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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

![Load button](image)

2. Load the project file → **OK**

![Load file dialog box](image)

3. Click **Config** button

![Config button](image)
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

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

```
SR2: 00
```

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**

![Software User Manual example](image)

### 2.2.3 Configuration Register

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

![Configuration Register](image)

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

![Configuration Register](image)

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
   - Sector Lockdown
     Sector(s) to lockdown (e.g. 0, 3, 5-7, or "all"): [Box]
     - Setting Lockdown

2. Programming Parameters → Check Selected sector(s) lockdown
   - Programming parameters
     - Status Register-1
     - Status Register-2
     - Status Register-1 and Status Register-2
     - Configuration Register
     - Lock-down secured OTP bit
     - Selected sector(s) lockdown

   - OK

3. Click OK to save values

4. Click Program button → Config
   - Program

   - Flash
   - 128 Byte OTP
   - Config
2.2.6 Freeze Sector Lockdown State

1. Programming Parameters → Check Freeze Sector Lockdown State

   ![Programming Parameters Screenshot]

   - Check the box for "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

![Status Register View/Edit]

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

   ![Load Button](image)

2. Load the project file → **OK**

   ![Load File](image)

3. Click **Config** button

   ![Config Button](image)
4. Click SPI NOR button

5. 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

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 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 the 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 the 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 endurances 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, BPO-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 an 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 Table]

     - **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.

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.

  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, BPO-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.

### 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 (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.
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.

<table>
<thead>
<tr>
<th><strong>DPB Register</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bit</td>
</tr>
<tr>
<td>------</td>
</tr>
</tbody>
</table>
| 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)**

<table>
<thead>
<tr>
<th>Bits</th>
<th>Field Name</th>
<th>Function</th>
<th>Type</th>
<th>Default State</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>63 to 0</td>
<td>PWD</td>
<td>Hidden Password</td>
<td>OTP</td>
<td>FFFFFFFF00000000h</td>
<td>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.</td>
</tr>
</tbody>
</table>
6.2 Read Register Value

Read IC register value by the below steps.

1. Click Select \(\rightarrow\) Select Chip

![Select Chip]

2. Click Read IC

3. Click Partition 2

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

![Load file dialog]

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]

![Status Register edit]
2. **Programming Parameters → Check Status Register or Status and Configuration Register**

<table>
<thead>
<tr>
<th>Programming Parameters</th>
<th>Status Register</th>
<th>Status and Configuration Register</th>
<th>Lock-down secured OTP</th>
<th>Advance Sector protection mode (WPSEL = 1)</th>
<th>Program Password</th>
</tr>
</thead>
</table>

3. Click **OK** to save values

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](image)

   TB: Top area = 0

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

   ![Configuration Register Edit](image)

3. Click **OK** to save values

4. **Program → Config**

### 6.3.3 Security Register

- **LDSO Bit**

  1. Programming Parameters → Check Lock-down secured OTP
2. Click OK to save values

3. Program → Config

---

**WPSEL Bit**

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

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)

2. Password Setup

   64 bit Password (hex) :

   Byte7-Byte4 | Byte3-Byte0

   FFFFFFE | FFFFFFE
3. Programming Parameters → Check **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)

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

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)

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

3. Click OK to save values

4. Program → Config

SPB Lock Down Bit

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

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

3. Click OK to save values

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.

   ![Password Setup](image)

3. Set up the Block that needs protection (The size of one block is 64K Byte)
   
   ![Block Setting](image)

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

5. Click **OK** to save values

6. Program → Config

   ![Program Config](image)

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

   ![Password Setup](image)
B. Click **OK** to save values.

![Screenshot of OK button]

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


- Security ID: divided into two types
    - 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.

    - 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.

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

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

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

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

   ![Check box for non-Volatile Write-Lock Lock-Down Register]

   - **Check** non-Volatile Write Lock-Down Register

3. Click **OK** to save values

4. Program → Config

### 7.3.4 Lockout Security ID

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

   ![Check box for Lockout OTP Security ID]

   - **Check** 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](image)

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
2. Click **OK** to save values

3. Program → Config

### 8.3.4 Password Register

1. **Password Setup**

<table>
<thead>
<tr>
<th>Selected sector(s) protect</th>
<th>64 bit Password (Byte0, Byte1, ... Byte7) (hex):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Byte3-Byte0</td>
</tr>
<tr>
<td></td>
<td>FFFFFFF</td>
</tr>
<tr>
<td>Program Password</td>
<td></td>
</tr>
</tbody>
</table>

2. Check **Program Password**

<table>
<thead>
<tr>
<th>64 bit Password (Byte0, Byte1, ... Byte7) (hex):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Byte3-Byte0</td>
</tr>
<tr>
<td>FFFFFFF</td>
</tr>
<tr>
<td><strong>Program Password</strong></td>
</tr>
</tbody>
</table>

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.

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

3. Check Selected sector(s) protect

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
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

   ![Load button](image)

2. Load the project file → **OK**

   ![Load file dialog](image)

3. Click **Config** button

   ![Config button](image)
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
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

   ![Status Register2](image)

   **SR2 (hex):** 00

   **View Status Register-2 Setting**

   **Status Register-2 settings**

   - CMP:
     - Disabled=0
   - LB3(OTP):
     - Disabled=0
   - LB2(OTP):
     - Disabled=0
   - LB1(OTP):
     - Disabled=0
   - QM:
     - Disabled=0
   - QE:
     - Disabled=0
   - SRP1:
     - Disabled=0
   - D8h_O(OTP):
     - 64 kB Erase (Hybrid 4 kB / 64 kB sectors)=0
   - 02h_O(OTP):
     - Wrap at 2568=0
   - IO3R_O(OTP):
     - IO3 alternate function is HOLD#=0

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

   ![Configuration Register1 (CR1)](image)

   - **CR1 (hex):** 00
   - **View Configuration Register Setting**

   **Configuration Register settings**
   - **LC1:** 0
   - **LC2:** 0
   - **T8PROT(OTP):** Top array=0
   - **BPNV(OTP):** Non-volatile=0
   - **T8PARM(OTP):** Bottom array=0
   - **QUAD:** Dual or Serial I/O=0

   - [ ] Permanently locks BP2-0 and T8PROT bits

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**

![Configuration Interface](image)

### 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

![Password Protection Configuration](image)

2. Check **Programming ASP Register**

![Programming ASP Register](image)

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**

![Software User Manual](image)

### 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**

![Diagram showing the Program button and Config option]

**9.2.9 AutoBoot Register**

1. Enter AutoBoot Register (hex) value

![Input field for AutoBoot Register with value 00000000]

2. Check **Programming AutoBoot Register**

![Checked box for 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

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

<table>
<thead>
<tr>
<th>Date</th>
<th>Version</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017/04/06</td>
<td>1.0</td>
<td>Initial release</td>
</tr>
</tbody>
</table>

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