



# PowerArchitect™ 4 Release Notes

## Introduction

PowerArchitect™ 4 is Exar's intuitive and powerful GUI used to program the first generation of Power<sup>XR</sup> family of power controllers. This release has many usability and feature improvements as well as a number of bug fixes.

### Minimum Requirements

Windows XP  
1GB RAM  
100MB Hard Disk Space  
USB Port

## Improvements in PowerArchitect™ 4.23

### Fixed PID coefficients in Advanced Tab.

The PID coefficients in Advanced Tab are calculated using truncated values of C, L, ESR and therefore differ from actual coefficients used elsewhere in GUI. This means the Bode plots will be off as well from the actual value. Coefficients programmed into a device are correct.

### Updated handling of don't cares in the XCM standalone mode.

Note: the V62 of the XCM firmware does NOT support standalone mode. If you need that function, contact [powertechsupport@exar.com](mailto:powertechsupport@exar.com).

### Added EVB configuration for XRP7740EVB-HC.

This will replace the old XRP7740EVB and XRP7708EVB. These are the old large boards with the uC included.

### Increased max allowed current limit.

### Update XRP7740 Version B configuration.

### Standardized I2C address to use 7-bit Hex formatting everywhere.

## Improvements in PowerArchitect™ 4.21

### Improved Voltage Range Support

Users now have the option to specify the full 5.1V range without requiring an external resistor divider network.

### Fixed XRP7714 Revision Recognition

Fixed the issue in recognizing 7714 revisions that caused some improper default settings.

### **Added Automatic Device Driver Installation**

On startup, device drivers are checked for proper installation and will prompt the user to install if it can't find the driver. Also, several language-related issues with driver installation have been fixed and added a 64-bit driver to the install package.

### **UVLO Lockup Issue**

An issue that caused lockup when reporting UVLO has been fixed.

### **Warning on PGOOD Flag Functionality**

A warning was added when the upper PGOOD threshold exceeded the possible set point for the upper limit (5.1V). For instance  $\pm 10\%$  on 5V results in a lower limit of 4.5V and an upper limit of 5.5V. Since  $5.5V > 5.1V$ , the upper limit is ignored.

### **Duty Cycle Programming**

Erroneous register programming when occurred for some duty cycle calculations has been fixed.

### **Squelch Iout Measurement**

Depending on the noise in a particular board design, the Iout measurement can be seen to jump around. So, in 4.0, a squelch of 25mV (5LSB) was added to the current output reporting (meaning 0A was reported until the voltage reached 30mV). This button allows the user to determine if they want the functionality or not.

## **Improvements in PowerArchitect™ 4.0**

### **Added Automatic Updates**

PowerArchitect™ will now check for updates in the background and notify the user when a new version is available. If the user wishes to update, PowerArchitect™ will download and install the update automatically. The user can also ignore the update if so desired.

### **Fixed Potential Board Not Recognized Issue**

Some users experienced issues where the evaluation board was connected, but not recognized. PowerArchitect™ now automatically installs the device drivers as well as checks on startup to verify they are installed properly. Also added a shortcut to search for connected boards: ctrl-b.

### **Added and Modified Capacitor Derating Calculation**

The derating function for capacitors has been modified to calculate more stable designs, particularly for customer-chosen capacitors.

### **Fixed the UVLO Fault and Warning Levels**

Previously, the UVLO Fault and Warning levels were able to be set below 4.75, which is below the available operating input voltage. They are now set to have a minimum value of 4.8 V.

### **Warning Messages Improvements**

Many of the warning messages have been revised to be more descriptive and clearer.

#### **Fixed the Vout Increment Over 2.6V**

The minimum voltage increment in the Design Tab is now 100mV over 2.6V.

#### **Erroneous Rise/Fall Time Calculation**

When setting an output voltage over 5.1V, PowerArchitect™ now calculates the correct values for rise and fall times.

#### **Fixed Discrete Pole Maximum and Minimum Values**

Changed the minimum value for the discrete pole to -15 and the maximum to +15, which results in stable designs.

## **Improvements in PowerArchitect™ 3.0**

#### **Added Power Supply Design Templates**

Users can now start a new design based upon a set of pre-defined settings for a particular application.

#### **Fixed NVM (Non-Volatile Memory) Error Warning**

Programming the non-volatile memory now correctly reports whether it was successful or unsuccessful upon completion

#### **Fixed 7713 GPIO Issue**

The GUI now reports the correct number of GPIO pins for the XRP7713 part.

#### **Improved the Design Saving mechanism**

There is now a *Save Design* button that doesn't prompt the user for a file name/selection, which applies whenever a design is started. The *Save Design As* button will prompt for a new file name. Also removed the reminder to save prompt if no changes have been made.

#### **Improved Window for Sending Configuration Files**

The Md5SUM / Email Started window is only available when the configuration file has been saved, ensuring consistency

#### **Improved the parts editing dialog**

You can now edit and add parts with engineer-friendly units such as nC, uF, uH and mOhm.

#### **Changed current limit detection to proper units**

On the demo tab, the current limit detection now displays Amps as opposed to the previous mV notation.

#### **Changed Temp to Junction Temp**

The temperature monitor is for Junction Temp and not system-level temperature and the interface now clearly specifies this.

#### **Added configuration file version mismatch checking**

PowerArchitect™ now checks and presents warnings if the new version of the software will change specific register settings from an older configuration file. The user may decide whether or not to proceed and is presented with the options.

#### **Added Export feature to PID calculator**

All of the advanced data from the plots on the PID calculator is made available to the user in a CSV file using the *Export...* menu option.

#### **Improved Bode Plots**

The Bode plots now start at 100Hz, allow more space for relevant frequency information.

#### **Added I2C Toggle for XPM boards**

You are now able to enable/disable the I2C communication for the XMP programming boards.

#### **Added proper GPIO capability for the 7713 and 7714**

The 7713 and 7714 allow the GPIO pins to be used as general-purpose I/O pins from the master microcontroller via I2C

#### **Fixed COM port issue**

In some cases, a COM port conflict prevented proper operation. Specifically, this was noticed with certain USB modems.

#### **Added Duty Cycle Warning**

On the Power Design page, you are now warned if the duty cycle has been violated ( $V_{out} / V_{in}$  ratio is too high for the performance of the buck regulator).

#### **Fixed Vout Rounding Error**

Rounding errors have been fixed that caused the Vout down arrow appear not to work.

#### **General Performance Improvements**

The user interface has been made more responsive and faster. Additionally, Windows 7 32-bit and 64-bit versions are now supported.

#### **I2C Improvements**

The Demo page now specifies the I2C address for reference. Additionally, the number you enter for the address will be the same number written on the microcontroller.

PowerArchitect™ also verifies that a proper board is connected prior to setting the I2C address as well as allowing you to set the address from the GPIO3 pin.