



SineMcuPro100S Programmer

User's Manual

(V0.2)

sinomcu.com



revision history

Document version	revision date	revised description
V0.0	2023-8-16	first edition
V0.1	2023-9-13	add software instructions
V0.2	2023-10-30	add instructions for 'using the burn-in adapter board'

1.Product profile

1.1 Hardware list

Table 1-1 Packing List

number	Item name	amount
1	SinemcuPro100S Burner Mainframe	1
2	DC18V 0.9A 2.1 DC Power Adapter	1
3	USB2.0 Printer Cable TypeA-B	1
4	Standard Adapter Plate	1 adapter board for each chip with the same burn-in pin position
5	Universal adapter plate (manual wiring version) (optional)	1
6	Universal adapter plate (manual welding version) (optional)	1



Figure 1-1 Packing List

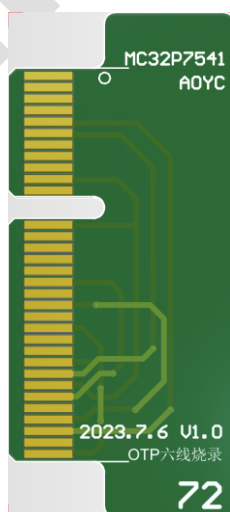


Figure 1-2 Standard burn-in adapter plate

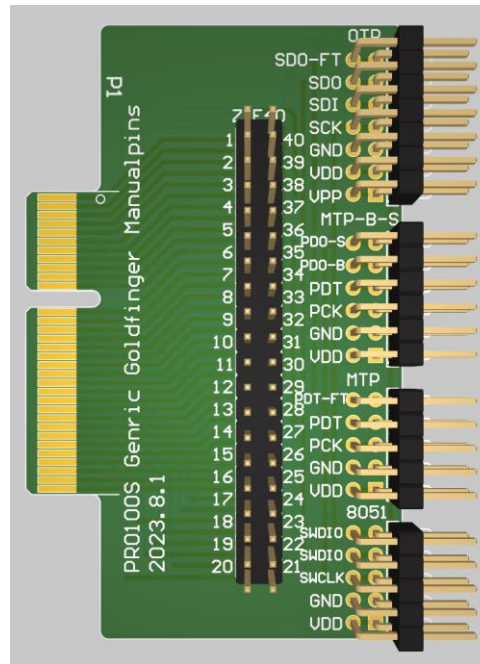


Figure 1-3 Universal Burn-in Adapter Board (Manual Wiring Version)

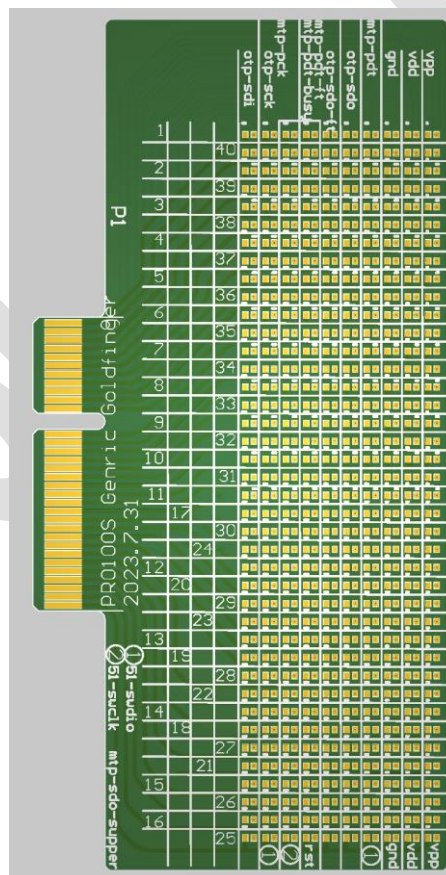


Figure 1-4 Universal burn-in adapter board (manual solder version)



1.2 Software list

Table 1-2 Programming Software

number	Software Name	Download Links
1	EZPro100_HID	https://sinomcu.com/product/download_tools?id=20

1.3 Supported Chips

Table 1-3 Supported Chip Categories

number	product category	definition
1	8051 chip	all
2	Risc8 lite instruction set chip, including the <ul style="list-style-type: none">● OTP\MTP● FLASH	all



2. Hardware usage

2.1 Host interfaces

Table 2-1 Hardware Interface Functions

number	name	functionality
1	Power indicator	Lights on: Indicates power is connected
2	Buzzer	Audible alerts: burn-in startup, burn-in results, firmware update, etc.
3	Burn Status Indicator	Indicates burn-in results
4	demonstrate	Displays burn-in chip and configuration information, as well as burn-in results
5	Initiating the burn-in button	Press to start burning
6	Burn-in Adapter Board Slot	Insert the burn-in adapter board and transfer the burn-in signals to the ZIF40 locking collar.
7	electric socket	Burner Power Supply Interface
8	Burner Station interface DB9	Signal connection port for automated burner stations
9	USB socket	Connection to PC for transfer of commands and data via USB cable
10	Chip Placement Locking Block ZIF40	Placement of chips to be burned



Figure 2-1 Names of hardware interfaces



2.2 Host PC connection



Figure 2-2 Connecting a PC via a usb cable

2.3 Mainframe connection adapter board

2.3.1 Standard Burn-in Adapter Boards

- Each package of each chip corresponds to one burn-in adapter board;
- Both chips can use each other's adapter boards if they use the same burn-in pins and correspond to the same ZIF40 locking holder number;



Figure 2-3 Standard burn-in adapter board connected to burner

2.3.2 Universal burn-in adapter board (manual)

- The universal burn-in adapter board is designed to lead the ZIF40 and all burn-in signals separately to the pins, making it easy for the user to connect the wires via DuPont cables;
- By looking at the user manual chip pin names and pin positions, it is possible to determine that the burn-in signal corresponds to the number on the ZIF40 locking block;

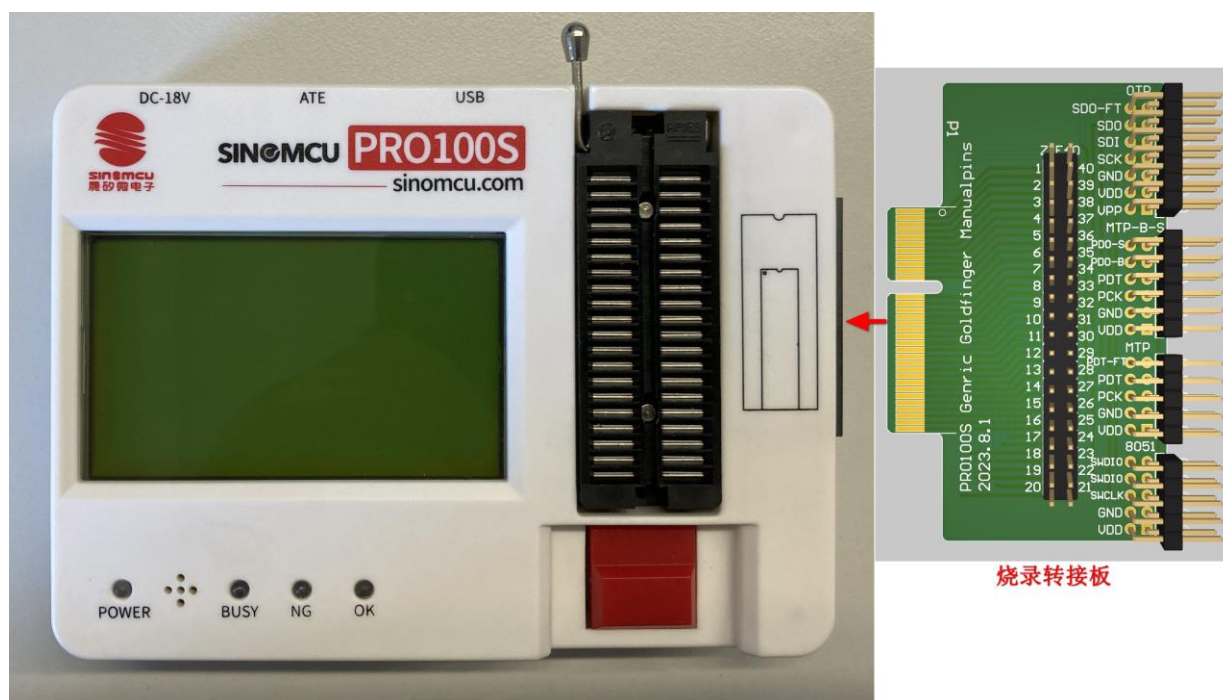


Figure 2-4 Universal burn-in adapter board connected to burner

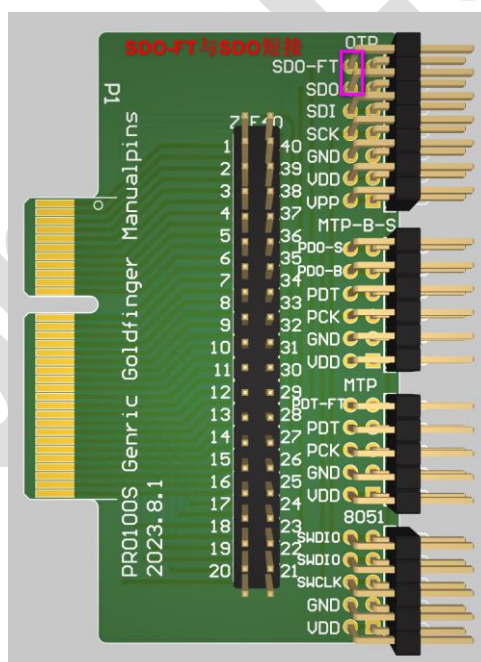
Adapter Board Wiring

There are 3 main categories:

1) OTP

number	Chip Pin Name	Adapter plate silkscreen
1	VPP	VPP
2	GND	GND
3	VDD	VDD
4	SCK	OTP-SCK[P07]
5	SD0	OTP-SD0[FT] [PIN0]
6	SD0	OTP-SD0[PIN4]
7	SDI	OTP-SDI[P06]

Note: 5-6 need to be manually shorted



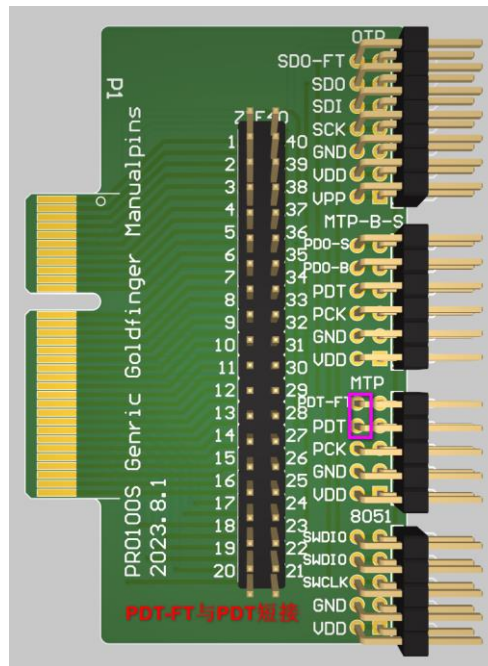
2) MTP

a) MTP/ MTP+ frequency calibration

number	Chip Pin Name	Adapter plate silkscreen
1	GND	GND
2	VDD	VDD
3	PCK	MTP-PCK[P07]

4	PDT	MTP-PDT[P05]
5	PDT	MTP-PDT[FT] [PIN0]

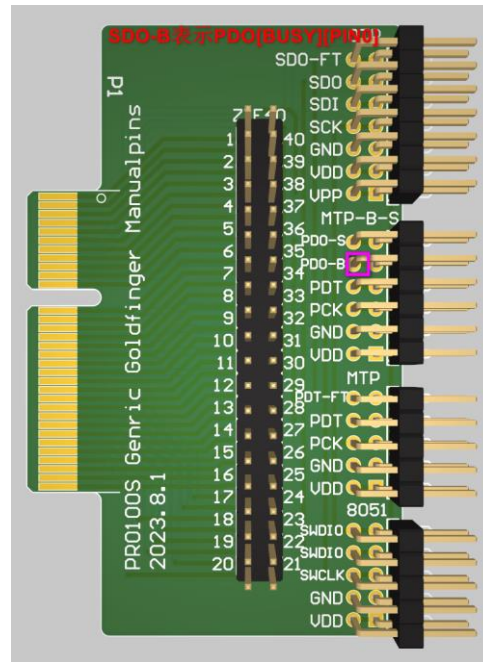
Note: 4-5 need to be shorted manually



b) MTP+BUSY

number	Chip Pin Name	Adapter plate silkscreen
1	GND	GND
2	VDD	VDD
3	PCK	MTP-PCK[P07]
4	PDT	MTP-PDT[P05]
5	PDO	MTP-PDO[BUSY] [PIN0]

Note: MC32F7343 uses this connection.

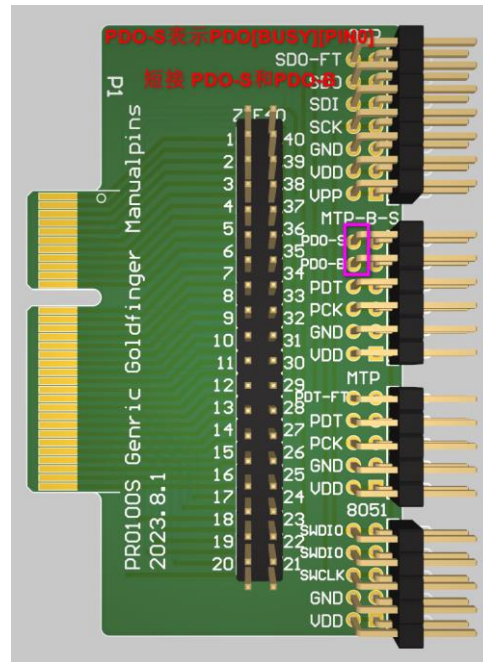


c) MTP+BUSY+SUPPER

number	Chip Pin Name	Adapter plate silkscreen
1	GND	GND
2	VDD	VDD
3	PCK	MTP-PCK[P07]
4	PDT	MTP-PDT[P05]
5	PDO	MTP-PDO[BUSY][PIN0]
6	PDO	MTP-PDO[SUPPER][P011]

Note: 5-6 need to be manually shorted

MC32F7341, MC32F7342 Use this connection method.

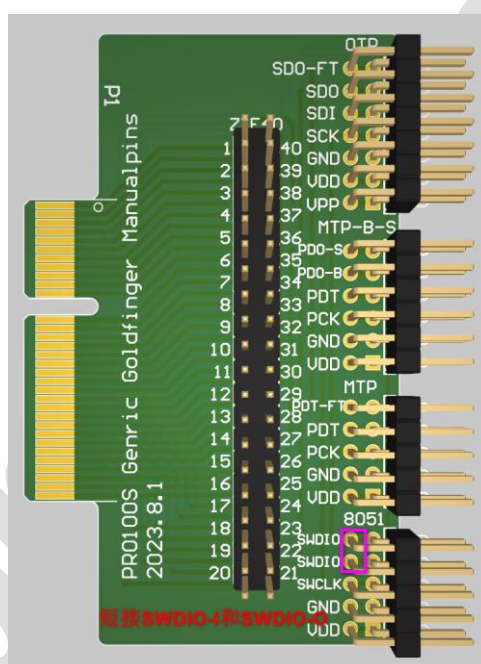


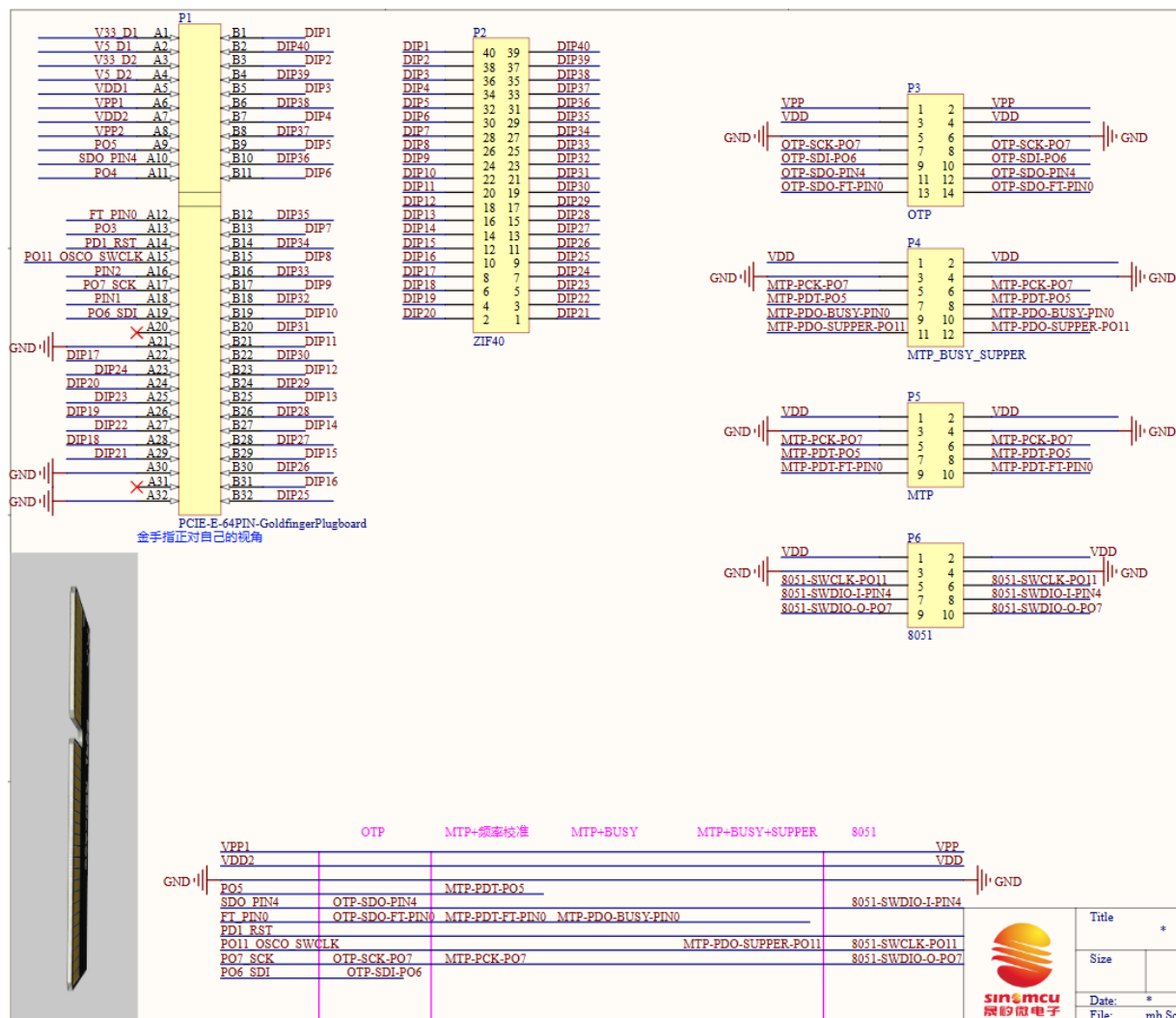


3) 8051

number	Chip Pin Name	Adapter plate silkscreen
1	GND	GND
2	VDD	VDD
3	SWDIO	8051-SWDIO-0 [P07]
4	SWDIO	8051-SWDIO-I [PIN4]
5	SWCLK	8051-SWCLK [P011]

Note: 3-4 need to be shorted manually





Schematic diagram of burn-in adapter board



Adapter plate silkscreen			typology	instruction
OTP	MTP	8051		
VPP			Power	Programming Power Supply
GND			Power	GND
VDD			Power	power supply
OTP-SCK[P07]	MTP-PCK[P07]	8051-SWDIO-0 [P07]	0	
	MTP-PDT[P05]		I/O	Bidirectional io
OTP-SDO[FT] [PIN0]	MTP-PDT[FT] [PIN0] or MTP-PDO[BUSY] [PIN0]		I	
OTP-SDO[PIN4]		8051-SWDIO-I[PIN4]	I	
	MTP-PDO[SUPPER] [P011] optional	8051-SWCLK[P011]	0	
OTP-SDI [P06]			0	

2.3.3 Universal burn-in adapter board (soldering)

3. The universal burn-in adapter board is designed to lead the ZIF40 and all burn-in signals to separate pads for easy connection through solder joints;
4. The ZIF40 and burn-in signals, forming a matrix, intersect at two adjacent pads in a square, shorted to indicate connection;
5. By looking at the names and pin positions of the chip pins in the user's manual, it is possible to determine that the burn-in signals correspond to the numbers on the ZIF40 locking block;

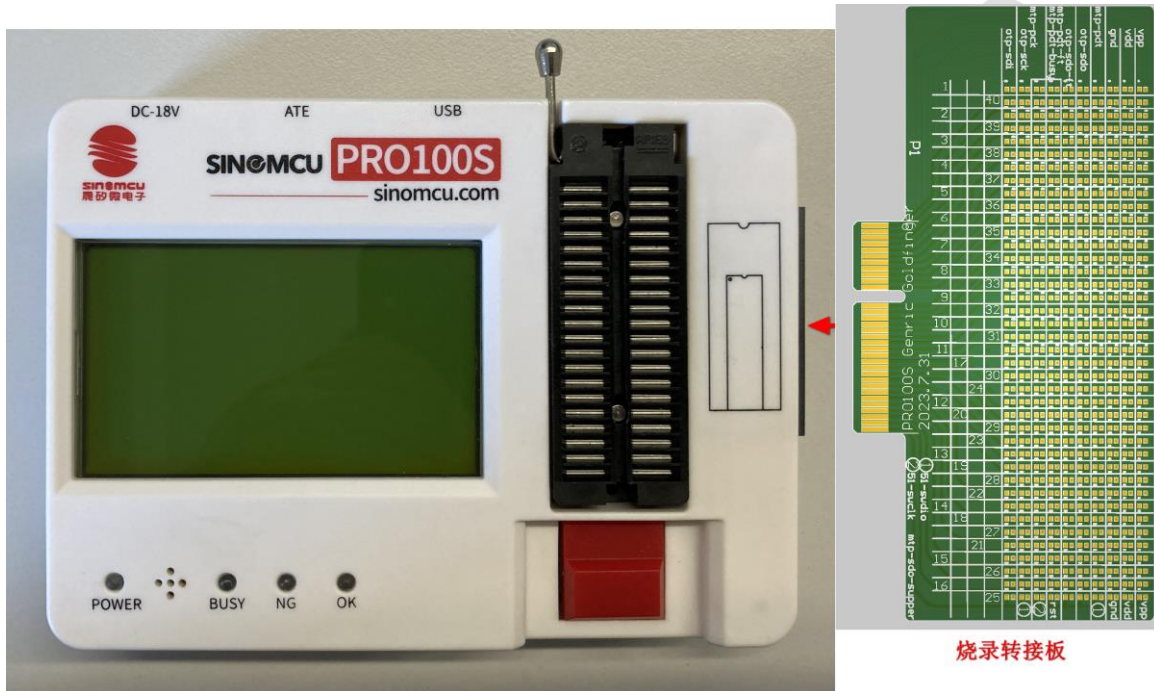


Figure 2-5 Universal burn-in adapter board connected to burner



2.4 Host Placement Chip

- Dual-row inline chip, aligned to the bottom of the ZIF40 locking block placement, top left corner of the chip is pin 1;
- non-dual-row inline chip, via socket chip adapter, converted to dual-row inline and inserted into ZIF40 locking holder, bottom aligned;



Figure 2-6 Placing the Chip



2.5 Mainframe connection ATE

Table 2-2 DB9 Interface ATE Signal Definition

DB9 number	name	functionality
1	V33	Output 3.3v power to burner station
2	GND	ground
3	Busy	Output current burning status: burning in progress, low active
4	Green (OK)	Output burn-in result: pass, low active
5	Red (NG)	Output burn-in result: failed, low validity
6	-	none
7	-	none
8	-	none
9	Key	Key Input: Initiate burn-in, low active

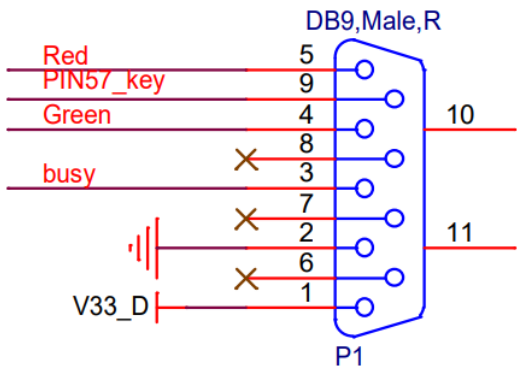
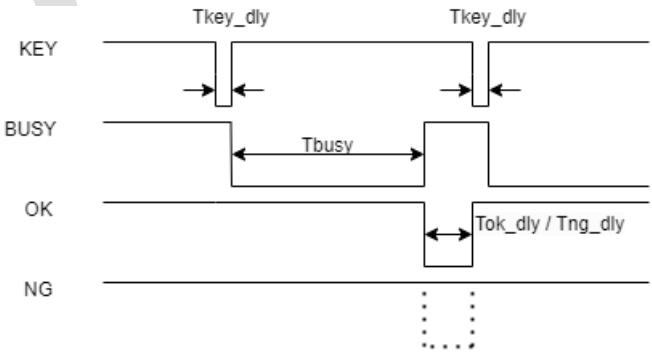


Figure 2-7 DB9 Interface ATE Signal Definition



相关时间要求

$T_{key_dly} > 20ms$

$T_{ok_dly} / T_{ng_dly} > 195ms$

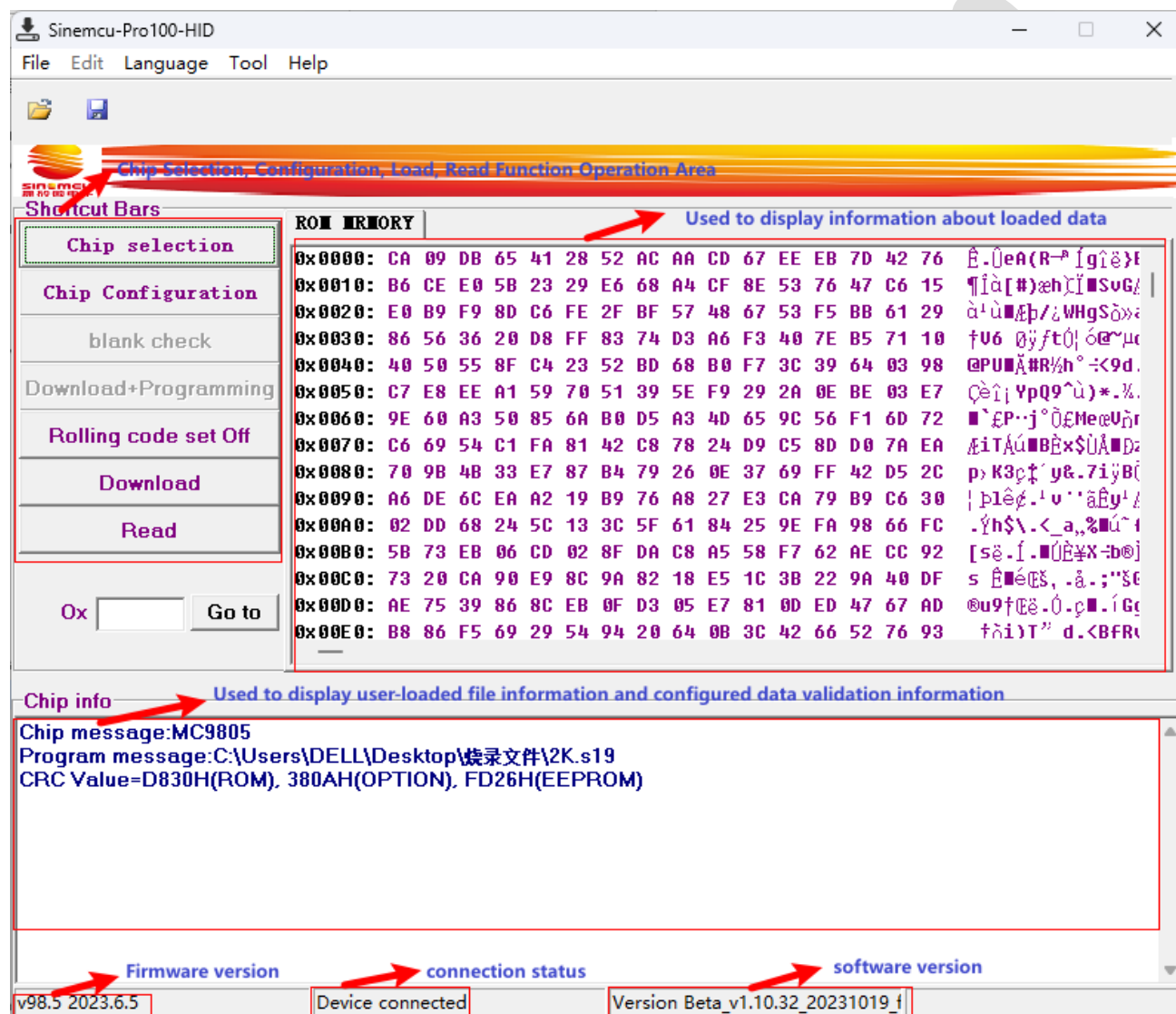
注: T_{busy} 为实际烧录时间

Figure 2-8 ATE Signal Timing



3. Software usage

3.1 Overall description of the software interface





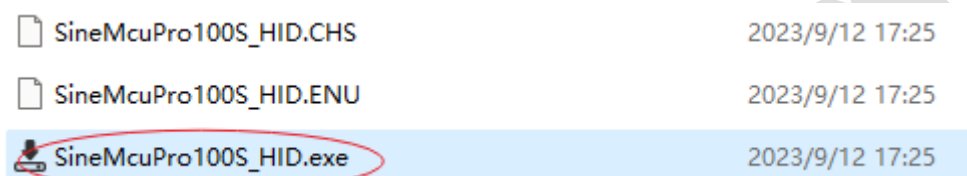
3.2 The basic flow of software use

3.2.1 First make sure the burner is connected to the PC.

- (1) Plug in the DC18V power supply.
- (2) Plug in the USB cable and connect it to the PC.

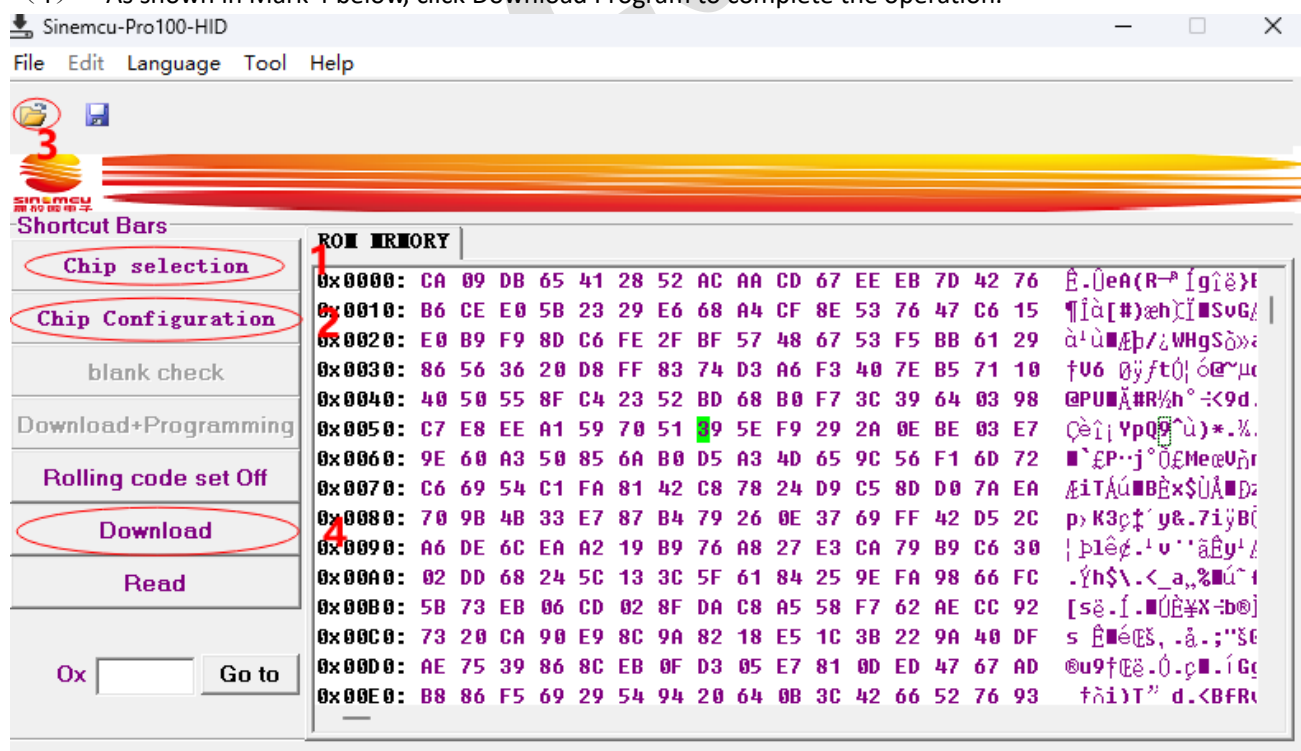
3.2.2 Run the software SineMcuPro100S_HID.exe

As shown below, click to open the software:



3.2.3 After the software opens

- (1) Click " Chip selection" as shown in Mark 1 below and select the model of the program to be downloaded.
- (2) Click on " Chip Configuration " as shown in Mark 2 below to make configuration selections.
- (3) Click the File Load button as shown in Mark 3 below to load the program to be downloaded.
- (4) As shown in Mark 4 below, click Download Program to complete the operation.



3.2.4 After the download is complete

After downloading, a prompt box will appear, showing the checksum code of the software, and the checksum



code of the ROM area program, these two codes must be consistent, otherwise the transmission is incorrect. If they are not the same, please power down the programmer and download it again. Meanwhile, after the download is completed, the LCD display will also show the corresponding model number, and the checksum code, and configure the OPTION value. Figure below:



Display contents:

First line: Model: MC32F7062 --- The display model is the same as the chip model selected during the corresponding download.

Second line: CS:61E6 OPT:A670 --- 0x61E6 is the result of CRC checksum calculation of the burned file, 0xA670 is the result of CRC checksum calculation of the option configuration word.

The third line Displayed when the burner is OK, the number of OK and NG have been burned this time. Note that the calculated value is the count value when the writer is not powered down this time. The count value will be automatically cleared to zero when the writer is re-powered.

When writing NG, it displays: Error Code: XXX The corresponding error code can be found in the appendix at the back of the manual to find out the reason for the writing error.

3.3 Scroll Code Burn Setting Description

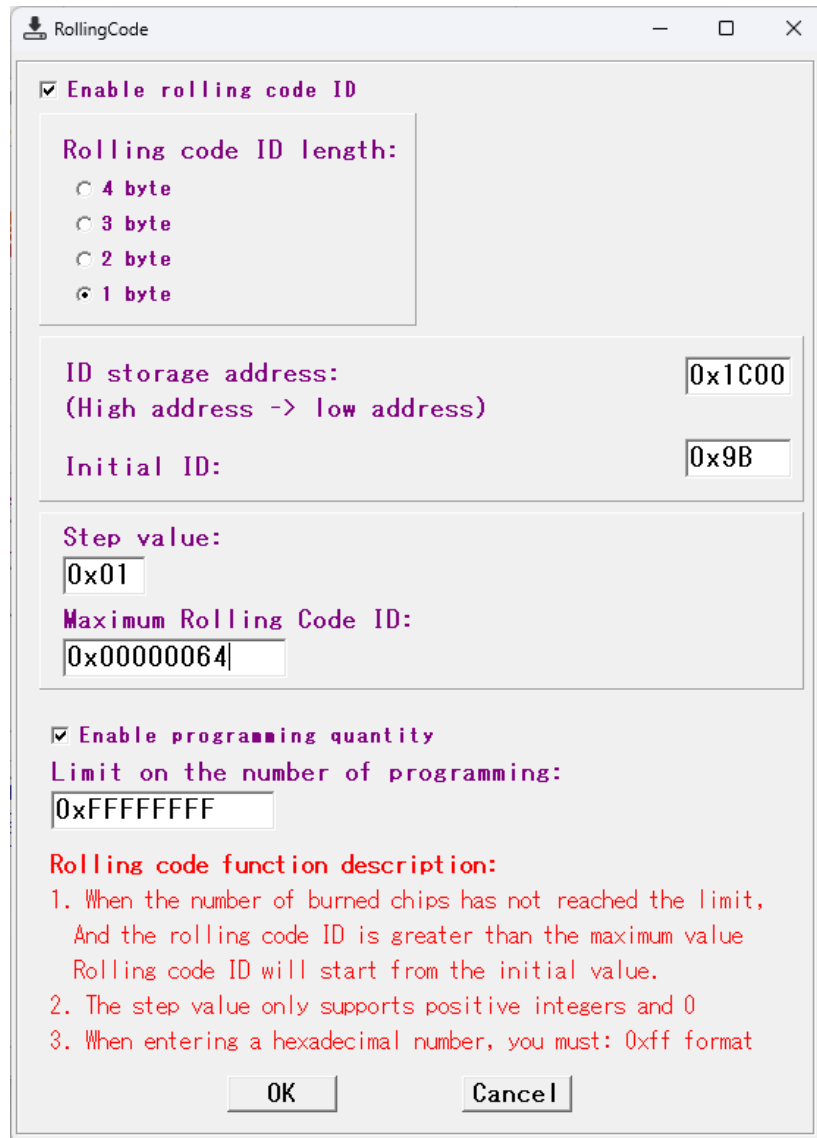
(1) When the software is opened, the "Scroll Code Setting Off" button is added to the shortcut menu. In order to prevent accidental writing, the scroll code setting is OFF every time the software is opened, as shown in the figure below.



Shortcut Bars

Chip selection
Chip Configuration
blank check
Download+Programming
Rolling code set Off
Download
Read
Ox <input type="text"/> Go to

(2) Click the "Scroll Code Setting Off" button and the following dialog box appears.



The image shows a software dialog box titled "RollingCode". It contains several settings for configuring a rolling code system. At the top, there is a checked checkbox labeled "Enable rolling code ID". Below this, a section titled "Rolling code ID length:" contains four radio button options: "4 byte", "3 byte", "2 byte", and "1 byte", with "1 byte" being selected. Further down, there are two text input fields: "ID storage address:" with the value "0x1C00" and "(High address -> low address)" below it, and "Initial ID:" with the value "0x9B". Below these is another section with "Step value:" set to "0x01" and "Maximum Rolling Code ID:" set to "0x00000064". At the bottom, there is a checked checkbox labeled "Enable programming quantity" and a text input field for "Limit on the number of programming:" set to "0xFFFFFFFF". Below the inputs is a red-colored section titled "Rolling code function description:" containing three numbered points. At the very bottom are "OK" and "Cancel" buttons.

☒ Enable rolling code ID

Rolling code ID length:

☐ 4 byte

☐ 3 byte

☐ 2 byte

☒ 1 byte

ID storage address: 0x1C00
(High address -> low address)

Initial ID: 0x9B

Step value: 0x01

Maximum Rolling Code ID: 0x00000064

☒ Enable programming quantity

Limit on the number of programming: 0xFFFFFFFF

Rolling code function description:

1. When the number of burned chips has not reached the limit, And the rolling code ID is greater than the maximum value Rolling code ID will start from the initial value.
2. The step value only supports positive integers and 0
3. When entering a hexadecimal number, you must: 0xff format

OK Cancel

By default, the "Enable Scroll Code" and "Enable Number of Writes" functions are disabled in the dialog box. At the same time, other setting windows are also disabled. When "Enable Scroll Code" is selected, you can set the length of scroll code, scroll code address, initial ID of scroll code, step value of scroll code, and maximum value of scroll code ID. The scroll code can be up to 32 bits long; the step number is an integer between 0X00 and 0XFF and can only be incremented; the initial ID corresponds to the initial value of each address. When the "Enable Scroll Code" checkbox is selected, the limit value of the number of writes can be configured.

(3) Scroll code storage address: must be a valid ROM address value, if the non-ROM valid address Fan set, the scroll code will not be burned. The address value is a 16-bit address, such as 0x1800, 0x1c00 and so on.

(4) ID initial value each byte can only store 8 digits, only one byte; if the current total ID value has exceeded the length of the point address, it will start from 0. (e.g.: set scroll code enable, length is 1 byte, initial value is 0XFF, step is 1, burn number is 1000, then, the 2nd IC burned, ID code is 0X00, when burned 1000PCS chip, the burner will report an error and no longer go to the execution of the burn function).

(5) Burning Quantity Limit: Used to limit the number of ICs that can only be burned OK for this downloaded program. When the number reaches the set value, the burner will no longer burn. Report error code 14.



(6) When the setting is completed, tap "OK", then the shortcut button will be "Scroll Code Setting On". After downloading the program to the writer, "ID:0X9B" will appear on the last line of the LCD display of the writer.

(7) If the burner is just powered on, the ID:0XXX will be the ID value to be burned, and the ID value will be the ID value that has just been burned during the process. When the rolling code function is turned on, the number of OK counts will be recorded, and the current OK counts and ID values will be recorded normally even if the power is turned off and on again.

3.4 Instructions for using the WRT file

During the production process, it is not easy for the production line personnel to operate the software because there are more places to be set up/configured in the software. Therefore, a saved document WRT format with OPTION values is provided, which contains the S19 code, the chip model, and the configuration word, and also carries configuration information related to rolling codes. If the loaded WRT is a WRT file generated using an older version of the software, it does not necessarily contain roll code information, so when using it, please click on the roll code setting to confirm whether there is roll code information.

(1) Generation of WRT format files:

When a program has been tested and verified to be OK, engineers can select the save format as WRT in the software menu FILE → Save As, and then save it. Or directly click the toolbar "Save" icon, select the WRT format, and then save. A WRT format file will be generated at this time.

(2) Use of WRT-format files:

When you need to produce again, open the SineMcuPro100S_HID.exe burning software. After the software is opened, there is no need to select and set any chip model, directly click the "Open" icon on the toolbar to open the WRT format file, if you can't find the WRT file under the folder, pay attention to find the file format is not already selected WRT.

After opening the WRT file, there is no need for any other operation, directly download the program to the burner that can burn the chip.

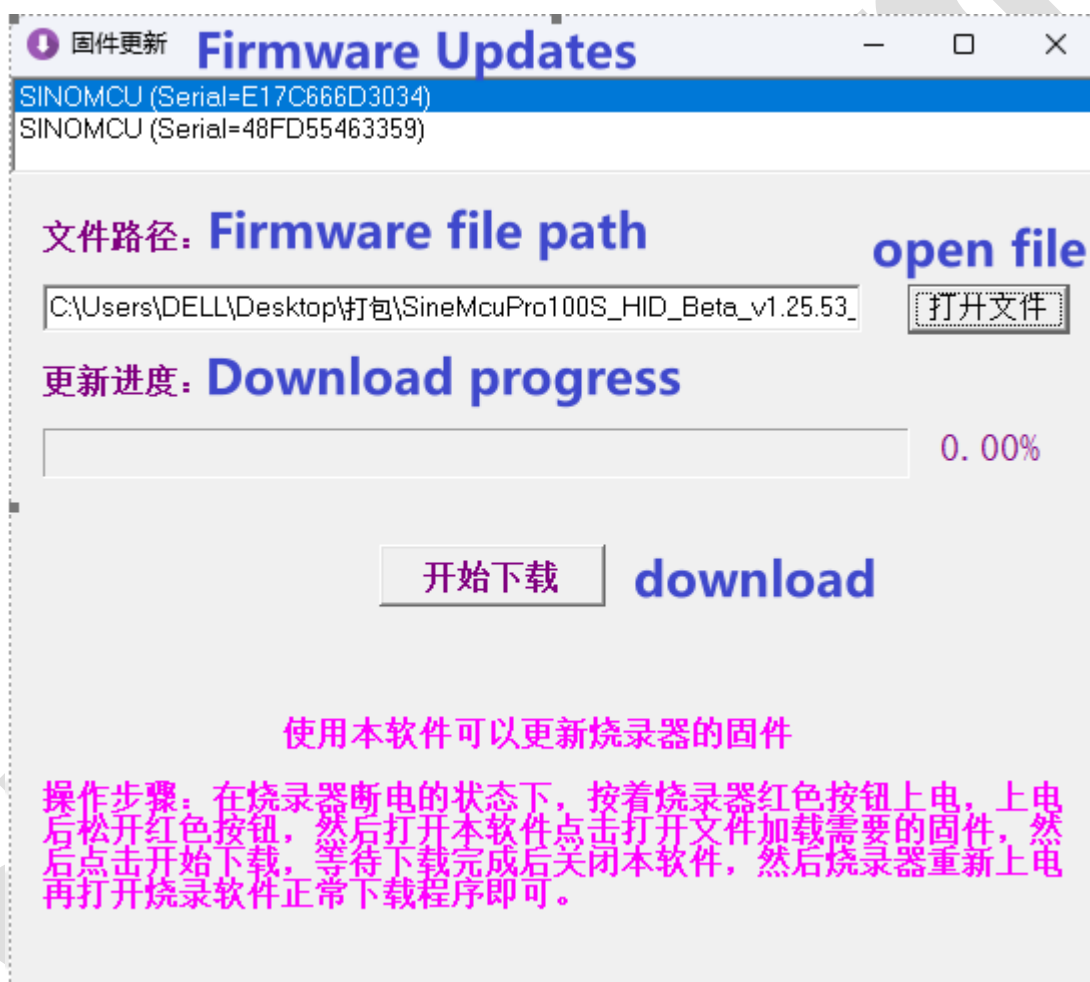
Note:

- 1. After loading the WRT file, you can't go back to selecting or configuring the chip, if you re-select and configure the chip, the downloaded content will become the new configuration content.**
- 2. This WRT file is not applicable to program burning with scroll code setting.**

3.5 Instructions for burning firmware upgrades

The burner software supports automatic firmware update, just select the corresponding model on the burner software and click download. However, when an error occurs during the automatic update process, it is necessary to manually update the firmware of the burner to switch to ensure that the complete firmware is downloaded into the burner. The update method is as follows:

- (1) First power down the burner. Then press and hold the red button of the burner and power up. At this point the burner enters firmware update mode.
- (2) Open the Update folder in the software directory and run the Manual Update Burn-in Firmware Tool.exe program, the program interface is as follows:



- (3) Click "Select File", select the EZPro100_APP_v20_XXXX.srec file under Update file, and select the corresponding model.
- (4) After selecting the file, click "Start Download".
- (5) After the update is completed, close this software, then re-power on the burner, and then open the burner software to download and burn normally.



3.6 Software CRC Checksum Description

For the user to use the burning software in the process of burning the old model about the CRC checksum value of the problem, the following explanation of this problem.

There are four CRC checksums in the figure below, which are explained one by one:

1. CRC checksums of user-loaded programs
2. CRC checksums for user-selected configuration items
3. Older CRC checksums
4. CRC checksum value read back from the chip (program part only, not configuration items)

Due to some old models (such as 20P series) and new models about CRC check value calculation method is not the same, so get the CRC check value is not the same, but the customer in the upgrade of the new version of the software after the old version of the CRC check value want to retain the old version of the CRC check value, so there will be old version of the CRC check value of an item.

Due to the chip in the burning process, part of the calibration value in the configuration item (not open to the customer) is not the same when burning different chips of the same model, so when the user burns different chips of the same model, the CRC checksum value of the configuration item read back by each chip is not the same, and it is normal for the user to see that the CRC checksum value of the configuration item read back by different chips is not the same.

The CRC checksum value read back by the user during the burning process is without configuration items, i.e., it only contains the program part, and its value should be consistent with the CRC checksum value of the program loaded by the user, if it is not consistent, it means that there is a problem during the burning process, please contact the sales or FAE.



3 Chip burn-in

Manual burning
machine burning



4 After-sales maintenance

4.2 Maintenance of the motherboard

Method: Replace the damaged chip, or change the motherboard.

4.2 Display Maintenance

Method: Replace the display module with a new one.

4.3 Adaptor maintenance

Method: Replace the adapter module with a new one.

appendix

Table Fault Codes

error code	Cause of error	simple solution
002	IRC calibration Failed to enter mode	
003	IRC Calibration Frequency Value Out of Range	1. Check if the calibration signal test line is connected to the burn-in board. 2. Burner test frequency function is normal
004	Failed to enter write mode	1. Check that the burn-in boards are of the same model number and that the connections are not misaligned; 2. 18V power supply is normal or not, VPP,VDD voltage is normal or not.
005	VDD voltage out of 7.0V~6.2V range	1. Measuring VDD voltage with an oscilloscope
006	VPP voltage beyond 13V~~11.5V range	1. Measuring the VPP voltage with an oscilloscope
007	IRC calibration value write failure	1. Verify that the write signal is in



		good contact
008	Failed to burn data in ROM area	1. Verify that the write signal contact is good 2. If the chip is 7341 or 7342, please check if it is a five-wire burn-in.
009	Program buffer read failure	1. Contact sales or FAE for replacement
010	OPTION value write failure	1. Verify that the burn signal contacts are good
011	Burning Abnormal	1. Contact sales or FAE for replacement
012	Calibration results in 0XFF or 0x00	1. Verify that the chip has been factory IRC calibrated
013	Error saving scroll code	1. Contact sales or FAE for replacement
014	The number of writes reaches the maximum limit	You need to re-limit the number of burns. Redownload the burn code.
015	Inconsistency between host computer software and burner firmware version	Update burner firmware
016	OTP address does not match the write address	1. Contact Sales or FAE
017	MC32T8132 Erase Error ID-XX0	1. Contact Sales or FAE
018	MC32T8132 Erase Error ID-011	1. Contact Sales or FAE
019	MC32T8132 Erase Error ID-101	1. Contact sales or FAE
020	MC32T8132 Erase Error ID-111	1. Contact Sales or FAE
021	HIRC_DIFF, the chip has been written, and the frequency of the internal high frequency oscillator used this time is different from the previous one.	1. Chip-swap burn-in
022 023	1. Normal read checksum failure when writing ROM for chips with Margin read mode 2. For chips with Margin read mode, Margin-1 mode read checksum failure when writing ROMs	1. Verify that the write signal is in good contact 2. Check that the burner power adapter voltage meets requirements 3. Check whether the burn-in VDD and VPP voltages are normal or not
024	For chips with Margin read mode, Off State Margin mode read checksum failure when writing	1. Verify that the write signal is in good contact



	ROMs	
025	check for errors	1. Contact Sales or FAE
026	MTP burn error	1. Checking the wiring 2. Re-burning
027	MCU hardware calibration and software calibration inconsistency error report	1. Check that the loaded program is correct 2. Read the chip to see if it's been burned.
028	No VREF calibration value	1. Contact sales or FAE for chip replacement
029	No LVD calibration value	1. Contact sales or FAE for chip replacement
030	Chip model and configuration mismatch	1. Contact Sales or FAE
031	For chips with Margin read mode, normal read checksum failure when writing OPTION	1. Verify that the write signal is in good contact
032	For chips with Margin read mode, the Margin-1 mode read checksum fails when writing OPTION.	1. Verify that the write signal is in good contact
033	For chips with Margin Read Mode, Off State Margin Mode Read Checksum Failure when Writing Option	1. Verify that the write signal is in good contact
034	S19 data in question reported an error	Verify that your S19 or wrt program does not contain illegal commands that are prohibited or not recommended for use
035	The OS test doesn't work.	Check that the burn-in skirmish boards are of the same model number and that the connections are not misaligned;
036	Special burners are shipped with a preset limit on the number of writes.	Contact Sales or FAE
037	Chip version and burn-in tool mismatch	Contact Sales or FAE
038	Communication error while writing	The burner is re-powered and can be re-burned
039	No engineering calibration values	Read the chip to see if there is a value in the corresponding part of the configuration word, if there is



		no value, it may be because the chip has not been tested for engineering.
040	CRC check error	<ol style="list-style-type: none">1. Verify that the program loaded into the burner is correct2. Check for good wiring
041	Bad Dot Repair Process Error	<ol style="list-style-type: none">1. This chip may be defective2. Read the chip data and then intercept the data in the configuration word part, and submit it to FAE to confirm whether the bad point option has been written.
042	Programming communication error Detecting the consistency of SDO data and input SDI data	<ol style="list-style-type: none">1. Check if SDO and SDI are in good contact with the chip2. re-power up the burner, reload the program to be burned and burn it again
043	Error loading option into registers into mode / FLASH error burning prog_lock (Problem only exists in 7341, 7342, 7343)	<ol style="list-style-type: none">1. Check for five-wire burning2. Check that the burner is well connected to the chip.3. If problems 1 and 2 above exist, the error chip can be re-programmed after correction.
044	Engineering test value flag bit error	<ol style="list-style-type: none">1. Check that the loaded wrt is correct2. Read the value of the chip interception option configuration area back to the FAE, compared with the development manual to check whether the actual chip engineering value and the development manual need to write the same
045	Failure to enter super mode (Problem only exists in 7341, 7342)	<ol style="list-style-type: none">1. Check that the burner PDO and OSC0 are not shorted.2. Check that the connection between the chip and the burner is good
046	Burner program running abnormally	<ol style="list-style-type: none">1. The burner is re-powered and the program to be burned is reloaded to be burned again
047	The loaded burn file does not	<ol style="list-style-type: none">1. Please backread the program



	match the program inside the chip.	inside the chip and check the CRC value to make sure the CRC of the loaded program is consistent with the CRC inside the chip.
049	LVR calibration value Out of range	1. Check for good wiring 2. Check that the burner power supply is normal
055	FLASH Erase Error	1. Check for good wiring 2. Check that the burner power supply is normal