



Gowin_EMPU_M1 Software and Hardware Design

Release Note

RN537-1.9E, 10/12/2021

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Revision History

Date	Version	Description
02/19/2019	1.0E	Initial version published.
07/18/2019	1.1E	<ul style="list-style-type: none"> ● MCU hardware design and software programming design support extended peripherals: CAN, Ethernet, SPI-Flash, RTC, DualTimer, TRNG, I²C, SPI, SD-Card. ● Supports the automated merging tool for MCU hardware design and software programming design. ● Supports off-chip SPI-Flash downloading startup.
08/18/2019	1.2E	<ul style="list-style-type: none"> ● MCU hardware design and software programming design support extended peripheral: DDR3 Memory. ● Known issues of ITCM, DTCM Size and IDE fixed.
09/27/2019	1.3E	<ul style="list-style-type: none"> ● MCU hardware design and software programming design support read, write and erasure of SPI-Flash. ● MCU software programming design supports a continuous multi-byte read and write of I²C. ● Fixed known issues of address mapping of AHB2 and APB2 extended interface in MCU software programming design. ● Fixed known issues of continuous read and write of DDR3 Memory in MCU software programming design.
01/16/2020	1.4E	<ul style="list-style-type: none"> ● MCU hardware design and software programming design supports PSRAM. ● MCU compiling software GMD V1.0 updated. ● RTOS reference design updated. ● Hardware and software reference design of AHB2 and APB2 extension bus interface added.
03/11/2020	1.5E	<ul style="list-style-type: none"> ● MCU hardware design and software programming design supports read and write of SD-Card. ● Fixed known issues of bootload size. ● Fixed known issues of read and write of DDR3 in synthesis using Synplify Pro. ● GW2A-18C/GW2AR-18C/GW2A-55C devices added.
06/12/2020	1.6E	<ul style="list-style-type: none"> ● MCU supports external instruction memory. ● MCU supports external data memory. ● Extension of 6 AHB bus interfaces. ● Extension of 16 APB bus interfaces. ● GPIO supports multiple interface types. ● I²C supports multiple interface types. ● The merge_bit tool supports the naming convention resolution for the synthesis tool, GowinSynthesis.
01/25/2021	1.7E	<ul style="list-style-type: none"> ● Fixed known issues of SPI-Flash initialization. ● The reference design of GW1N-9C, GW2A-18C and GW2A-55C (Version C) updated. ● The download aids, merge_bit and make_hex, updated. ● The reference design of Gowin Software version updated. ● The reference supports of external interrupt signal added.
07/21/2021	1.8E	<ul style="list-style-type: none"> ● GW1N-9C/GW1NR-9C supports embedded UserFlash as instruction memory. ● Known issues of read and write for SPI full-duplex fixed.

Date	Version	Description
		<ul style="list-style-type: none"> ● The synthesis tool, SynplifyPro, deleted. ● FPGA and the version of MCU updated. ● The reference design updated.
10/12/2021	1.9E	<ul style="list-style-type: none"> ● ITCM and DTCM size of GW2AN-9X/GW2AN-18X modified. ● GW2AN-9X/GW2AN-18X does not support external DDR3. ● DK-START-GW2AR18 V1.1 development board reference design updated. ● Non-BlockRAM ITCM/DTCM solution added.

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About This Release

Gowin_EMPU_M1 V1.6.5 software development kit includes:

- ITCM and DTCM size of GW2AN-9X/GW2AN-18X modified.
- GW2AN-9X/GW2AN-18X does not support external DDR3.
- DK-START-GW2AR18 V1.1 development board reference design updated.
- Non-BlockRAM ITCM/DTCM solution added.

Gowin_EMPU_M1 V1.6.5 software development kit is available at Gowinsemi website: http://cdn.gowinsemi.com.cn/Gowin_EMPU_M1.zip.

Parameters have been configured in Gowin_EMPU_M1 software and hardware reference design. The reference design can be used in ARM Keil MDK (V5.26 and above), GOWIN MCU Designer (V1.1 and above) and GOWIN Software (V1.9.8.01 and above).

Function and Enhancement Summary

Gowin_EMPU_M1 functions and enhancement items are as follows:

Function	Description
Front-end Synthesis Tool	GowinSynthesis [®] V1.9.8.01 and above
New Function Support	<ul style="list-style-type: none"> ● ITCM and DTCM size of GW2AN-9X/GW2AN-18X modified. ● GW2AN-9X/GW2AN-18X does not support external DDR3. ● DK-START-GW2AR18 V1.1 development board reference design updated. ● Non-BlockRAM ITCM/DTCM solution added.
Back-end Placement and Routing Tool	Gowin_V1.9.8.01 and above
Software Compilation and Debugging Tool	<ul style="list-style-type: none"> ● ARM Keil MDK V5.26 and above ● GOWIN MCU Designer V1.1 and above
Enhancements	-

Platform Supported

The corresponding software of the released IP supports the following platforms:

Windows	Windows 7/8/10 (32 bit/64 bit) Windows XP/7 (32 bit)
Linux	Centos 6.8/7.0/7.5 (64 bit) Ubuntu 18.04 LTS

Documents

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

Documents	
IPUG531 , Gowin_EMPU_M1 Hardware Design Reference Guide	Online, PDF
IPUG532 , Gowin_EMPU_M1 Download Reference Guide	Online, PDF
IPUG533 , Gowin_EMPU_M1 Software Programming Reference Guide	Online, PDF
IPUG534 , Gowin_EMPU_M1 Quick Design Reference Guide	Online, PDF
IPUG535 , Gowin_EMPU_M1 Serial Debugging Reference Guide	Online, PDF
IPUG536 , Gowin_EMPU_M1 IDE Software Reference Guide	Online, PDF
RN537, Gowin_EMPU_M1 Software and Hardware Reference Design Release Note	Online, PDF

