



Gowin PicoRV32 Software and Hardware Reference Design **Release Note**

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Revision History

Date	Version	Description
01/16/2020	1.0E	Initial version published.
03/12/2020	1.1E	● MCU supports GPIO of Wishbone bus interface; ● MCU supports extension AHB bus interface; ● MCU supports off-chip SPI-Flash download and startup; ● MCU supports the read, write and erasure SPI-Flash; ● MCU supports Hardware Stack Protection and Trap Stack Overflow.
06/01/2020	1.2E	● MCU on-line debug function supported; ● MCU core interrupt handler function enhanced; ● MCU core instruction optimized; ● Mergebin tool updated supports GowinSynthesis® to parse the rules of naming.
07/16/2021	1.3E	● The synthesis tool, SynplifyPro, deleted; ● FPGA software version updated; ● Reference design updated.
02/17/2022	1.4E	● The register address mapping of the peripheral Simple UART updated. ● The register definitions of the peripheral I2C Master and GPIO updated. ● The driver function definition of the peripheral SPI-Flash updated. ● The interrupt handler enhanced. ● MCU software reference design updated. ● IDE software options configuration optimized. ● IDE software on-line debug process improved. ● The range of ITCM and DTCM Size for GW2AN-9X/GW2AN-18X modified. ● The reference design of makehex and mergebin added.
08/18/2023	1.5E	Arora V FPGA products supported.
03/29/2024	1.6E	● GW5AT-60 Version A FPGA products supported. ● mergebin tool updated to support GW2AN-18X/9X FPGA products. ● Software programming and hardware reference designs updated.
06/14/2024	1.7E	● mergebin tool updated to support Arora V FPGA products. ● GW5ART-15 Version A FPGA products supported. ● Reference designs for software programming and hardware updated.
09/26/2025	1.8E	● Software programming reference designs updated to be compatible with GMD 2025.01. ● Hardware reference design added. ● The version descriptions of Gowin Software and GMD software updated.

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1 About This Release

This release includes Gowin_PicoRV32 V1.6 SDK.

Gowin_PicoRV32 V1.6 SDK is available for download from Gowin Semiconductor website through this [link](#).

Parameters have been configured in Gowin_PicoRV32 software and hardware reference designs. Use these reference designs in GMD (GOWIN MCU Designer 2025.01, tested) and Gowin Software (V1.9.11.02 (64-bit), tested).

2 Function and Enhancement

Gowin_PicoRV32 functions and enhancement items are as follows:

Function	Description
Front-end synthesis tool	Tested version: GowinSynthesis V1.9.11.02 (64-bit)
Function updated.	● Software programming reference designs updated to be compatible with GMD 2025.01. ● Hardware reference design added. ● The version descriptions of Gowin Software and GMD software updated.
Back-end placement and routing tool	Tested version: Gowin_V1.9.11.02 (64-bit)
Software compile tool	Tested version: GMD_2025.01
Enhancements	–

3 Platform Supported

Gowin_PicoRV32 supports the following software platforms:

Windows	Windows 10/11 (64-bit)
Linux	Centos 7.0/7.3/7.5/8.2 (64-bit) Ubuntu 20.04/22.04/24.04 LTS

4 Documents

The released IP manuals are listed in the table below. You can download the PDF manuals at Gowin website or read online.

Documents	
IPUG914, Gowin PicoRV32 Hardware Design Reference Manual	Online, PDF
IPUG913, Gowin PicoRV32 Software Download Reference Manual	Online, PDF
IPUG911, Gowin PicoRV32 Software Programming Reference Manual	Online, PDF
IPUG915, Gowin PicoRV32 Quick Start Reference Manual	Online, PDF
IPUG910, Gowin PicoRV32 IDE Software Reference Guide	Online, PDF
RN912, Gowin PicoRV32 Software and Hardware Reference Design Release Note	Online, PDF

5 IP Support

Since the requirements of user design and the maximum frequency are different, the reference design does not include FPGA specific location (.cst) and timing constraints (.sdc) documents, and you can determine the location and timing constraints on your own.

For the customized IP design and support, please contact Gowin sales.

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