

# **CW-Writer User Manual**

## **Application Notes**



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## Introduction

This manual describes the use of the CW-Writer for the CW32 microcontroller and the software CW-Programmer that accompanies it. The programmer CW-Writer enables offline or online program burning of the CW32 microcontroller FLASH via the ISP protocol.



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#### 1 Programmer CW-Writer

#### 1.1 Programmer Overview



Figure 1-1 CW-Writer

- The CW-Writer is connected to the PC through the USB port to achieve power supply and communication functions, when used offline, it needs to provide DC 5V/500mA or more for the programmer to use;
- The burning machine port of the CW-Writer for automated burning of the burning machine;
- The burning port of the CW-Writer for program burning of the chip;
- The start button, press it to start programming the chip;
- Power light, used to indicate that the power supply of the burner is normal, and it is red and always on;
- Failure light, always on when burning fails, color is red;
- Success light, always on when burning success, color is green;
- Programming light, always on when burning, color is orange;
- The Communication light flashes when the burner communicates with the PC, and the color is blue.



#### 1.2 Description of Programmer interface signal

#### 1.2.1 Burning port

The burning port is an IDC 8P socket, and its signal is defined as follows:

Burning port d	iagram
----------------	--------



#### Definition of burning port signal

Pin Number	Signal Name	Pin Number	Signal Name
1	BOOT	2	GND
3	VDD	4	RST
5	SCLK	6	SDIO
7	GND	8	VDD

Caution:

Pin 3 and Pin 8 are shorted together inside the burner.

*CW-Programmer power supply connection When selecting the target chip self-power supply, VDD is the input pin, which must be connected to the target chip's operating voltage to achieve level matching; When the power supply connection of CW-Programmer selects the power supply of the programmer, VDD is the power supply output pin, which can output 3.3V or 5.0V according to the selection of the host computer.* 

#### 1.2.2 Burning machine port

The burning machine port is an IDC 6P socket, and its signal is defined as follows:

Burning machine port



#### Definition of burning machine port signal

Pin Number	Signal Name	Pin Number	Signal Name
1	BUSY	2	PASS
3	GND	4	FAIL
5	VCC	6	START

*Caution 1: The input/output signals are active low. Caution 2: VCC fixed output 3.3V.* 



#### 2 Software CW-Programmer

#### 2.1 Software Installation

CW-Programmer is portable software that does not require installation and can be run directly.



#### 2.2 Software Usage

#### 2.2.1 Online Programming

• Connecting diagram



The computer is connected to the CW-Writer burner via USB cable, and the burner is connected to the PCB of the program to be burned via an 8-conductor burner cable.

- Instructions for use
  - 1. Run the CW-Programmer software, if the CW-Writer burner is connected, the software interface shows the following figure:

芯片系列: CW32F00 、 芯片型号: CW32F003C5FA-TSS0F20 , 20K, 3K 、 焼录速率: 115200 、 供电连接: 目标芯片自供电, RST夏位 、 其它配置 编程文件:	编程配置	$\rightarrow$	连接编程器
编程操作       「I. FLASH全片擦除     6. 读保护       2. FLASH空白检查     7. 运行程序       3. FLASH预处理     8. 蠕鸣提示	芯片系列: CW32F00 烧录速率: 115200 编程文件:	<ul> <li>✓ 芯片型号: C₩32F003C5FA-TSS0F20 , 20K, 3K</li> <li>✓ 供电连接: 目标芯片自供电, KST复位</li> </ul>	✓ ✓ 其它配置 ····
✓ 4. FLASH编程及验证 离线编程次数: 读取闪存 在线编程	编程操作 ✓ 1. FLASH全片擦除 2. FLASH空白检查 3. FLASH预处理 ✓ 4. FLASH编程及验证	<ul> <li>6.读保护</li> <li>7.运行程序</li> <li>8. 蛸鸣提示</li> <li>离线编程次数:</li> <li>这取囚行</li> </ul>	牛 离线编程 字 在线编程

Figure 2-2

Select the device "CW Writer 0" and click "Connect Programmer".



2. After connecting the burner, make the corresponding configuration according to the chip model used in the target board, as follows to select the chip model:

🚮 CW-Programmer V1	.50		- □ >
连接设备			
选择设备: CW Writer	0	$\checkmark$	断开编程器
(白19年19年			
·////////////////////////////////////			
心片条列: CW32F03	◇ 心片型号: CW32F030C8T6	5-LQFP48 , 64K, 8K	
烧录速率: 115200	> 供电连接: 目标芯片自供	电,RST复位 v	其它配置
伯伊安州。			
调柱义件:		•••	
编程操作			
☑ 1. FLASH全片擦除	□ 6. 读保护		
□ 2. FLASH空白检查		生成文件	离线编程
□ 3 FLASH和外理			
✓ 4. FLASRee在及短い	上 高线调柱入刻:	读取闪存	在线编程
□ 5. 0TP编程及验证			
Writer.VT <	-> Chip.VCC		~
Writer RXD <	-> Chip.SWCLK		
Writer TXD <	-> Chip.SWDIO		
Writer.GND <	-> Chip.GND		
Writer.BOOT <	-> Chip.BOOT		
Writer.KSI < 活用王能去库泊	-> Chip.RST		
迫用丁所有情/冗			

Figure 2-3

Select the power supply and reset method of the chip as follows:

Figure 2-4

连接设备				
选择设备: CW Writer O		$\sim$	断开编程器	
编程配置				
芯片系列: C₩32┣03	✓ 芯片型号: C₩32F0300	18T6-lqfp48 , 64K, 8K $\sim$		
烧录速率: 115200	→ 供电连接: < 4 編程器供用	包3.3V, RST复位	其它配置	
编程文件:		•••		
编程操作				
☑ 1. FLASH全片擦除	🗌 6. 读保护			
2. FLASH空白检查	🗌 7. 运行程序	生成又件	<b>尚</b> 线编柱	
🗌 3. FLASH预处理	☑ 8. 蜂鸣提示			
✓ 4. FLASH编程及验证	离线编程次数: 100000	读取闪存	在线编程	
Writer.VT <>	Chip.VCC			^
Writer RXD <>	Chip.SWCLK			
Writer GND	Chip GND			
Writer.BOOT <>	Chip.BOOT			
Writer.RST <>	Chip.RST			
法田干航海塘湿				



Select the program file (in HEX format) to be burned as follows:

连接设备			
选择设备: CW Writer O		断开结	编程器
编程配置			
芯片系列: C₩32F03	✓ 芯片型号: C₩32F030C8T6-LQFP48 ,	64K, 8K ~	
烧录速率: 115200	✓ 供电连接: 编程器供电3.3Ⅴ, RST复位	~ 其它	配置
编程文件:			
编程操作 (1) 11 11 11 11 11 11 11 11 11 11 11 11 1			×
			^
$\leftarrow \rightarrow \checkmark \uparrow \square \ll 0$	0documents > ISP ~	o 搜索"ISP"	م
组织 ▼ 新建文件夹			· 🔟 ?
□ 此电脑 ^		修改日期 美國	빈
3D 对象	Flash_2021-08-20 14_27_33.hex	2021/8/20 14:27 HE	×文件
🚪 视频	Flash_2021-08-20 14_37_59.hex	2021/8/20 14:37 HE	×文件
▶ ■ 圏片	test.hex	2021/8/17 9 <b>:</b> 50 HE	×文件
☐ 文档 ¥	<		>
文件	名(N): Flash_2021-08-20 14_27_33.hex	~ HEX文件(*.hex)	~
	L		

3. Configure the "Programming operations" as required, as follows:

Figure 2-6

连接设备			
选择设备: CW Writer O		$\sim$	断开编程器
编程配置			
芯片系列: C₩32┣03	✓ 芯片型号: C₩32F	)30C8T6-LQFP48 , 64K, 8K $\vee$	
烧录速率: 115200	~ 供电连接: 编程器	供电3.3V,RST复位 ~	其它配置
编程文件: Flash_2021-08-20	14_27_33. hex		
编程操作			
☑ 1. FLASH全片擦除	🗌 6. 读保护	ナポサル	商建的担
2. FLASH空白检查		主成又件	南纪犏性
	✓ 8. 戰略提示		
○ 4. FLSSE编程及验证	100000	读取闪存	在线编栏
Writer.TXD <> 0 Writer.GND <> 0	hip.SWDIO hip.GND		
Writer.BOOT <> 0	hip.BOOT		
Writer.RST <> ( 适用于所有情况	hip.RST		
   待编程Hex文件格式检查完成,其	較验码为: 31D1FBC8		



4. Finally, click the "Online Programming" button, and the burn-in information will be displayed in the message box, as follows:



Figure 2-7



#### 2.2.2 Offline Programming

CW-Writer burner can save the programming files in the burner and can be used away from the computer. The operation is basically the same as the online programming procedure. The last step is to click the "Offline Programming" button, and the message box will say "Downloading data to the programmer is complete...", as shown below:

连接设备			
选择设备: CW Writer O		$\sim$	断开编程器
编程配置			
芯片系列: CW32F03	∨ 芯片型号: C₩32⊮030C8	TG-LQFP48 , 64K, 8K $\sim$	
烧录速率: 115200	~ 供电连接: 编程器供电	3.3V, RST复位 ~	其它配置
编程文件: Flash_2021-08-20	14_27_33. hex	•••	
编程操作			
☑ 1. FLASH全片擦除	🗌 6. 读保护		
2. FLASH空白检查	□ 7. 运行程序	生成文件 (	<b>尚</b> 线编程
🗌 3. FLASH预处理	☑ 8. 蜂鸣提示		
☑ 4. FLASH编程及验证	离线编程次数:	读取闪存	在线编程
□ 5. 0TP编程及验证	100000		
配置离线下载次数成功			^
写入HEX文件名称成功…			
正在下载HEX数据到编程器,已新	完成 100%		
下或2011月到3月1日百万元以			



When the burner is powered and properly connected to the target chip through the burner port, press the start button on the CW-Writer to program offline.

*Caution: When the number of offline programming is set to 100000, it means there is no limit to the number of programming; when the number of offline programming is less than 100000, the set number is the number of times the program can be successfully written.* 



#### 2.2.3 Check the remaining number of offline programming

After the CW-Writer is connected to the computer, run the CW-Programmer software and click the "Connect Programmer" button (after connecting, it will show "Disconnect Programmer"), and the remaining offline programming times will be displayed in the information bar, as shown in the following figure:

🐼 CW-Programmer V1.57			- 🗆 ×
连接设备 选择设备: CW Writer O			斯开编程哭
201+ X H · Ca arrest o		· · · ·	D1713#1±68
编程配置			
芯片系列: C₩32┣00 ~	· 芯片型号: CW32F003F4	U7-QFN20 , 20K, 3K 🗸	
烧录速率: 1000000 ~	供电连接: 编程器供电	3.3V, RST复位 ~	其它配置
编程文件: DigitalSign.hex		•••	
编程操作			
☑ 1. FLASH全片擦除	🗌 6. 读保护		78768651P
□ 2. FLASH空白检查	🗌 7. 运行程序	生成又伴	崗线编柱
🗌 3. FLASH预处理	☑ 8. 蜂鸣提示		
☑ 4. FLASH编程及验证	离线编程次数: -	读取闪存	在线编程
□ 5. 0TP编程及验证	5		
成功连接到编程器: CW Writer 0			^
編程器固件版本号: 1.51 编程器变线应列号: 85030053001	DC600C04000000ED3471CE		
高线编程文件名称: DigitalSign.html	ex		
离线编程总共次数:5			
离线编程现东次数: 4			

Figure 2-9



#### 2.2.4 Automatic numbering

When burning the program on the chip, the burning tool can write the number to the specified area of the chip in an incremental manner, which can be the OTP area, or the FLASH area. However, if it is a FLASH area, it must not occupy the area used by the program to be written. The configuration method is as follows:

- 1. click the "Other Configuration" button to bring up the "Advanced Programming Configuration" dialog box;
- 2. Check the "Enable" item of auto numbering in the dialog box, and fill in the "Start Address" (Note: When the address is OTP address, it is saved in the OTP area), "Step Value", "Number Length" and "Start Number" of the number saving location, as shown in the figure below:

🐼 CW-Pro	grammer V1.56		– 🗆 🗙
连接设备			
选择设备	高级编辑程置	~	断开编程器
编程配置	自动编号配置		
芯片系列	▲ ●能配署: □ 使能 编号长度: 8	· · ·	
烧录速率		~	其它配置 1
编程文件	启始地址: 0x 4FF0 启始编号: 이		
	步进数值: 0x 1 当前编号: 0		
编程操作			
✓ 1. I	OTP编程文件	件	离线编程
2. I			
□ •. I □ 4. I		-	
□ 5. C	预处理Hex文件	Ŧ	住弦编柱
	•••		
已连接到			^
正在读取			
OTP内数	取消 确定 3		
Flash内数	和实现完成,止在保存文件【Hash_2022-04-02 14_08_15.hex】		
			~

Figure 2-10

- 3. Program the chip online/offline, the chip will be numbered automatically.
- *Caution: In online programming mode, the current configuration and current number will not be recorded after CW-Programmer software is closed; in offline programming mode, the configuration and current number will be saved in CW-Writer, and the data will not be lost after power off, and the chip number will continue the previous number after power on again.*



#### 2.2.5 Generate project files

The project file is used for mass production. The project file contains the configuration parameters required by CW-Writer and the Hex file to be burned, and the project file is stored in an encrypted way, which greatly reduces the risk of Hex file leakage. The generation method is as follows:

- 1. Configuration of additional options by online programming or offline programming;
- 2. Configure the automatic numbering function as required;
- 3. Click the "Generate File" button to bring up the "Generate Project File" dialog box, as shown below:

14-14-10 At			
连接设备			NY TT John PP
选择设备: CW Writer O		$\sim$	bf 并编柱器
编程配置			
芯片系列: C₩32F00	✓ 芯片型号: C₩32F003F	4P7-TSSOP20 , 20K, 3K $\sim$	
烧录谏室: 115200	✓ 供由注接: 编程器供用	A.3.3V, SWD复穴 ✓	其它配罟
	POCKETIK' PROLEMPON		
确在义件: project.hex			
编程操作			
☑ 1. FLASH全片擦除	🗌 6. 读保护		
2. FLASH空白检查	□ 7. 运行程序	生成又件	<b>尚</b> 线编柱
🗌 3. FLASH预处理	☑ 8. 蜂鸣提示		
☑ 4. FLASH编程及验证	离线编程次数:	读取闪存	在线编程
□ 5. 0TP编程及验证	100000		
Writer.VT <>	Chip.VCC		^
Writer.RXD <>	Chip.SWCLK		
Writer.TXD <>	Chip.SWDIO Chip.GND		
仅适用于可通过SWD连接芯片	的情况		
	甘始之刀 生。 #700000		
199mm在HeX又1年指元小型完成,	央仪娅妈为: A/U28389		





Figure 2-12

连接: 工程配置选项:	
选择i 待编程芯片产品系列为: CW32F00 待编程芯片产品型号为: CW32F003F4P7-TSSOP20,20K,3K	
编程图 待编程Flash文件名称为: project.hex	
芯片表 符编程Flash文件校验码为: A7D283B9	
焼泉道 待編程芯片編程速率为: 115200bps	
旧物性的小1代电力式力: 物性的1代电3.3V, SWU复位	
待编程芯片需要烧录序列号	
编程者 序列号起始地址为: 0×4FF0	
序列号步进量为: 0×1	
□ 3 不需要限制离线编程次数	
【Hash 至 月 孫 除 】 【Hash 编 怪 並 业 】 【 天 l 初 实 保 护 】 【 打 升 巽 鸣 造 示 】	
Write	~
Write C 允许在线编程 C 允许修改自动编号的启始编号	
Write 双接曲 1 允许离线编程 高线编程时锁定到指定编程器	
1m上前11m上前115m17715。 取消 生成工業	程文件

- 4. Click "Generate Project File" button, a file with the same name as the programmed file and the extension Prog will be generated in the directory where the programmed file is located.
- *Caution 1: If you want to generate the project file for online programming, please check "Allow online programming"; if you want to generate the project file for offline programming, please check "Allow offline programming".*
- *Caution 2: After selecting "Allow Offline Programming", you can bind the project file and programmer, that is, the project file can only be used by the specified programmer, and when binding the programmer, you need to specify the serial number of the programmer. The serial number of the programmer can be obtained in the information box when the programmer is connected, as follows :*



Figure 2-13

GW-Programmer V1.56             连接设备			- • ×
选择设备: CW Writer 0 编程配置 芯片系列: CW32F00	✓ 芯片型号: C₩32F003F4F	∽ 7-TSSOP20 , 20K, 3K ∽	断开编程器
焼录速室: 115200 编程文件: project.hex	◇ 供电连接: 编程器供电3	6.3V,RST复位 ~	其它配置
编程操作	<ul> <li>□ 6. 读保护</li> <li>☑ 7. 运行程序</li> <li>☑ 8. 蠕鸣提示</li> </ul>	生成文件	离线编程
<ul> <li>✓ 4. FLASH信程及验证</li> <li>□ 5. 0TP编程及验证</li> </ul>	离线编程次数:	读取闪存	在线编程
成功连接到编程器: CW Writer 编程器离线序列号: 8FC39C53 高线编程文件各称. DigitalSign 高线编程总共次数: 100000 离线编程剩余次数: 100000	0 C9DC600CA08601007073329A		~



#### 2.2.6 Use of project files

- 1. Connect your computer to CW-Writer, then start CW-Programmer software and connect the programmer.
- 2. Select the required project file (note that you need to select the extension as Prog) at the "Programming File" and open it as follows :

🚮 CW-Programmer V1.56			- 🗆	×
连接设备 选择设备: CW Writer O		~	断开编程器	
编程歐置 芯片系列: CW32F00 烷录速率: 115200 编程文件: project.hex	<ul> <li>◇ 芯片型号: C₩32F003F4</li> <li>◇ 供电连接: 编程器供电</li> </ul>	P7-TSSOP20 , 20K, 3K ~ 3.3V, RST夏位 ~ 1	其它配置	
<ul> <li>编程操作</li> <li>□ 1. FLASH全片擦除</li> <li>□ 2. FLASH空白检查</li> <li>□ 3. FLASH境处理</li> <li>□ 4. FLASH境程及验证</li> <li>□ 5. OTP编程及验证</li> </ul>	<ul> <li>□ 6. 读保护</li> <li>☑ 7. 运行程序</li> <li>☑ 8. 蠕鸣提示</li> <li>离线编程次数:</li> <li>100000</li> </ul>	生成文件 读取闪存	离线编程 在线编程	
成功连接到编程器: CW Wr 编程器固件版本号: 1.51 编程器离线序列号: 8FC39C 高线编程文件名称: Digital 高线编程总共次数: 100000 高线编程帧余次数: 100000	iter 0 53C9DC600CA08601007073329A iign.hex			< >

Figure 2-14

Figure 2-15

编程配置	连接设备 选择设备:	CW Writer O		~ <b>E</b>	所开编程器
▲       →       ▲       MDK → output → exe       ✓       ②       搜索*exe*       戶           新建文件夹       □       ②       ②             ○       ⑦       ⑦       ⑦             ○       ⑦       ⑦       ⑦       ⑦              ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○       ○ <th>编程配置</th> <th></th> <th>4+11 m/G</th> <th></th> <th>×</th>	编程配置		4+11 m/G		×
Source A Set	へ く 利 組织 ▼	<ul> <li>个 — 《 MDK</li> <li>新建文件夹</li> </ul>	> output > exe v ♂	搜索"exe" ☷ ▼	
成     文件名(N):     E:\20211021_003MCU\03CW3; ~     工程文件(*.Prog)       編     田E文文件(*.Prog)     一       編     工程文件(*.Prog)     2	約 ● 世月 ● 日 ● 秋 ● 秋 ● 秋 ● 秋 ● 秋 ● 秋 ● ○ ☆	S网盘 ^ 目脑	容称 project.Prog project1.Prog	修改日期 2022/4/2 15:18 2021/12/27 10:10	类型 PROG 文 PROG 文 →
高/····································	成 編 編 高	文件名()	0: E:\20211021_003MCU\03CW32 ~	工程文件(*.Prog) HEX文件(*.hex) 工程文件(*.Prog)	2



3. Run the burn-in program.

*Caution 1: If you load the online programming project file, click "Online Programming" to burn in the program to the chip, as shown in the figure below:* 

CW-Programmer V1.56		- 🗆 X
连接设备 选择设备: CW Writer O	~	断开编程器
编程配置 芯片系列: CW32F00 焼录速车: 115200 编程文件: project.Prog	<ul> <li>◇ 芯片型号: C₩32F003F4F7-TSS0F20 , 20K, 3K </li> <li>◇ 供电连接: 编程器供电3.3V, RST复位 </li> <li>···</li> </ul>	其它配置
- 编程操作 ✓ 1. FLASH全片擦除 ○ 2. FLASH空白检查 ○ 3. FLASH预处理	<ul> <li>□ 6. 读保护</li> <li>✓ 7. 运行程序</li> <li>✓ 8. 蜂鸣提示</li> </ul>	离线编程
<ul> <li>✓ 4. FLASH编程及验证</li> <li>□ 5. 0TP编程及验证</li> </ul>	离线编程次数: 读取闪存	在线编程
离线编程总共次数:100000 离线编程剩余次数:100000 待编程Hex文件格式检查完成 待编程Hex文件名为: 待编程Hex文件名为: 待编程Hex文件校验码为:	, 其校验码为: A7D283B9 project.hex A7D283B9	^

*Caution 2: If you load the offline programming project file, click "Offline Programming", the project file will be imported into CW-Writer, and then you can use CW-Writer to burn the program on the chip directly without the computer, as the following figure:* 

连接设备 选择设备: CW Writer 0		~	断开编程器
编程配置 芯片系列: CW32F00 烧录速车: 115200 编程文件: Ree_20.00K_RNG.Pro	芯片型号: CW32F003F4 供电连接: 编程器供电	?7-TSSOF20 , 20K, 3K ~ 9.3V, RST复位 ~	其它配置
<ul> <li>编程操作</li> <li>✓ 1. FLASH全片擦除</li> <li>2. FLASH空白检查</li> <li>3. FLASH预处理</li> <li>✓ 4. FLASH编程及验证</li> <li>⑤. OTP编程及验证</li> </ul>	<ul> <li>6. 读保护</li> <li>✓ 7. 运行程序</li> <li>✓ 8. 蠕鸣提示</li> <li>密线编程次数:</li> <li>50</li> </ul>	生成文件 读取闪存	<b>离线编程</b> 在线编程
配置產減下载次数成功 写入HEX文件名称成功 配置自动编号成功 配置供电方式成功 正在下载HEX数据到编程器,已完 下载数据到编程器完成	at 100%		^



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### 3 Revision history

Date	Revision	Changes
April 13, 2023	Rev 1.0	Initial release.

#### Table 3-1 Document revision history

