



Gowin WB Async Bridge IP

User Guide

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Revision History

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1 About This Guide

1.1 Purpose

Gowin WB Async Bridge IP User Guide provides an overview of the functional description, ports description, call and configuration, etc. It helps users quickly learn the features and usage of Gowin WB Async Bridge IP.

1.2 Supported Products

The information in the guide applies to all Gowin FPGA products.

1.3 Related Documents

The latest user guides are available on the GOWINSEMI Website. You can find the related documents at www.gowinsemi.com.

1.4 Terminology and Abbreviations

The terminology and abbreviations used in this guide are shown in Table 1-1.

Table 1-1 Terminology and Abbreviations

Terminology and Abbreviations	Meaning
IP	Intellectual Property
WB Async Bridge	wishbone async bridge
LUT	Look-up Table
REG	Register

1.5 Support and Feedback

Gowin Semiconductor provides customers with comprehensive technical support. If you have any questions, comments, or suggestions, please feel free to contact us directly by the following ways.

Website: www.gowinsemi.com

E-mail: support@gowinsemi.com

Tel: +86 755 8262 0391

2 Overview

2.1 Introduction to Gowin WB Async Bridge IP

Gowin WB Async Bridge IP can connect with a wishbone master device and an async wishbone slave device. Data width can be configured: 8, 16, 32, 64; Address width can be configured: 8~64.

Table 2-1 Gowin WB Async Bridge IP

Gowin IP WB Async Bridge IP	
IP Core Application	
Supported Devices	Gowin all FPGA products
Logic Resource	See Table 2-2
Delivered Doc.	
Design Files	Verilog (encrypted)
Test and Design Flow	
Synthesis Software	Synplify_Pro
Application Software	Gowin YunYuan

2.2 Key Features

Data width supports 8, 16, 32, 64.

Address width supports 8~64.

2.3 Resource Utilization

Gowin WB Async Bridge IP is implemented by Verilog, and its resources vary greatly due to different configurations. Take the default configuration, data width=32 and addr width =32 as an example, the resource utilization is as shown in Table 2-2 .

Table 2-2 Resource Utilization of Gowin WB Async Bridge IP

Device	Speed Grade	Name	Resource Utilization	Remarks
GW2A-55	C8/I7	LUT	115	Data Width=32; Addr Width=32
		REG	222	

3 Functional Description

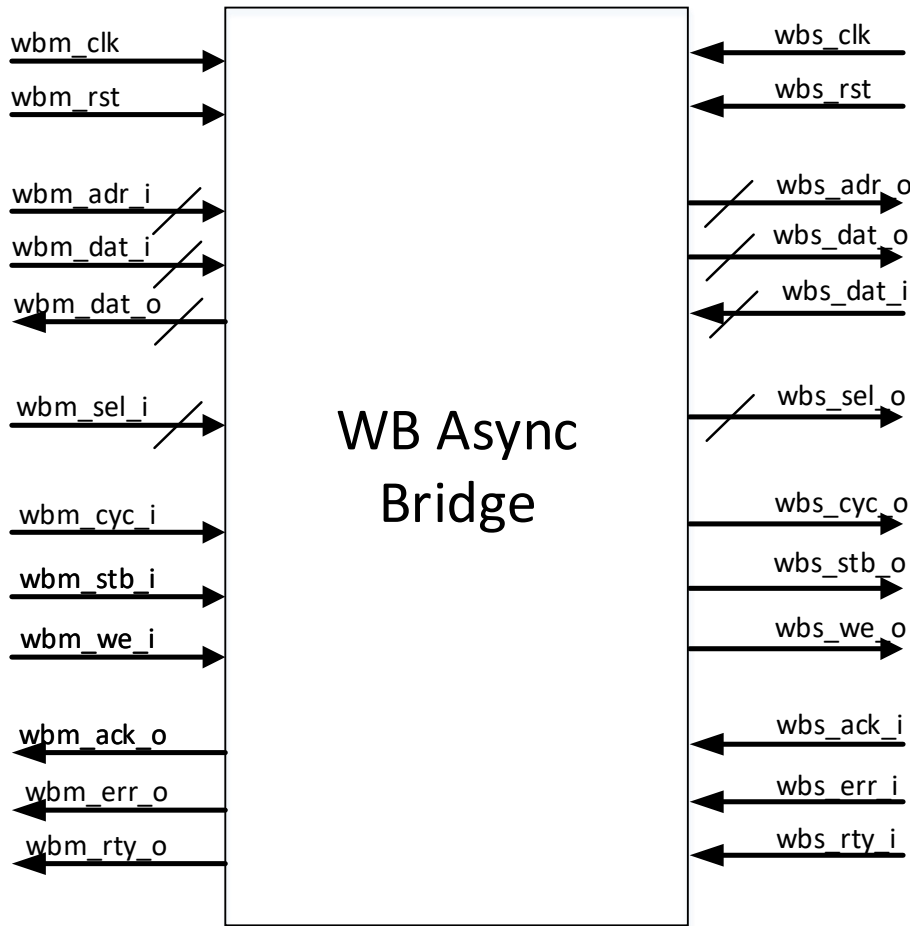
Gowin WB Async Bridge IP can connect with a wishbone master device and an async wishbone slave device. The data width and address width can be configured.

- Data width: 8, 16, 32, 64;
- Address width: 8~64.

4 Port Description

The IO ports of Gowin WB Async Bridge IP are shown in Figure 4-1.

Figure 4-1 Ports Diagram of Gowin WB Async Bridge IP



The details of Gowin WB Async Bridge IP I/O ports are shown in Table 4-1.

Table 4-1 Port Description of Gowin WB Async Bridge IP

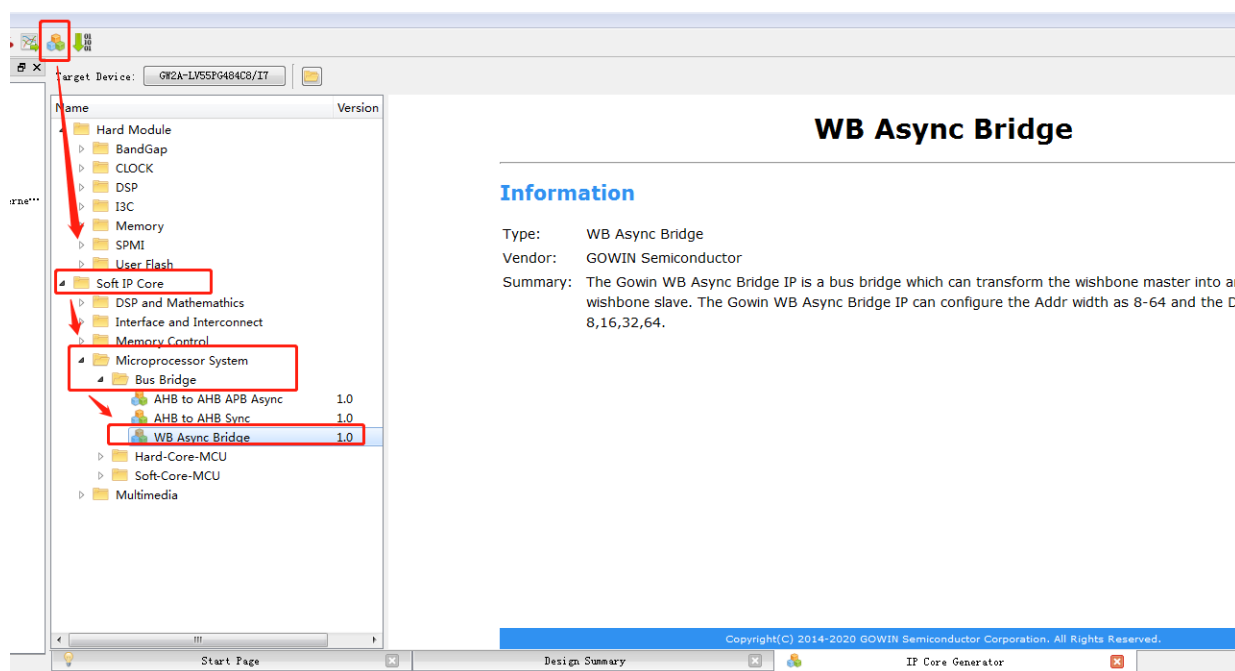
Name	I/O	Data Width	Description
wbm_clk	Input	1	Clock signal input of Master
wbm_rst	Input	1	Reset signal input of Master, active-high
wbm_adr_i	Input	Changeable	Bus address signal input of Master
wbm_dat_i	Input	Changeable	Bus data signal input of Master
wbm_dat_o	Output	Changeable	Bus data signal output of Master
wbm_we_i	Input	1	Bus write enable signal input of Master
wbm_sel_i	Input	Changeable	Bus data valid location input of Master
wbm_stb_i	Input	1	Bus data valid cycle input of Master
wbm_ack_o	Output	1	Bus response signal output of Master
wbm_err_o	Output	1	Bus exception response signal output of Master
wbm_rty_o	Output	1	Bus retry response signal output of Master
wbm_cyc_i	Input	1	Bus valid cycle input of Master
wbs_clk	Input	1	Clock signal input of Slave
wbs_rst	Input	1	Reset signal input of Slave, active-high
wbs_adr_o	Output	Changeable	Bus address signal output of Slave
wbs_dat_i	Input	Changeable	Bus data signal input of Slave
wbs_dat_o	Output	Changeable	Bus data signal output of Slave
wbs_we_o	Output	1	Bus write enable signal output of Slave
wbs_sel_o	Output	Changeable	Bus data valid location output of Slave
wbs_stb_o	Output	1	Bus data valid cycle output of Slave
wbs_ack_i	Input	1	Bus response signal input of Slave
wbs_err_i	Input	1	Bus exception response signal input of Slave
wbs_rty_i	Input	1	Bus retry response signal input of Slave
wbs_cyc_o	Output	1	Bus valid cycle output of Slave

5 Call and Configuration

5.1 Gowin WB Async Bridge IP Call

Click "Tools > IP Core Generator > Soft IP Core > messenger > Bus Bridge > AHB to AHB APB Async" on the interface of Gowin Yun Yuan software to complete the Gowin WB Async Bridge IP call, as shown in Figure 5-1.

Figure 5-1 Gowin WB Async Bridge IP Call Example

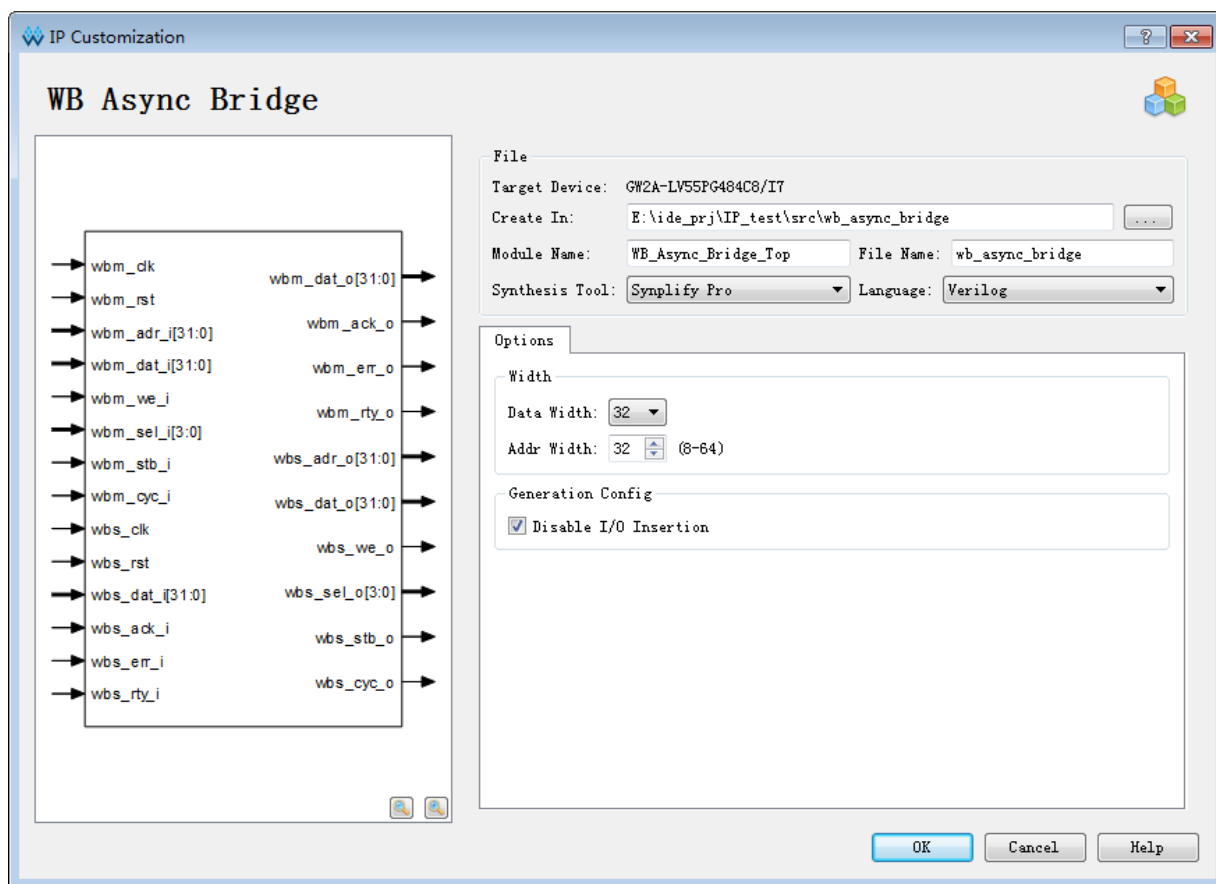


5.2 Gowin WB Async Bridge IP Configuration

5.2.1 Configuration Interface of Gowin WB Async Bridge IP

The configuration interface of Gowin WB Async Bridge IP is as shown in Figure 5-2.

Figure 5-2 Gowin WB Async Bridge IP Configuration Example



1. Click "Create In" to change the path of the file generated by Gowin WB Async Bridge IP.
2. Click "Module Name" to configure the top module name of Gowin WB Async Bridge IP;
3. Click "File Name" to configure the file name of Gowin WB Async Bridge IP.
4. Click "Options" to configure width.

Note!

Data Width=32; Addr Width=32 by default

5.2.2 Gowin WB Async Bridge IP Options Configuration

Gowin WB Async Bridge IP options configuration is as shown in Table 5-1.

Table 5-1 Gowin WB Async Bridge IP Options Configuration

Options	Description
Data Width	Data width: 8, 16, 32, 64
Addr Width	Address Width: 8~64

