



# Swinyard1 User Manual

Issue – 1.00

## **Kit Contents**

You should receive the following items with you Swinyard1 development kit:

- 1 - Swinyard1 Board
- 2 - Programming Cable
- 3 – Samtec GFZ connectors (2 off)

## **Foreword**

**PLEASE READ THIS ENTIRE MANUAL BEFORE PLUGGING IN  
OR POWERING UP YOUR SWINYARD1 BOARD.  
PLEASE TAKE SPECIAL NOTE OF THE WARNINGS WITHIN  
THIS MANUAL.**

## **Trademarks**

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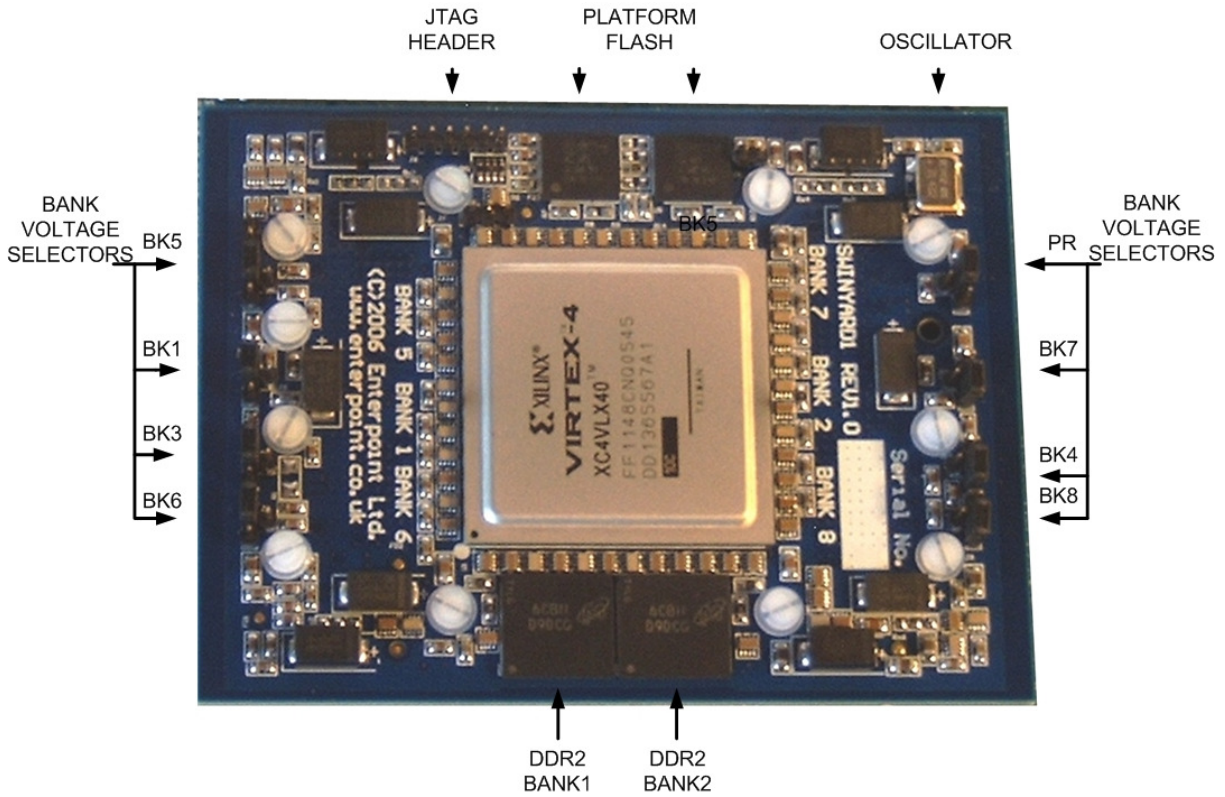
Swinyard1 is a trademark of Enterpoint Ltd.

## **Introduction**

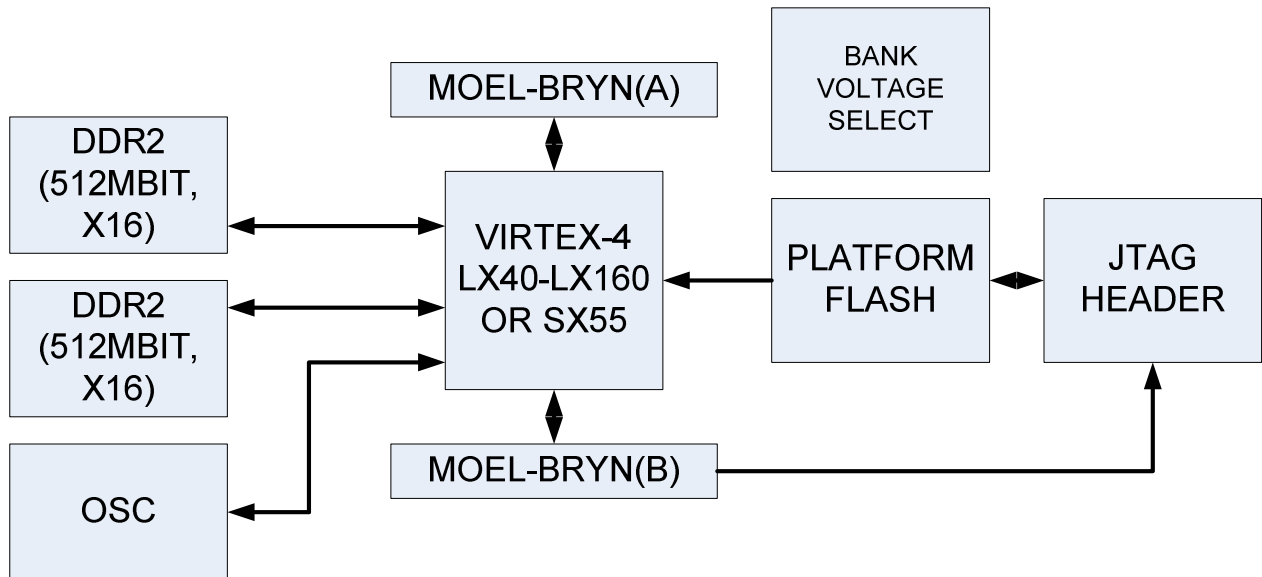
Welcome to your Swinyard1 board. Swinyard1 is a high performance Virtex<sup>TM</sup>-4 FPGA based module with a high bandwidth interconnect capability to the outside world.

The aim of this manual is to assist in using the main features of Swinyard1. Should this manual fail to explain a feature sufficiently then our support team can be reached by email on [support@enterpoint.co.uk](mailto:support@enterpoint.co.uk).

## Finding Your Way Around



## Block Diagram



## **Getting Started**

(1) Ensure that any vital data, contained within your host system, is backed up before attempting to use your Swinyard1 in the system.

(2) Ensure that your host system has all the voltages Swinyard1 needs available – 0.9V, 1.2V, 1.8V, 2.5V and 3.3V.

(2) Ensure that all jumpers for bank voltages are set to the required setting either 1.8V, 2.5V or 3.3V

(3) Carefully seat the GFZ connectors in the host motherboard and sit the Swinyard1 carefully on to them taking care that alignment pins of the GFZ seat correctly. Tighten up the screws that hold the module on a motherboard in an even fashion around the board.

Your Swinyard1 normally comes in an un-programmed state.

## **Swinyard1 Features**

### **Power Inputs and Power Supplies**

Swinyard1 uses 5 input power supplies to power the module. These supplies are available when using our Broaddown2 and Broaddown4 products that support this module. The following are guideline supply ratings based on our experience. Particular implementations of Virtex-4 size and internal design loaded into the Virtex-4 may vary these numbers and you should run a power analyser on any given design for a more accurate guide. I/O bank usage will also vary these numbers.

Supply	Voltage	Current
DDR2 Reference Voltage	0.9V	1 Amp
Virtex-4 Core Voltage	1.2V	5-15Amps
DDR2 Core Voltage	1.8V	2 Amps
Vccint/2.5V	2.5V	2-8 Amps
Vccio/3.3V	3.3V	2-8 Amps

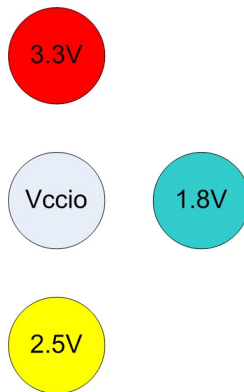
## Selecting the FPGA Bank (Vcciox) voltages.

Swinyard1 fixes the I/O voltages of FPGA banks 9,10,11,12,13,14 at 1.8V. Banks 10 and 12 have Vref connected to the 0.9V rail.

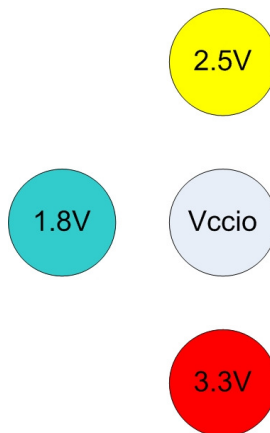
Banks 1, 2(PR), 3, 4, 5, 6, 7 have 4 pin jumpers to allow the selection between 1.8V, 2.5V and 3.3V. Other voltages may be selected by flying wire providing they have suitable voltages for the given bank supplied.

**Special note – Bank2 should be maintained at 2.5V. If you wish to change this contact Enterpoint Support before changing this setting.**

### Bank 1,3,5,6 Header



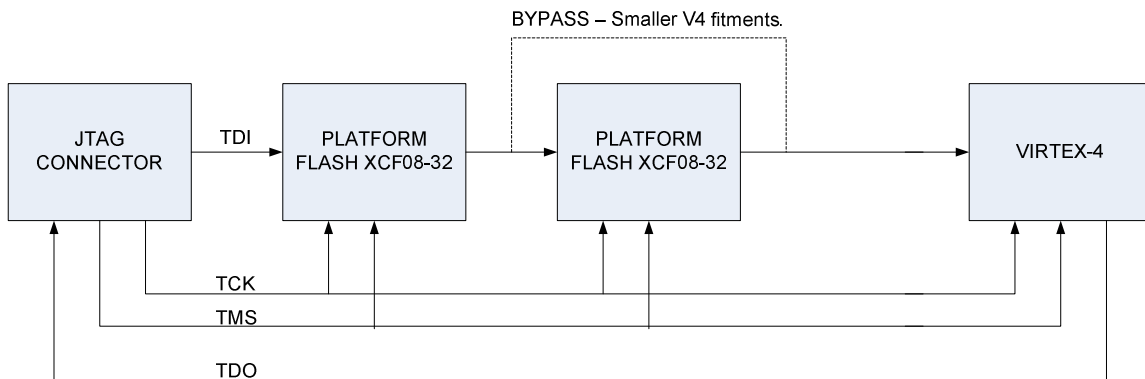
### Bank 2(PR),4,7,8 Header



## Programming Swinyard1

The programming of the FPGA and Platform Flash parts on Swinyard1 is achieved using JTAG chains. Principally it is anticipated that a JTAG connection will be used in conjunction with Xilinx ISE software although other alternatives do exist including programming from a host motherboard. Please contact Enterpoint support for more details of host based programming.

The JTAG chain looks like this:



*Figure 5 – Swinyard1 JTAG CHAIN.*

## **FPGA**

Swinyard1 supports a single Virtex-4 devices in the FF1148 package. There are 18 possible commercial grade device fitments of Virtex-4 that can be supported in Swinyard1 and a similar number of industrial grade fitments. Any FF1148 packaged of XC4LX40, XC4VLX60, XC4VLX80, XC4VLX100, XC4VLX160 and XC4VSX55 can be supplied in speed grades -10, -11 and -12.

DCI features are supported for FPGA banks 1-8, 10 and 12. The value of resistors fitted can be requested when you purchase your product. By default only banks 10 and 12 resistors are fitted in Swinyard1 at manufacture.

Reference voltage features are available on FPGA banks for DDR2 banks. These use the 0.9V supply. For other banks contact Enterpoint support for details.

## **Moel-Bryn Connector**

The Moel-Bryn connector pinout is available under NDA and license only. Contact our board sales department for more details.

## **Medical and Safety Critical Use**

Swinyard1 boards are not authorised for the use in, or use in the design of, medical or other safety critical systems without the express written person of the Board of Enterpoint. If such use is allowed the said use will be entirely the responsibility of the user. Enterpoint Ltd will accepts no liability for any failure or defect of the Swinyard1 board, or its design, when it is used in any medical or safety critical application.

## **Warranty**

Swinyard1 comes with a 90 return to base warranty.

Other specialised warranty programs can be offered to users of multiple Enterpoint products. Please contact sales on [boardsales@enterpoint.co.uk](mailto:boardsales@enterpoint.co.uk) if you are interested in these types of warranty,

## **Support**

Enterpoint offers support during normal United Kingdom working hours 9.00am to 5.00pm. Please examine our Swinyard1 FAQ web page and the contents of this manual before raising a support query. We can be contacted as follows:

Telephone - +44 (0) 1684 585262  
Email - [support@enterpoint.co.uk](mailto:support@enterpoint.co.uk)