Getting started with the XDPL8221 reference board using .dp Vision software

XDP™ digital power

About this document

Scope and purpose

The purpose of this document is to give a quick guide to operation of the XDPL8221 reference board for all power classes of LED lighting applications, and how to use the .dp Vision software to program the operating parameters of the digital controller XDPL8221.

Intended audience

This document is intended for anyone who wants to evaluate the XDPL8221 reference design for LED lighting.

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1 Tools

1.1 Required hardware and software tools

The required hardware and software tools are listed in **Table 1**. Please order all the hardware tools and download and install all the software tools.

Table 1 Required hardware and software tools for getting started

Name	Ordering link	Description	Ordering content
Please order all the hardware tools. Click on the links below:			
XDPL8221 reference board	Click on the link: **device-Demo**	XDPL8221 reference board for LED lighting	XDPL8221 reference board Driver for LED lighting Programming cable To connect the XDPL8221 reference board with the .dp Interface Gen2
.dp Interface Gen2	Click on the link: **IF-BOARD.DP-GEN2**	Interface board to control XDPL8221 from PC/notebook	.dp Interface Gen2 Interface for programming the XDPL8221 digital controller USB cable To connect the .dp Interface Gen2 with a PC
Please download and install all the software tools. Click on the links below:			
Graphic User Interface (GUI) for read and write access to the parameters in the OTP	Click on the link and follow the instruction in the right column: **.dp Vision**	Accept the mentioned terms and conditions Click “Run” Install “dp.vision”	.dp Vision installer (*.msi)
dpVision_folder_set-up Copies auxiliary files including the parameters .csv file to the respective directory structure	Click on the link and follow the instruction in the next column: **REF-XDPL8221-U50W_ dpVision_ folder_set-up**	On the website of the respective board, choose and open the appropriate .zip file (e.g. for the 50 W reference board, choose “**REF-XDPL8221-U50W_ dpvision_folder_set-up**” Double-click the *.msi file to install	XDP™ digital power – dp Vision set-up with the following documents: XDPL8221 parameters .csv file XDPL images file XDPL8221 documentation files XDPL system simulation and design creation tool .dp Interface Gen2 firmware

2 Getting started

Attention: The instructions of this manual work without V AC connection.

Attention: Before you connect the reference board to the mains, pay attention to the safety hints in the recent "REF-XDPL8221-U50W Engineering report Vx.x" thoroughly. Incorrect use of the reference board could be dangerous, and even life-threatening!

2.1 Hardware connection

Connect the .dp Interface Gen2 to a notebook/PC with the USB cable.

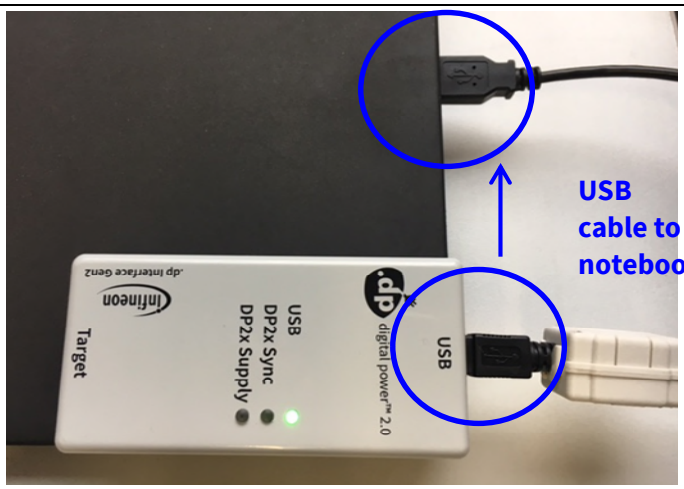

Figure 1 Connection between .dp Interface Gen2 and notebook

Note: Sometimes the detection of the .dp Interface Gen2 fails on USB3.0 ports. Therefore the use of a USB2.0 port might be necessary (which can be provided by an external USB2.0 hub if the machine only offers USB3.0 ports).

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Connect the .dp Interface Gen2 to the XDPL8221 reference board with the programming cable.

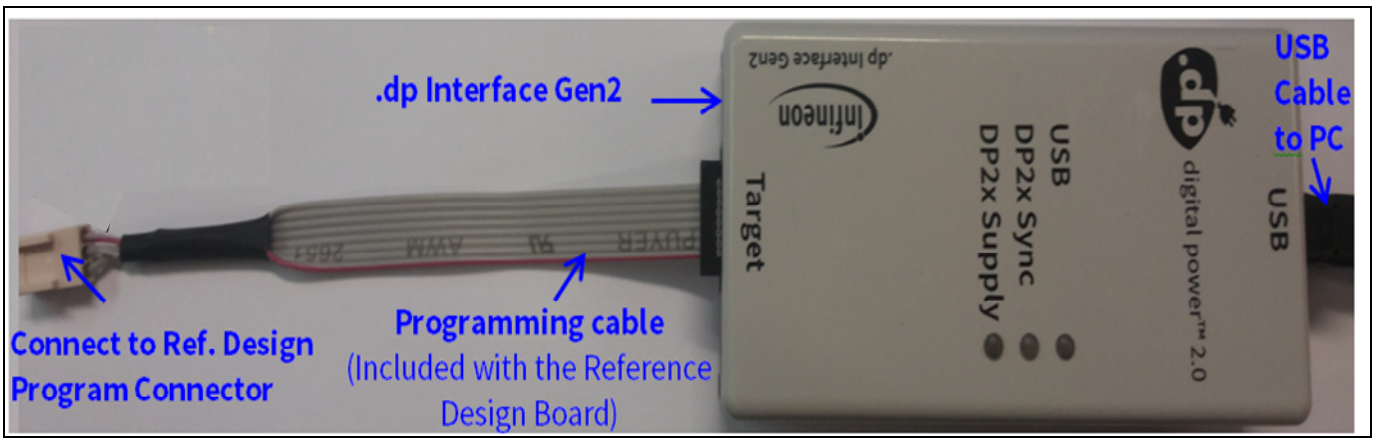


Figure 2 .dp Interface Gen2 connection

Figure 3

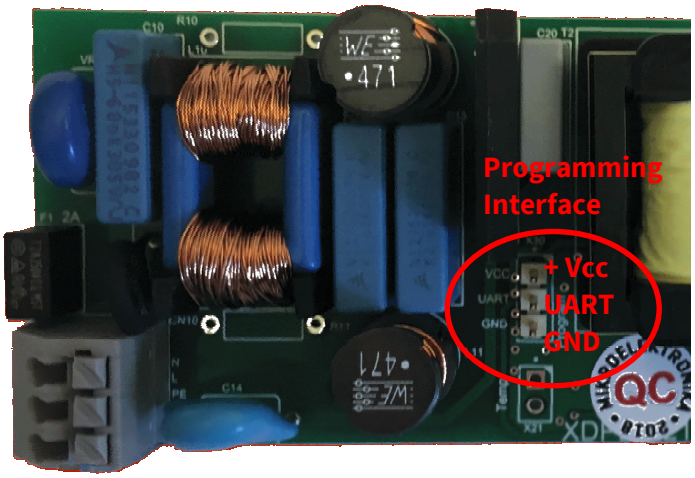


Figure 4 Connection between the .dp Interface Gen2 and the XDPL8221 reference board

Note: Please ensure that the connector of the programming cable is plugged in correctly: the colored wire indicates Pin 1 and should be connected to the V_{cc} pin on the XDPL8221 reference board.

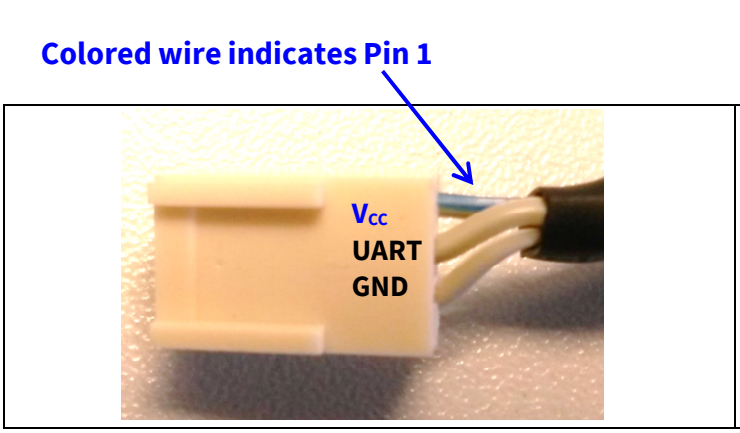


Figure 5 Program connector V_{cc}, UART, GND

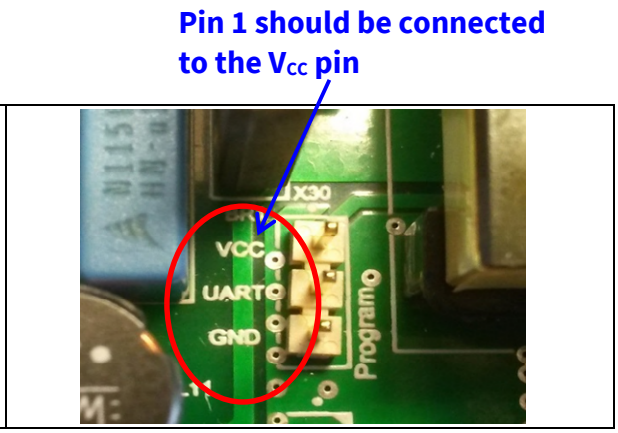


Figure 5 Programming interface V_{cc}, UART, GND

2.2 Parameter configuration

Start the .dp Vision program by clicking the ".dp Vision" shortcut on the desktop. The screen shown in Figure 6 will appear.

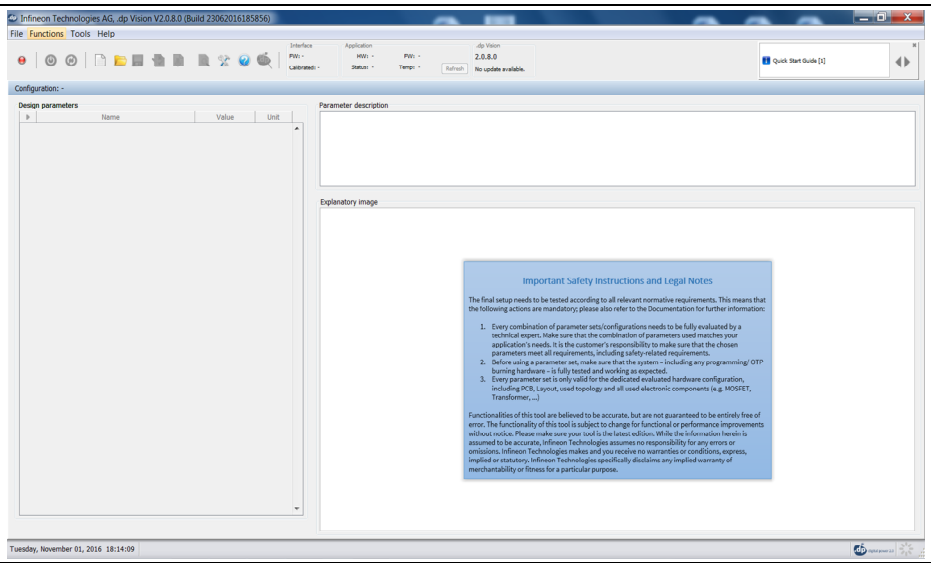


Figure 6 Starting .dp Vision

Load the XDPL8221 parameters configuration file (*.csv) in the folder *(HOME) \Infineon Technologies AG\.dp vision\Parameters* as shown in **Figure 8**. Please select the corresponding file (e.g., for a 50 W board choose the "XDPL8221_FWvx.x.x_50W" file).

Select the appropriate .csv file to open

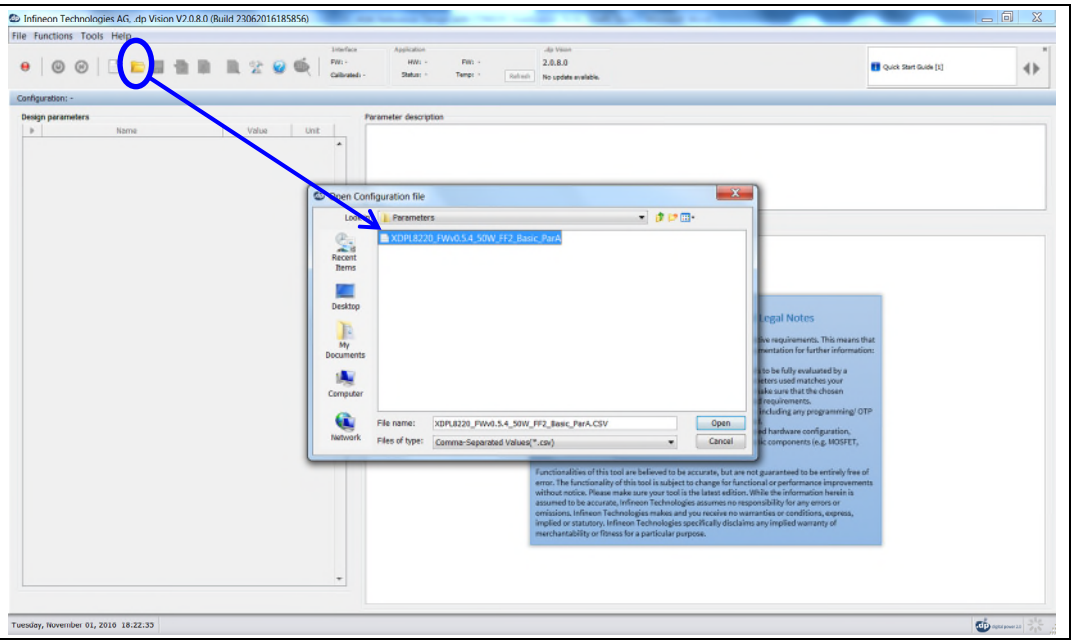


Figure 7 Load the .csv file

After loading the parameters .csv file, a list of XDPL8221 configurable parameters will show (see the box on the left in **Figure 8**). These values can be modified by users and will turn blue.

Getting started

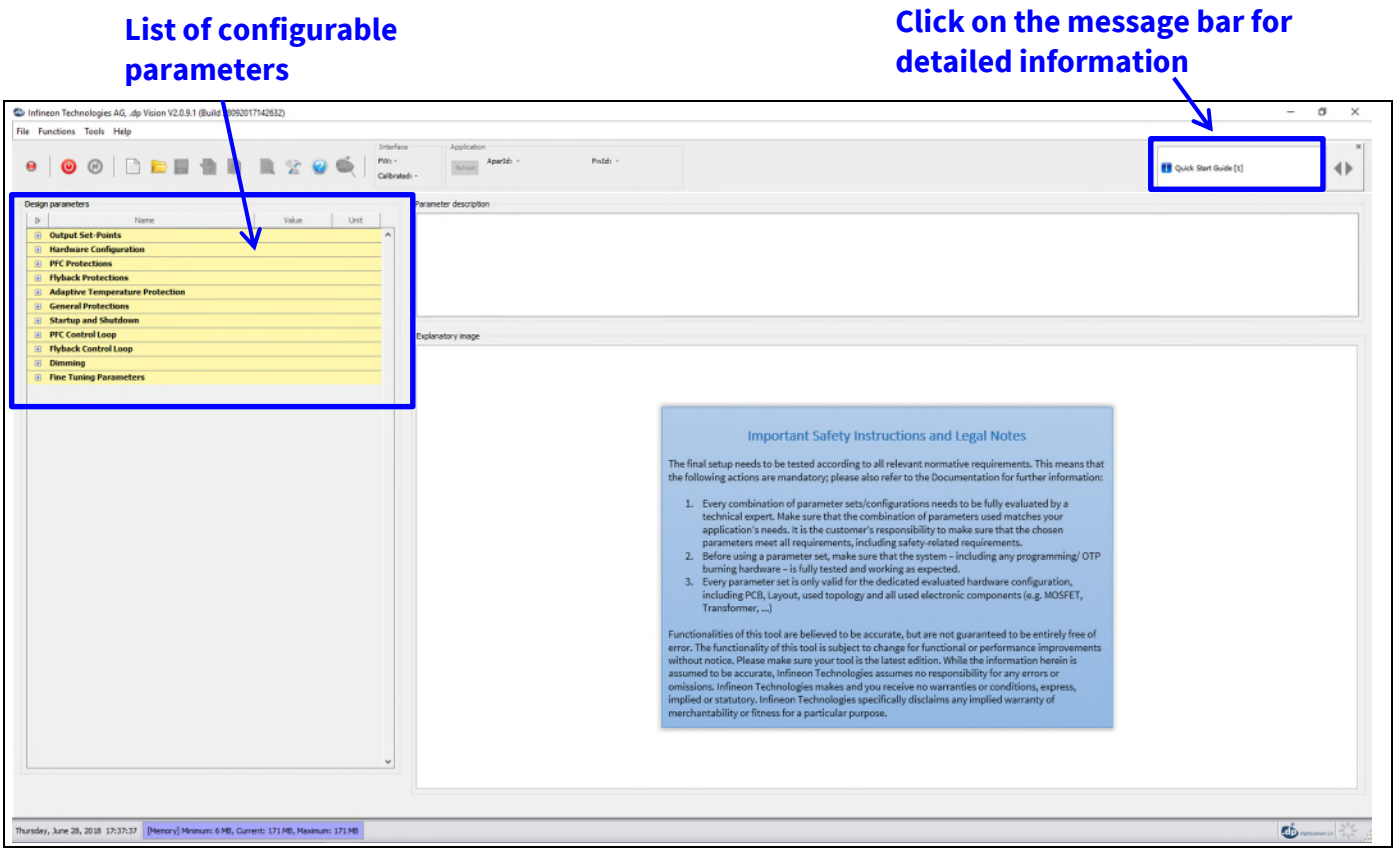


Figure 8 Parameters file loaded in .dp Vision

Note: The message bar shown in Figure 8 provides detailed information. For further information, please refer to the "dpvision User manual".

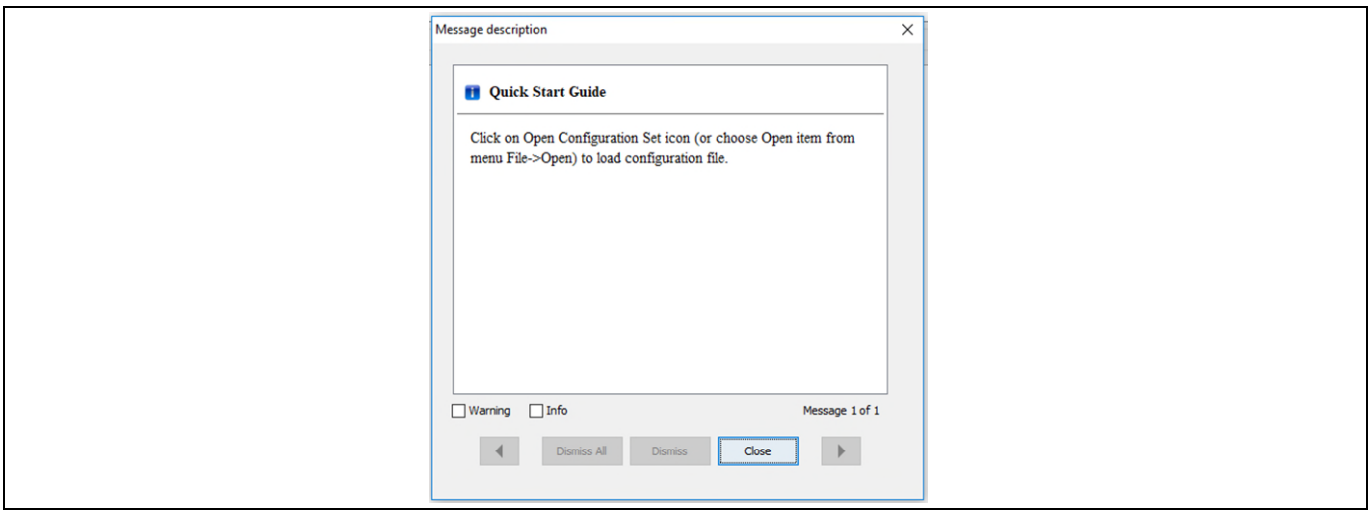


Figure 9 Message description

Getting started

There are two options available to configure the IC based on the parameter values in .dp Vision.
1) Non-permanent for testing
2) Permanent for regular operation

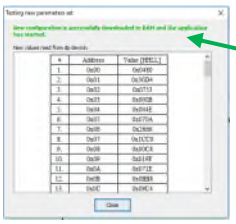
1) Test configuration

This function will download the parameter values from .dp Vision into the XDPL8221 RAM memory space, and it will then be followed by an automatic IC start-up for application testing with the new configuration. As long as the board is activated, the V_{CC} is supplied.

Parameters configuration with this option is not permanent, because the loaded RAM content gets lost once the IC supply voltage is turned off or the IC restarts due to certain protections. For detailed information, please refer to the "dpvision User manual" in the "Documents" folder.

Table 2 shows the procedures for using test configuration function in .dp Vision to load the new parameter values in the RAM and test the application with the new configuration.

Table 2 Test configuration procedures

Step	Instruction
1	Open configuration file and change parameter value (see example in **Figure 8**).
2	Ensure that the primary supply voltage (AC input) to the board is not active and the hardware connection for configuration is OK based on **Figure 2** and **Figure 4**.
3	Press to supply power and establish a connection to the target XDPL8221. After this, XDPL8221 will be in configuration mode and the device status should change to .
4 (optional)	Ensure that the LED output is connected to a load, and switch on AC input (e.g. 230 V AC). After this, the board will not start because XDPL8221 is still in configuration mode.
5	Press to test the configuration with target XDPL8221. After this, the IC will automatically start normal operation with the new configuration and the window below will pop up:  New configuration is successfully downloaded to RAM and the application has started Note: If the parameter configuration is equivalent to the pre-existing parameters, the XDPL8221 will not download them to RAM.
6	Press "Close" on the pop-up window.
7	To test another configuration, repeat these steps.

Note: If there is any error between steps 1 and 7, refer to the message bar of .dp Vision for the error message. For further information, please refer to the "dpvision User manual".

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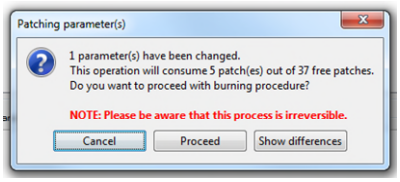
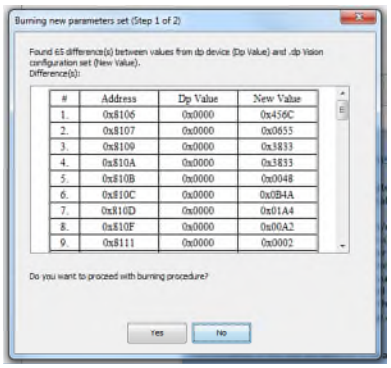
2) Burn configuration

As the XDPL8221 chip on the 50 W reference design PCB has a first full set of parameters in its One-Time Programmable (OTP) memory space, only changed parameters are written in the OTP memory. For detailed information, please refer to the “dpvision User manual” in the “Documents” folder.

Table 3 shows the procedures to burn a parameter update in .dp Vision into the OTP memory.

Table 3 Burn configuration procedures

Step	Instruction
1	Load configuration file (see example in **Figure 8**).
2	Modify the parameter value needed, then press **[File]** >> **[Save]** or **[File]** >> **[Save as]**, to save the configuration file. Otherwise, proceed to step 3.
3 (optional)	Disconnect or turn off AC input voltage and check the hardware connection for configuration, see **Figure 2** and **Figure 4**.
4	Press to supply power and establish connection to the target XDPL8221. After this, XDPL8221 will enter configuration mode and the device status should change to .
5	Press to burn configuration into target XDPL8221. After this step, a window pops up, like one of these below.   Note: If the parameter configuration is equivalent to the pre-existing parameters, the XDPL8221 will not burn them in the OTP memory.
6	Press “Proceed” or “Yes” to burn the configuration. After this, a window pops up indicating success.
7	Press “OK” on the pop-up window then disconnect the programming cable from the board connector and test the application, if needed.

Revision history

Major changes since the last revision

Page or reference	Description of change
All	First release

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