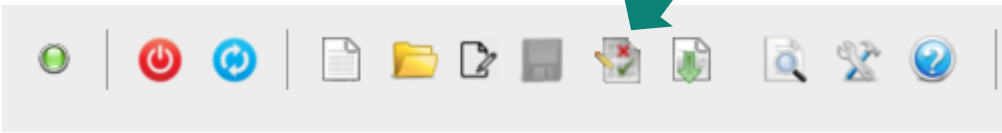


  - Case 2: mismatch of FW ID in the loaded .csv file and inside the IC

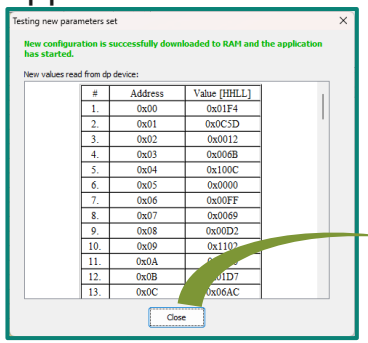


    - Need to check the csv file or the IC on board

- Step 5: Test configuration set during performance fine tune by click on the button



  - Message window
    - Successful parameter downloading and
    - Application started



DP vision coming back to the status at step 2

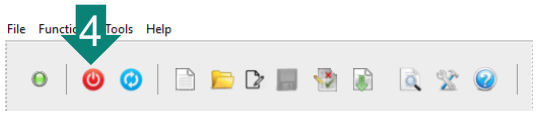


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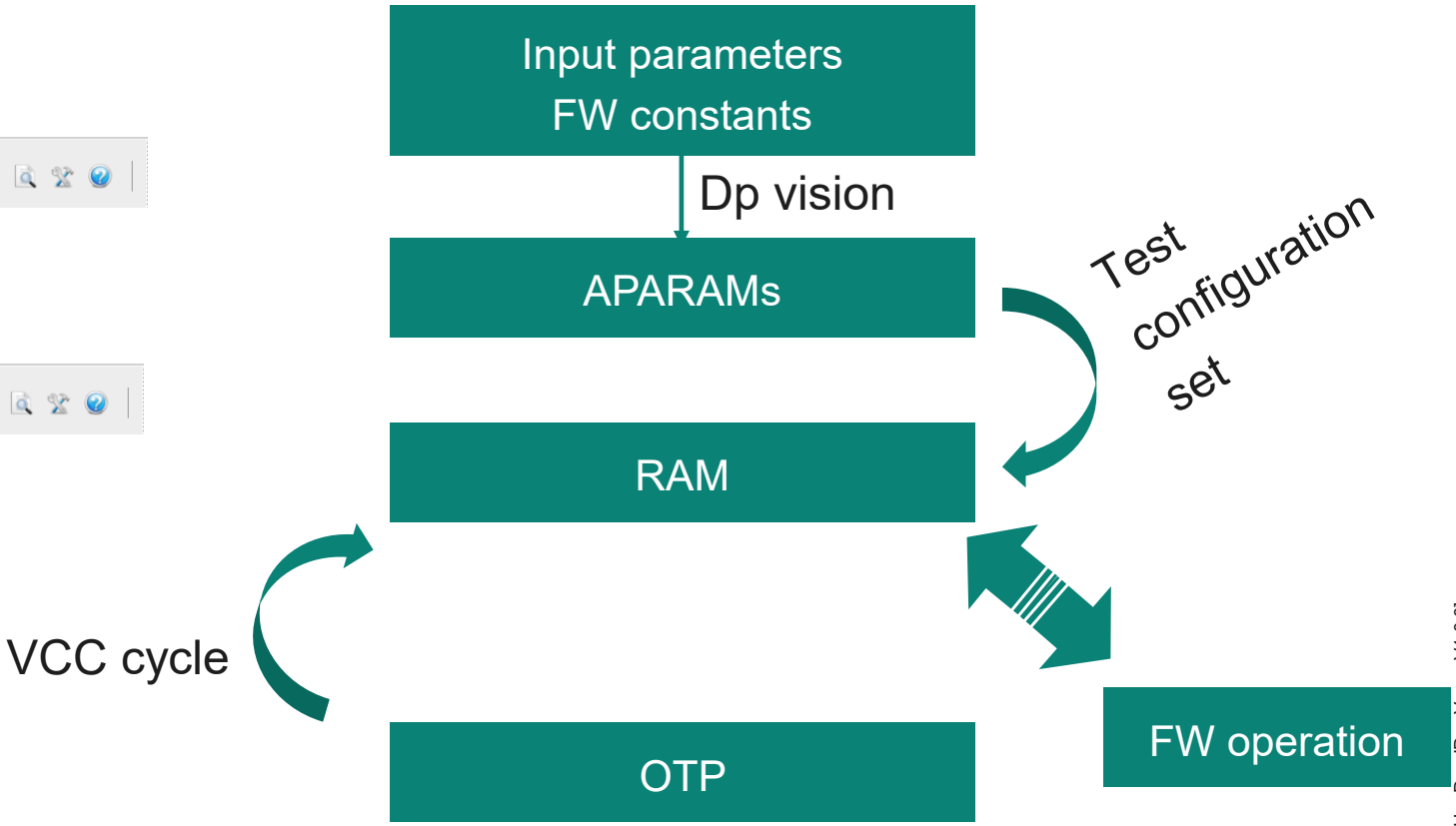
Application
- Test configuration set (3/3)

– Important to know
  – Required sequence for Test Configuration Set
    1. Load the working .csv file
    2. Set the value properly
    3. Save the .csv file, optional
    4. **Power on device**
    5. **Turn on the AC source**
    6. **Test Configuration Set**





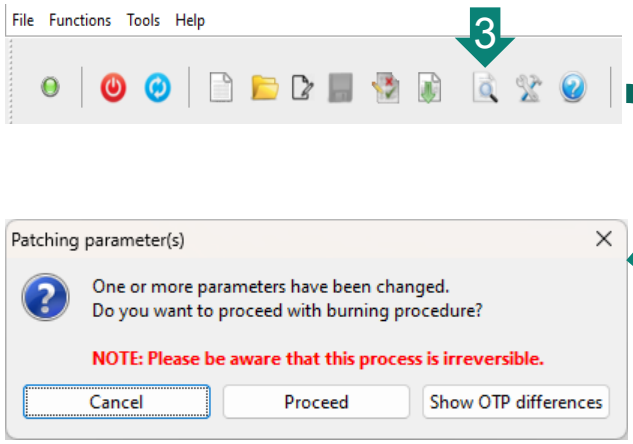
– Data process and flow



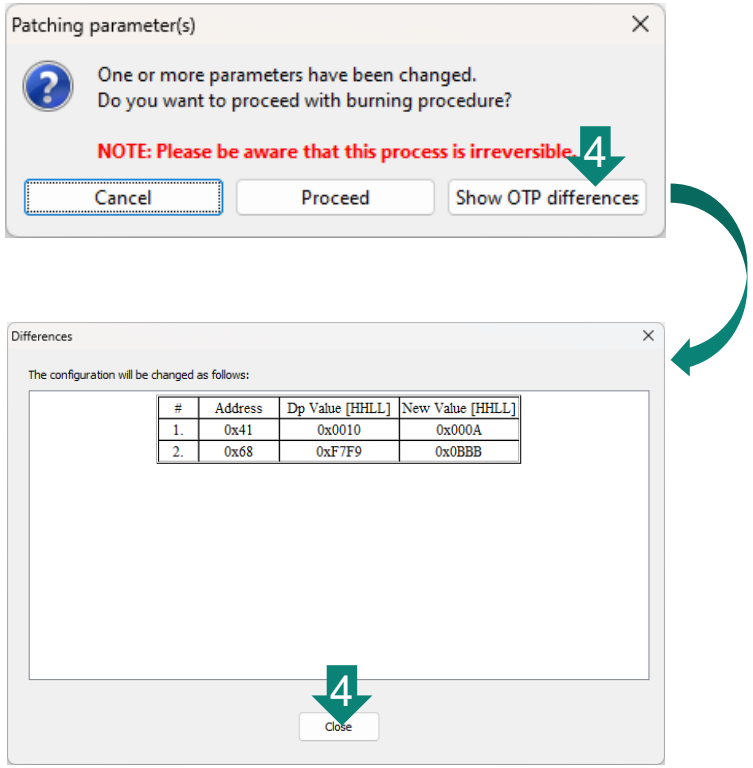
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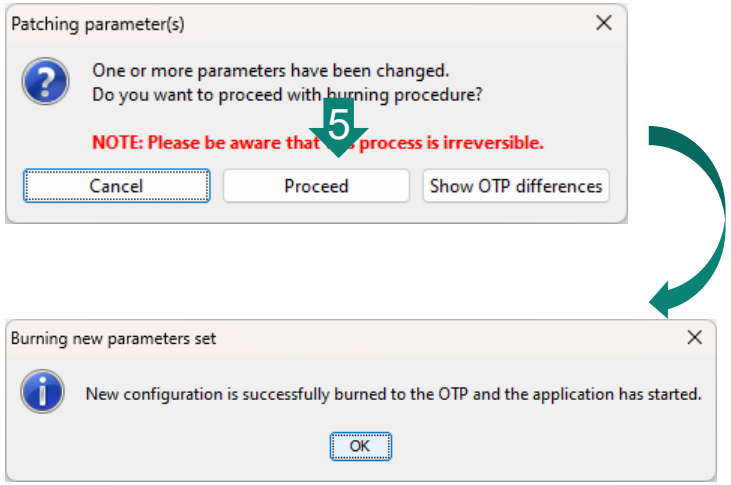
Application
- Burn configuration set (parameter)

- Recommendation: To be used
  - During debugging of protection related parameters, or
  - For product release after parameter fine tuned
  - **Bypass the VCC blocking diode when burn OTP on power board**
- Procedure
  1. Load the specific .csv file
  2. Power on device
  3. 

4. Optinal: check the change and close the window



5. Proceed parameter burning



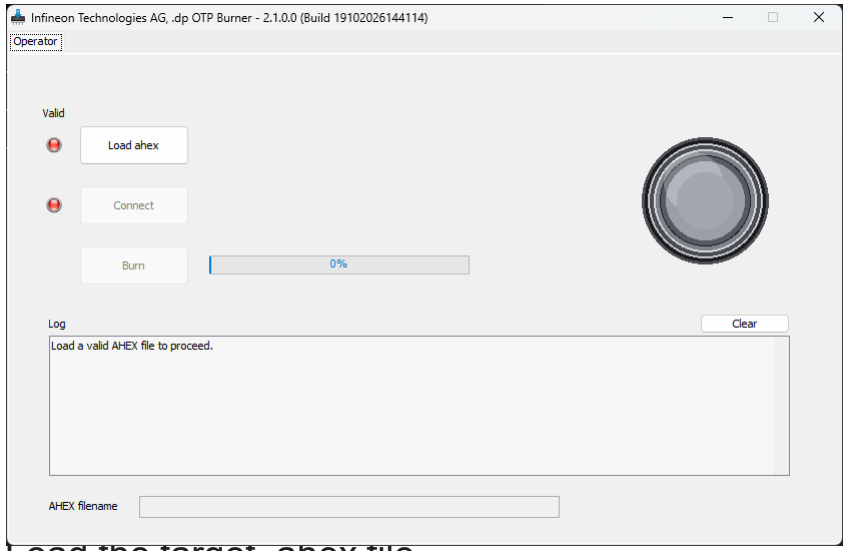
6. New configuration set (parameter set) burnt to the IC and ready for use

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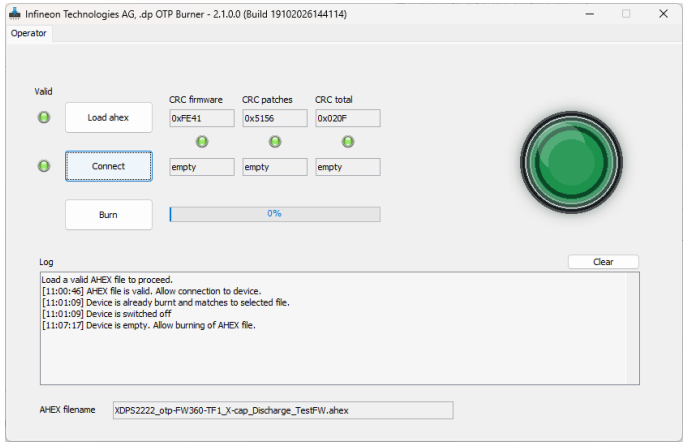
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Application
- Burn FW + parameter set .ahex file

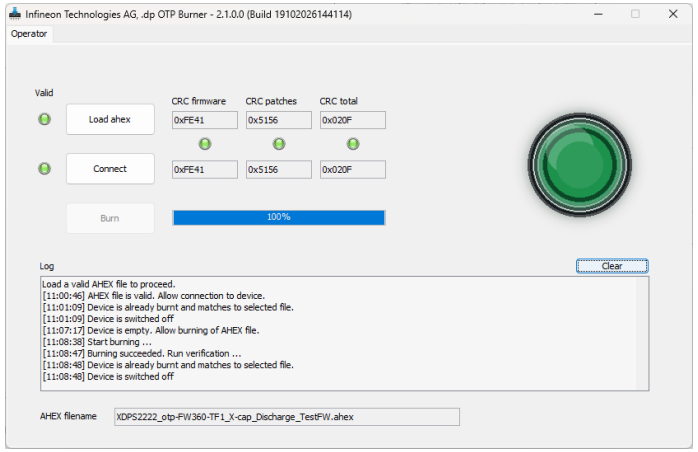
- FW and parameter set burnt into blank samples
  - Required
    1. Interface board Gen 2
    2. dp OTP burner (check here or ask Infineon FAEs for access)
    3. Target .ahex file
  - Steps
    1. Connections preparation and a blank IC in the IC socket



    2. Load the target .ahex file
    3. Connect



    4. Burn



    5. Finished and remove the device

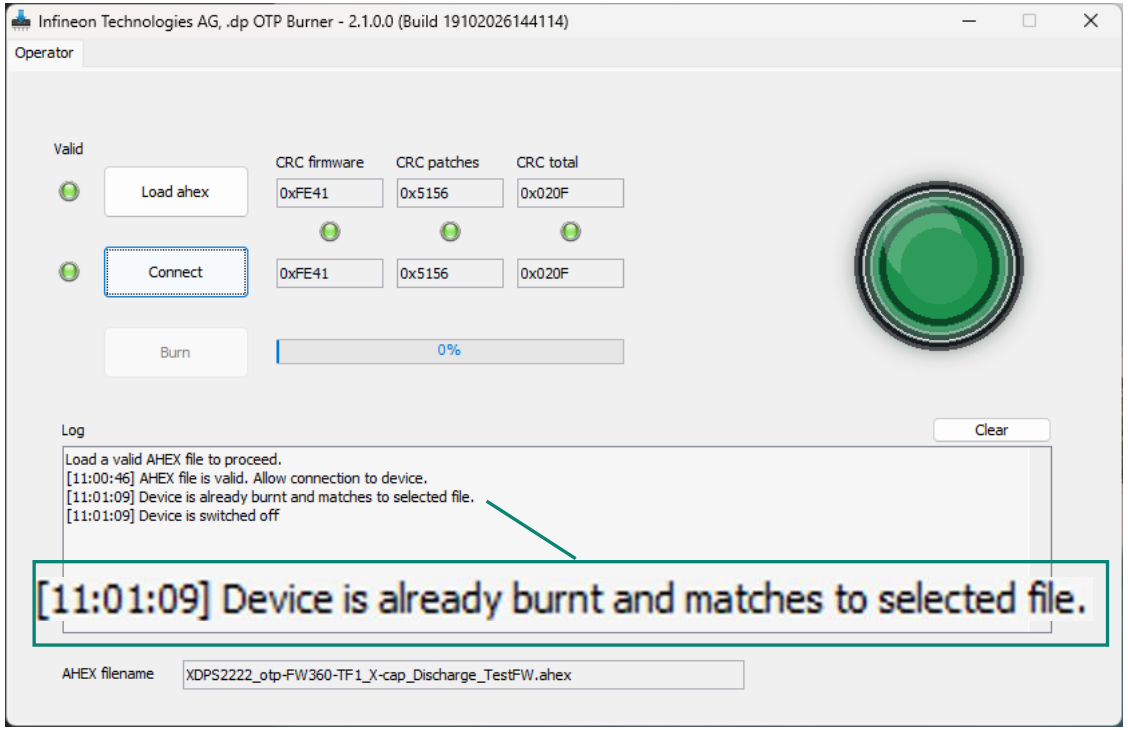
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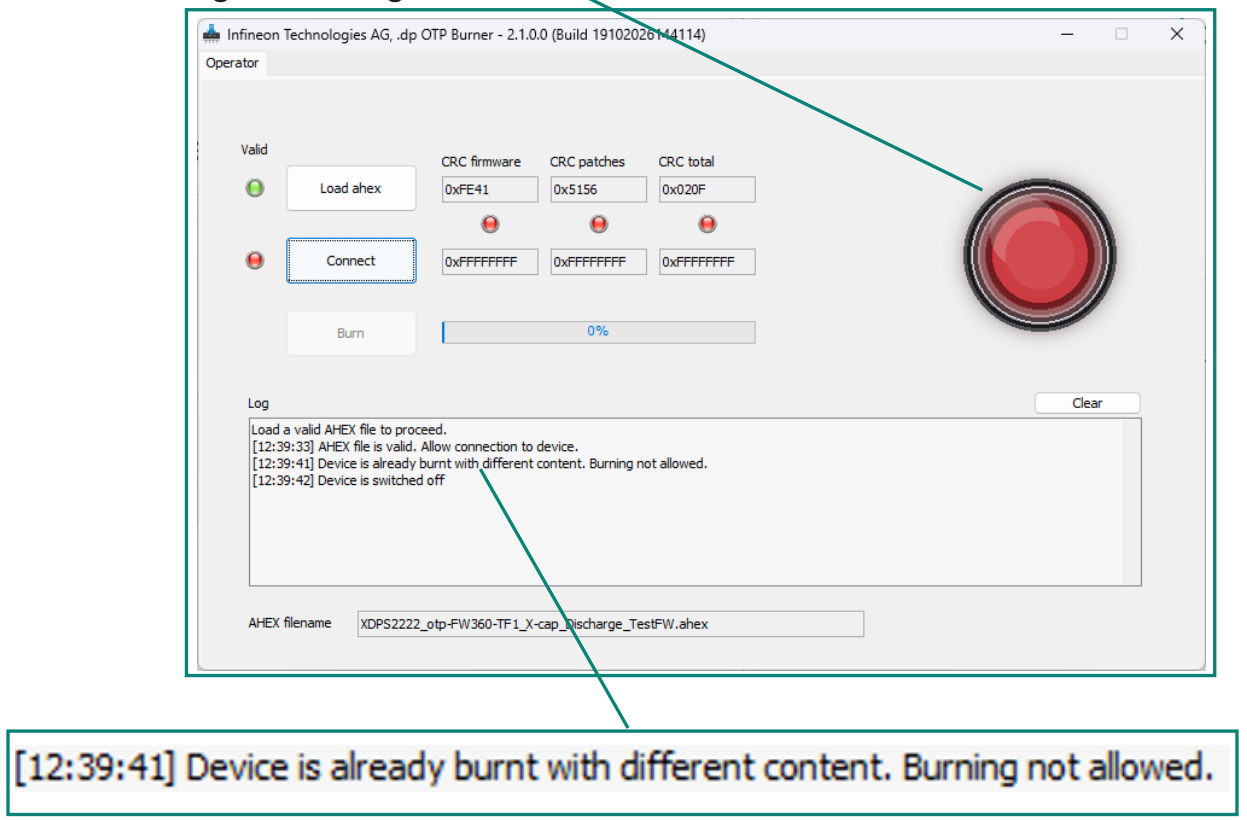
Check a burnt device for correctness

- Steps
  - Load the target .ahex file
  - “Connect” click

- Case one: OTP properly burnt



- Case two: Unmatched content
  - Lights turning into red

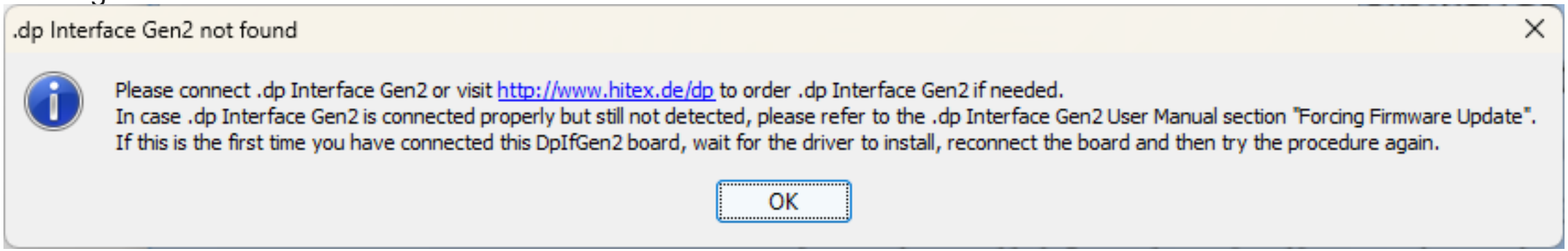


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Application
- Q&A

- What to be checked when .dp interface board not found, where
  - PC, interface board and IC connected
  - Dp2x Sync LED blinking
  - Message



  - To do
    - ***Disconnect and reconnect the cables***
    - ***Check the interface board FW***
    - ***Update the interface board FW to version 2.5.0***

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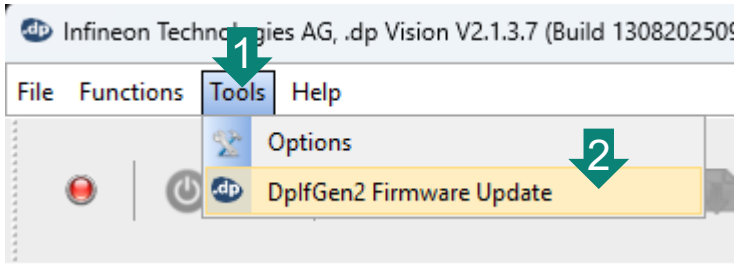
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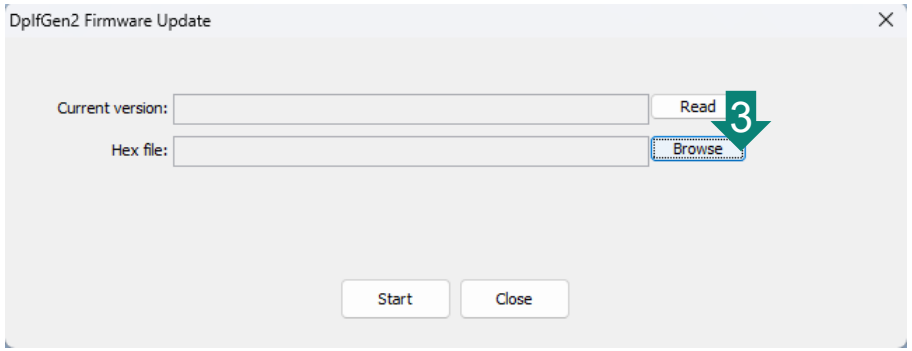
Application
- Q&A

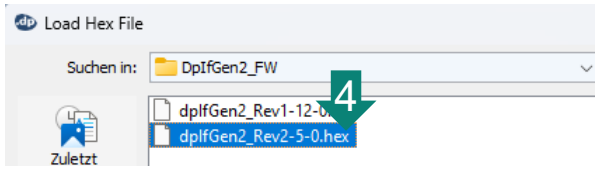
– Interface board not recognized by dp vission?
  – A forced FW update required
    1. ***Disconnect the interface board from PC***
    2. ***Connect two marked pins***

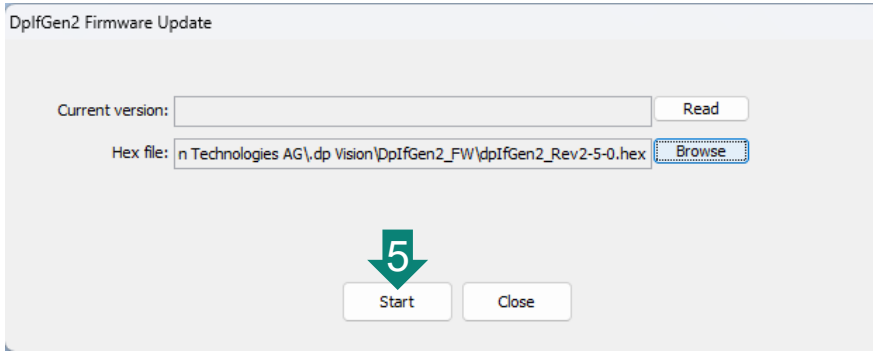


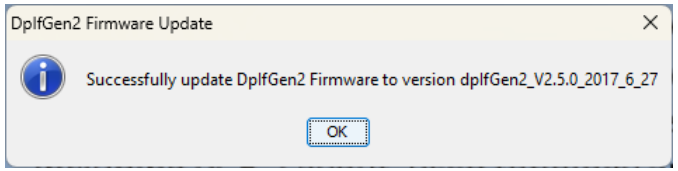
    3. ***Reconnect the USB cable to PC, the DP2X Sync LED shall start to flashing. If not, the interface board is damaged***
    4. ***Load the FW .hex file and update the FW***









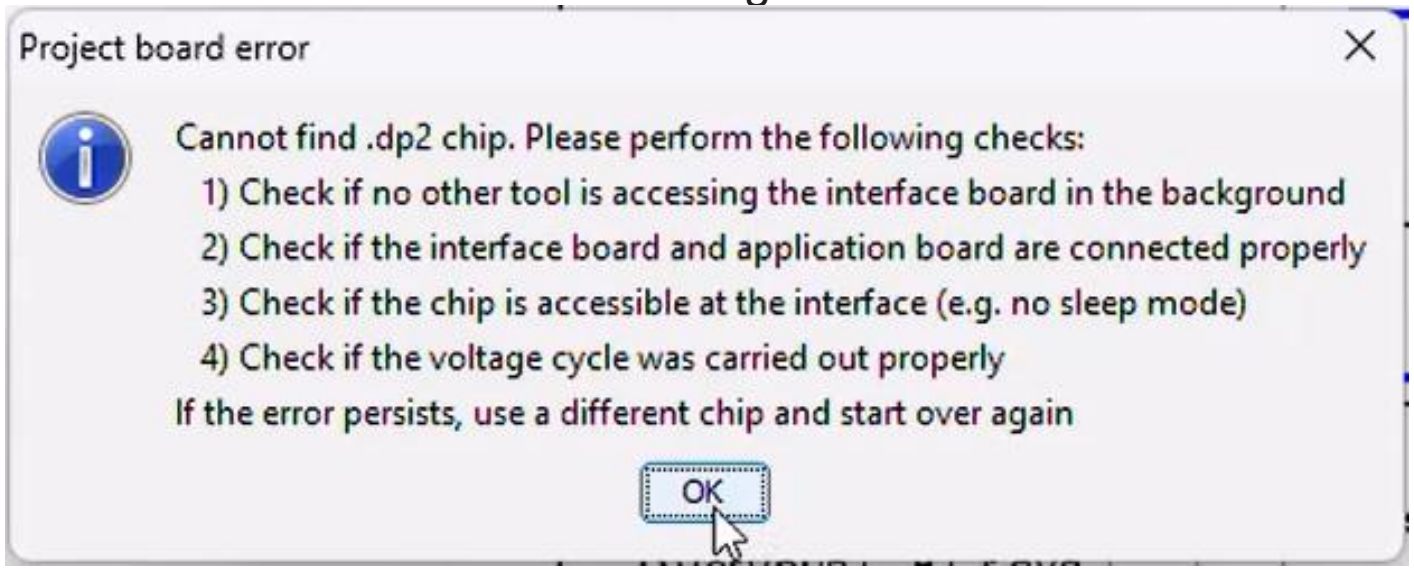


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Application
- Q&A

- What to be checked at error message?



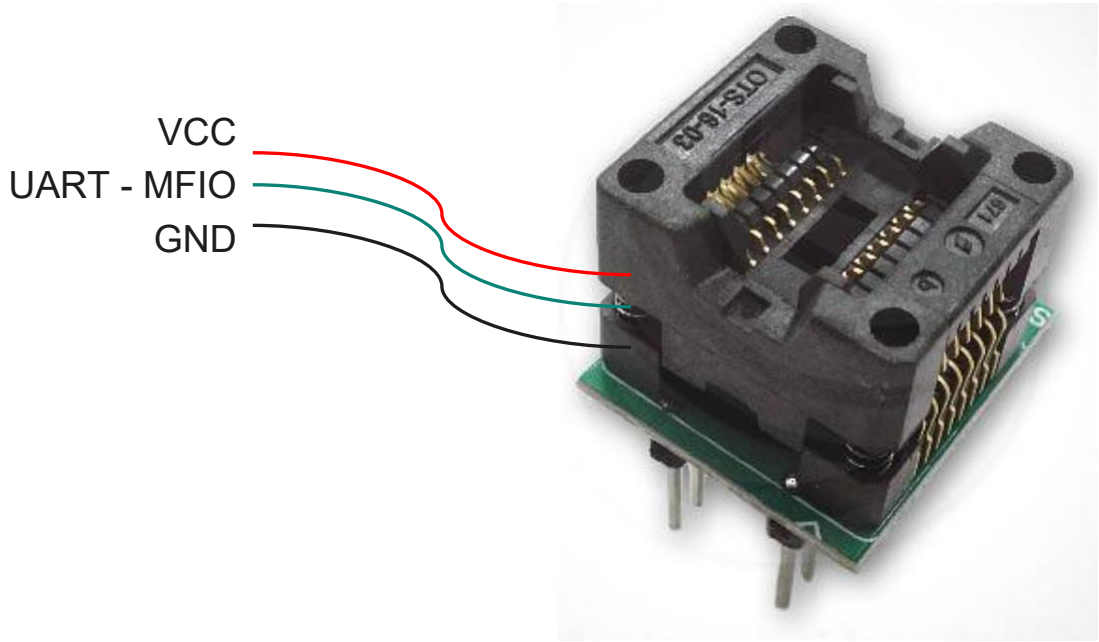
  - No other dp tools running in parallel, i.e., of different dp vision versions
    - ***Close all dp tools and restart the dp vision***
  - Broken cable or improper connection from PC to IC pins
    - ***Replace the cables and rebuild proper connections***
  - IC operating in sleep mode
    - ***Disconnect the VCC supply and wait for VCC drop***
  - VCC voltage cycle failed, most likely on a power board with VCC block diode
    - ***Wait for a while or discharge the VCC capacitor manually***

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Application
- Q&A

- How to prepare more samples for test in laboratory?
  - With an OTP programming board, which has
    - Connection to the interface board
      - UART – MFIO, VCC, GND
    - DOS-16 IC socket with spring to hold the samples
  - A simplest example
    - Based on an available adaptor in the open market
    - Three short flex wire to the interface board
    - Adding a 1 µF ceramic capacitor between VCC and GND
  - The same parameter burning process as described before



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