

IP CORE MANUAL



Hexadecimal Constant IP

`px_consthex32`

PENTEK

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IP Facts

Description

Pentek's Navigator™ Hexadecimal Constant Core generates a constant 32-bit vector output from a generic parameter defined by the user.

This user manual defines the hardware interface, software interface, and parameterization options for the Hexadecimal Constant Core.

Features

- Copies the generic parameter into the output vector

Table 1-1: IP Facts Table	
Core Specifics	
Supported Design Family ^a	Kintex® Ultrascale
Supported User Interfaces	N/A
Resources	N/A
Provided with the Core	
Design Files	VHDL
Example Design	Not Provided
Test Bench	Not Provided
Constraints File	Not Provided ^b
Simulation Model	N/A
Supported S/W Driver	N/A
Tested Design Flows	
Design Entry	Vivado® Design Suite 2016.3 or later
Simulation	Vivado VSim
Synthesis	Vivado Synthesis
Support	
Provided by Pentek fpgasupport@pentek.com	

a.For a complete list of supported devices, see the [Vivado Design Suite Release Notes](#).

b.Clock constraints can be applied at the top level module of the user design.

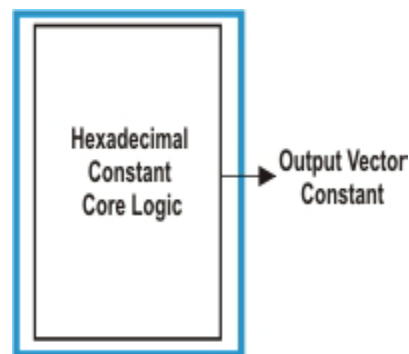
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Chapter 1: Overview

1.1 Functional Description

The Hexadecimal Constant core generates a constant 32-bit vector output from the input 32-bit generic parameter defined by the user. The generic parameter supports both binary string and hexadecimal format. [Figure 1-1](#) is a top-level block diagram of the Pentek Hexadecimal Constant Core. The modules within the block diagram are explained in the later sections of this manual.

Figure 1-1: Hexadecimal Constant Core Block Diagram



1.2 Applications

The Hexadecimal Constant Core can be incorporated into any Kintex Ultrascale FPGA to generate a constant vector output.

1.3 System Requirements

For a list of system requirements, see the [Vivado Design Suite Release Notes](#).

1.4 Licensing and Ordering Information

This core is included with all Pentek Navigator FPGA Design Kits for Pentek Jade series board products. Contact Pentek for Licensing and Ordering Information (www.pentek.com).

1.5 Contacting Technical Support

Technical Support for Pentek's Navigator FPGA Design Kits is available via e-mail (fpgasupport@pentek.com) or by phone (201-818-5900 ext. 238, 9 am to 5 pm EST).

1.6 Documentation

This user manual is the main document for this IP core. The following documents provide supplemental material:

- 1) [*Vivado Design Suite User Guide: Designing with IP*](#)
- 2) [*Vivado Design Suite User Guide: Programming and Debugging*](#)

Chapter 2: General Product Specifications

2.1 Standards

This section is not applicable to this IP core.

2.2 Performance

This section is not applicable to this IP core.

2.3 Resource Utilization

This IP core utilizes only the I/O resources of the FPGA it is incorporated into.

2.4 Limitations and Unsupported Features

This section is not applicable to this IP core.

2.5 Generic Parameters

The generic parameters of the Hexadecimal Constant Core are described in [Table 2-1](#). These parameters can be set as required by the user application while customizing the core.

Table 2-1: Generic Parameters		
Port/Signal Name	Type	Description
const_value[31:0]	std_logic_vector	Constant Value: This is the 32-bit parameter defined by the user based on the requirement, which is the output constant vector of this IP core. It can take the values defined in hexadecimal and double quoted binary string formats. Eg. 0xFFFF or "01111".

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Chapter 3: Port Descriptions

This chapter provides details about the port descriptions for the following interface types:

- [I/O Signals](#)

3.1 I/O Signals

The I/O port/signal description of the top level module of the Hexadecimal Constant Core is discussed in [Table 3-1](#).

Table 3-1: I/O Signals			
Port/ Signal Name	Type	Direction	Description
constant_data[31:0]	std_logic_vector	Output	Constant Data Output: This is the constant 32-bit vector output of the core which takes the value of the generic parameter defined by the user.

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Chapter 4: Designing with the Core

This chapter includes guidelines and additional information to facilitate designing with the Hexadecimal Constant Core.

4.1 General Design Guidelines

The Hexadecimal Constant core generates a vector output equivalent to the value of the generic parameter.

4.2 Clocking

This section is not applicable to this IP core.

4.3 Resets

This section is not applicable to this IP core.

4.4 Interrupts

This section is not applicable to this IP core.

4.5 Interface Operation

This section is not applicable to this IP core.

4.6 Programming Sequence

This section is not applicable to this IP core.

4.7 Timing Diagrams

This section is not applicable to this IP core.

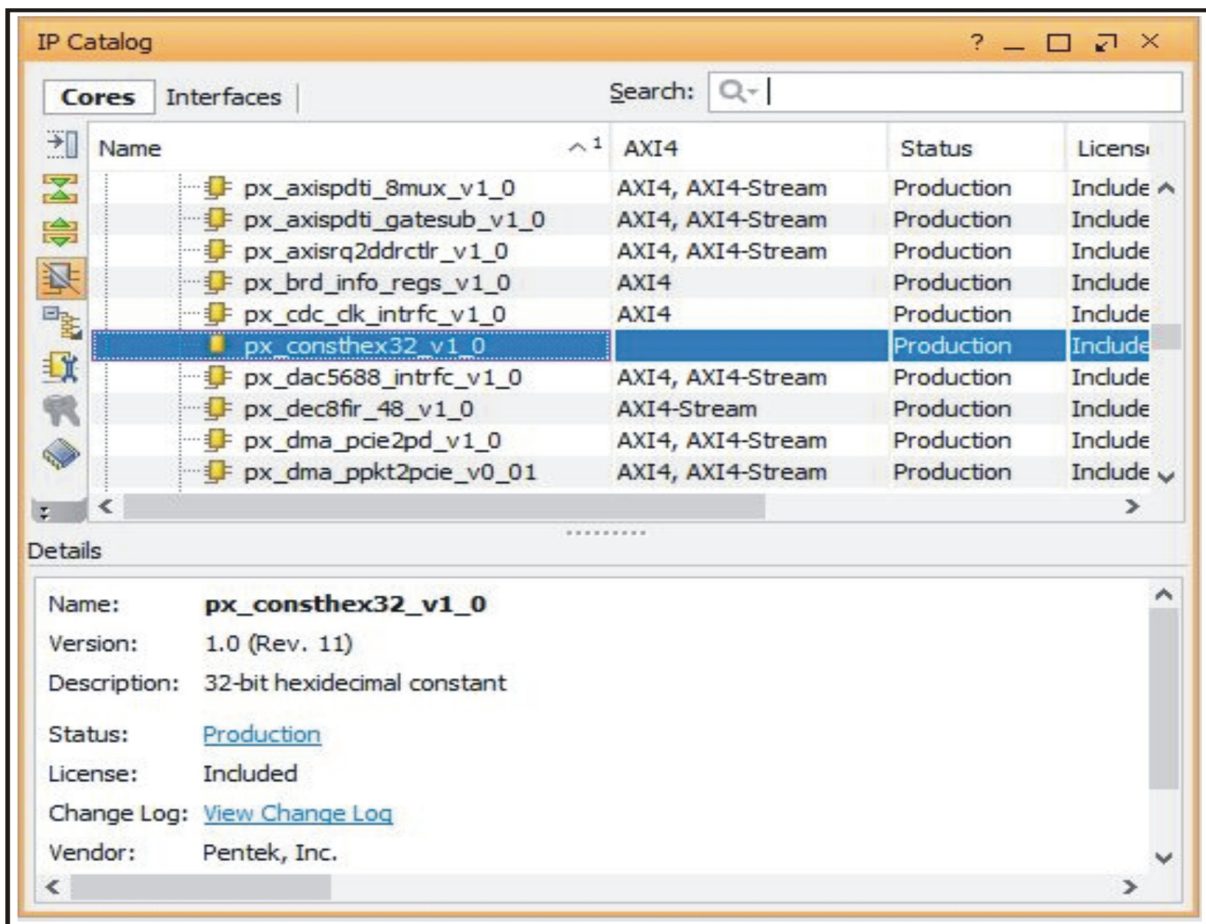
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Chapter 5: Design Flow Steps

5.1 Pentek IP Catalog

This chapter describes customization and generation of the Pentek Hexadecimal Constant Core. It also includes simulation, synthesis, and implementation steps that are specific to this IP core. This core can be generated from the Vivado IP Catalog when the Pentek IP Repository has been installed. It will appear in the IP Catalog list as **px_consthex32_v1_0** as shown in [Figure 5-1](#).

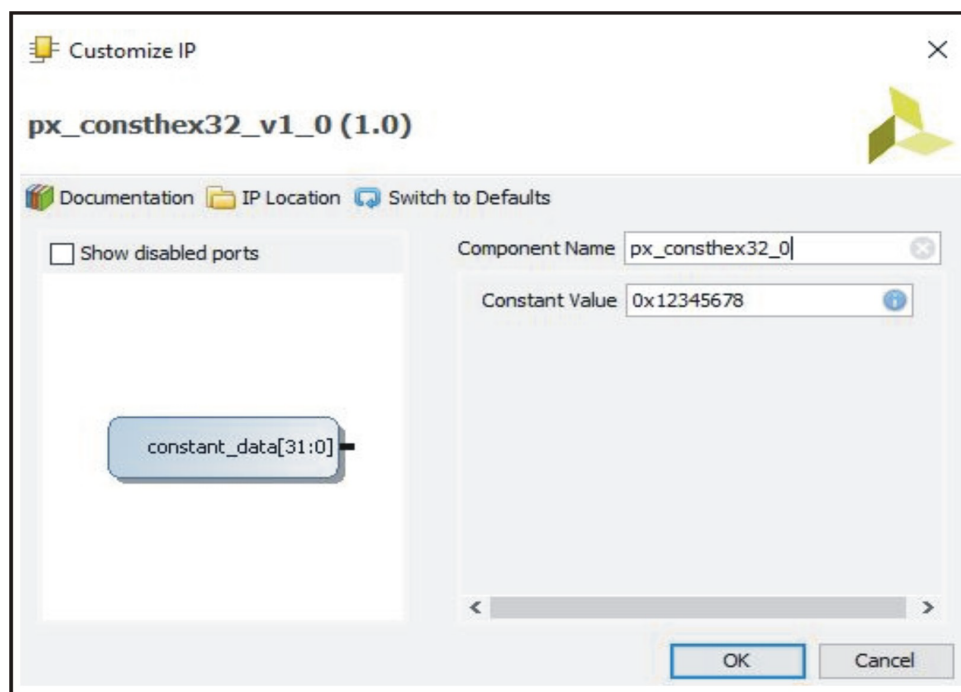
Figure 5-1: Hexadecimal Constant Core in Pentek IP Catalog



5.1 Pentek IP Catalog (continued)

When you select the **px_consthex32_v1_0** core, a screen appears that shows the core's symbol and the core's parameters (see [Figure 5-2](#)). The core's symbol is the box on the left side.

Figure 5-2: Hexadecimal Constant Core IP Symbol



5.2 User Parameters

The user parameters of this core are described in [Section 2.5](#) of this user manual.

5.3 Generating Output

For more details about generating and using IP in the Vivado Design Suite, refer to the [Vivado Design Suite User Guide - Designing with IP](#).

5.4 Constraining the Core

This section contains information about constraining the Hexadecimal Constant Core in Vivado Design Suite.

Required Constraints

The XDC constraints are not provided with the Hexadecimal Constant Core. Clock constraints can be applied in the top-level module of the user design.

Device, Package, and Speed Grade Selections

This IP works for the Kintex Ultrascale FPGAs.

Clock Frequencies

This section is not applicable to this IP core.

Clock Management

This section is not applicable for this IP core.

Clock Placement

This section is not applicable for this IP core.

Banking and Placement

This section is not applicable for this IP core.

Transceiver Placement

This section is not applicable for this IP core.

I/O Standard and Placement

This section is not applicable for this IP core.

5.5 Simulation

This section is not applicable to this IP core.

5.6 Synthesis and Implementation

For details about synthesis and implementation see the [Vivado Design Suite User Guide - Designing with IP](#).

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