Palomar Scientific Instruments

DPD-3W-05C/DPD-3W-06C 3-Wave FIR Demodulator

Programming Guide

June 2015 Version 1.91

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Document Revisions

Date	Version Number	Document Changes	
07/17/2013	0.90	Initial Draft.	
05/18/2015	1.90	Update using scripts and DIP switch settings.	
06/02/2015	1.91	Added instructions for iMPACT GUI.	

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1 Overview

This guide provides a basic guide on how to re-flash the firmware on the DPD.

2 Acquiring tools / files

In order to reprogram the DPD please visit <u>http://www.PalomarScientific.com/Downloads</u> and download the compressed archive (.zip) under **Programming Tools**. Within this archive, there is one file and a folder: **Xilinx.lic**, and the folder **Xilinx_LabTools_14.5**. Also download the appropriate compressed archive (.zip) under **Programming Files**. Within this archive, there should be three files; **EASTDPD_0xC_2r1.mcs, programDPD.bat, programDPD.sh**. Extract these archives to C: _EAST. Once the archives have been extracted, continue with this guide.

3 Xilinx iMPACT Installation

3.1 Windows

Launch xsetup.exe that is located within C:_EAST\Xilinx_LabTools_14.5. Once launched, the following screen should appear:



Figure 1

Click **Next** and agree to both License Agreements. After agreeing, an Installation Options window will appear. Set the options to the following screenshot and select **Next**:

🐖 ISE 14.5 Installer				
	Select Installation Options Select the desired installation options below. Selection of these options may result in additional programs being run at the conclusion of the installation process.			
DESIGN SUITE	Use multiple CPU cores for faster installation Enabling this option will speed up installation but may slow down other active applications			
	 Acquire or Manage a License Key Enable WebTalk to send software, IP and device usage statistics to Xilinx (Always enabled for W Install Cable Drivers 			
ISE 14.5 Installer				
Welcome Accept License Agreements Select Products to Install				
-> Select Installation Options Select Destination Directory Installation	Description of Enable WebTalk to send software, IP and			
	Note: WebTalk is always enabled for WebPACK users. WebTalk ignores user and install preference when a bitstream is generated using the WebPACK license. If a design is using a device contained in WebPACK and a WebPACK license is available, the WebPACK license will always be used. To change this, please see Answer Record 34746			
Copyright (c) 1995-2013 Xilinx, Inc. All rights reserved. XILINX, the Xilinx logo and other designated brands included herein are trademarks of Xilinx, Inc. All other trademarks are the property of their respective owners.	DESCRIPTION: WebTalk provides a means for you, the customer, to provide Xilinx with information about what features of our FPGAs are being used in your designs and what parts of ISE Design Suite software and IP are being used to complete the design. One of the primary purposes of the WebTalk feature is to assist Xilinx in understanding how its customers use EPGAs, software and IP, so more effort can be placed on improving the			
	< <u>Back</u> <u>Next</u> <u>Cancel</u>			

Figure 2

Select **Next** in the Destination Directory dialog and wait until it finishes installing. Once Finish is selected the Xilinx License Configuration Manager dialog should appear. Select **Locate Existing License** and select **Next**.

quire a License	Manage Xilinx Licenses
elect one of the f	ollowing options
Start Now! - 3	0 Day Trial (No Bitstream)
Get Free ISE	NebPack License
🔘 Start 30 Day I	Evaluation
Get My Purch	ased License(s)
Locate Existin	g License(s)
Description of the	above selected option

Figure 3

At the next screen click **Copy License**, browse to and select the provided license file (**Xilinx.lic**). iMPACT will now be accessible in the start menu.



Figure 4

4 Hardware Setup

It may be necessary to adjust a physical DIP switch on the DPD.





Figure 5

To do so; using a phillips screwdriver remove the 8 screws holding the top into place. There is a DIP switch on the middle left hand side of the DPD. The correct switch settings should appear like that of Figure 5. Notice that the settings are set to 00010, read from left to right. If not set as pictured, please modify. Once modified, reseal the DPD.

NOTE: This step may be skipped for the 6CH model.

5 Flashing

Available at <u>http://www.PalomarScientific.com/Downloads</u>, download and extract the needed updated files to a path with no spaces (ie. C:_EAST_Updates). Using the provided USB to USB-micro cable (JTAG), connect the DPD to the host computer.

5.1 iMPACT GUI

Launch iMPACT, and hit **Cancel** on the **New iMPACT Project** dialog. Double click the Boundary Scan option in the top upper left corner of iMPACT. This will cause the area of the right to turn white, right click any part of this area and select **Initialize Chain**. If successful, the screen should appear as follows:

🛞 ISE iMPACT (P.58f) - [Boundary Scan]		1 0 X
File Edit View Operations Output	Debug Window Help	- 8
🗋 🥭 🖬 🗰 🖬 🖬 🖷 🚺	P 12	
MPACT Flows ++	Dicht eller dening to select operations	
The System ACE System ACE Creater RROM File (PROM File Format WebTalk Data	TDI Example Example xc2054a xc7x325 xc xc7x325	
MPACT Processes ··· 급 중 × Available Operations are:	Auto Assign Configuration Files Query Datog Do you want to continue and assign configuration files(s)? Don't show the message again, save the setting in preference. Ves No Identify Succeeded	
	Boundary Scan	
Console		++ D #
<pre>'1': : Manufacturer's ID = Xi</pre>	linx xo2c64a, Version : 0 /ISE/xbr/data/xo2c64a.bsd Device xo2c64a successfully.	
// *** BATCH CMD : identifyMP	4	
<		,
🚺 Console 🔇 Errors 🔔 Warnings	Configuration	Delet ITAG-SMT1 1000000
	L OCTIONITATION	

Figure 6

Select **No** and **Cancel** on the next dialogs that appear. Above the chip labeled as "xc7k35t" there is a blue outlined box, right click this and select **Add SPI/BPI Flash**.



Navigate and select the provided .MCS file. Change the settings of the dialog to match Figure 8 and select **OK** to continue.

an]								
Output	Debug	Window	Help					
88 83		1 🗉 🎤	₩?					
→□₽×								
				(SP17891) 2?				
Format				C. MILLING				
						7		
		¥02	o64a	×07k225				
		by	ass	bypass	n.			
	TDC)						
	Í	🛞 Select A	ttached SPI	/BPI			x	
		Select the I	PROM attach	ed to EPGA:	_			
		BPI PRC	M	cu to rr ox.		28E00AP30		
		Data W	idth:			16		
		Calaat		ddaaa Ritaa				
		Select F	(S[1:0]D PIN /	Address bits:		NOT USED		
→□₽×								
			O	<		Cancel		
					-			
1								

Figure 8

Right click the flash chip and select Program as in Figure 9.

Debug Window Help	
🛱 🛷 📑 🖪 🌽 🌾	
Right click device to select operations	
(FU	SH 1
,	📮 Program
TDI Exilinar Exi	un Verify
	Erase
	Blank Check
xc2c64a xc7	Readback
TDO	Get Device Checksum
	Assign New Configuration File
	Delete
	Set Programming Properties
	Set Erase Properties
	Edit Attached Elash Properties

Figure 9

This can take up to 15min to complete. Once completed, you have successfully re-flashed the DPD with new firmware.

5.2 Script

Run either the provided script **programDPD.bat** or **programDPD.sh** (depending on your OS). Upon launching, the script will ask for the filename, enter it without the extension (ie, EASTDPD_05C) and the script will run, programming the DPD.

C:\Windows\system32\c	md.exe	
Specify the filenar Release 14.5 - iMFP Copyright (c) 1995- Preference Table Name StartupClock AutoSignature KeepSUP ConcurrentMode UseHighz Config0nFailure UseFlevel MessageLevel MessageLevel MessageLevel SpiByteSwap AutoInfer SvfPlayDisplayComme INF0:iMPACT - Conne	ne, followed by [ENTER]:EastDPD_5C ICT P.58f (nt) -2012 Xilinx, Inc. All rights reserved. Setting Auto_Correction False False False Stop Movice Detailed false Auto_Correction false sints false reting to ICF agent	Image: A state of the state

Figure 10

This can take up to 15min to complete. Once completed, you have successfully re-flashed the DPD with new firmware.