

Dediware Software User Manual For SPI NOR Flash Option Bytes

V1.0





Table of Content

Table of Content.....2

I. Description4

II. Adesto Tech 25.....4

 2.1 Read Register Value..... 4

 2.2 Option Bytes Setting 5

 2.2.1 Status Register 1 (SR1) 6

 2.2.2 Status Register 2 (SR2) 7

 2.2.3 Configuration Register 8

 2.2.4 Lock-down secured OTP 9

 2.2.5 Sector Lockdown..... 10

 2.2.6 Freeze Sector Lockdown State 11

III. AMIC12

 3.1 Read Register Value..... 12

 3.2 Option Bytes Setting 13

 3.2.1 Status Register 1 (SR1) 14

 3.2.2 Status Register 2 (SR2) 15

 3.2.3 Lock-down secured OTP..... 16

IV. cFeon_Eon.....17

 4.1 Read Register Value..... 17

 4.2 Option Bytes Setting 18

 4.2.1 Status Register 1 (In Normal mode)..... 19

 4.2.2 Status Register 1 (In OTP mode) 20

V. GigaDevice22

 5.1 Read Register Value..... 22

 5.2 Option Bytes Setting 23

 5.2.1 Status Register 1 (In Normal mode)..... 24

 5.2.2 Status Register 1 (In OTP mode) 25

VI. Macronix27

 6.1 Macronix Data Protection Feature 27

 6.2 Read Register Value..... 32

 6.3 Option Bytes Setting 33

 6.3.1 Status Register 33

 6.3.2 Configuration Register 34

 6.3.3 Security Register 34

 6.3.4 Password Register 35

 6.3.5 Lock Register 36

 6.3.6 SPB Register 38

VII. Microchip40

 7.1 Microchip Data Protection Feature 40

 7.2 Read Register Value..... 41

 7.3 Option Bytes Setting 42

 7.3.1 Status Register..... 42

 7.3.2 Configuration Register 43

 7.3.3 non-Volatile Write-Lock Lock-Down register..... 43



7.3.4 Lockout Security ID 44

VIII. Micron45

8.1 Micron Data Protection Feature 45

8.2 Read Register Value..... 45

8.3 Option Bytes Setting 46

8.3.1 Status Register(SR) 46

8.3.2 Non Volatile Configuration Register (NVCR)..... 47

8.3.3 Sector Protection Security Register..... 47

8.3.4 Password Register 48

8.3.5 Nonvolatile Sector Lock Bits Security 49

IX. Spansion51

9.1 Read Register Value..... 51

9.2 Option Bytes Setting 52

9.2.1 Status Register1 (SR1) 53

9.2.2 Status Register2 (SR2) 54

9.2.3 Configuration Register1 (CR1) 55

9.2.4 Password Register 56

9.2.5 ASP Register (ASPR) 57

9.2.6 Persistent Protection Bits (PPB)..... 59

9.2.7 Erase All PPB in Password Protection Mode 60

9.2.8 Non-Volatile Data Learning Pattern 61

9.2.9 AutoBoot Register 62

X. Winbond.....64

10.1 Read Register Value..... 64

10.2 Option Bytes Setting 65

10.2.1 Status Register1, 2, 3..... 66

XI. Revision History67


I. Description

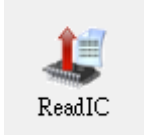
This application note illustrates how to set up Dediware for programming SPI NOR Flash option bytes. Learn more about DediProg products and how to use them.

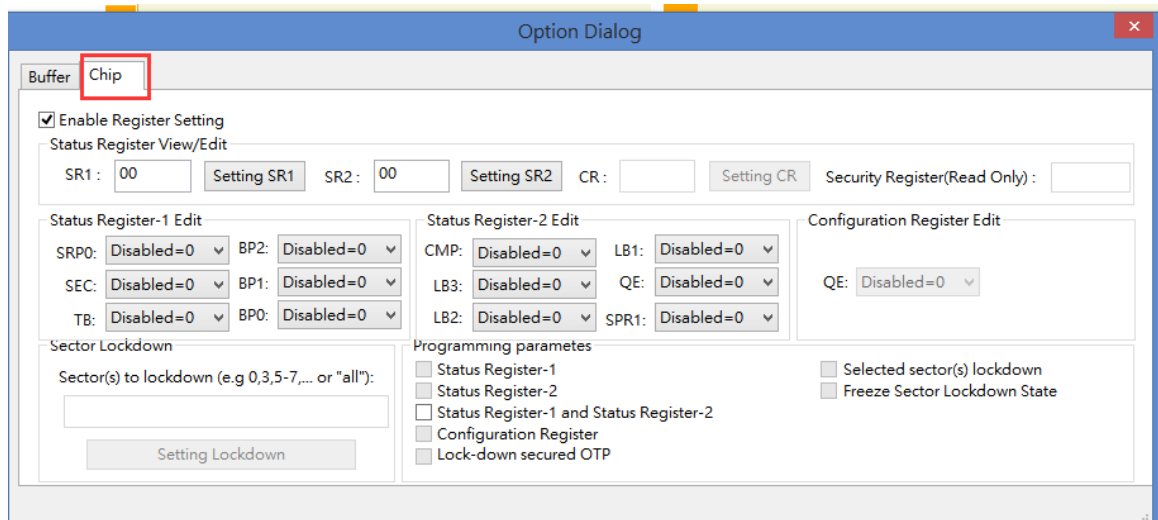
II. Adesto Tech 25

2.1 Read Register Value

Read IC register value by the steps below.

1. Click **Select** button  → Select Chip

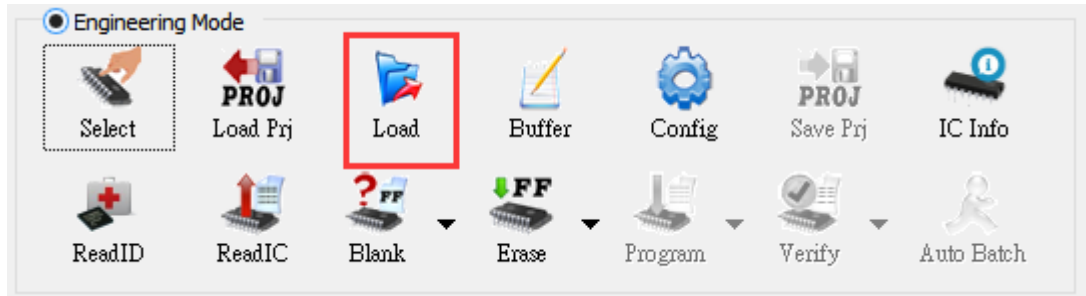
2. Click **Read IC** button 
3. Click **Config** button
4. Click **Chip**



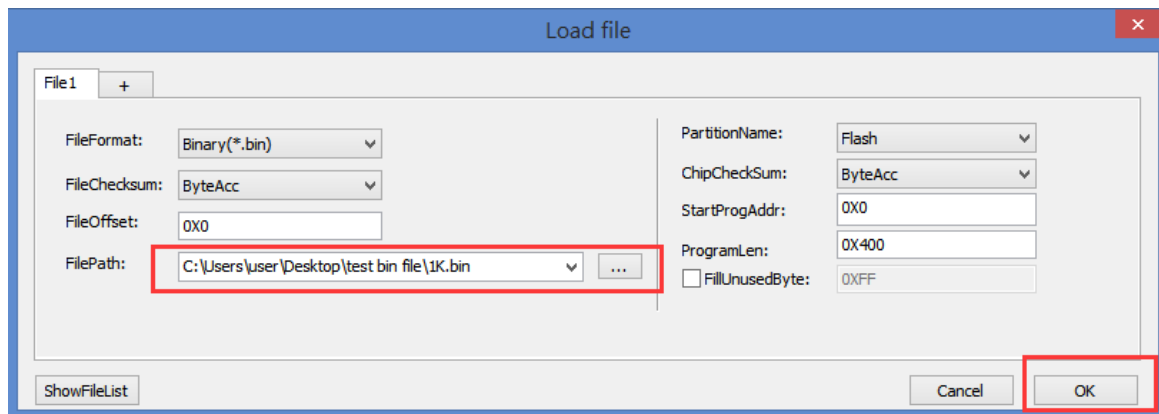
2.2 Option Bytes Setting

Please load the file before programming the register.

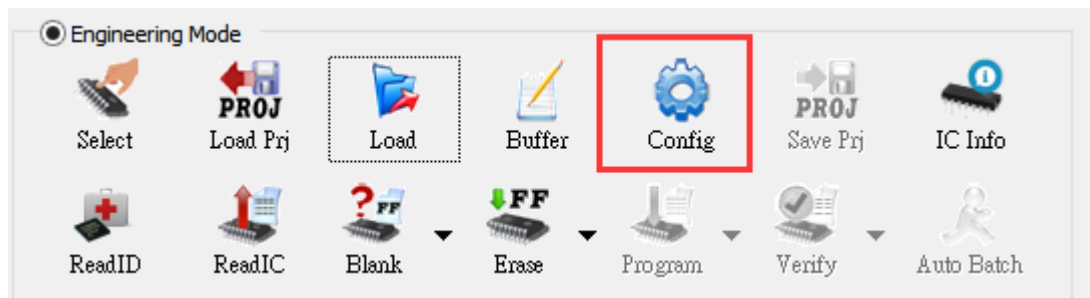
1. Click **Load** button



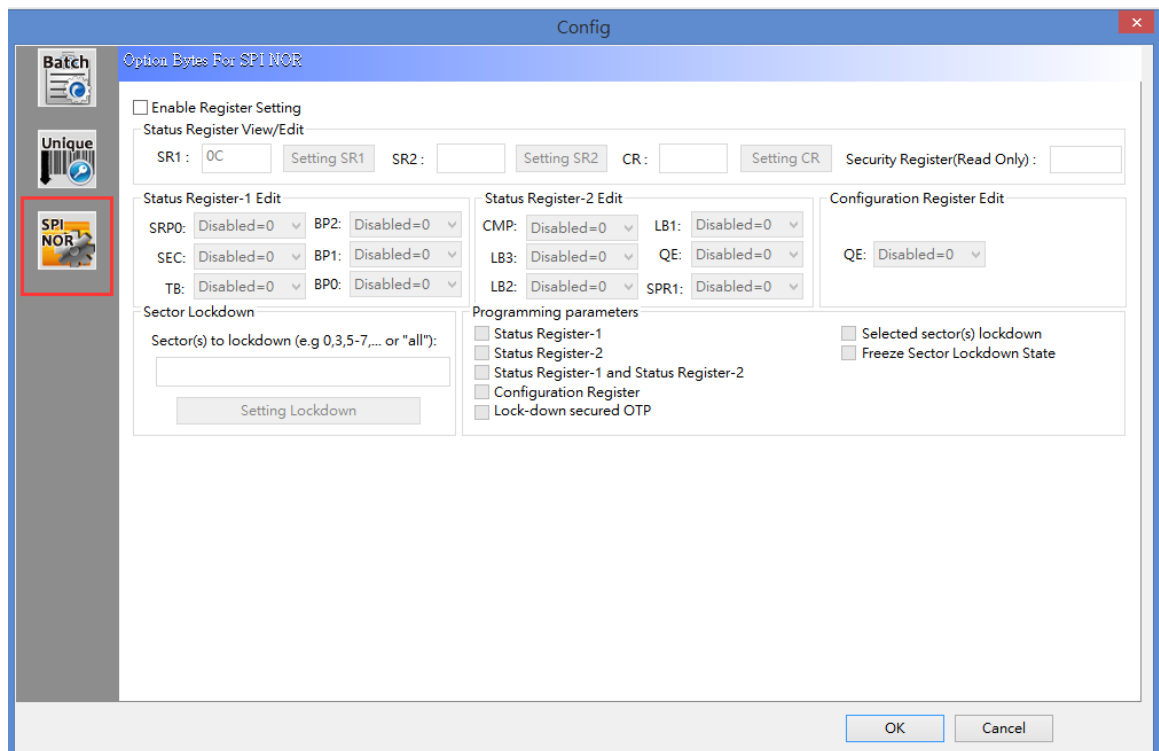
2. Load the project file → **OK**



3. Click **Config** button



4. Click **SPI NOR** button

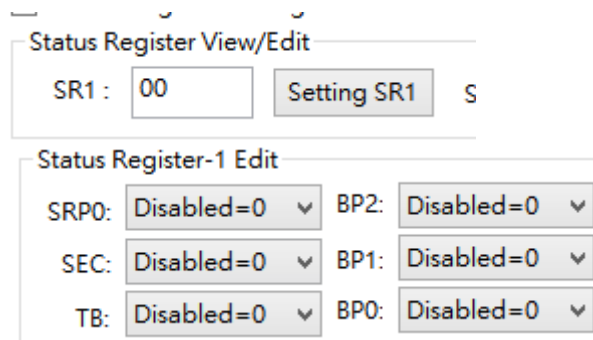


5. Set up option bytes

2.2.1 Status Register 1 (SR1)

Note: Program Flash or Erase Flash will erase Status Register 1 to 00h

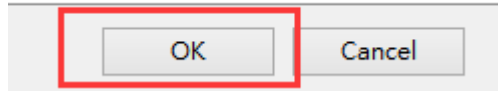
1. Enter the SR1(hex)→**Setting SR1**, or select the status for each Bit in the Status Register



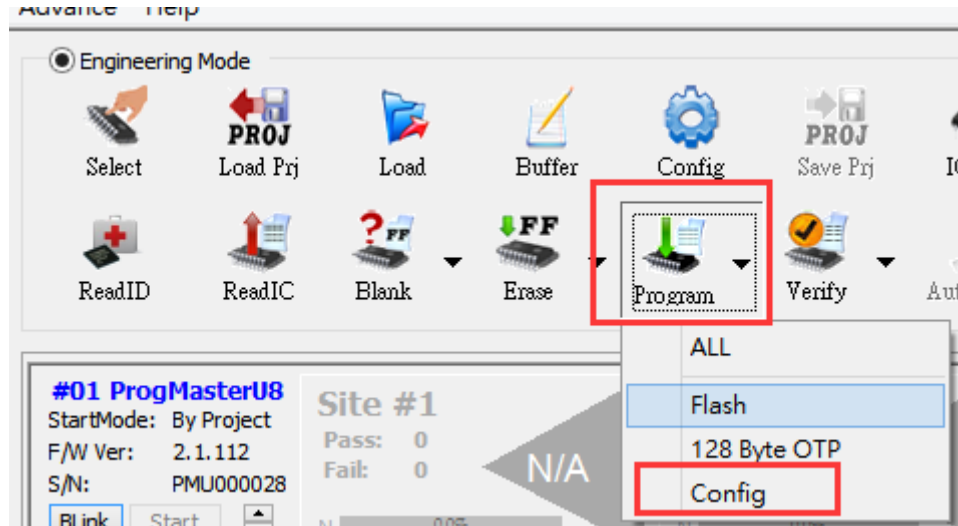
2. Programming Parameters →Check **Status Register-1** or **Status Register-1 and Status Register-2**



3. Click **OK** to save values

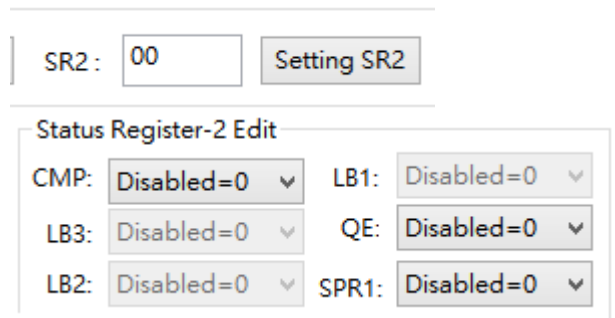


4. Click **Program** button → **Config**

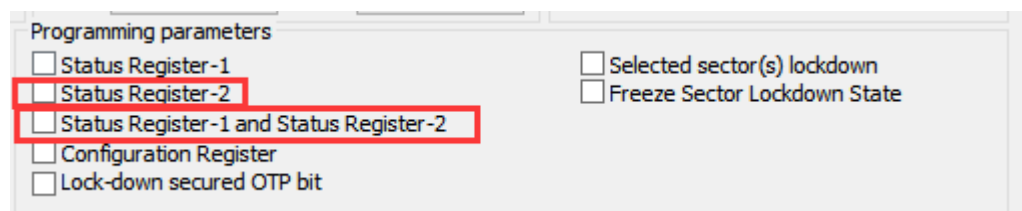


2.2.2 Status Register 2 (SR2)

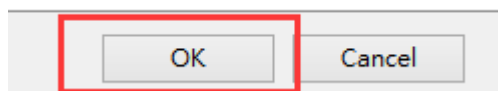
1. Enter the SR2(hex)→**Setting SR2**, or select the status for each Bit in the Status Register



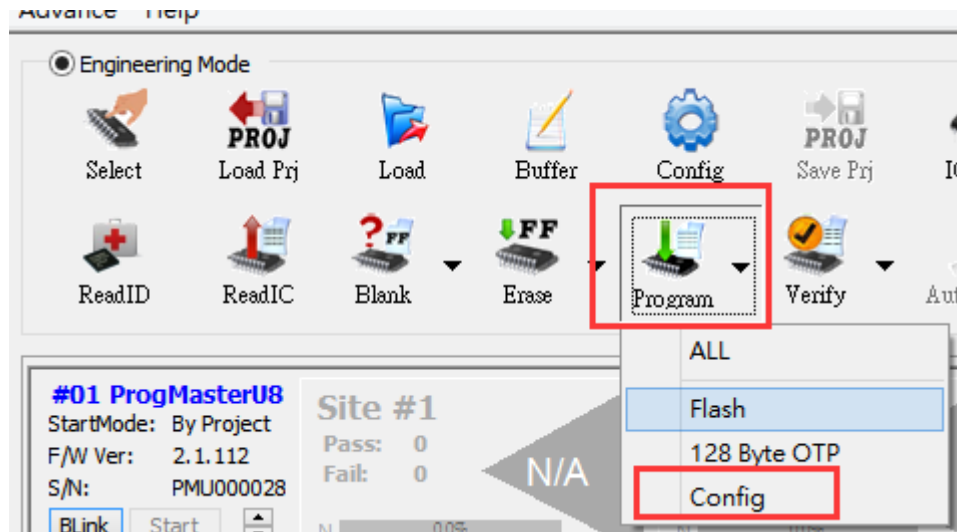
2. Programming Parameters →Check **Status Register-2** or **Status Register-1** and **Status Register-2**



3. Click **OK** to save values

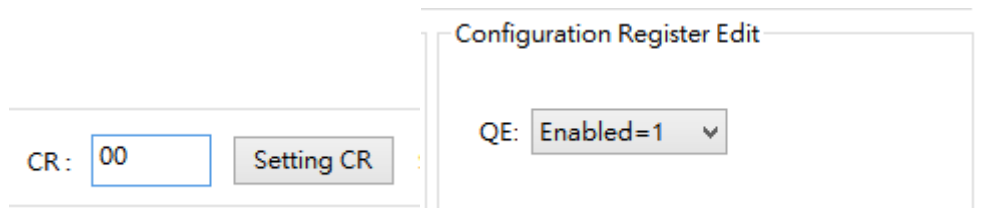


4. Click **Program** button → **Config**

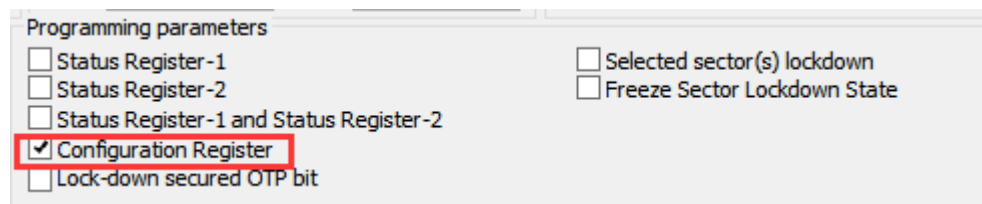


2.2.3 Configuration Register

1. Enter the CR(hex)→**Setting CR**, or select the status for each Bit in Status Register

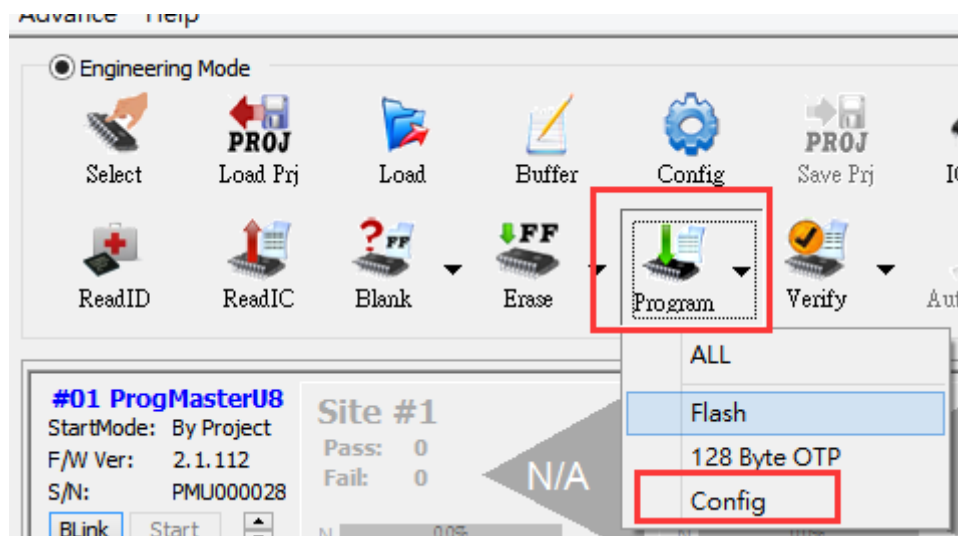


2. Programming Parameters →Check **Configuration Register**



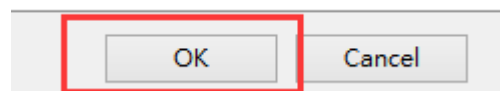
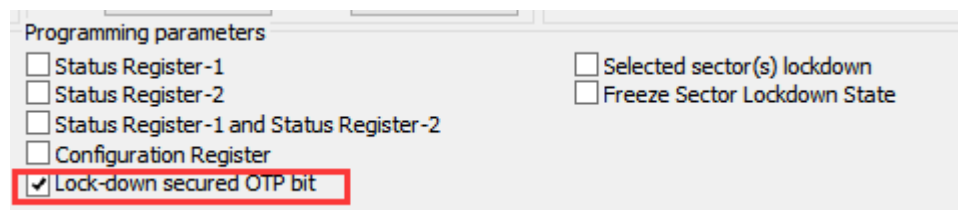
3. Click **OK** to save values

4. Click **Program** button → **Config**

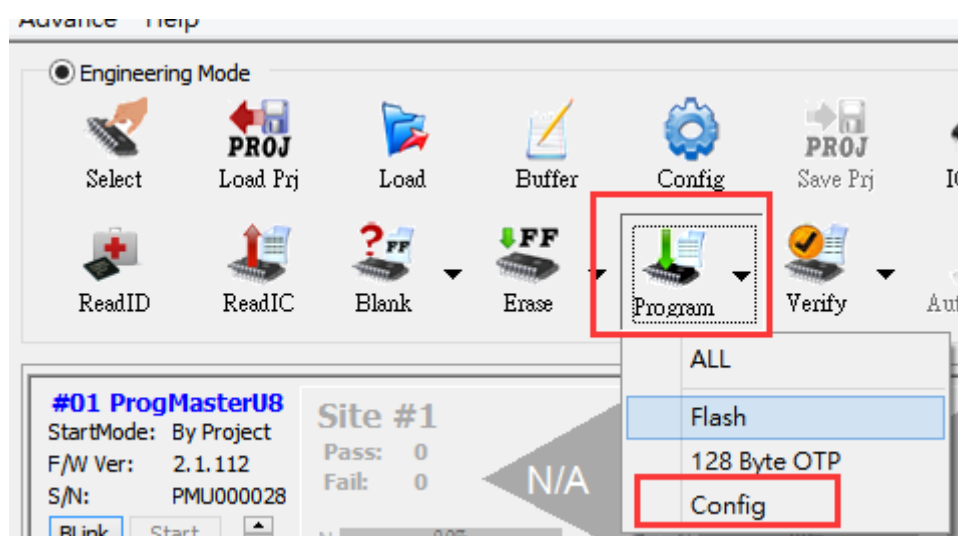


2.2.4 Lock-down secured OTP

1. Programming Parameters → Check **Lock-down secured OTP**

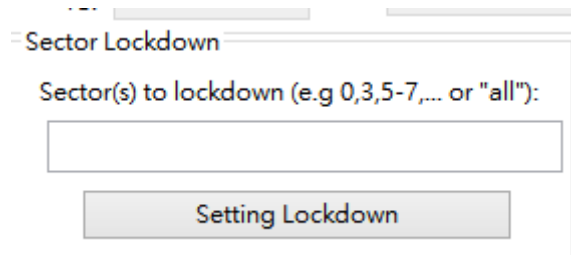


2. Click **OK** to save values
3. Click **Program** button → **Config**

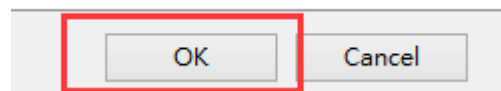
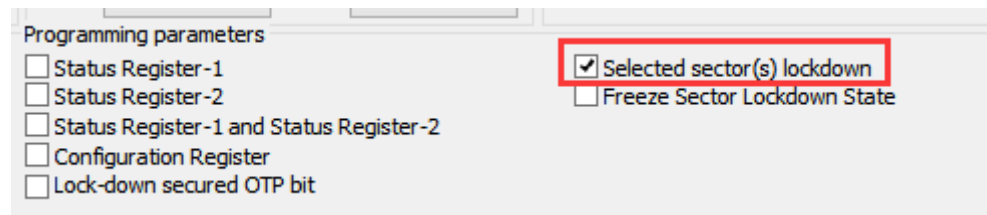


2.2.5 Sector Lockdown

1. Set up the Sector that needs lockdown → **Setting Lockdown**

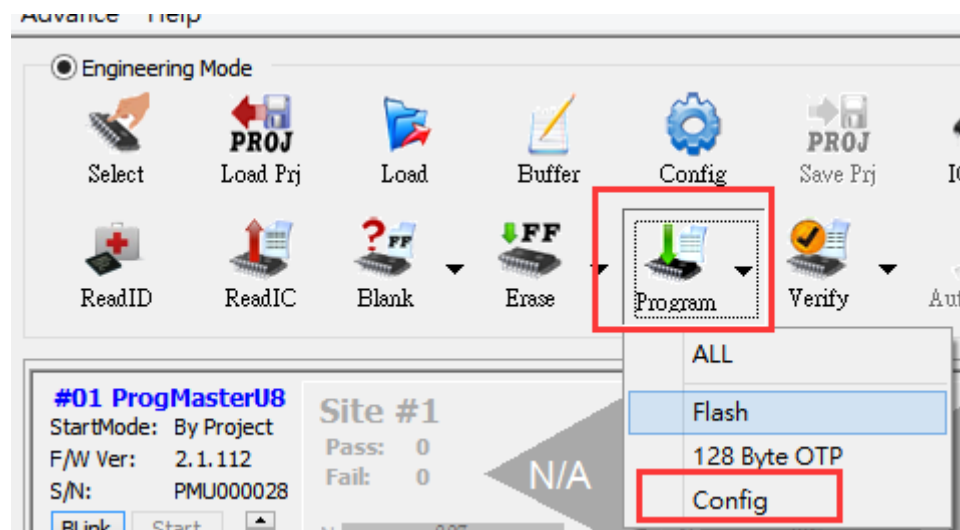


2. Programming Parameters → Check **Selected sector(s) lockdown**



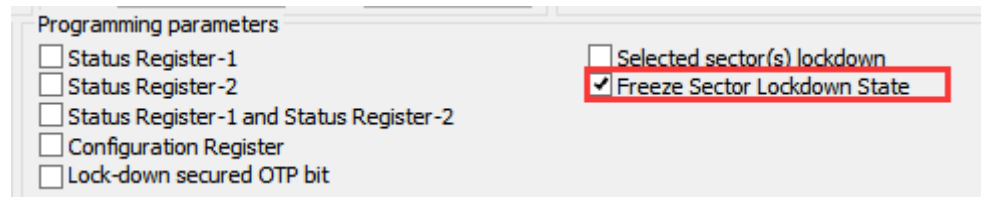
3. Click **OK** to save values

4. Click **Program** button → **Config**

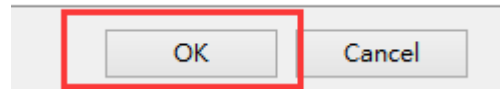


2.2.6 Freeze Sector Lockdown State

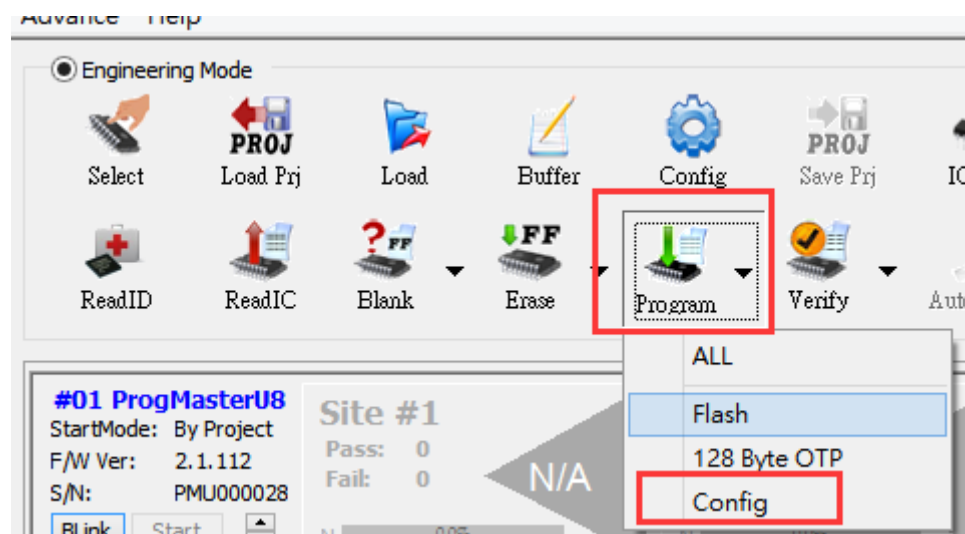
1. Programming Parameters → Check **Freeze Sector Lockdown State**



2. Click **OK** to save values



3. Click **Program** button → **Config**



III. AMIC

3.1 Read Register Value

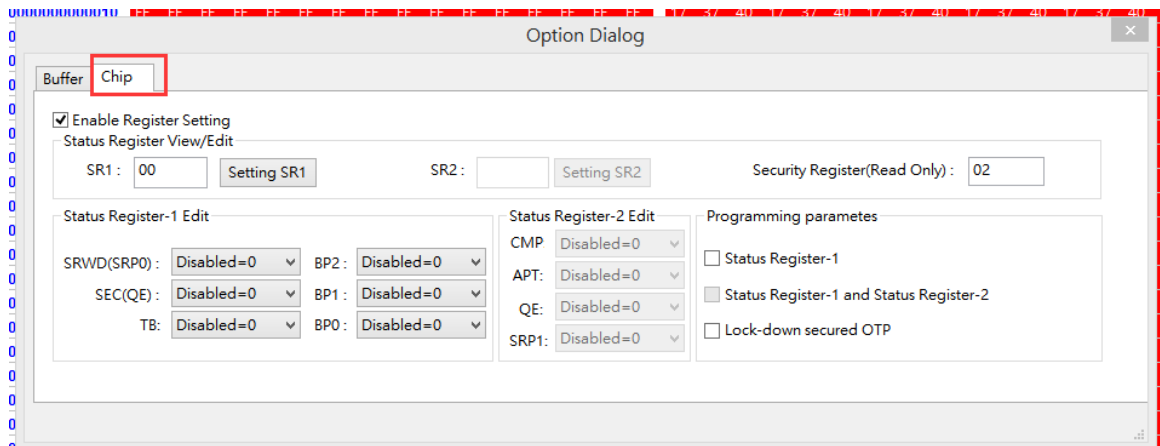
Read IC register value by the steps below.

5. Click **Select** button  → Select Chip

6. Click **Read IC** button 

7. Click **Config** button

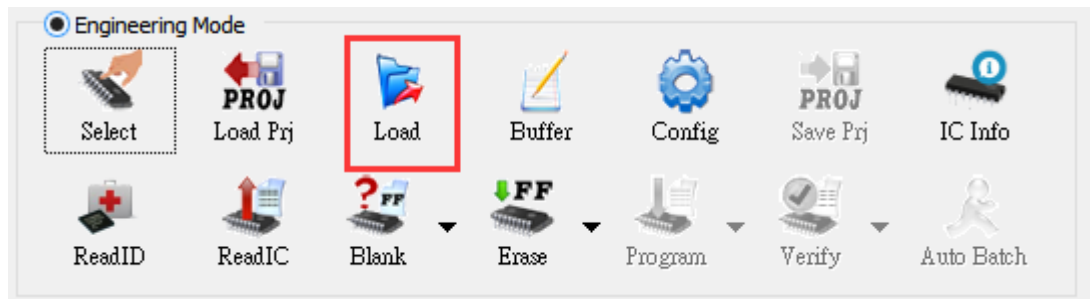
8. Click **Chip**



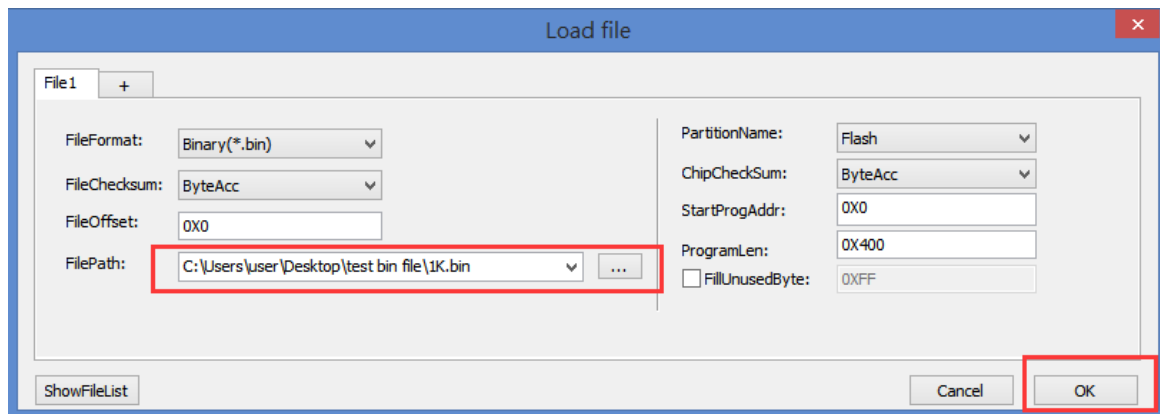
3.2 Option Bytes Setting

Please load the file before programming the register.

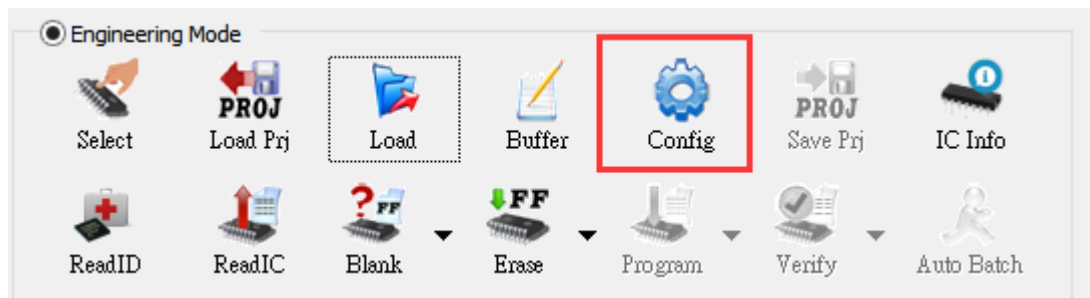
1. Click **Load** button



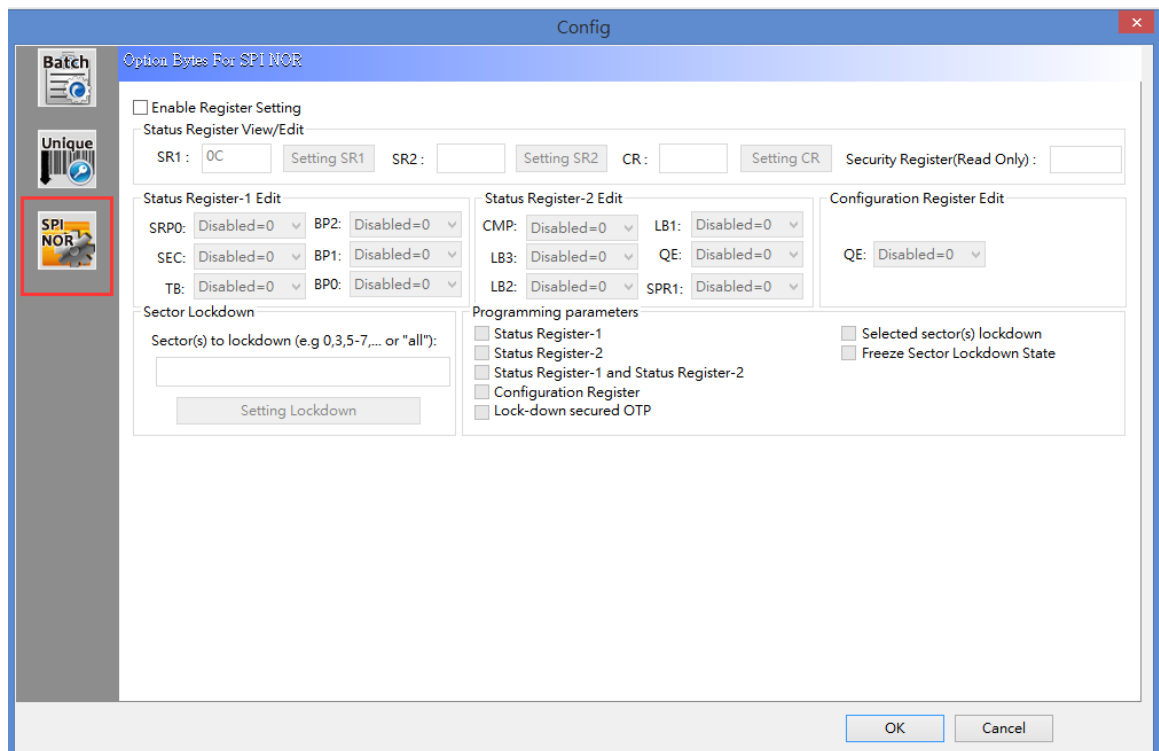
2. Load the project file → **OK**



3. Click **Config** button



4. Click **SPI NOR** button

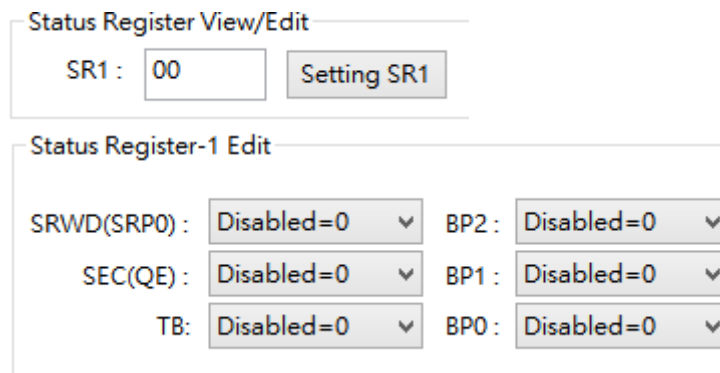


5. Set up option bytes

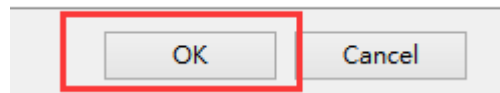
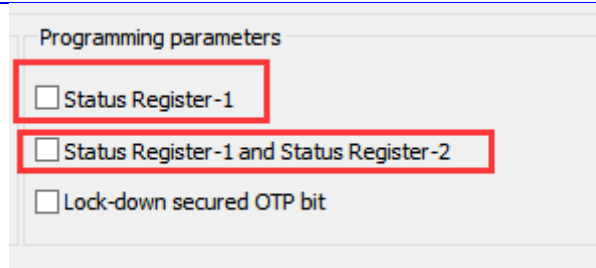
3.2.1 Status Register 1 (SR1)

Note: Program Flash or Erase Flash will erase Status Register 1 to 00h

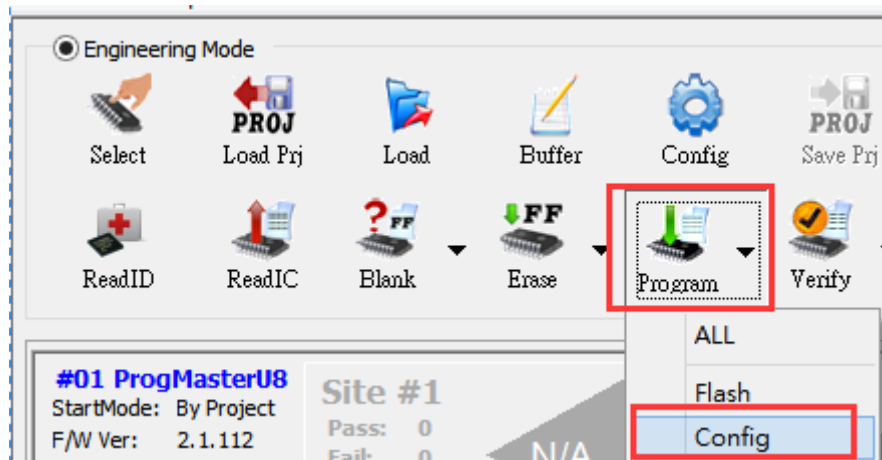
1. Enter the SR1(hex)→**Setting SR1**, or select the status for each Bit in the Status Register



2. Programming Parameters → Check **Status Register-1** or **Status Register-1 and Status Register-2**

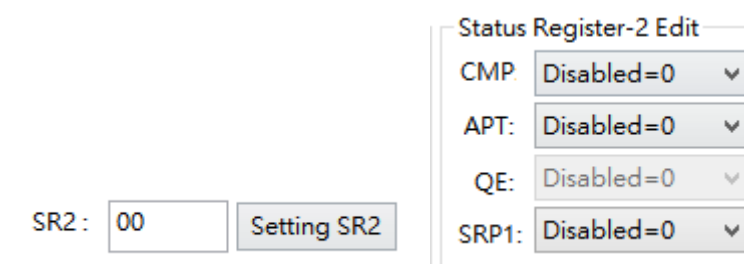


3. Click **OK** to save values
4. Click **Program** button → **Config**

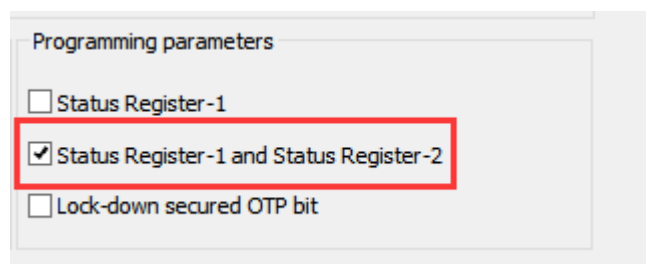


3.2.2 Status Register 2 (SR2)

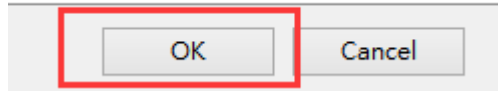
1. Enter the SR2(hex)→**Setting SR2**, or select the status for each Bit in the Status Register



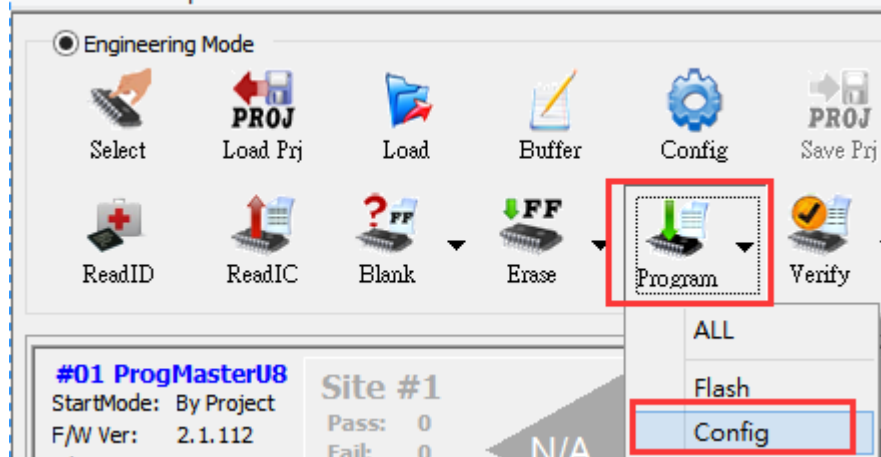
2. Programming Parameters → Check **Status Register-1** and **Status Register-2**



3. Click **OK** to save values

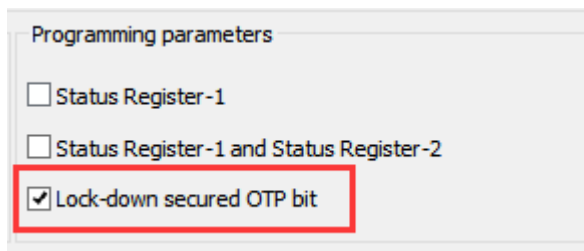


4. Click **Program** button → **Config**

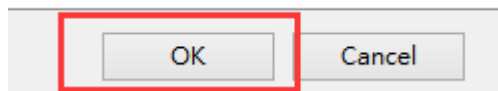


3.2.3 Lock-down secured OTP

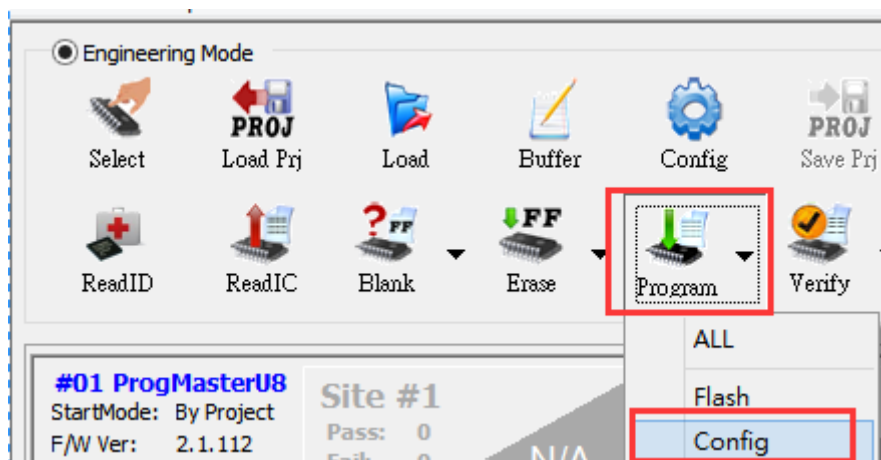
1. Programming Parameters → Check **Lock-down secured OTP**



2. Click **OK** to save values



3. Click **Program** button → **Config**



IV.cFeon_Eon

4.1 Read Register Value

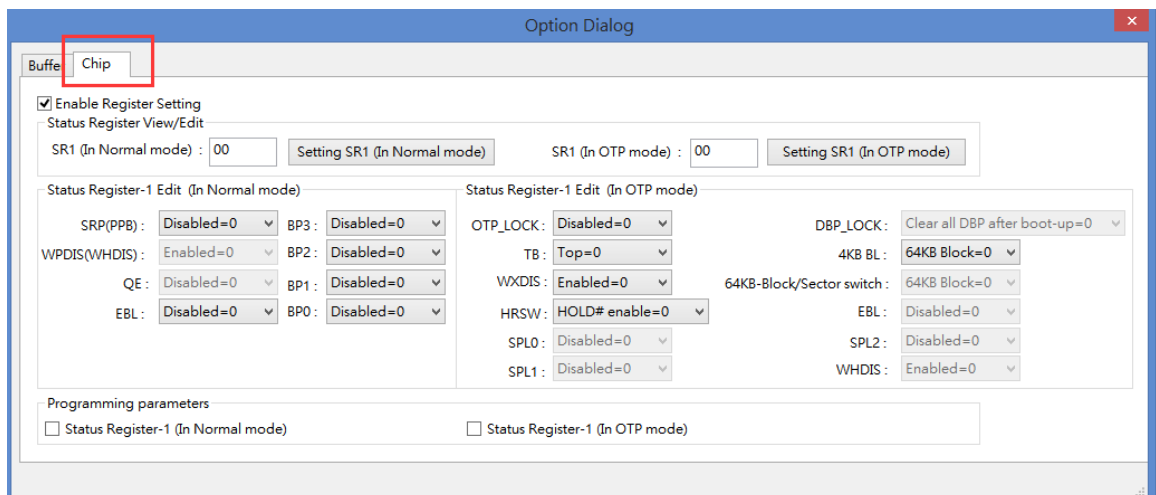
Read IC register value by the steps below.

1. Click **Select** button  → Select Chip

2. Click **Read IC** button 

3. Click **Config** button

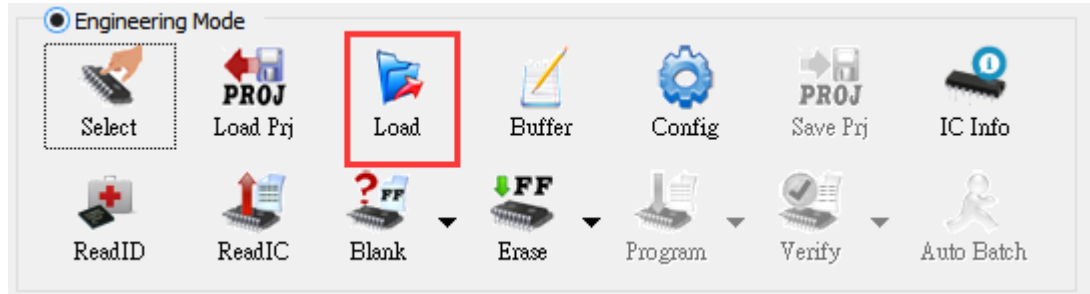
4. Click **Chip**



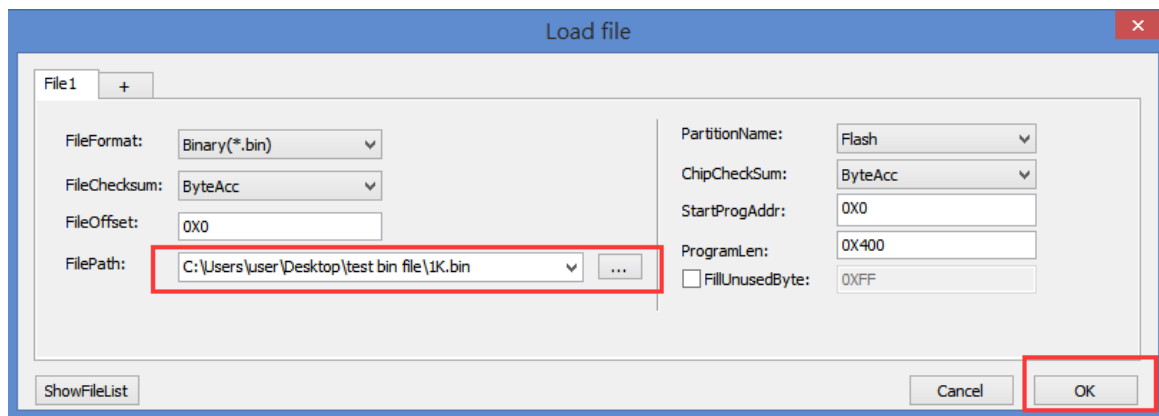
4.2 Option Bytes Setting

Please load the file before programming the register.

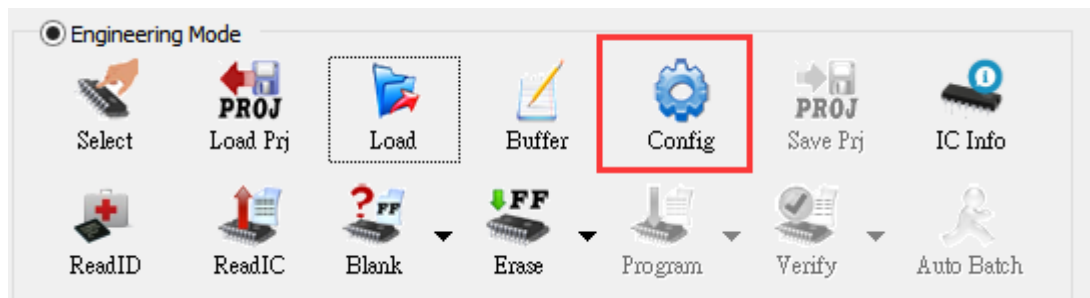
1. Click **Load** button



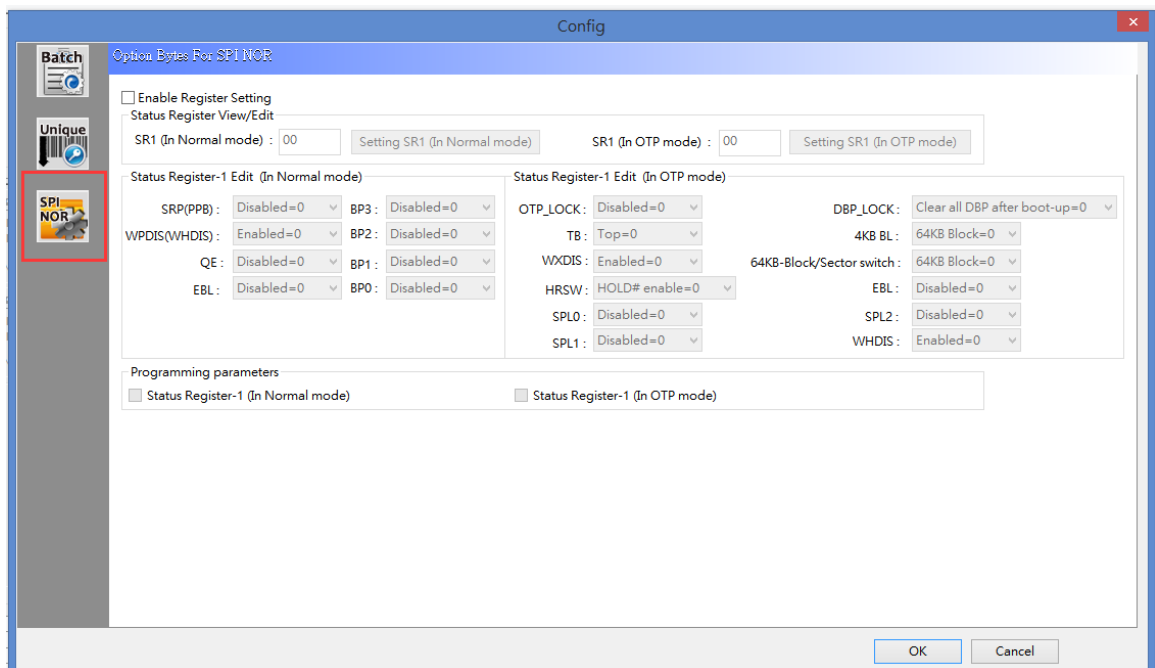
2. Load the project file → **OK**



3. Click **Config** button



4. Click **SPI NOR** button

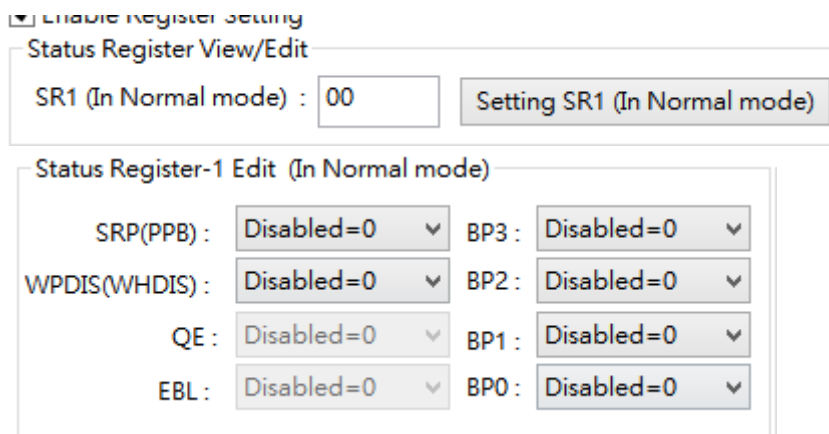


5. Set up option bytes

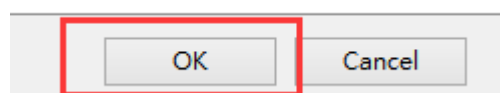
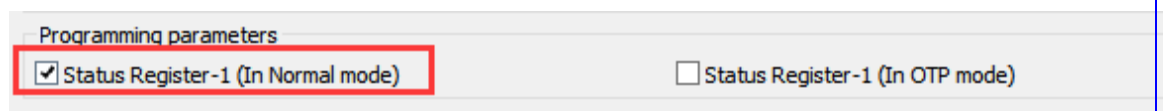
4.2.1 Status Register 1 (In Normal mode)

Note: Program Flash or Erase Flash will erase Status Register 1 to 00h

1. Enter the SR1 (In Normal mode) → **Setting SR1 (In Normal mode)**, or select the status for each Bit in the Status Register

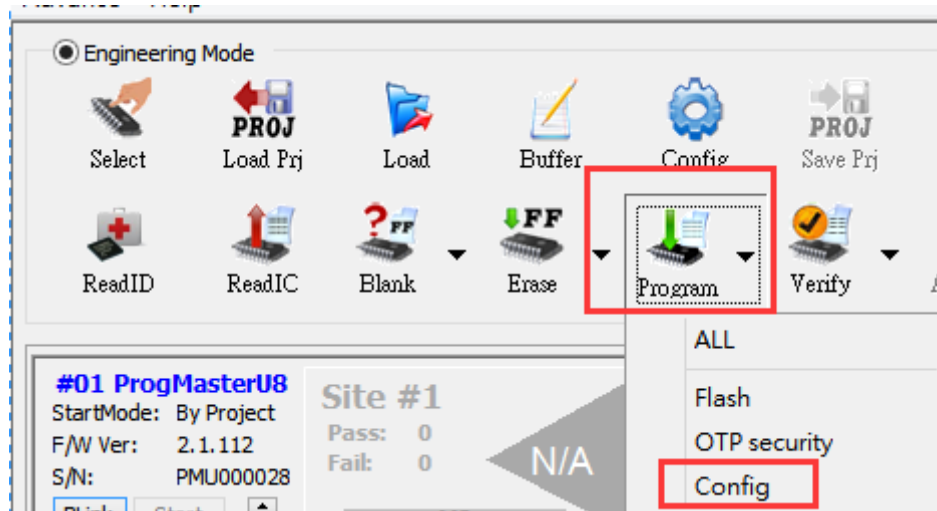


2. Programming Parameters → Check **Status Register-1 (In Normal mode)**



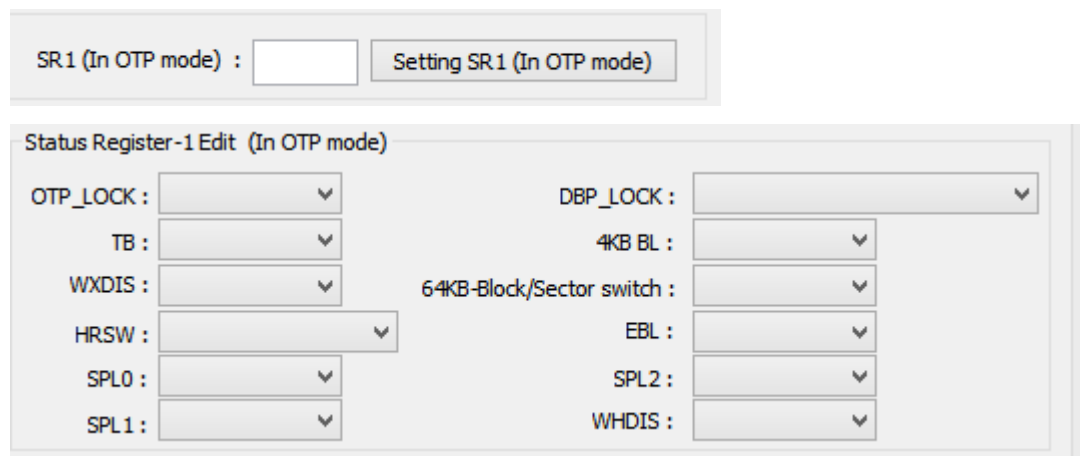
3. Click **OK** to save values

4. Click **Program** button → **Config**

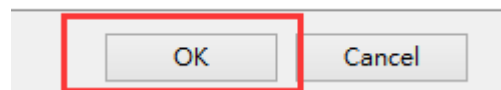
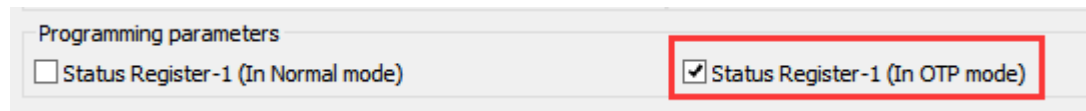


4.2.2 Status Register 1 (In OTP mode)

1. Enter the SR1 (In OTP mode) → **Setting SR1 (In OTP mode)**, or select the status for each Bit in the Status Register

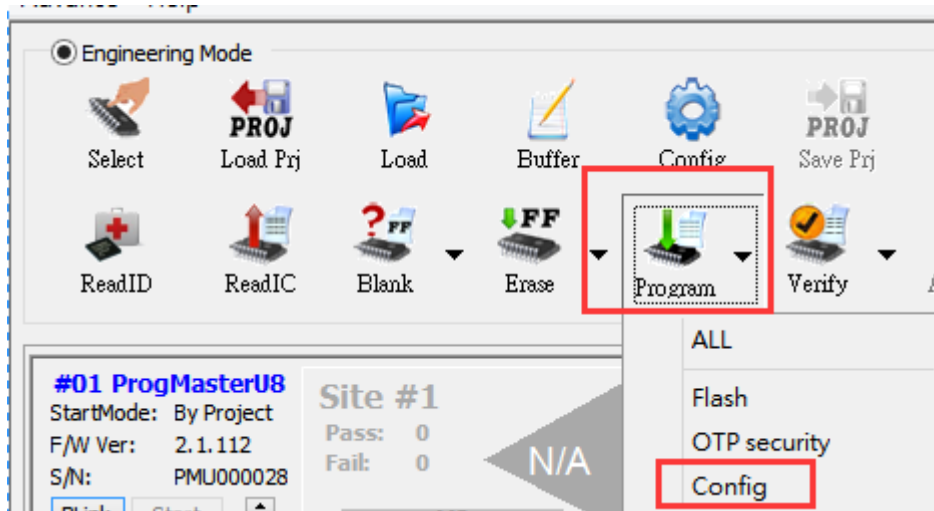


2. Programming Parameters → Check **Status Register-1 (In OTP mode)**



3. Click **OK** to save values

4. Click **Program** button→**Config**



V. GigaDevice

5.1 Read Register Value

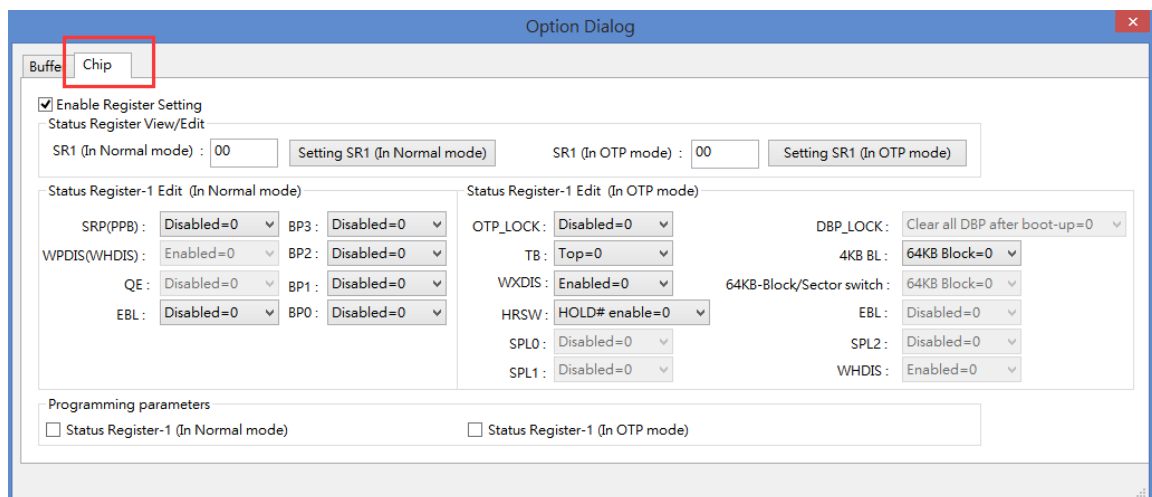
Read IC register value by the steps below.

1. Click **Select** button  → Select Chip

2. Click **Read IC** button 

3. Click **Config** button

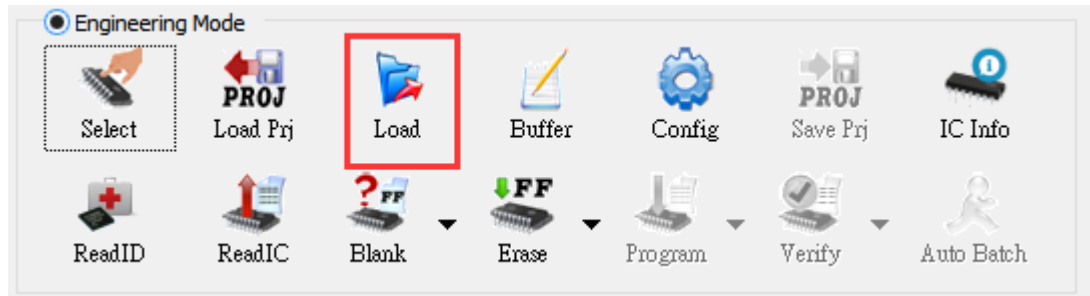
4. Click **Chip**



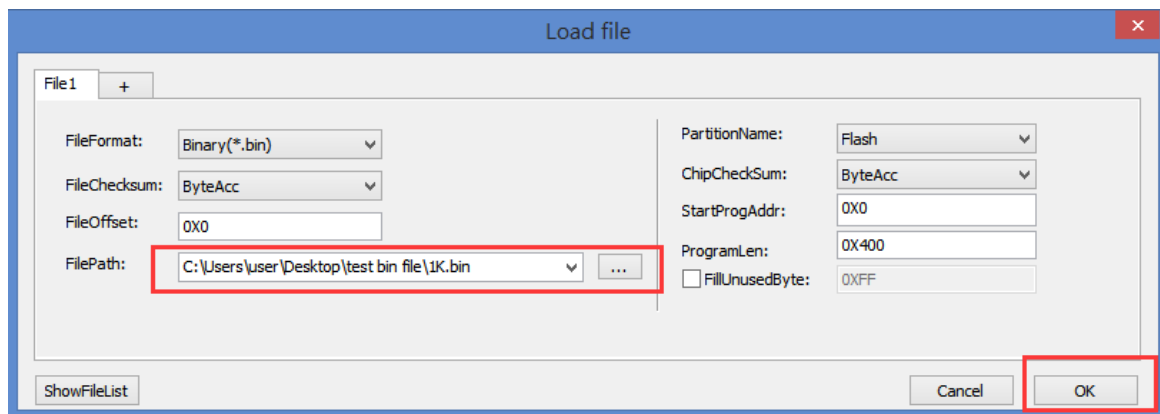
5.2 Option Bytes Setting

Please load the file before programming the register.

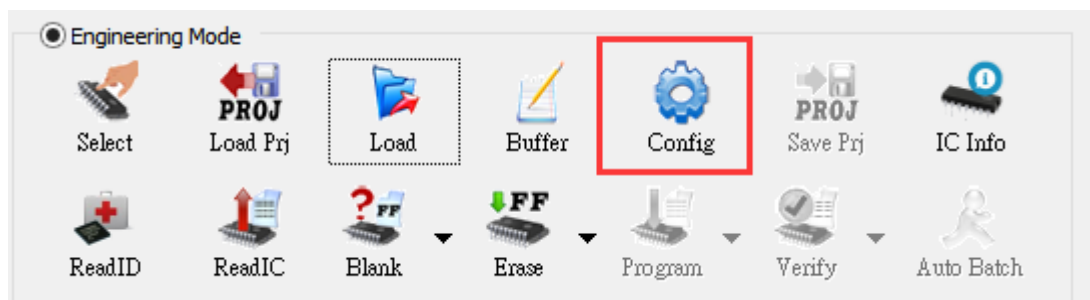
1. Click **Load** button



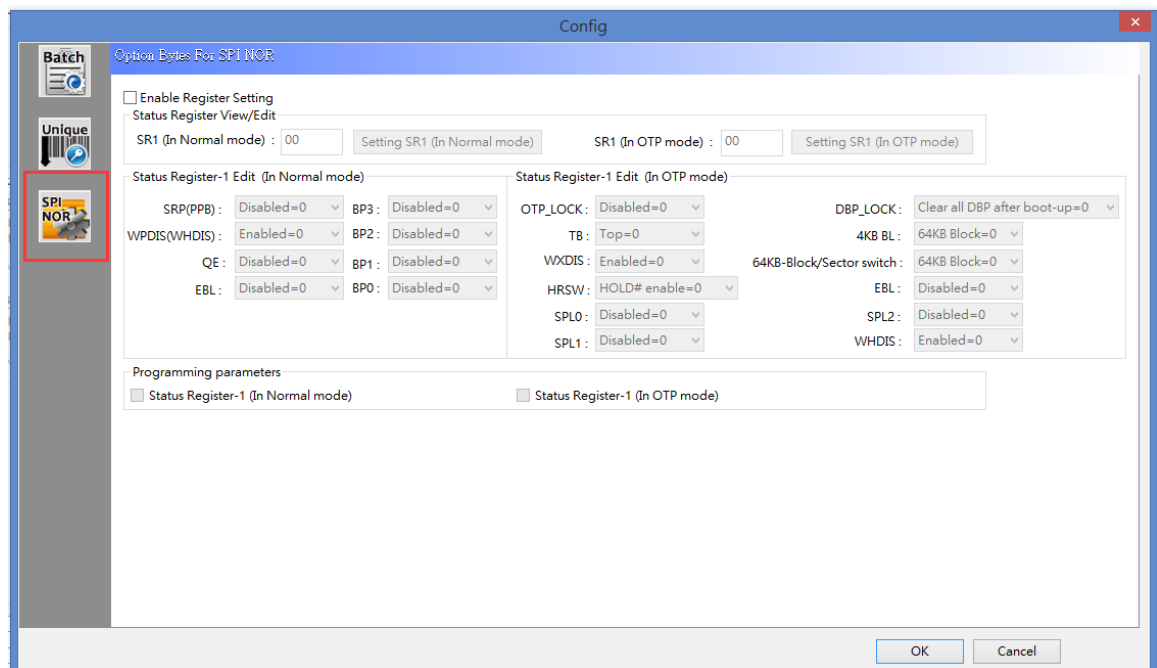
2. Load the project file → **OK**



3. Click **Config** button



- Click **SPI NOR** button

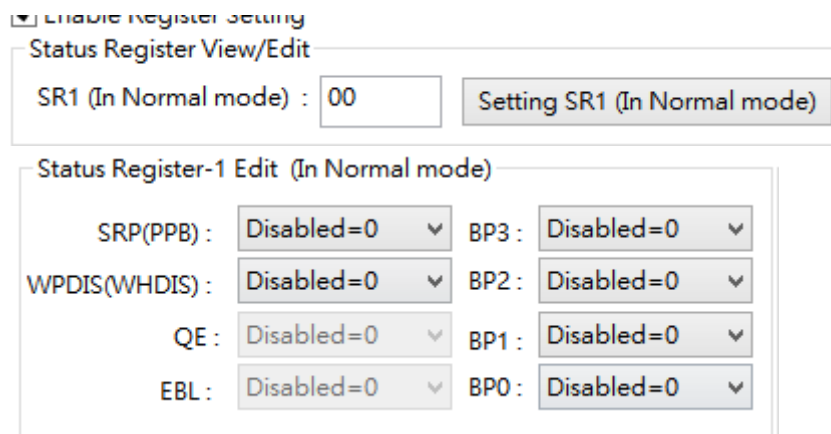


- Set up option bytes

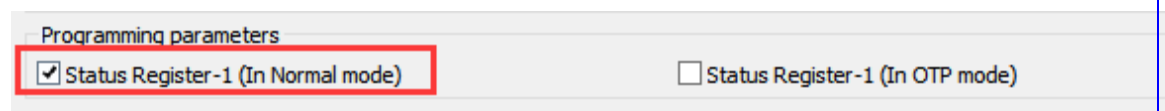
5.2.1 Status Register 1 (In Normal mode)

Note: Program Flash or Erase Flash will erase Status Register 1 to 00h

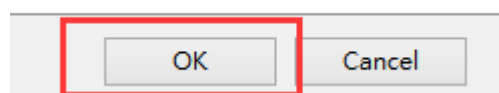
- Enter the SR1 (In Normal mode) → **Setting SR1 (In Normal mode)**, or select the status for each Bit in the Status Register



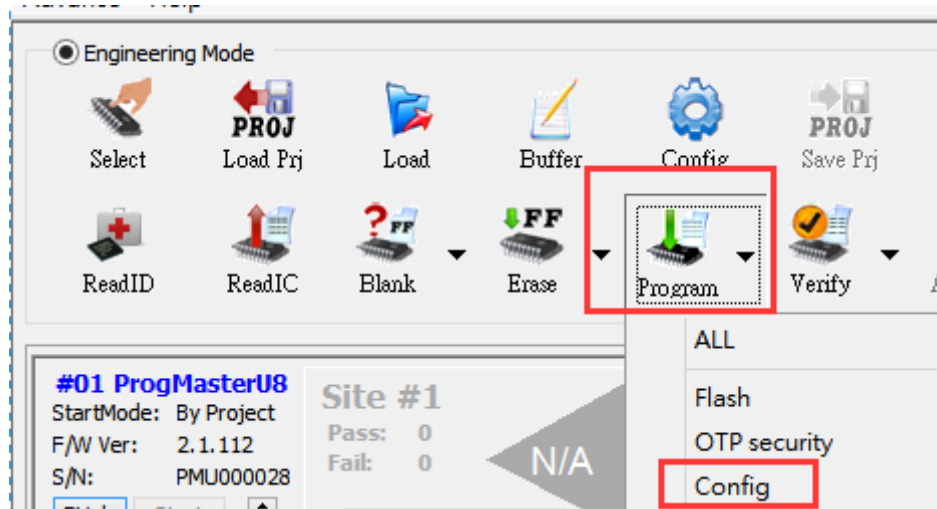
- Programming Parameters → Check **Status Register-1 (In Normal mode)**



- Click **OK** to save the values

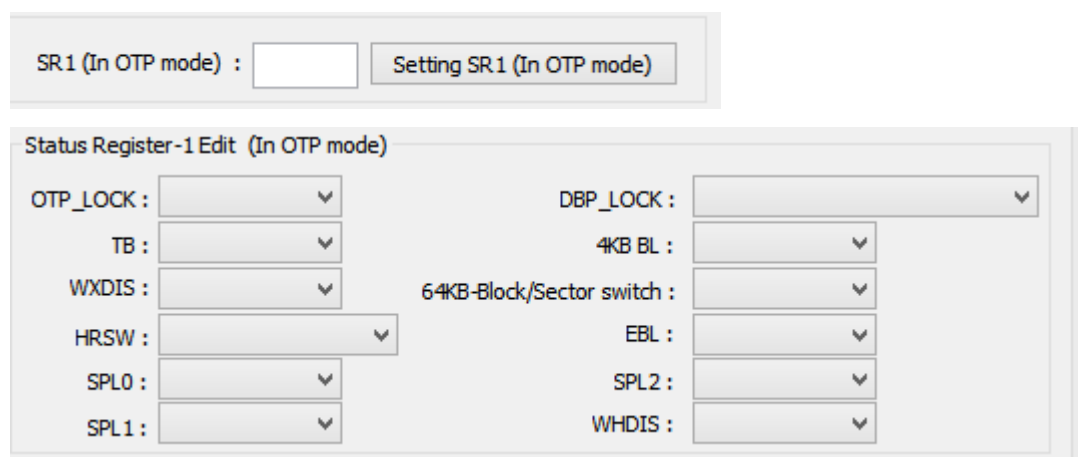


4. Click **Program** button → **Config**

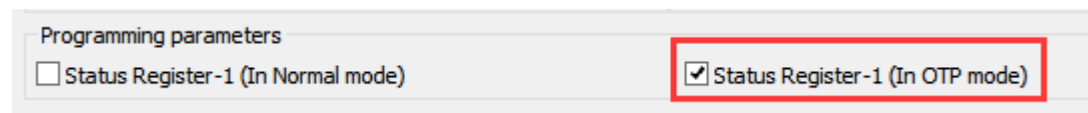


5.2.2 Status Register 1 (In OTP mode)

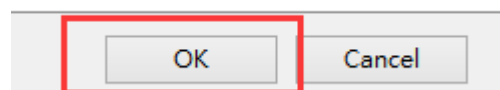
1. Enter the SR1 (In OTP mode) → **Setting SR1 (In OTP mode)**, or select the status for each Bit in the Status Register



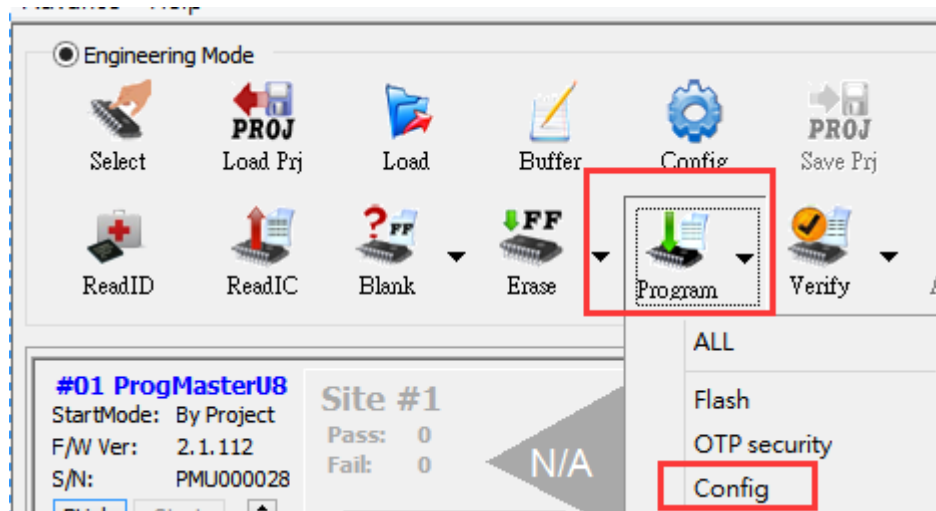
2. Programming Parameters → Check **Status Register-1 (In OTP mode)**



3. Click **OK** to save values



4. Click **Program** button → **Config**



VI. Macronix

6.1 Macronix Data Protection Feature

- **Type 1 (ex: MX25L1608E) :**

1. ***Block Protection (BP) mode***

The Software Protected Mode (SPM) uses (TB, BP3, BP2, BP1, BP0) bits to allow part of memory to be protected as read only. The protected area definition is shown as datasheet; the protected areas are more flexible which may protect various areas by setting value of TB, BP0-BP3 bits.

- **Type 2 (ex: MX25L6456F) :**

1. ***Block Protection (BP) mode :***

The Software Protected Mode (SPM) uses (TB, BP3, BP2, BP1, BP0) bits to allow part of memory to be protected as read only. The protected area definition is shown as datasheet; the protected areas are more flexible which may protect various areas by setting value of TB, BP0-BP3 bits.

2. ***Advanced Sector Protection mode :***

- ◆ **SPB (Solid Protection Bits)**

The Solid write Protection bit (SPB) is a nonvolatile bit with the same endurance as the Flash memory. It is assigned to each sector/block individually.

When SPB is set to "1", the associated sector/block may be protected, preventing any program or erase operation on this sector.

Note: If SPBLKDN=0, commands to set or clear the SPB bits will be ignored.

◆ Lock Register

The Lock Register is a 16-bit one-time programmable register.

SPBLK: SPB Lock bit, OTP bit, the default value is "1". When SPBLK = "0", SPB bit is changed as OTP bit. In other words, SPB bit can be programmed and read, but it cannot be erased.

SPBLKDN: SPB Lock Down bit, OTP bit, the default value is "1". When SPBLKDN = "0", SPB bit value cannot be changed again and it is read-only.

● **Type 3 (ex: MX25L25673G) :**

1. **Block Protection (BP) mode :**

The Software Protected Mode (SPM) uses (TB, BP3, BP2, BP1, BP0) bits to allow part of memory to be protected as read only. The protected area definition is shown as datasheet; the protected areas are more flexible which may protect various areas by setting value of TB, BP0-BP3 bits.

2. **Advanced Sector Protection mode :**

◆ Lock Register

The Lock Register is a 16-bit one-time programmable register. Lock Register bit [6] is SPB Lock Down Bit (SPBLKDN) which is a unique bit assigned to control all SPB bit status.

When SPBLKDN is 1, SPB can be changed. When it is locked as 0, all SPB can not be changed anymore, and SPBLKDN bit itself can not be altered anymore, either.

Lock Register

Bits	Field Name	Function	Type	Default State	Description
15 to 7	RFU	Reserved	OTP	1	Reserved for Future Use
6	SPBLKDN	SPB Lock Down	OTP	1	1 = SPB changeable 0 = freeze SPB
5 to 0	RFU	Reserved	OTP	1	Reserved for Future Use

◆ SPB (Solid Protection Bits)

The Solid Protection Bits (SPBs) are nonvolatile bits for enabling or disabling write-protection to sectors and blocks. The SPB bits have the same endurance as the Flash memory

When an SPB is set to “1”, the associated sector or block is write-protected. Program and erase operations on the sector or block will be inhibited.

SPB Register

Bit	Description	Bit Status	Default	Type
7 to 0	SPB (Solid Protection Bit)	00h = Unprotect Sector / Block FFh = Protect Sector / Block	00h	Non-volatile

Note: If SPBLKDN=0, commands to set or clear the SPB bits will be ignored.

◆ DPB (Dynamic Protection bit)

The Dynamic Protection Bits (DPBs) are volatile bits for quickly and easily enabling or disabling write-protection to sectors and blocks.

DPB Register

Bit	Description	Bit Status	Default	Type
7 to 0	DPB (Dynamic Protection Bit)	00h = Unprotect Sector / Block FFh = Protect Sector / Block	FFh	Volatile

Note: Only support clear all DPB bits feature.

● **Type 4 (ex: MX25L12835F) :**

1. **Block Protection (BP) mode :**

The Software Protected Mode (SPM) uses (TB, BP3, BP2, BP1, BP0) bits to allow part of memory to be protected as read only. The protected area definition is shown as datasheet; the protected areas are more flexible which may protect various areas by setting value of TB, BP0-BP3 bits.

2. **Advanced Sector Protection mode :**

◆ Lock Register

The Lock Register is a 16-bit one-time programmable register. Lock Register bits [2:1] select between Solid Protection mode and Password Protection mode. When both bits are “1” (factory default), Solid Protection mode is enabled by default. Programming Lock Register bit 1 to “0” permanently selects Solid Protection mode and permanently disables Password Protection mode. Conversely, programming bit 2 to “0” permanently selects Password Protection mode and permanently disables Solid Protection mode. Bits 1 and 2 cannot be programmed to “0” at the same time otherwise the device will abort the operation.

A password must be set prior to selecting Password Protection mode.

Lock Register

Bit 15-3	Bit 2	Bit 1	Bit0
Reserved	Password Protection Mode Lock Bit	Solid Protection Mode Lock Bit	Reserved
x	0=Password Protection Mode Enable 1= Password Protection Mode not enable (Default =1)	0=Solid Protection Mode Enable 1= Solid Protection Mode not enable (Default =1)	x
OTP	OTP	OTP	OTP

Note: Once bit 2 or bit 1 has been programmed to "0", the other bit can't be changed any more. Attempts to clear more than one bit in the Lock Register will set the Security Register P_FAIL flag to "1".

◆ SPB Lock Bit (SPBLK)

The SPB Lock Bit (SPBLK) is a volatile bit located in bit 0 of the SPB Lock Register. The SPBLK bit controls whether the SPB bits can be modified or not. If SPBLK=1, the SPB bits are unprotected and can be modified. If SPBLK=0, the SPB bits are protected ("locked") and cannot be modified. The power-on and reset status of the SPBLK bit is determined by Lock Register bits [2:1].

In Solid Protection mode, the SPBLK bit defaults to "1" after power-on or reset. When SPBLK=1, the SPB bits are unprotected ("unlocked") and can be modified.

In Password Protection mode, the SPBLK bit defaults to "0" after power-on or reset. A valid password must be provided to set the SPBLK bit to "1" to allow the SPBs to be modified.

SPB Lock Register

Bit	Description	Bit Status	Default	Type
7-1	Reserved	X	0000000	Volatile
0	SPBLK (SPB Lock Bit)	0 = SPBs protected 1= SPBs unprotected	Solid Protection Mode: 1 Password Protection Mode: 0	Volatile

Note: Only support read SPB Lock Register feature.

◆ SPB (Solid Protection Bits)

The Solid Protection Bits (SPBs) are nonvolatile bits for enabling or disabling write-protection to sectors and blocks. The SPB bits have the same endurance as the Flash memory

When an SPB is set to "1", the associated sector or block is write-protected. Program and erase operations on the sector or block will be inhibited.

SPB Register

Bit	Description	Bit Status	Default	Type
7 to 0	SPB (Solid Protection Bit)	00h = Unprotect Sector / Block FFh = Protect Sector / Block	00h	Non-volatile

Note: If SPBLK=0, commands to set or clear the SPB bits will be ignored.

◆ DPB (Dynamic Protection bit)

The Dynamic Protection Bits (DPBs) are volatile bits for quickly and easily enabling or disabling write-protection to sectors and blocks.

DPB Register

Bit	Description	Bit Status	Default	Type
7 to 0	DPB (Dynamic Protection Bit)	00h = Unprotect Sector / Block FFh = Protect Sector / Block	FFh	Volatile

Note: Only support clear all DPB bits feature

◆ Password Protection

Password Protection mode potentially provides a higher level of security than Solid Protection mode. In Password Protection mode, the SPBLK bit defaults to “0” after a power-on cycle or reset. When SPBLK=0, the SPBs are locked and cannot be modified. A 64-bit password must be provided to unlock the SPBs.

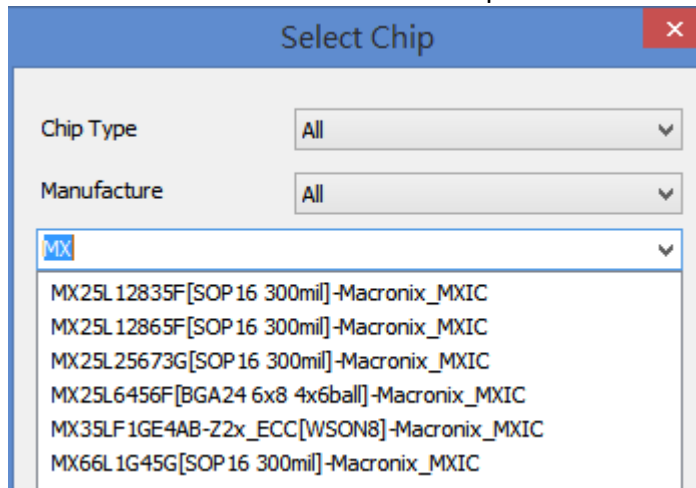
Password Register (PASS)


Bits	Field Name	Function	Type	Default State	Description
63 to 0	PWD	Hidden Password	OTP	FFFFFFFFFFFFFFFFh	Non-volatile OTP storage of 64 bit password. The password is no longer readable after the Password Protection mode is selected by programming Lock Register bit 2 to zero.

6.2 Read Register Value

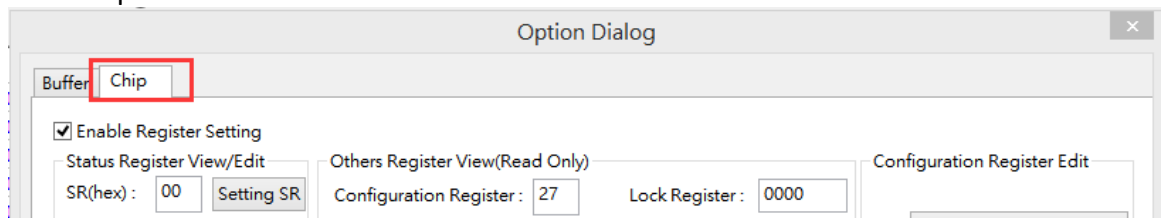
Read IC register value by the below steps.

1. Click Select  → Select Chip




2. Click Read IC 

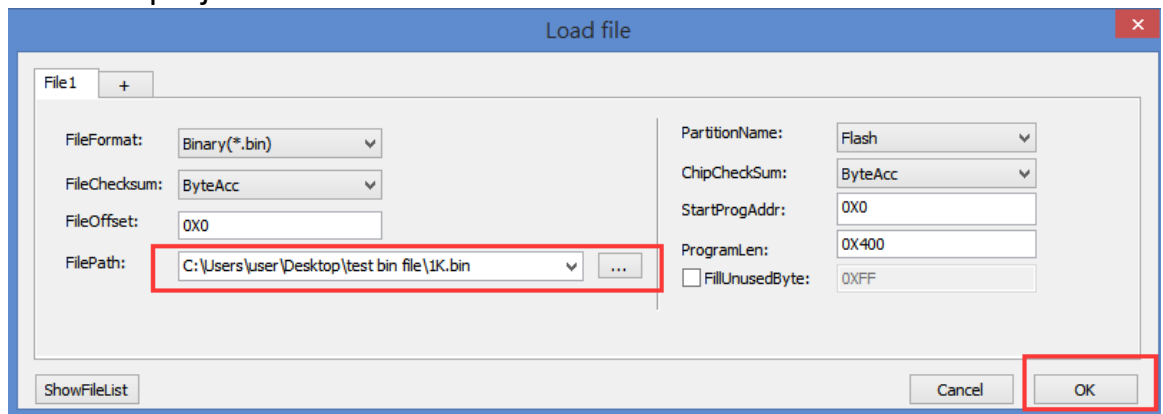
3. Click Partition 2 Partition 1 Partition 2 Partition 3
4. Click Chip





6.3 Option Bytes Setting

Please load the file before programming the register.

1. Click **Load** 
2. Load the project file → **OK**



3. Click **Config** 
4. Click **SPI NOR** 

6.3.1 Status Register

1. Enter the SR(hex) value → **Setting SR**, or select the status for each Bit in Status Register

Status Register View/Edit

SR(hex) :

Status Register Edit

SRWD : ▾

QE : ▾

BP3 : ▾

BP2 : ▾

BP1 : ▾

BP0 : ▾


2. Programming Parameters → Check **Status Register** or **Status and Configuration Register**

Programming Parameters

<input type="checkbox"/> Status Register	<input type="checkbox"/> Program Password Protection Mode Lock Bit= 0
<input type="checkbox"/> Status and Configuration Register	<input type="checkbox"/> Program Solid Protection Mode Lock Bit=0
<input type="checkbox"/> Lock-down secured OTP	<input type="checkbox"/> Program SPB Lock Down Bit= 0
<input type="checkbox"/> Advance Sector protection mode(WPSEL=1)	<input type="checkbox"/> Selected sector(s) protect
<input type="checkbox"/> Program Password	

3. Click **OK** to save values

OK Cancel

4. Program  →Config

Note: Program Flash or Erase Flash will erase Status Register to 00h

6.3.2 Configuration Register

1. Set up TB Bit

Configuration Register Edit

TB : Top area=0


2. Programming Parameters → Check **Status and Configuration Register**

Programming Parameters

<input type="checkbox"/> Status Register	<input type="checkbox"/> Program Password Protection Mode Lock Bit= 0
<input checked="" type="checkbox"/> Status and Configuration Register	<input type="checkbox"/> Program Solid Protection Mode Lock Bit=0
<input type="checkbox"/> Lock-down secured OTP	<input type="checkbox"/> Program SPB Lock Down Bit= 0
<input type="checkbox"/> Advance Sector protection mode(WPSEL=1)	<input type="checkbox"/> Selected sector(s) protect
<input type="checkbox"/> Program Password	

3. Click **OK** to save values

OK Cancel

4. Program  →Config

6.3.3 Security Register

■ LDSO Bit


1. Programming Parameters → Check **Lock-down secured OTP**

Programming Parameters

<input type="checkbox"/> Status Register	<input type="checkbox"/> Program Password Protection Mode Lock Bit= 0
<input type="checkbox"/> Status and Configuration Register	<input type="checkbox"/> Program Solid Protection Mode Lock Bit=0
<input checked="" type="checkbox"/> Lock-down secured OTP	<input type="checkbox"/> Program SPB Lock Down Bit= 0
<input type="checkbox"/> Advance Sector protection mode(WPSEL=1)	<input type="checkbox"/> Selected sector(s) protect
<input type="checkbox"/> Program Password	

2. Click **OK** to save values



3. Program  →Config

■ WPSEL Bit


1. Programming Parameters → Check **Advance Sector protection mode**

Programming Parameters

<input type="checkbox"/> Status Register	<input type="checkbox"/> Program Password Protection Mode Lock Bit= 0
<input type="checkbox"/> Status and Configuration Register	<input type="checkbox"/> Program Solid Protection Mode Lock Bit=0
<input type="checkbox"/> Lock-down secured OTP	<input type="checkbox"/> Program SPB Lock Down Bit= 0
<input checked="" type="checkbox"/> Advance Sector protection mode(WPSEL=1)	<input type="checkbox"/> Selected sector(s) protect
<input type="checkbox"/> Program Password	

2. Click **OK** to save values



3. Program  →Config

6.3.4 Password Register

1. Programming Parameters → Check **Advance Sector protection mode** (Skip this setting if WPSEL bit = 1)

Programming Parameters

<input type="checkbox"/> Status Register	<input type="checkbox"/> Program Password Protection Mode Lock Bit= 0
<input type="checkbox"/> Status and Configuration Register	<input type="checkbox"/> Program Solid Protection Mode Lock Bit=0
<input type="checkbox"/> Lock-down secured OTP	<input type="checkbox"/> Program SPB Lock Down Bit= 0
<input checked="" type="checkbox"/> Advance Sector protection mode(WPSEL=1)	<input type="checkbox"/> Selected sector(s) protect
<input type="checkbox"/> Program Password	

2. Password Setup

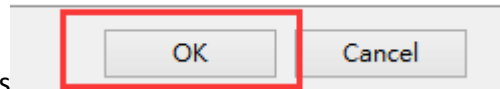
64 bit Password (hex) :

Byte7-Byte4	Byte3-Byte0
<input type="text" value="FFFFFFF"/>	<input type="text" value="FFFFFFF"/>

3. Programming Parameters → Check **Program Password**

Programming Parameters	
<input type="checkbox"/> Status Register	<input type="checkbox"/> Program Password Protection Mode Lock Bit= 0
<input type="checkbox"/> Status and Configuration Register	<input type="checkbox"/> Program Solid Protection Mode Lock Bit=0
<input type="checkbox"/> Lock-down secured OTP	<input type="checkbox"/> Program SPB Lock Down Bit= 0
<input type="checkbox"/> Advance Sector protection mode(WPSEL=1)	<input type="checkbox"/> Selected sector(s) protect
<input checked="" type="checkbox"/> Program Password	

4. Click **OK** to save values



5. Program  →Config

Note: Once it is in Password Protection Mode, you will not be able to change the password.

6.3.5 Lock Register

■ Password Protection Mode Lock Bit

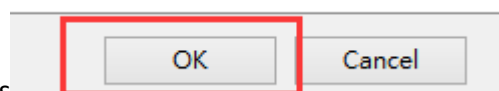
1. Programming Parameters → Check **Advance Sector protection mode**
(Skip this setting if WPSEL bit = 1)


Programming Parameters	
<input type="checkbox"/> Status Register	<input type="checkbox"/> Program Password Protection Mode Lock Bit= 0
<input type="checkbox"/> Status and Configuration Register	<input type="checkbox"/> Program Solid Protection Mode Lock Bit=0
<input type="checkbox"/> Lock-down secured OTP	<input type="checkbox"/> Program SPB Lock Down Bit= 0
<input checked="" type="checkbox"/> Advance Sector protection mode(WPSEL=1)	<input type="checkbox"/> Selected sector(s) protect
<input type="checkbox"/> Program Password	

2. Programming Parameters → Check **Program Password Protection Mode Lock Bit= 0**

Programming Parameters	
<input type="checkbox"/> Status Register	<input checked="" type="checkbox"/> Program Password Protection Mode Lock Bit= 0
<input type="checkbox"/> Status and Configuration Register	<input type="checkbox"/> Program Solid Protection Mode Lock Bit=0
<input type="checkbox"/> Lock-down secured OTP	<input type="checkbox"/> Program SPB Lock Down Bit= 0
<input type="checkbox"/> Advance Sector protection mode(WPSEL=1)	<input type="checkbox"/> Selected sector(s) protect
<input type="checkbox"/> Program Password	

3. Click **OK** to save values



4. Program  →Config

Note: Please finish password setup before entering Password Protection Mode

■ Solid Protection Mode Lock Bit

1. Programming Parameters → Check **Advance Sector protection mode**
(Skip this setting if WPSEL bit = 1)

Programming Parameters

<input type="checkbox"/> Status Register	<input type="checkbox"/> Program Password Protection Mode Lock Bit= 0
<input type="checkbox"/> Status and Configuration Register	<input type="checkbox"/> Program Solid Protection Mode Lock Bit=0
<input type="checkbox"/> Lock-down secured OTP	<input type="checkbox"/> Program SPB Lock Down Bit= 0
<input checked="" type="checkbox"/> Advance Sector protection mode(WPSEL=1)	<input type="checkbox"/> Selected sector(s) protect
<input type="checkbox"/> Program Password	

2. Programming Parameters → Check **Program Solid Protection Mode Lock Bit= 0**

Programming Parameters

<input type="checkbox"/> Status Register	<input type="checkbox"/> Program Password Protection Mode Lock Bit= 0
<input type="checkbox"/> Status and Configuration Register	<input checked="" type="checkbox"/> Program Solid Protection Mode Lock Bit=0
<input type="checkbox"/> Lock-down secured OTP	<input type="checkbox"/> Program SPB Lock Down Bit= 0
<input type="checkbox"/> Advance Sector protection mode(WPSEL=1)	<input type="checkbox"/> Selected sector(s) protect
<input type="checkbox"/> Program Password	

3. Click **OK** to save values

OK Cancel

4. Program  →Config

■ SPB Lock Down Bit

1. Programming Parameters → Check **Advance Sector protection mode**
(Skip this setting if WPSEL bit = 1)

Programming Parameters

<input type="checkbox"/> Status Register	<input type="checkbox"/> Program Password Protection Mode Lock Bit= 0
<input type="checkbox"/> Status and Configuration Register	<input type="checkbox"/> Program Solid Protection Mode Lock Bit=0
<input type="checkbox"/> Lock-down secured OTP	<input type="checkbox"/> Program SPB Lock Down Bit= 0
<input checked="" type="checkbox"/> Advance Sector protection mode(WPSEL=1)	<input type="checkbox"/> Selected sector(s) protect
<input type="checkbox"/> Program Password	


2. Programming Parameters → Check **Program SPB Lock Down Bit= 0**

Programming Parameters

<input type="checkbox"/> Status Register	<input type="checkbox"/> Program Password Protection Mode Lock Bit= 0
<input type="checkbox"/> Status and Configuration Register	<input type="checkbox"/> Program Solid Protection Mode Lock Bit=0
<input type="checkbox"/> Lock-down secured OTP	<input checked="" type="checkbox"/> Program SPB Lock Down Bit= 0
<input type="checkbox"/> Advance Sector protection mode(WPSEL=1)	<input type="checkbox"/> Selected sector(s) protect
<input type="checkbox"/> Program Password	

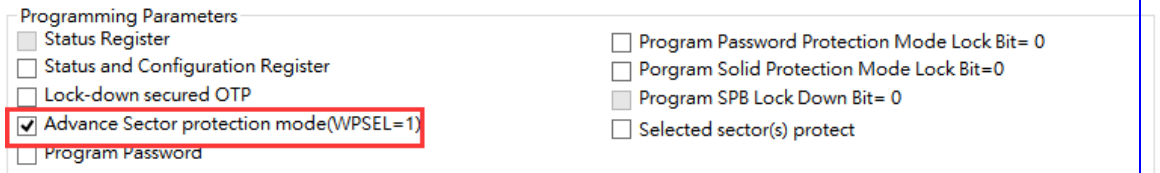
3. Click **OK** to save values

OK Cancel

4. Program  →Config

6.3.6 SPB Register

1. Programming Parameters → Check **Advance Sector protection mode** (Skip this setting if WPSEL bit = 1)



2. If switch to Password Protection Mode, please set up a password for unlock. If not, then skip this setup.

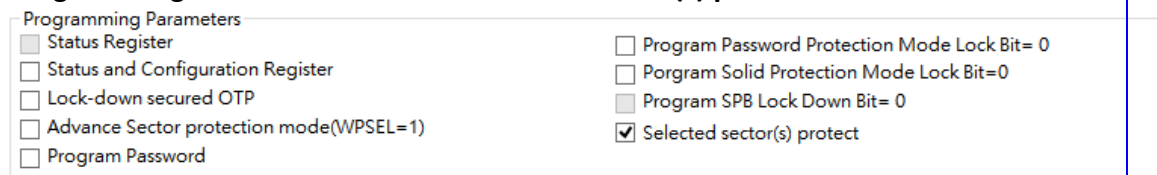
64 bit Password (hex) :

Byte7-Byte4 Byte3-Byte0

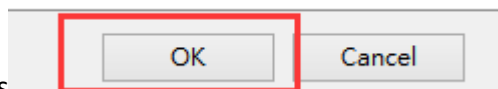
3. Set up the Block that needs protection (The size of one block is 64K Byte) → **Setting protect**




4. Programming Parameters → Check **Selected sector(s) protect**



5. Click **OK** to save values



6. Program  → Config

Note:


1. Program Flash or Erase Flash will change all SPB to unprotected
2. If it is in Password Protection Mode, please follow the below steps to unlock the SPB
 - A. Set up the password to unlock

64 bit Password (hex) :

Byte7-Byte4 Byte3-Byte0

B. Click **OK** to save values



C. Program  →Config

D. Program Flash or Erase Flash will change all SPB to unprotected

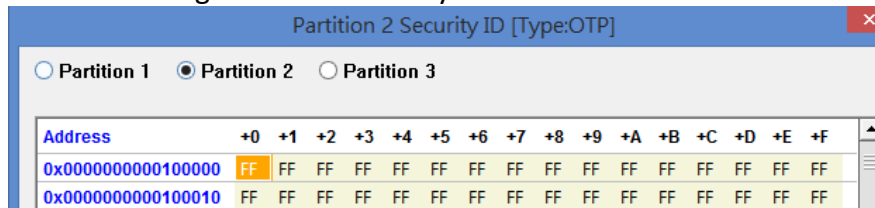
3. Password Protection Mode cannot unlock SPB in Production Mode, so if IC needs re-work while SPB is protected, please follow step 2 to unlock SPB in the Engineering Mode first.

VII. Microchip

7.1 Microchip Data Protection Feature

- Write Protection (reference SST25PF040C Datasheet 4.1 “Write Protection” chapter <http://www.microchip.com/wwwproducts/en/SST25PF040C>)
- Hardware Write Protection (reference SST26VF016B / SST26VF016BA Datasheet 4.2 “Hardware Write Protection” chapter <http://www.microchip.com/wwwproducts/en/SST26VF016B>)
- Security ID: divided into two types
 - 256-bit Security ID (reference SST25PF080B Datasheet 4.3 “Security ID” chapter <http://www.microchip.com/wwwproducts/en/SST25PF080B>)

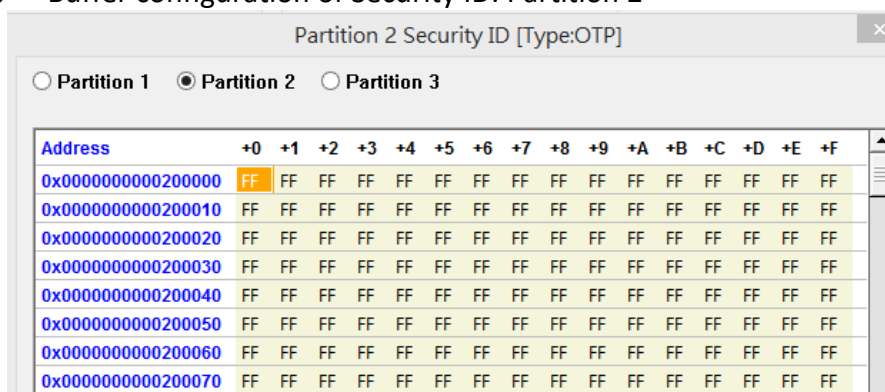
◆ Buffer configuration of Security ID: Partition 2



- ◆ The first eight Bytes (00H~07H) in the Buffer area are factory-programmed, which will be skipped during Blank Check and Verification.

- 2 KByte Security ID (reference SST25PF080B Datasheet 4.3 “Security ID” chapter <http://www.microchip.com/wwwproducts/en/SST26VF016B>)



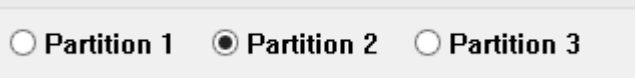
◆ Buffer configuration of Security ID: Partition 2

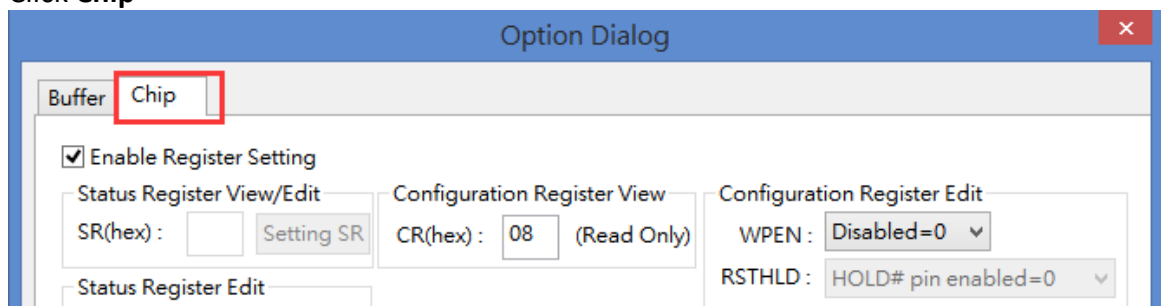


- The first eight Bytes (00H~07H) in the buffer area is factory-programmed, which will be skipped during Blank Check and Verification.
- non-Volatile Write-Lock Lock-Down register (reference SST26VF016B / SST26VF016BA Datasheet 4.1.3 chapter <http://www.microchip.com/wwwproducts/en/SST26VF016B>)

7.2 Read Register Value


Read IC register value by the steps below.

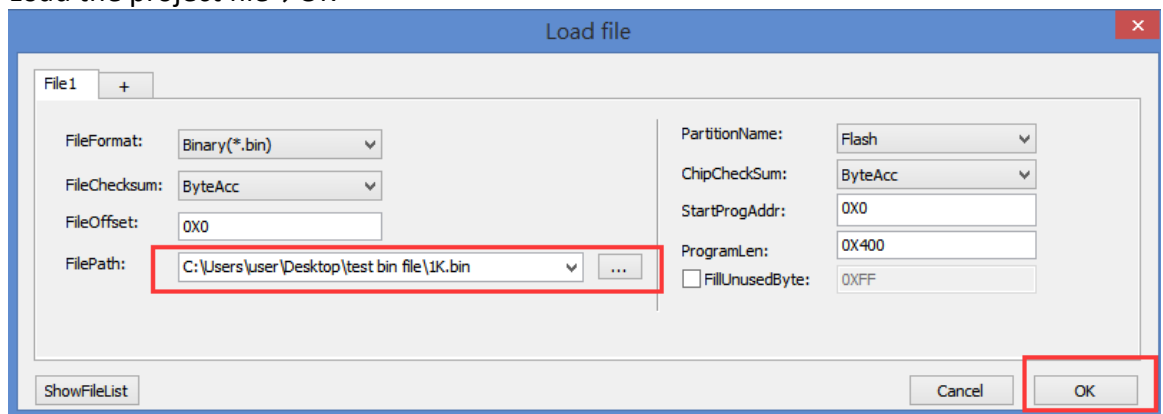
1. Click **Select**  → Select Chip
2. Click **Read IC** 
3. Click **Partition 2** or **Partition 3** 
4. Click **Chip**



7.3 Option Bytes Setting

Please load the file before programming the register.

1. Click **Load** 
2. Load the project file → OK



3. Click **Config** 
4. Click **SPI NOR** 

7.3.1 Status Register

3. Enter the SR(hex) value → **Setting SR**, or select the status for each Bit in Status Register

Status Register View/Edit

SR(hex) : **Setting SR**

Status Register Edit

BPL : ▼

TB : ▼

BP2 : ▼

BP1 : ▼

BP0 : ▼

4. Programming Parameters → Check **Status Register**

Programming Parameters

- Status Register**
- Status and Configuration Register
- non-Volatile Write Lock-Down Register
- Lockout OTP Security ID

5. Click **OK** to save values

6. Program → Config

Note: Program Flash or Erase Flash will erase Status Register to 00h

7.3.2 Configuration Register

7. Set up WPEN Bit or RSTHLD Bit

Configuration Register Edit

WPEN :

RSTHLD :

8. Programming Parameters → Check **Status and Configuration Register**

Programming Parameters

- Status Register
- Status and Configuration Register**
- non-Volatile Write Lock-Down Register
- Lockout OTP Security ID

9. Click **OK** to save values

10. Program → Config

7.3.3 non-Volatile Write-Lock Lock-Down register

1. Set up a zone that needs protection → Setting protect

non-Volatile Write Lock-Down Register

Block(s) to lock(e.g 0,3,5-7,... or 'all'): 0 - 47(max.) :

2. Programming Parameters → Check **non-Volatile Write-Lock Lock-Down register**

Programming Parameters

Status Register

Status and Configuration Register

non-Volatile Write Lock-Down Register

Lockout OTP Security ID

3. Click **OK** to save values



4. Program → Config

7.3.4 Lockout Security ID

1. Programming Parameters → Check **Lockout OTP Security ID**

Programming Parameters

Status Register

Status and Configuration Register

non-Volatile Write Lock-Down Register

Lockout OTP Security ID

2. Click **OK** to save values



3. Program → Config

VIII. Micron

8.1 Micron Data Protection Feature


- **Advanced Security Protection**

The MT25Q offers an advanced security protection scheme where each sector can be independently locked, by either volatile or nonvolatile locking features. The nonvolatile locking configuration can also be locked, as well password-protected.

(Reference MT25QL01GB Datasheet “Security Registers” chapter <https://www.micron.com/resource-details/2dd46e97-8a6c-4ed2-81c8-7d77528076c2>)

8.2 Read Register Value

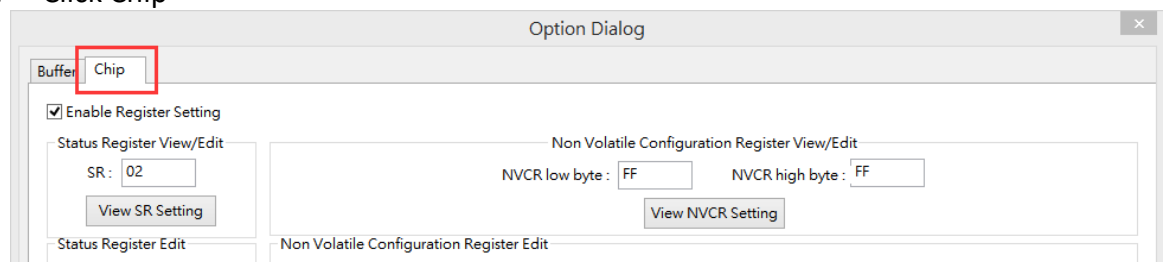
Read IC register value by the steps below.

1. Click **Select**  → Select Chip

2. Click Read IC 

3. Click Partition 2 

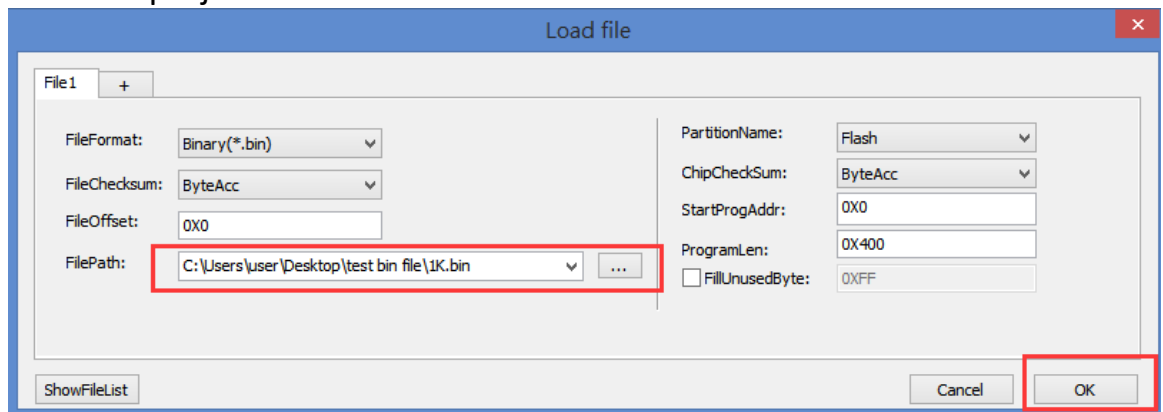
4. Click Chip



8.3 Option Bytes Setting

Please load the file before programming the register.

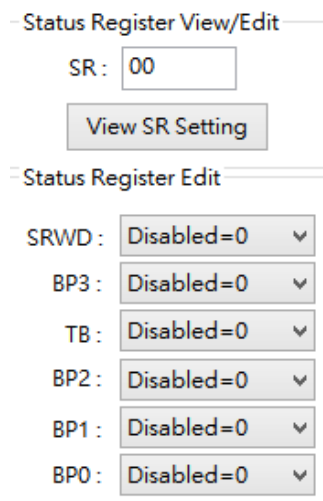
1. Click **Load**
2. Load the project file → **OK**



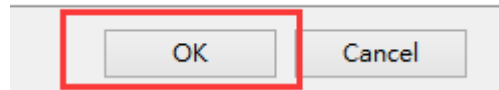
3. Click **Config**
4. Click **SPI NOR**


8.3.1 Status Register(SR)

1. Enter the SR(hex) value → **View SR Setting** or select the status for each Bit in Status Register



2. Click **OK** to save values



3. Program  →Config

Note: Program Flash or Erase Flash will erase Status Register to 00h.

8.3.2 Non Volatile Configuration Register(NVCR)

1. Enter the NVCR low/high byte(hex) value → **View NVCR Setting** or select the status for each Bit in Non Volatile Configuration Register

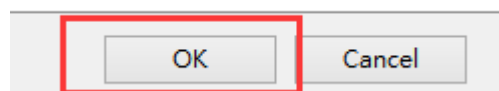
Non Volatile Configuration Register View/Edit


NVCR low byte : NVCR high byte :

Non Volatile Configuration Register Edit

Dummy clock cycles :	<input type="text" value="15=1111"/>	Quad I/O Protocol :	<input type="text" value="Disabled=1"/>
XIP mode at power-on reset :	<input type="text" value="XIP Disabled=111"/>	Dual I/O Protocol :	<input type="text" value="Disabled=1"/>
Output Driver Strength :	<input type="text" value="30 Ohms=111"/>	128Mb segment select :	<input type="text" value="Lowest 128Mb segment=1"/>
DTR Protocol :	<input type="text" value="Disabled=1"/>	Address mode selection :	<input type="text" value="3-byte address mode=1"/>
Fast POR x READ :	<input type="text" value="Disabled=1"/>	Lock NVCR :	<input type="text" value="Disabled=1"/>
Reset/Hold :	<input type="text" value="Enabled=1"/>		

2. Click **OK** to save values



3. Program  →Config

8.3.3 Sector Protection Security Register

1. Select the status for each Bit in Sector Protection Security Register

Sector Protection Register View/Edit

Sector Protection Register View(Read Only) : FFFF

Password protection lock : Disabled=1

Sector protection lock : Enabled, with password protection = 1

OK Cancel

2. Click **OK** to save values

3. Program  →Config

8.3.4 Password Register

1. Password Setup

Selected sector(s) protect

64 bit Password (Byte0, Byte1,Byte7) (hex):

Program Password

Byte3-Byte0 Byte7-Byte4

FFFFFFF7 FFFFFFFF

2. Check **Program Password**

64 bit Password (Byte0, Byte1,Byte7) (hex):

Program Password

Byte3-Byte0 Byte7-Byte4

FFFFFFF7 FFFFFFFF

3. Click **OK** to save values

4. Program  →Config

Note: Once password protection lock bit = 0, you will not be able to change the password.

8.3.5 Nonvolatile Sector Lock Bits Security

1. If password protection lock bit = 0, please set up a password for unlock. If not, then skip this setup.

Selected sector(s) protect
 64 bit Password (Byte0, Byte1,Byte7) (hex):
 Program Password

Byte3-Byte0	Byte7-Byte4
FFFFFFF	FFFFFFF

2. Set up the Block that needs protection (The size of one block is 64K Byte)

Advanced Sector Protection

Sector(s) to protect(e.g. 0,3,5-7,...)(unit:64K-byte) : -

Selected sector(s) protect
 Byte3-Byte0 Byte7-Byte4

3. Check **Selected sector(s) protect**


Advanced Sector Protection

Sector(s) to protect(e.g. 0,3,5-7,...)(unit:64K-byte) : -

Selected sector(s) protect
 64 bit Password (Byte0, Byte1,Byte7) (hex):
 Program Password

Byte3-Byte0	Byte7-Byte4
<input type="text"/>	<input type="text"/>

4. Click **OK** to save values

5. Program  →Config

Note:

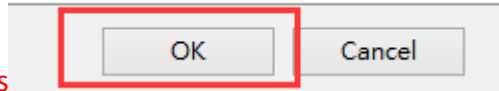
1. Program Flash or Erase Flash will change all Nonvolatile Lock Bit to unprotected
2. If password protection lock bit = 0, please follow the below steps to unlock the Nonvolatile Lock Bit

A. Set up the password to unlock

Selected sector(s) protect
 64 bit Password (Byte0, Byte1,Byte7) (hex):
 Program Password

Byte3-Byte0	Byte7-Byte4
FFFFFFF	FFFFFFF

B. Click **OK** to save values



C. Program → Config

D. Program Flash or Erase Flash will change all Nonvolatile Lock Bit to unprotected

3. If password protection lock bit = 0, then it cannot unlock Nonvolatile Lock Bit in Production Mode, so if IC needs re-work while Nonvolatile Lock Bit is protected, please follow step 2 to unlock Nonvolatile Lock Bit in the Engineering Mode first.

IX. Spansion

9.1 Read Register Value

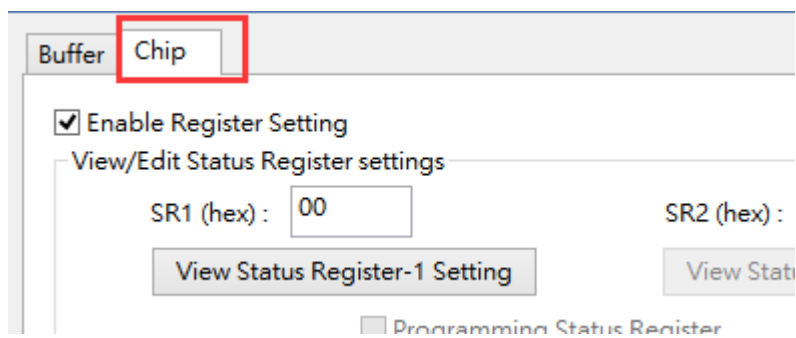
Read IC register value by the steps below.

1. Click **Select** button  → Select Chip

2. Click **Read IC** button 

3. Click **Config** button

4. Click **Chip**



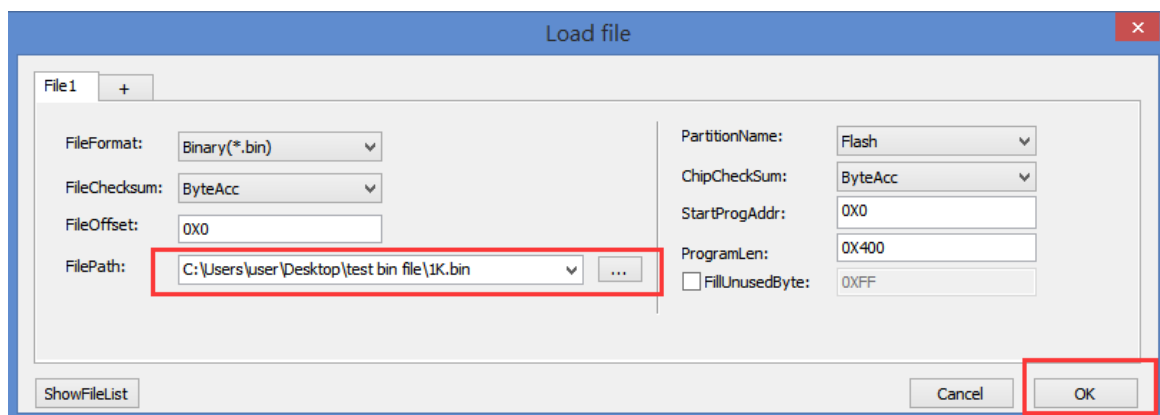
9.2 Option Bytes Setting

Please load the file before programming the register.

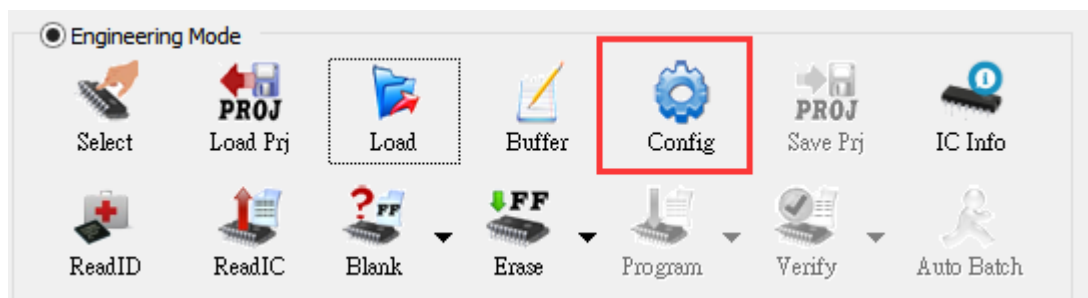
1. Click **Load** button



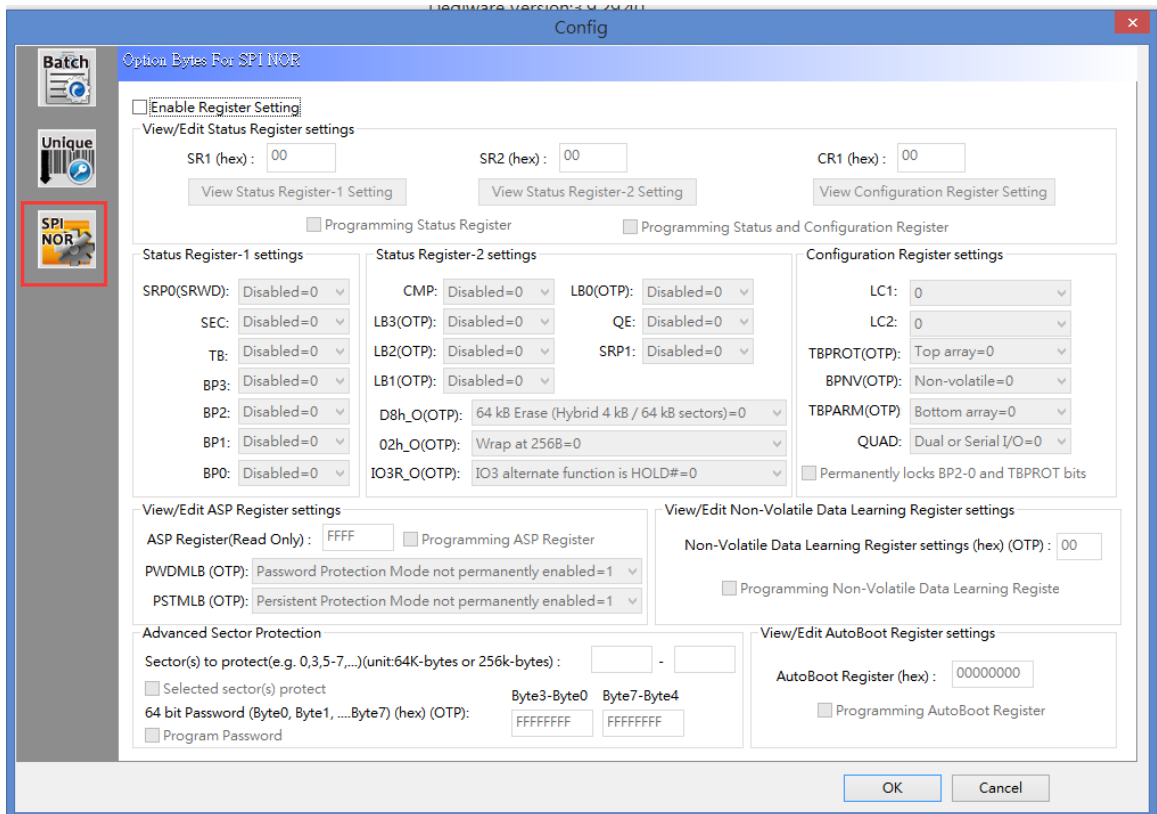
2. Load the project file → **OK**



3. Click **Config** button



4. Click **SPI NOR** button

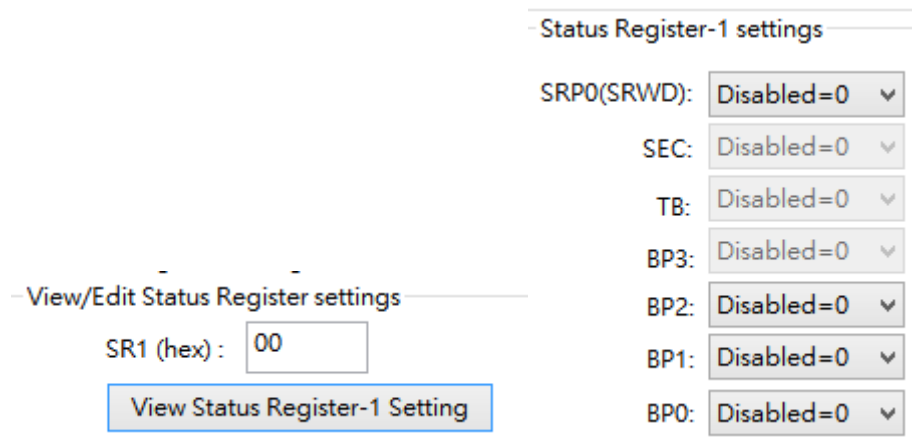


5. Set up option bytes

9.2.1 Status Register1 (SR1)

Note: Program Flash or Erase Flash will erase Status Register to 00h

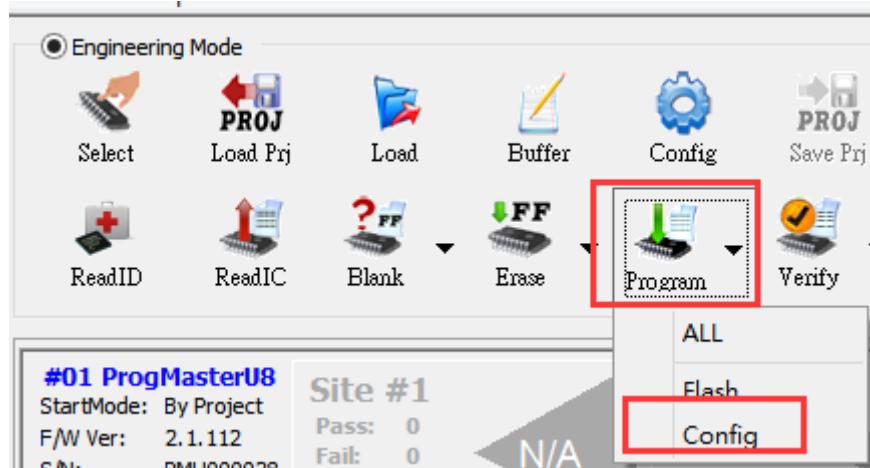
1. Enter the SR1(hex) value → **View Status Register-1 Setting**, or select the status for each Bit in the Status Register



2. Check **Programming Status Register** or **Programming Status and Configuration Register**

Programming Status Register
 Programming Status and Configuration Register

3. Click **OK** to save values
4. Click **Program** button → **Config**



9.2.2 Status Register2 (SR2)

1. Enter the SR2(hex) value → **View Status Register-2 Setting**, or select the status for each Bit in the Status Register

SR2 (hex) :

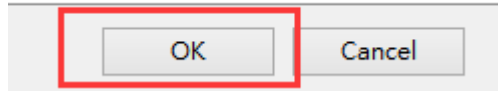
Status Register-2 settings

CMP: <input type="text" value="Disabled=0"/>	LB0(OTP): <input type="text" value="Disabled=0"/>
LB3(OTP): <input type="text" value="Disabled=0"/>	QE: <input type="text" value="Disabled=0"/>
LB2(OTP): <input type="text" value="Disabled=0"/>	SRP1: <input type="text" value="Disabled=0"/>
LB1(OTP): <input type="text" value="Disabled=0"/>	
D8h_O(OTP): <input type="text" value="64 kB Erase (Hybrid 4 kB / 64 kB sectors)=0"/>	
02h_O(OTP): <input type="text" value="Wrap at 256B=0"/>	
IO3R_O(OTP): <input type="text" value="IO3 alternate function is HOLD#=0"/>	

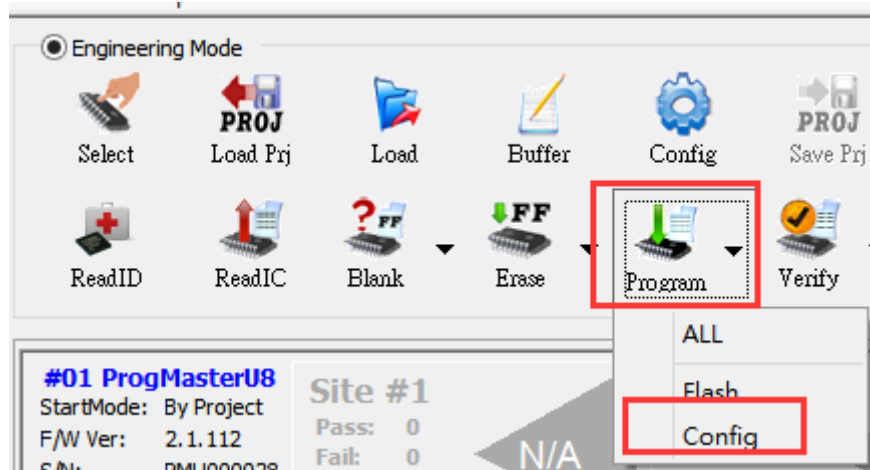
2. Check **Programming Status Register** or **Programming Status and Configuration Register**

Programming Status Register
 Programming Status and Configuration Register

3. Click **OK** to save values

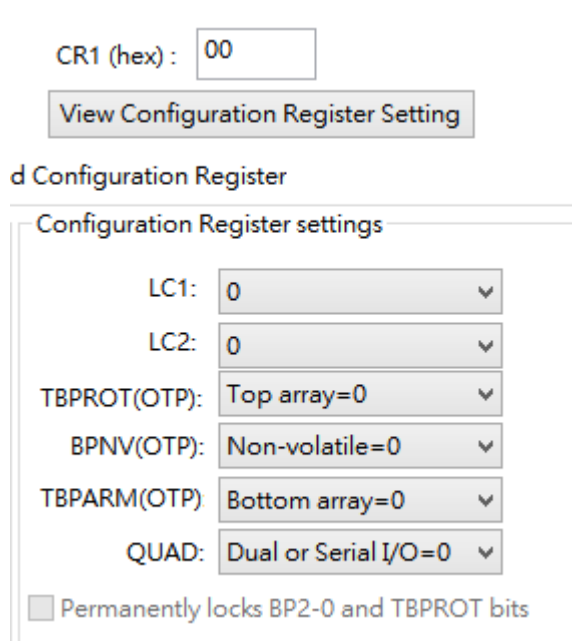


4. Click **Program** button → **Config**



9.2.3 Configuration Register1 (CR1)

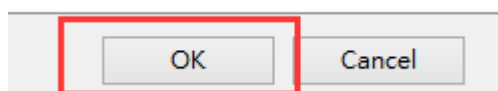
1. Enter the CR1(hex) value → **View Configuration Register Setting**, or select the status for each Bit in the Status Register



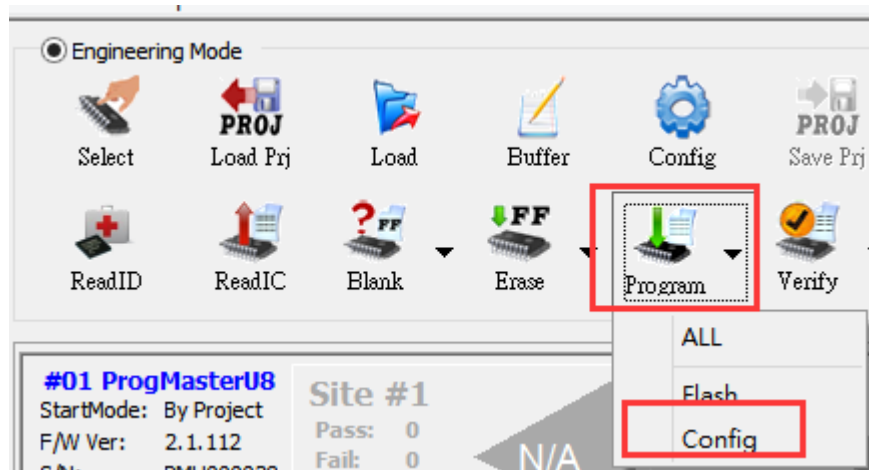
2. Check **Programming Status and Configuration Register**

Programming Status and Configuration Register

3. Click **OK** to save values



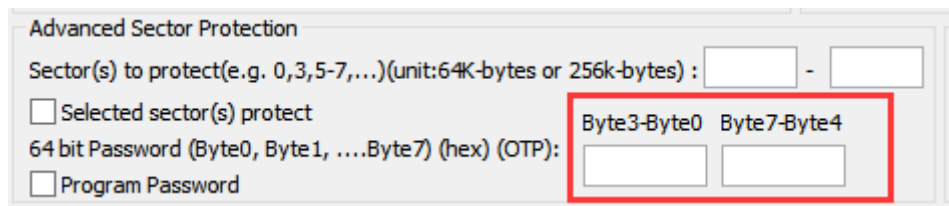
4. Click **Program** button → **Config**



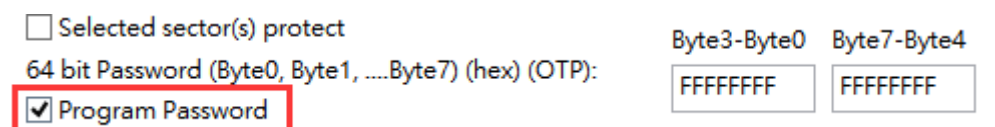
9.2.4 Password Register

Note: Once it is in Password Protection Mode, you will not be able to change the password.

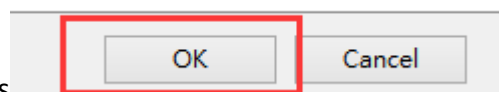
1. Password Setup



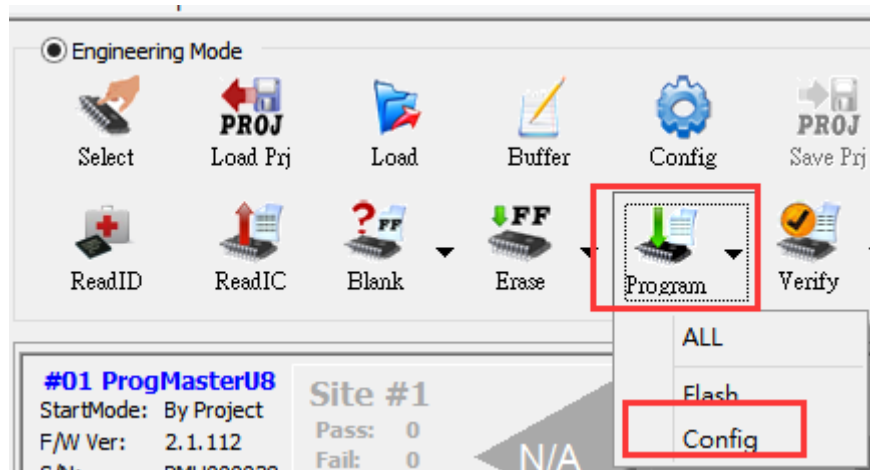
2. Programming Parameters → Check **Program Password**



3. Click **OK** to save values



4. Click **Program** button → **Config**

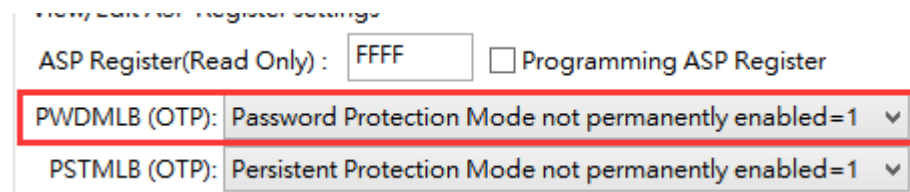


9.2.5 ASP Register (ASPR)

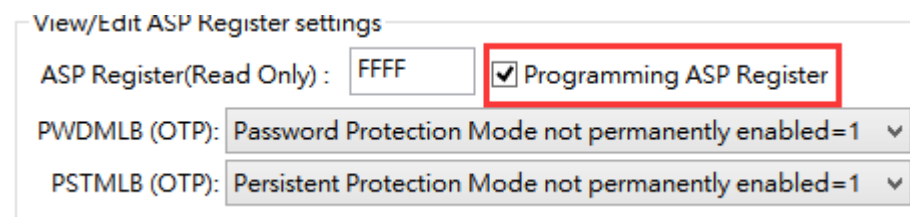
9.2.5.1 Password Protection Mode Lock Bit

Note: Please finish password setup before entering Password Protection Mode

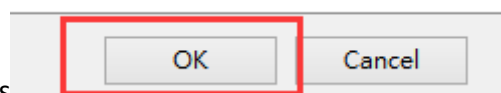
1. Set up Password Protection Mode Lock Bit



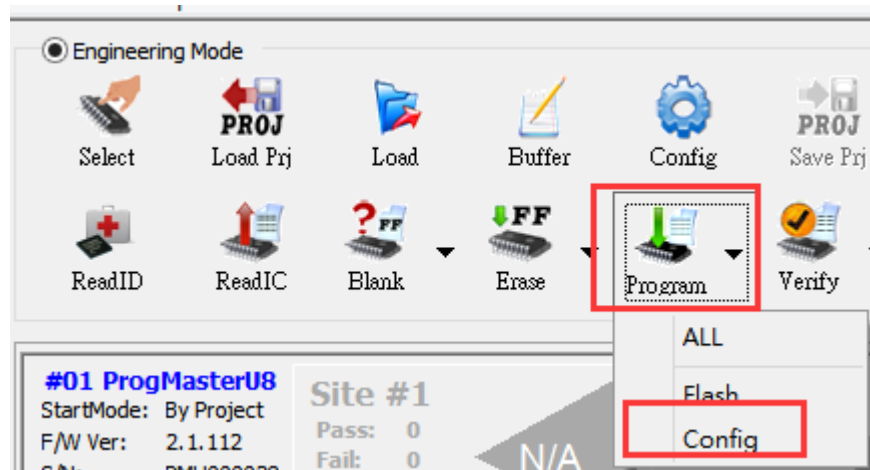
2. Check **Programming ASP Register**



3. Click **OK** to save values

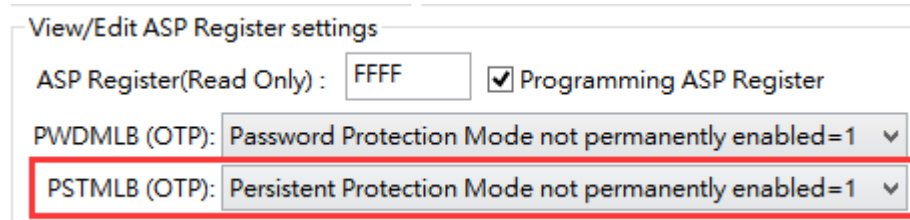


4. Click **Program** button → **Config**

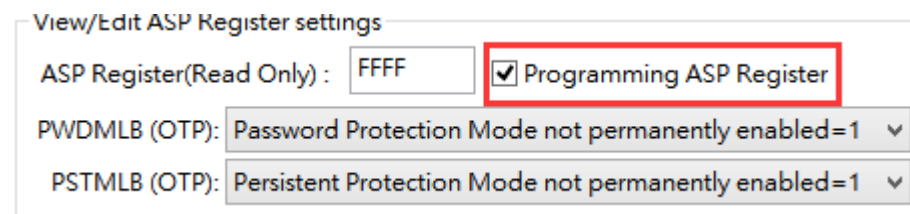


9.2.5.2 Persistent Protection Mode Lock Bit

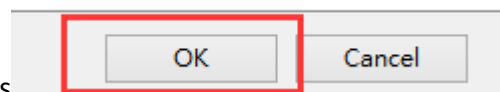
1. Set up Persistent Protection Mode Lock Bit



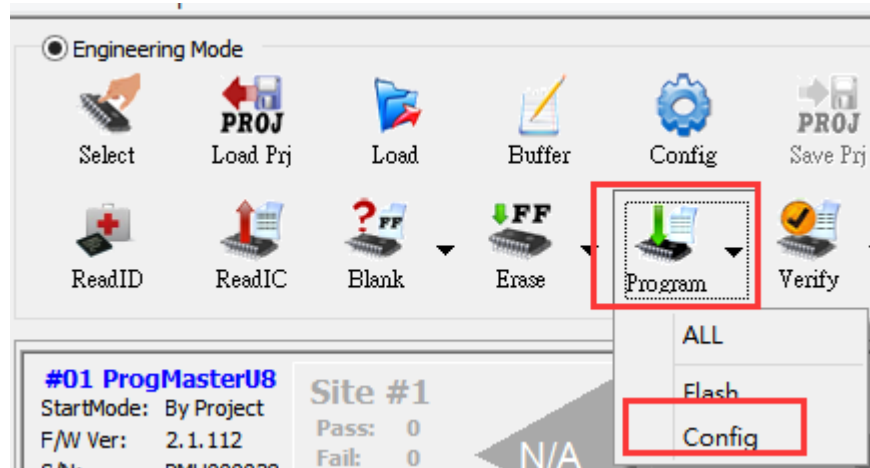
2. Check **Programming ASP Register**



3. Click **OK** to save the values



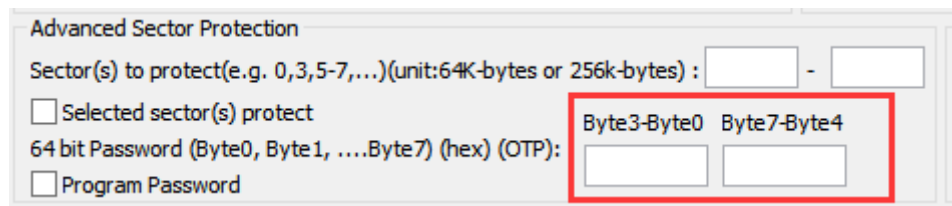
4. Click **Program** button → **Config**



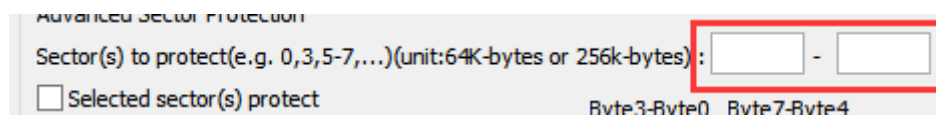
9.2.6 Persistent Protection Bits (PPB)

Note: Program Flash or Erase Flash will change all PPB to unprotected

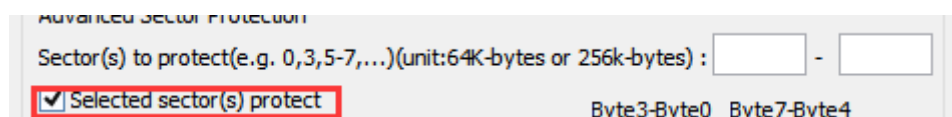
1. If switch to Password Protection Mode, please set up a correct password for unlock. If not, then skip this setup.



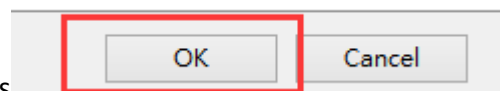
2. Set up the Block that needs protection



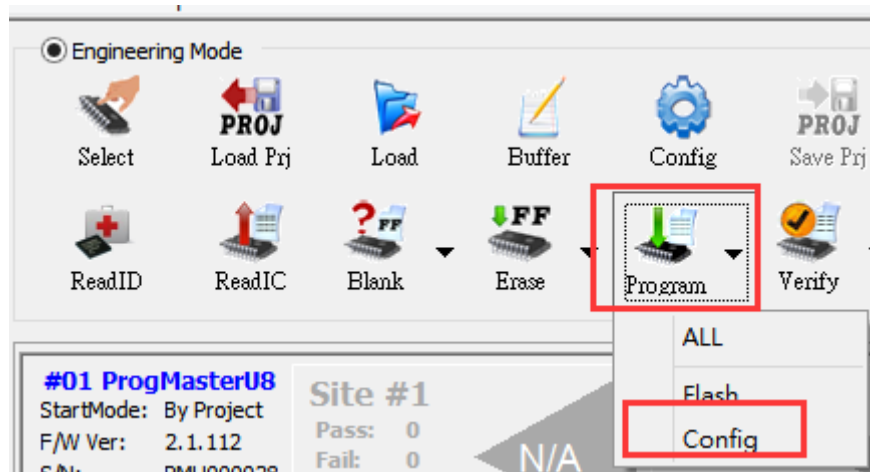
3. Check **Selected sector(s) protect**



4. Click **OK** to save values



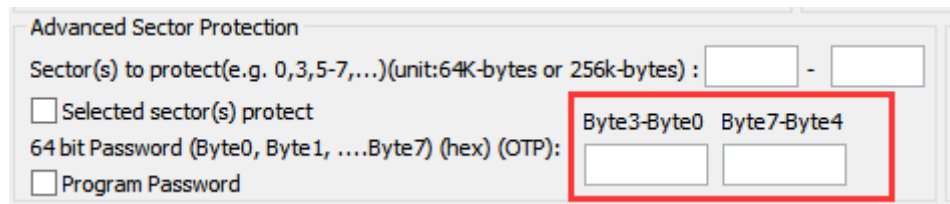
5. Click **Program** button → **Config**



9.2.7 Erase All PPB in Password Protection Mode

Note: Password Protection Mode cannot unlock PPB in Production Mode, so if IC needs re-work while PPB is protected, please unlock SPB in the Engineering Mode first.

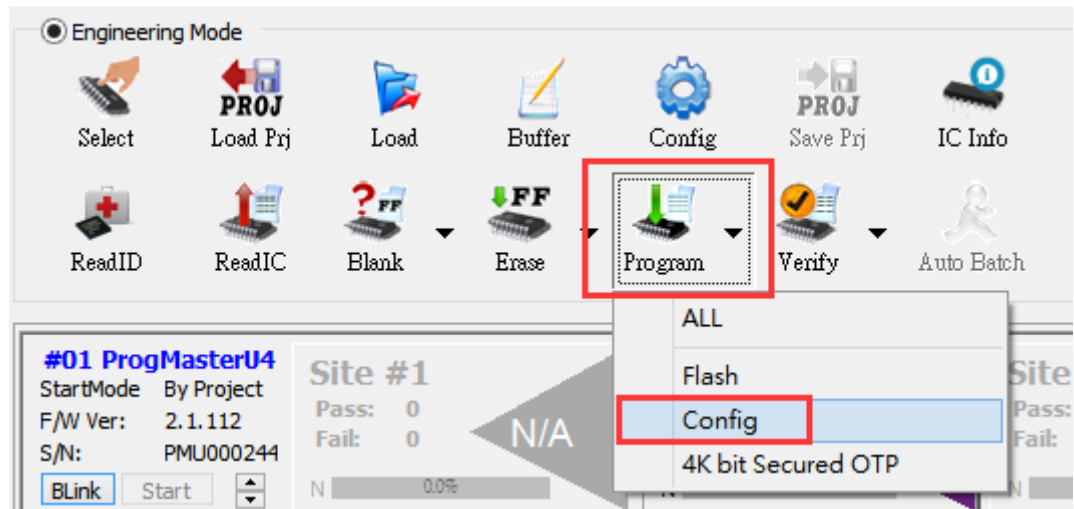
1. Set up the correct password to unlock



2. Click OK to save values



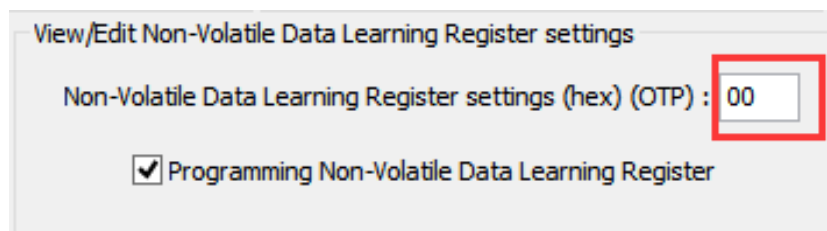
3. Click **Program** button → **Config** (The password is saved in the SRAM of the software)



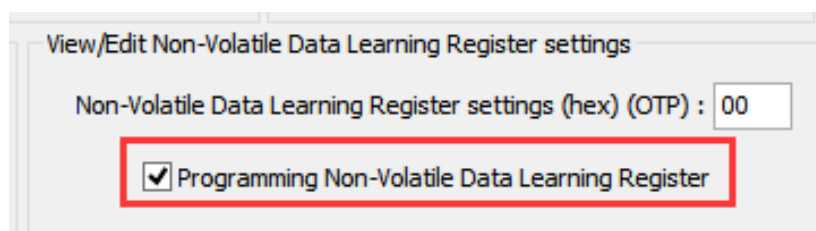
4. Program Flash or Erase Flash will change all PPB to unprotected

9.2.8 Non-Volatile Data Learning Pattern

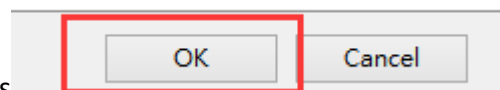
1. Enter the Non-Volatile Data Learning Register settings (hex) (OTP) value



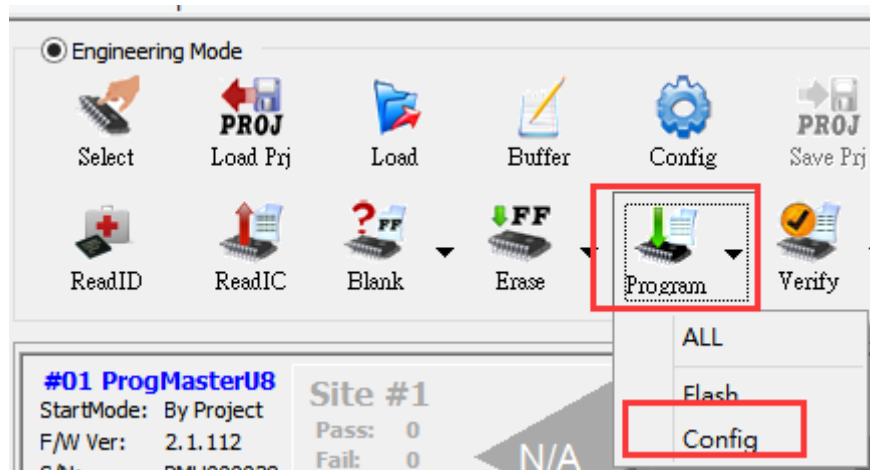
2. Check **Programming Non-Volatile Data Learning Register**



3. Click **OK** to save values

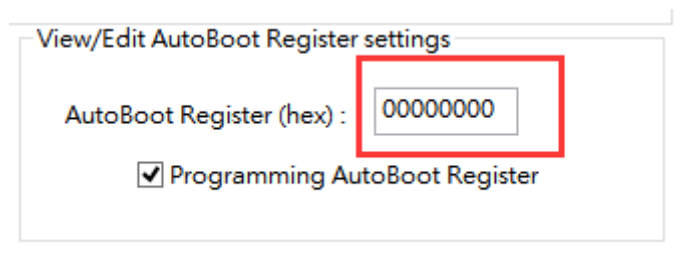


4. Click **Program** button → **Config**

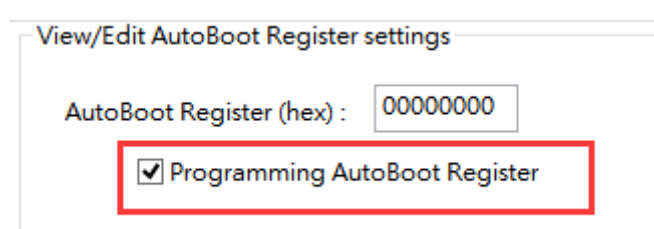


9.2.9 AutoBoot Register

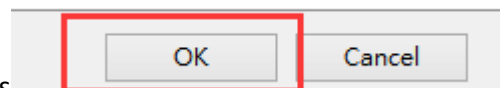
1. Enter AutoBoot Register (hex) value



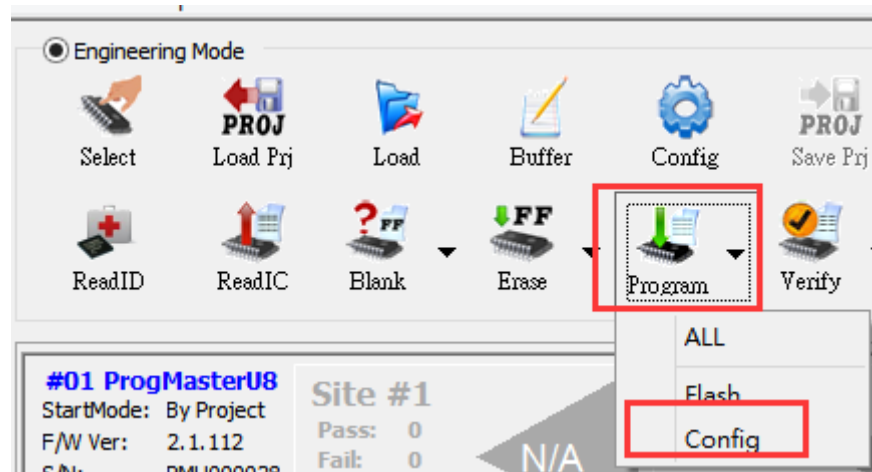
2. Check **Programming AutoBoot Register**



3. Click **OK** to save values





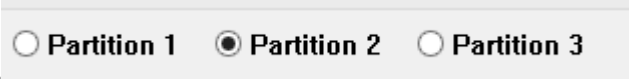
4. Click **Program** button → **Config**

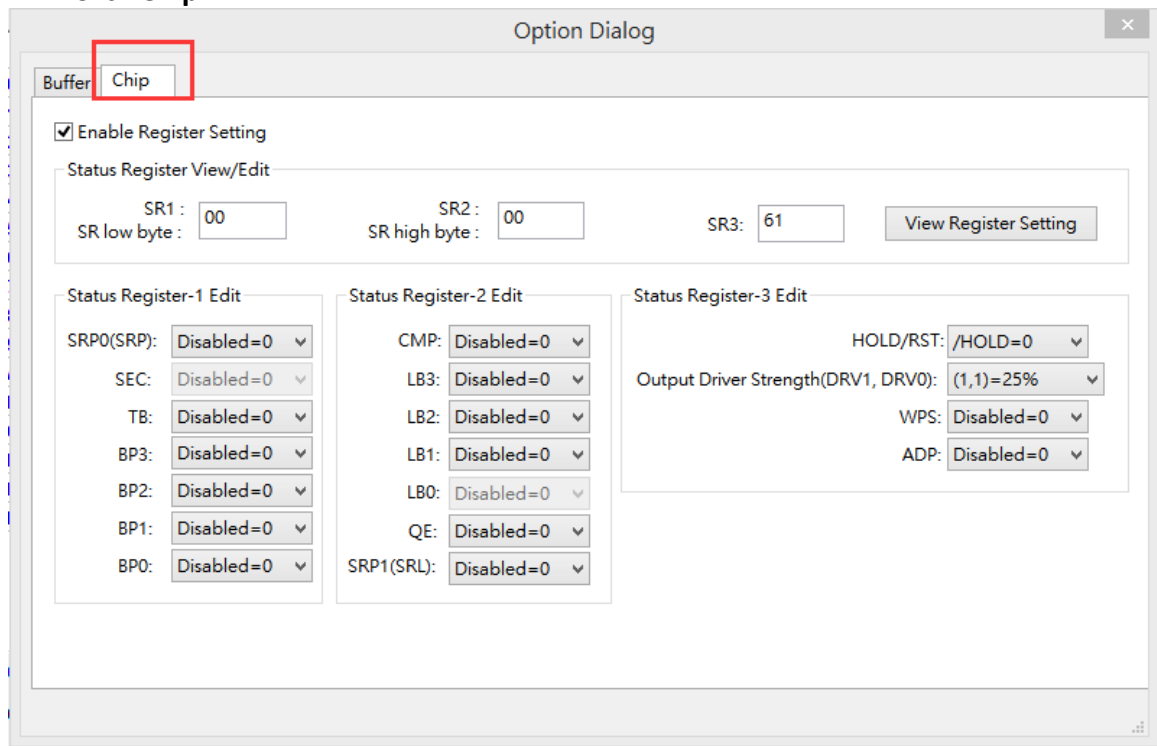


X. Winbond

10.1 Read Register Value

Read IC register value by the below steps

1. Click **Select**  → Select Chip
2. Click **Read IC** 
3. Click **Partition 2** 
4. Click **Chip**

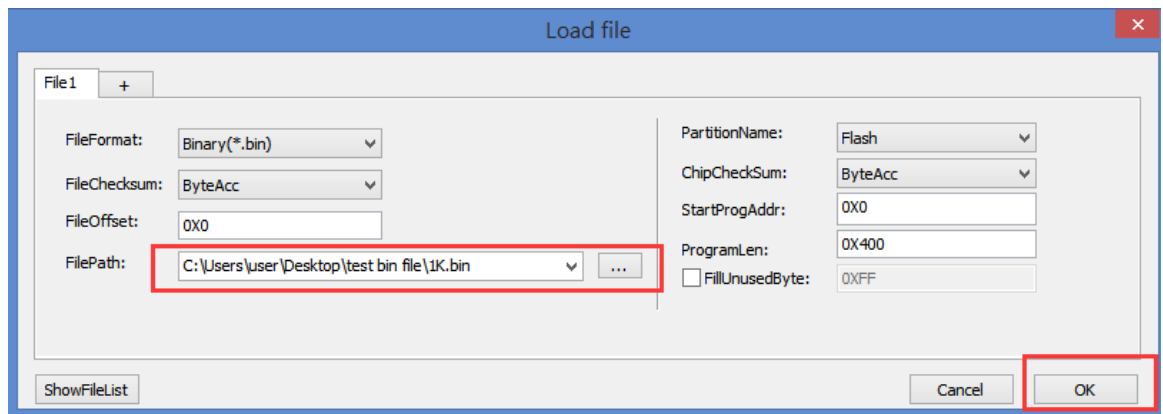


10.2 Option Bytes Setting

Please load the file before programming the register.



1. Click **Load**
2. Load the project file → OK



3. Click **Config**



4. Click **SPI NOR**

10.2.1 Status Register1, 2, 3

1. Enter the SR1(hex), SR2(hex), SR3(hex) value → **View Register Setting**, or select the status for each Bit in Status Register

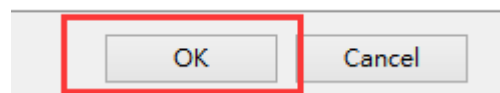
Status Register View/Edit

SR1 : SR2 : SR3:

SR low byte : SR high byte :

Status Register-1 Edit	Status Register-2 Edit	Status Register-3 Edit
SRP0(SRP): <input type="text" value="Disabled=0"/>	CMP: <input type="text" value="Disabled=0"/>	HOLD/RST: <input type="text" value="/HOLD=0"/>
SEC: <input type="text" value="Disabled=0"/>	LB3: <input type="text" value="Disabled=0"/>	Output Driver Strength(DRV1, DRV0): <input type="text" value="(1,1)=25%"/>
TB: <input type="text" value="Disabled=0"/>	LB2: <input type="text" value="Disabled=0"/>	WPS: <input type="text" value="Disabled=0"/>
BP3: <input type="text" value="Disabled=0"/>	LB1: <input type="text" value="Disabled=0"/>	ADP: <input type="text" value="Disabled=0"/>
BP2: <input type="text" value="Disabled=0"/>	LB0: <input type="text" value="Disabled=0"/>	
BP1: <input type="text" value="Disabled=0"/>	QE: <input type="text" value="Disabled=0"/>	
BP0: <input type="text" value="Disabled=0"/>	SRP1(SRL): <input type="text" value="Disabled=0"/>	

2. Click **OK** to save values



3. Program  → Config

Note: Program Flash or Erase Flash will erase Status Register 1 to 00h

XI. Revision History

Date	Version	Changes
2017/04/06	1.0	Initial release

DediProg Technology Co., Ltd

- **Taiwan Headquarter** TEL: 886-2-2790-7932 FAX: 886-2-2790-7916
4F., No.7, Ln. 143, Xinming Rd., Neihu Dist., Taipei City 114, Taiwan
- **Shanghai Office** TEL: 86-21-5160-0157
Room 518.519, Building 66, Lane1333, Xinlong Road, Vanke Hongqiao CBD.Min Hang District, Shanghai, P.R.C. 201101
- **U.S. Office** TEL: +1 480-775-5139
2266 South Dobson Road, Suite 200, Mesa, AZ, 85202, USA

Technical Support : support@dediprogram.com

Sales Support : sales@dediprogram.com

www.dediprogram.com

Information furnished is believed to be accurate and reliable. However, DediProg assumes no responsibility for the consequences of use of such information or for any infringement of patents or other rights of third parties which may result from its use. Specifications mentioned in this publication are subject to change without notice.

This publication supersedes and replaces all information previously supplied.

All rights reserved
Printed in Taiwan.