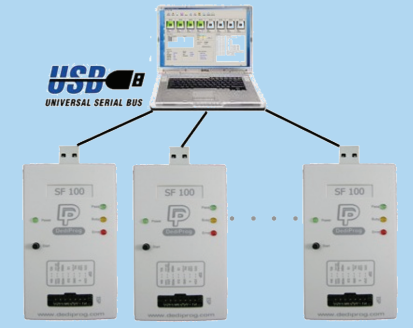
SF100 In Circuit Serial Flash Programmer

“REDUCE YOUR TIME TO MARKET”
“REDUCE YOUR PRODUCTION COST”

The SF100 is a high speed “**In Circuit Programming**” programmer to update the SPI Flash soldered on board or Freescale MCU using Ezport. The programmer is easily controlled by the computer DediProg Software through the USB bus offering friendly interface and powerful features to users.

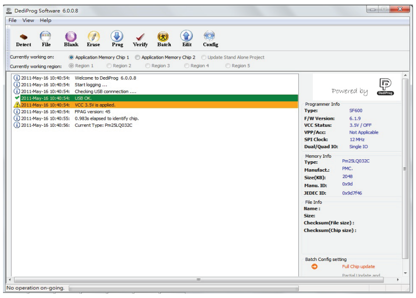
SF100 Features:

- Update Serial Flash soldered on board with application powered or not
- Update the internal Flash of Freescale MCU using the Ezport (MCF5223, MCF5221, MCF5213) or the external SPI Flash of Freescale MCU using the SBF interface (MCF5445, MCF5227)
- Control Application, controller reset and MOSFET isolation status
- Capable of handling two serial flash memories
- Signal conflict protections
- Multi-Programmers Capability



Multi Programmers Support

SPI Flash	1Mb	2Mb	4Mb	8Mb	16Mb	32Mb	64Mb	128Mb
Program+Verify (second)	1s	2s	4s	7s	14s	37s	70s	108s



Currently working on: ● Application Memory Chip 1 ○ Application Memory Chip 2 ○ Update Stand Alone Project
Currently working region: ● Region 1 ○ Region 2 ○ Region 3 ○ Region 4 ○ Region 5

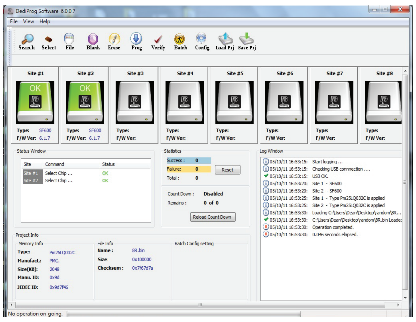
```
2011-May-16 10:40:54:   Welcome to DediProg 6.0.0.8
2011-May-16 10:40:54:   Start logging ...
2011-May-16 10:40:54:   Checking USB connnection ....
2011-May-16 10:40:54:   USB OK.
2011-May-16 10:40:54:   VCC 3.5V is applied.
2011-May-16 10:40:54:   FPAG version: 45
2011-May-16 10:40:55:   0.983s elapsed to identify chip.
2011-May-16 10:40:56:   Current Type: Pm25LQ032C
```

Programmer Info
Type: SF600
F/W Version: 6.1.9
VCC Status: 3.5V / OFF
VPP/Acc: Not Applicable
SPI Clock: 12 MHz
Dual/Quad IO: Single IO

Memory Info
Type: Pm25LQ032C
Manufact.: PMC.
Size(KB): 2048
Manu. ID: 0x9d
JEDEC ID: 0x9d7f46

File Info
Name :
Size:
Checksum(File size) :
Checksum(Chip size) :

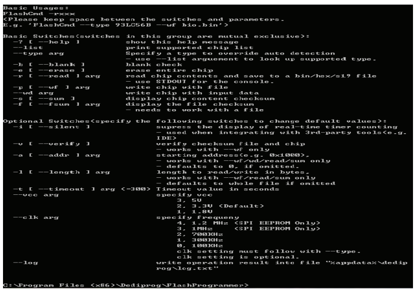
No operation on-going.



Log Window

```
05/10/11 16:53:15:   Start logging ...
05/10/11 16:53:15:   Checking USB connnection ....
05/10/11 16:53:15:   USB OK.
05/10/11 16:53:20:   Site 1  -  SF600
05/10/11 16:53:20:   Site 2  -  SF600
05/10/11 16:53:25:   Site 1  -  Type Pm25LQ032C is applied
05/10/11 16:53:25:   Site 2  -  Type Pm25LQ032C is applied
05/10/11 16:53:30:   Loading C:\Users\Dean\Desktop\random\8R...
05/10/11 16:53:30:   C:\Users\Dean\Desktop\random\8R.bin Loaded
05/10/11 16:53:30:   Operation completed.
05/10/11 16:53:30:   0.046 seconds elapsed.
```

No operation on-going.



```
Basic Usages:
FlashCmd -rxxx
<Please keep space between the switches and parameters.
E.g. 'FlashCmd --type 93LC56B --wf bio.bin'>

Basic Switches<switches in this group are mutual exclusive>:
  -? [ --help ]             show this help message
  --list                    print supported chip list
  --type arg                Specify a type to override auto detection
                            - use --list arguement to look up supported type.
  -b [ --blank ]            blank check
  -e [ --erase ]            erase entire chip
  -r [ --read ] arg         read chip contents and save to a bin/hex/s19 file
                            - use STDOUT for the console.
  -p [ --wf ] arg           write chip with file
  --wd arg                  write chip with input data
  -s [ --sum ]              display chip content checksum
  -f [ --fsum ] arg         display the file checksum
                            - needs to work with a file

Optional Switches<specify the following switches to change default values>:
  -i [ --silent ]                 supress the display of real-time timer counting
                                  - used when integrating with 3rd-party tools<e.g.
                                  IDE>
  -v [ --verify ]                 verify checksum file and chip
                                  - works with --wf only
  -a [ --addr ] arg               starting address<e.g. 0x1000>,
                                  - works with --wf/wd/read/sum only
                                  - defaults to 0, if omitted.
  -l [ --length ] arg             length to read/write in bytes,
                                  - works with --wf/read/sum only
                                  - defaults to whole file if omitted
  -t [ --timeout ] arg <=300> Timeout value in seconds
  --vcc arg                       specify vcc
                                      3, 5V
                                      2, 3.3V <Default>
                                      1, 1.8V
  --clk arg                       specify frequeny
                                      4, 1.2 MHz <SPI EEPROM Only>
                                      3, 1MHz    <SPI EEPROM Only>
                                      2, 700KHz
                                      1, 300KHz
                                      0, 100KHz
                                      clk setting must follow with --type.
                                      clk setting is optional.
  --log                           write operation result into file "%appdata%\dedip
                                  rog\log.txt"

C:\Program Files <x86>\Dediprog\FlashProgrammer>
```

Engineering Graphic User Interface:

For engineers and experts to access advanced features for development, repairing etc.

Production Graphic User Interface:

For operators in production to control multiple programmers and improve the throughput.

Windows Dos Command line interface:

For customers to control multi SF100 programmers (SF100 integration, Control SF100 with Production in Circuit Tester..)

Contact Information: DediProg Technology CO., Ltd. 岱鐠科技有限公司
Web site: www.DediProg.com Sales: sales@dediprog.com Tel: 886-2-2790-7932

SF100 Serial Flash Programmer

The Innovative solution to update the Serial Flash on board

- ***High performances of low price***
- ***USB full speed support***
- ***In Circuit Programming (program on board SPI Flash)***
- ***Socket Programming (program SPI flash in the socket)***
- ***ICP connector to work with Serial Flash soldered on board***
- ***Friendly and powerful tool with free life time update via Website***
- ***Portable programmer:***
  SF100: (10cm X 5cm X 2 cm)
- ***Advanced I/O control***

Content

Important notice:
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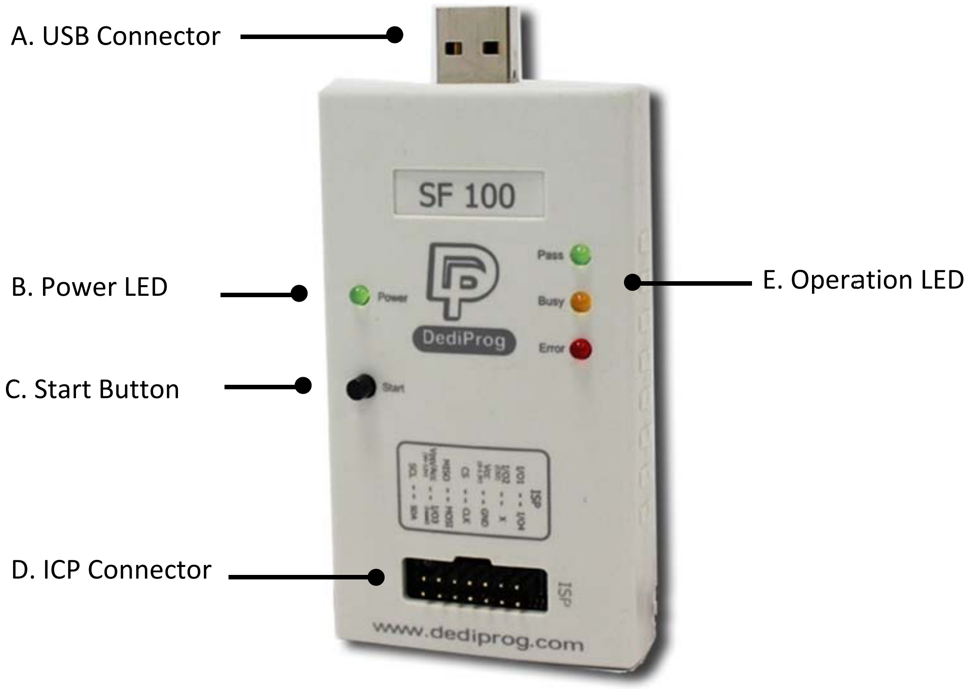
I. Product Description

The SF100 programmers are used to read, program or update the Serial Flash soldered on board or inserted in the socket of the DediProg Backup Boot Flash tool by using the computer software through USB communication.

1.1 Interface description

Fig 1: SF100 Programmer



A. USB Connector

Connect the programmer to the computer.
A USB cable extension is provided for more flexibility and convenience.

B. Power LED

Power LED will shine when SF100 is powered by USB.

C. Start button

Start operations from the programmer

D. ICP Connector

Connect the SPI signals and power supply to the application Serial Flash via a flat cable. The flat cable is flexible and convenient to manipulate, and can be changed easily before connection. For customization of the ICP-cable (number of signals, pin out assignment or connector size), please contact DediProg.

E. Operation LED

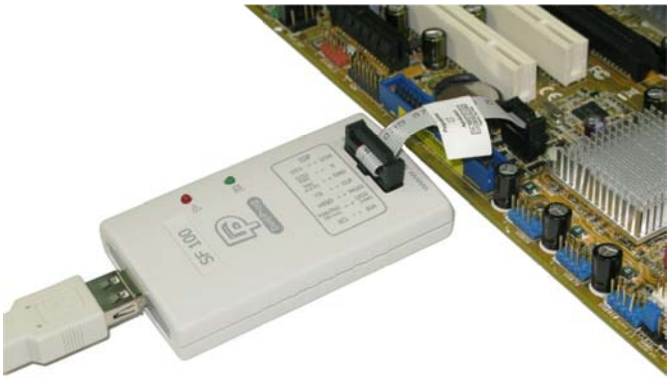
- Red Led: error
- Orange Led: operation on going
- Green Led: pass

1.2 Connected to the application pin header

The SF100 programmer has been designed to meet the strong and growing demand of serial flash users to program and update the memories soldered on board during development, production, and field manipulation or repairing with high performance and low cost. Before trying to update the Serial Flash on Board, be sure that the SPI controller and the application are compatible with the In Circuit Programming method to avoid any conflict with the programmer.

DediProg has published Application Note to help designers to implement the ICP method and will be pleased to answer to any of your questions on this subject.

Fig 2: SF100 connected to the application pin header



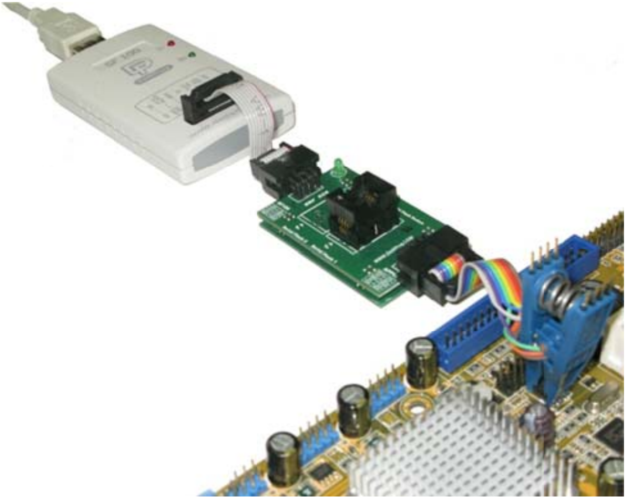
1.3 Connected to Backup Boot Flash

The software provided with the SF100 has been developed to offer a complete portfolio of features with a friendly and simple interface to not require any technical expertise.

SF100 can also be used together with DediProg backup boot flash modules so that it forces the application to boot from the backup flash located in the backup boot flash module instead of the soldered SPI flash on the application.

The backup serial flash can then be accessed at any time with the SF100 without any possible conflict with the application controller.

Fig 3: Backup Boot Flash (BBF) connected to SF100



II. Products Features

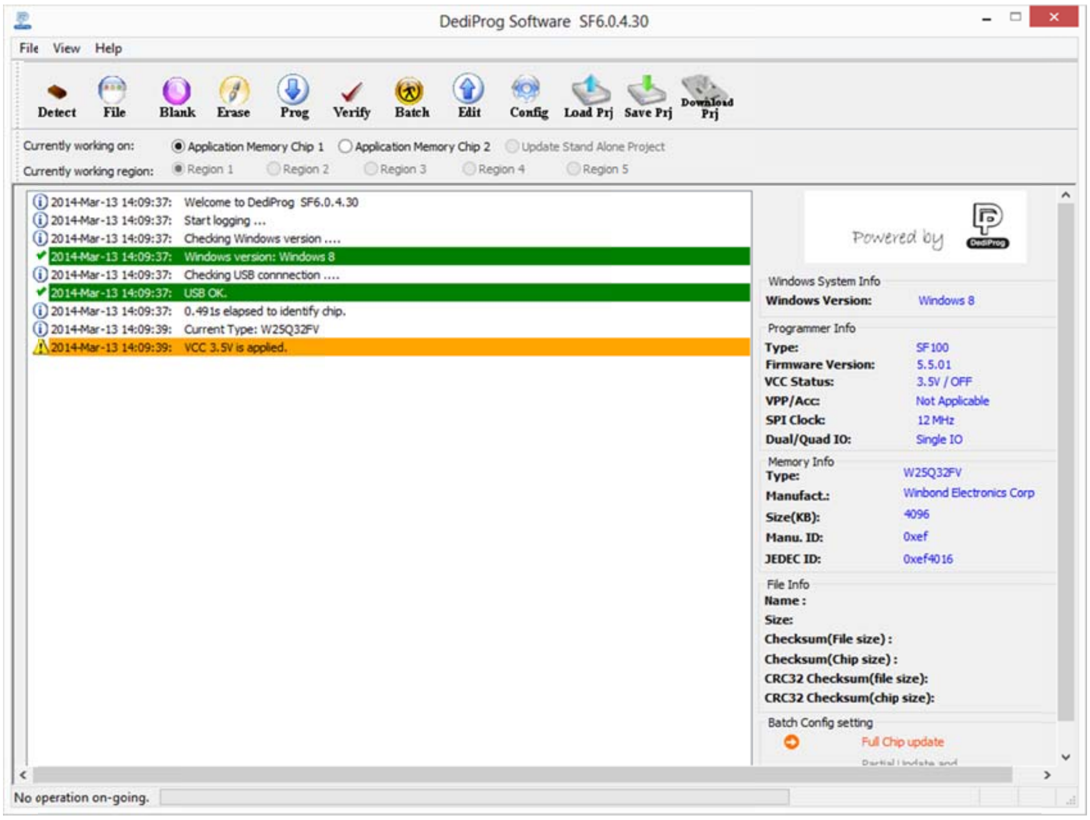
2.1 USB mode

In USB mode, user can control the programmer operations via a friendly interface.

User can load a file, blank check, program and verify the target Serial Flash. Batch button provides an easy way to perform more than one operation in one click.

User can also edit the buffer, files and SPI Flash content and compare.

Fig 4: USB Window interface



Currently working on: ● Application Memory Chip 1 ○ Application Memory Chip 2 ○ Update Stand Alone Project

Currently working region: ● Region 1 ○ Region 2 ○ Region 3 ○ Region 4 ○ Region 5

```
2014-Mar-13 14:09:37:   Welcome to DediProg SF6.0.4.30
2014-Mar-13 14:09:37:   Start logging ...
2014-Mar-13 14:09:37:   Checking Windows version ....
2014-Mar-13 14:09:37:   Windows version: Windows 8
2014-Mar-13 14:09:37:   Checking USB connection ....
2014-Mar-13 14:09:37:   USB OK.
2014-Mar-13 14:09:37:   0.491s elapsed to identify chip.
2014-Mar-13 14:09:39:   Current Type: W25Q32FV
2014-Mar-13 14:09:39:   VCC 3.5V is applied.
```

Windows System Info

Windows Version:	Windows 8

Programmer Info

Type:	SF100
Firmware Version:	5.5.01
VCC Status:	3.5V / OFF
VPP/Acc:	Not Applicable
SPI Clock:	12 MHz
Dual/Quad IO:	Single IO

Memory Info

Type:	W25Q32FV
Manufact.:	Winbond Electronics Corp
Size(KB):	4096
Manu. ID:	0xef
JEDEC ID:	0xef4016

File Info

Name :

Size:

Checksum(File size) :

Checksum(Chip size) :

CRC32 Checksum(file size):

CRC32 Checksum(chip size):

Batch Config setting

Full Chip update

Partial Update and

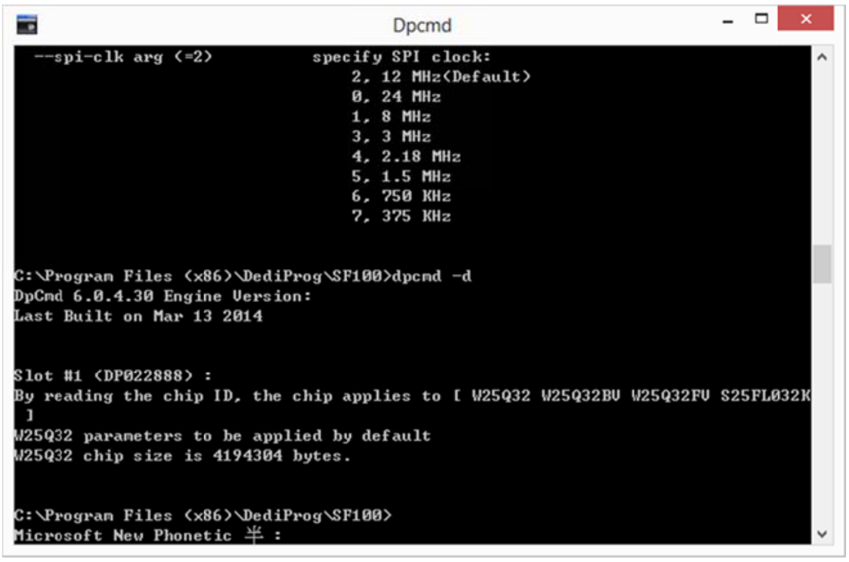
No operation on-going.

To get more information on the software features, please refer to our user manual.

2.2 Command line mode

User can quickly perform some repetitive operations just by typing the command on our Dpcmd interface or control programmer using other software (compiler or ICT tester).

Fig 5: Dpcmd interface



```
  --spi-clk arg (=2)          specify SPI clock:
                                  2, 12 MHz(Default)
                                  0, 24 MHz
                                  1, 8 MHz
                                  3, 3 MHz
                                  4, 2.18 MHz
                                  5, 1.5 MHz
                                  6, 750 KHz
                                  7, 375 KHz


C:\Program Files (x86)\DediProg\SF100>dpcmd -d
DpCmd 6.0.4.30 Engine Version:
Last Built on Mar 13 2014


Slot #1 (DP022888) :
By reading the chip ID, the chip applies to [ W25Q32 W25Q32BV W25Q32FV S25FL032K
 ]
W25Q32 parameters to be applied by default
W25Q32 chip size is 4194304 bytes.


C:\Program Files (x86)\DediProg\SF100>
Microsoft New Phonetic 半 :
```

III. Specification

3.1 USB Connector

The USB connector type A is available to communicate with the computer tool.

USB Power supply specification:

- Vdd = 5V ± 5%
- Idd min = 500mA

3.2 DC and IO characteristics

3.2.1 ICP DC and AC characteristics

The ICP connector is a 7x2 pin header straight type with 2.54mm pitch. It is used to control the application SPI Flash, and if necessary supply the SPI Flash, provide the high voltage to the SPI Flash, or reset the application chipset, etc.

Table 1: SF100 connector Pin out:

1	I/O1	I/O4	**2**
3	I/O2 or CS2	NC	**4**
5	Vcc	GND	**6**
7	CS	CLK	**8**
9	MISO	MOSI	**10**
11	Vpp/Acc	I/O3	**12**
13	SCL	SDA	**14**

Table 2: Description of the signals:

Pin Number	Name of the signals	Description
1,2,3,12	General I/O	General I/O are used to control optional pins of the SPI Flash (hold, WP) or switch the application to a specific mode (reset chipset or switch OFF MOSFET)
3	I/O2	I/O2 can also been used as a second Chip Select (CS2) to update two serial Flashes on the board (option selected from the DediProg software). *
4	NC	Not Connected
5	Vcc	Vcc is used to supply the application SPI Flash
6	GND	GND is the common ground shared between application and programmer
7	CS	SPI chip select of the application SPI Flash
8	CLK	SPI clock signal for the application SPI Flash
9	MISO	Data out from the application memory (master in slave out)
10	MOSI	Data in of the application SPI Flash (master out slave in)
11	Vpp	High voltage applied on the SPI Flash to speed up the programming and erasing operations
13,14	SCL, SDA	I2C bus reserved for future use

* Available on the products with firmware 2.x.x and after

A. Application SPI Flash supply: Vcc

Specification for the ICP Vcc pin:

- Vcc is set at 3.3V by default and can be switched to 2.5V or 1.8V on the hardware version 3 and after (hardware version can be identified with the firmware version V3.xx)
- Icc max supplied = 50mA

The application SPI Flash can be supplied by two different sources:
a) by the programmer via ICP Vcc pin at 3.3V
b) by the application according to the SPI Flash specification

B. SPI signals management: CS, CLK, MISO and MOSI

The SPI signals are used to communicate with the application SPI Flash with a high frequency (24MHZ or 12MHZ according to the firmware). The frequency can be also adjusted on the latest hardware. The signals are CMOS compatible and are switched in High Impedance when not used.

Table 3: DC specification for SPI signals and IO

Symbol	Parameter	Test condition		Value	Unit
		Vcc(V)	Io(mA)		
Vih	High Level Input Voltage	2.7V to 3.6V		2V	V min
		2.3V to 2.7V		1.7V	V min
		1.65V to 1.95V		0.65XVcc	V min
Vil	Low Level Input Voltage	2.7V to 3.6V		0.8V	V max
		2.3V to 2.7V		0.7V	
		1.65V to 1.95V		0.35XVcc	
Ioh	High Level Output current	3V	-24mA		mA
		2.7V	-12mA		mA
		2.3V	-12mA		mA
		1.65V	-4mA		mA
Iol	Low Level Output current	3V	24mA		mA
		2.7V	12mA		mA
		2.3V	12mA		mA
		1.65V	4mA		mA
Cap	Capacitance			10nF	nF typ

This specification is relative to individual capability of one signal.

ESD high performance protection compliant with IEC61000-4-2 level 4:
15kV (air discharge)
8kV (contact discharge)

Remark: the total capacitance added on the application SPI bus will also depend on the ICP cable length. The ICP cable length must be reduced at the minimum. The SPI flash output buffer capability (MISO) is limited compared to the programmer performances. So even if the programmer is able to drive high capacitance, the Serial Flash soldered on the application will probably not (information read from SPI Flash will be wrong).

C. Smart management of the SPI Flash Vcc and SPI signals

In order to minimize the impact of the ICP method on the chipset and application board, the programmer supplies the application Serial Flash with Vcc and SPI signals only during the programmer and Serial Flash operations.

Advantages:

a) The programmer is plugged on the application board with Vcc OFF and SPI signals in High Impedance to avoid inrush current.

b) All the ICP pins are protected with ESD high performance protections to discharge the Electronics charge before the connection and protect the application.

c) The Serial Flash Vcc and SPI signals are provided only when the user send the command and are switched OFF automatically when the operation is completed.

Therefore, the programmer is transparent for the application and can be kept connected during application trials.

D. High voltage supply: Vpp/Acc

Specification for the Vpp pin

Vpp = 8.5V to 12.5V

Ipp max = 50mA

The Vpp high voltage can be supplied by the programmer and used to speed up programming and erasing of the application Serial Flash if this feature is supported by the Serial Flash supplier.

The Vpp supply will be applied automatically by the programmer on the Vpp pin only during erase, write, or programming operations and only if the Vpp option has been enabled on the software. The programmer will also controll the Vpp voltage level according to the Serial Flash connected and its specification.

E. I/O management: I/O1, I/O2, I/O3, I/O4

Four general outputs are available on the ICP connector for custom needs. The IOs are in HZ state if there is no software operation ongoing even if the power is connected. The IOs are driven high or low when the software is running command.

I/O4, I/O2 = driven High
I/O1, I/O3 = driven Low

These outputs can be useful to drive Wp, Hold, reset the application chipset, or switch Off the MOSFET transistors in the application board. They are CMOS compatible and are switched in High Impedance when the software is not executing commands.

The **I/O2** can also be used as a **second Chip Select** to update a second SPI Flash soldered on the board. In this case, I/O2 have to be connected to the application CS2 and the option “Chip 2” has to be selected in the DediProg software.

For the DC characteristics please refer to table 3.

ESD high performance protection compliant with IEC61000-4-2 level 4:

15kV (air discharge)

8kV(contact discharge)

3.2.2 ICP timing

The IO has been designed to set the application in external programming mode before applying the SPI signal. They can be used to reset the chipset and application, to drive multiplexers and switch SPI bus from application controller to programmer, to turn off MOSFET and isolate the SPI bus when programmer is working.

This is the behavior of the IO and SPI signals on our latest firmware.

A. If No programmer operation is on going

All our SF100 outputs are equivalent to high impedance.

B. When an operation is requested on the user interface

- I/O1, I/O2, I/O3 and I/O4 are first switched in Low impedance
- I/O1 and I/O3 are driven low
- I/O2 and I/O4 are driven high

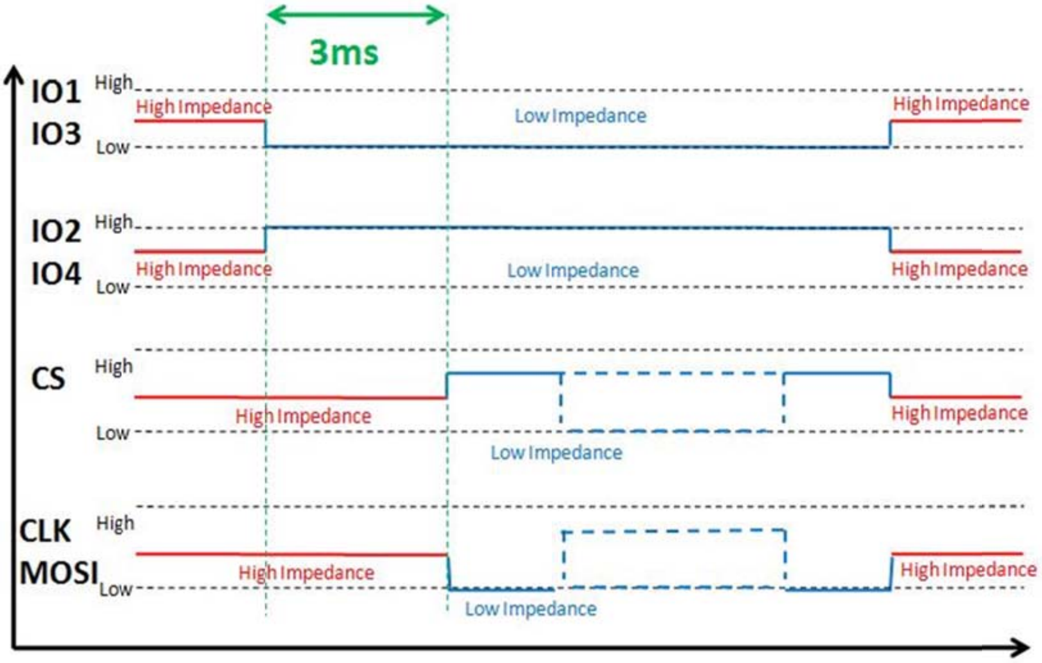
C. 3ms after IO are switched to Low Impedance, the CS, Clock and MOSI outputs are switched in low impedance too.CS1 and CS2 are driven high

- CS is driven high
- Clock and MOSI are driven low.

D. The programmer is then ready for the communication with the Serial Flash.

So designer can use I/O3 to reset or switch the application in external programming mode. Application will have a delay of 3ms between I/O3 is driven low and Programmer SPI outputs are switched from High Impedance to Low Impedance. SPI communication starts 6ms after I/O3 has been driven low.

Fig 6: IO and SPI timing



3.2.3 Host PC requirements

The SF100 interface with IBM compatible PC's through the USB 2.0/1.1 port. This gives full compatibility with the latest PC's, notebooks and portables.

System Requirements:

- PC with Windows XP / Vista / 7 / 8 / 8.1
- Hard disk with at least 64 MB free space.

System Interface:

- PC connexion …………………..………..……………….USB 2.0/1.1 port

IV. Programming Performance

Table 4: Programming and verify in USB mode

SPI Flash Densities	8 Mbit	16 Mbit	32 Mbit	64 Mbit	128 Mbit	256 Mbit	512Mbit	1Gbit
Program+ Verify	11s	15s	20.5s	48.5s	94s	157s	297s	717s
Reference IC	W25X80V SSIG	W25Q16VS SIG	W25Q32FVS SIG	W25Q64CV SSIG	W25Q128B VFIG	W25Q256FV FG	S25FL512S AIF01	N25Q00AA 13GSF40

Note 1: The measurements are done with SF100 with firmware 5.5.01 and software version of 6.0.4.28. The tested memories are from a single serial flash manufacturer.

Note 2: new hardware versions with firmware 3.x.x allow Vpp/Acc high speed programming if the chip supports it. The programming performance will be better if applying Vpp/Acc during the programming or erasing for chips supporting such feature.

V. Revision History

Date	Version	Changes
17/05/10	V1.0	1. SF100 and SF200 updated with 3 LED and Start button. 2. System requirements updated.
03/13/14	V2.0	1. Remove SF200/SF300. 2. Software interface updated.

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DediProg SF Software User Manual

Version 6.9

Table of Content

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I. Introduction

This user manual illustrates the usage of DediProg SF Software. The device connected when using this software can be used together with SF100, SF600, SF60*Plus* and Backup Boot Flash kit. Get more information for DediProg products and how to use them.

II. Software Installation Guide

Please refer to our products specification, presentation and application notes on our website: www.dediprog.com

2.1 Operating System Requirement

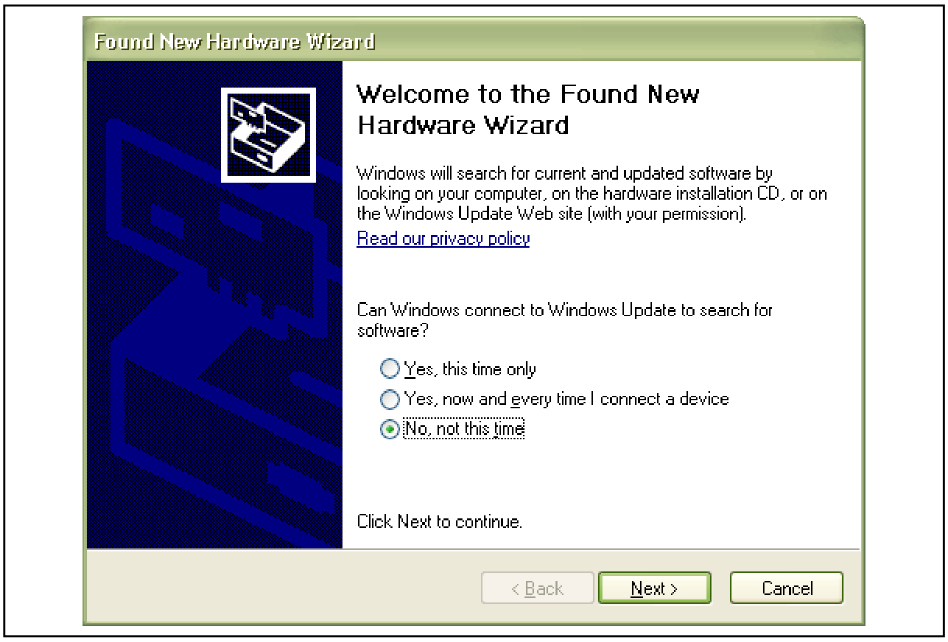
Windows 8.1
Windows 8
Windows 7
Windows Server® 2008
Windows Vista®
Support both 32 bit and 64bit OS

2.2 USB Installation

2.2.1 Insert the installation CD or download the installation software from www.dediprog.com/download

2.2.2 Execute SFx.x.x.msi file and click next until the installation is finished.

2.2.3 After step 2, connect your computer and DediProg programmer via USB port, A Hardware wizard will show up as follow.



Found New Hardware Wizard

Welcome to the Found New Hardware Wizard

Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).

Read our privacy policy

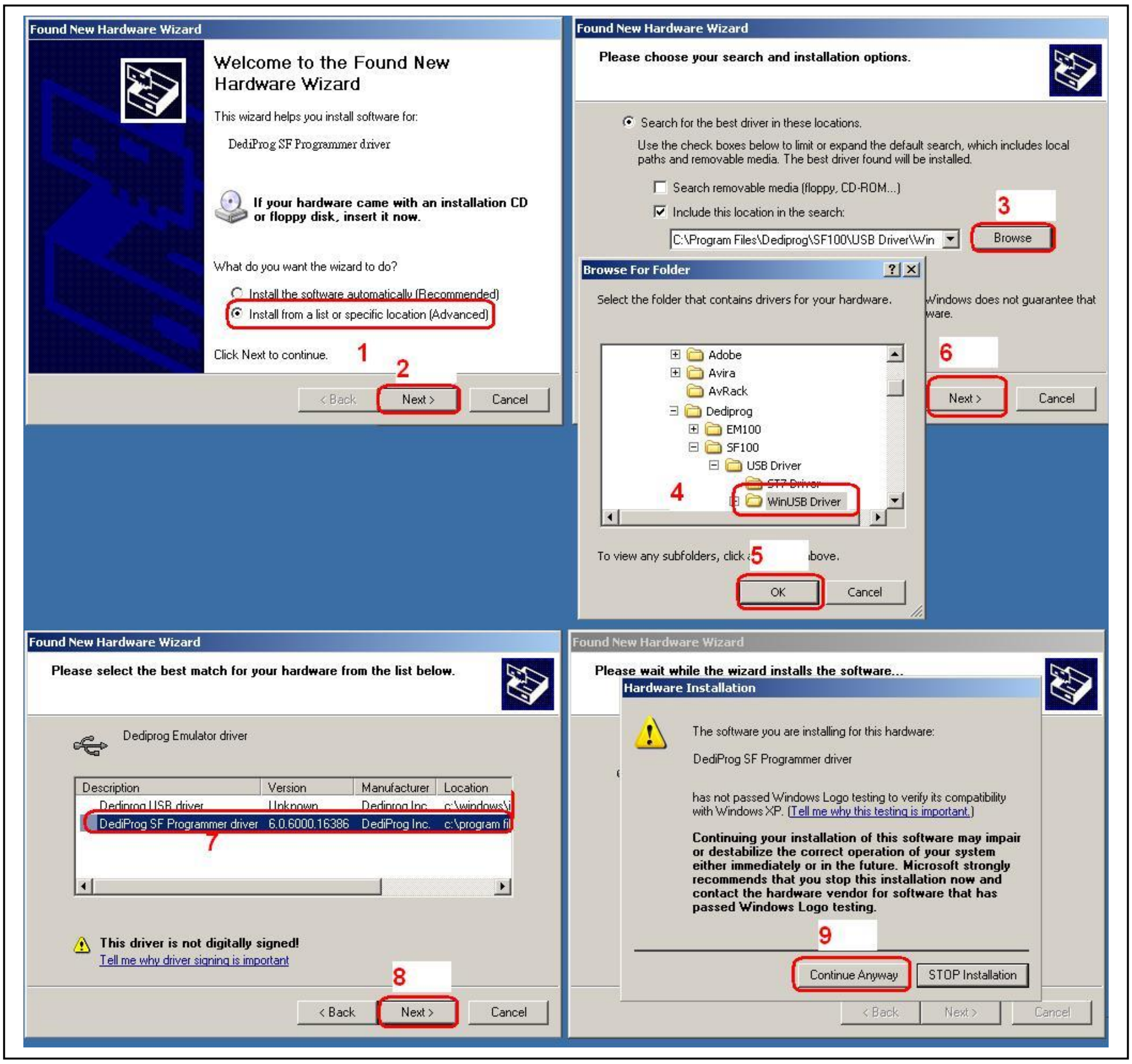
Can Windows connect to Windows Update to search for software?

○ Yes, this time only
○ Yes, now and every time I connect a device
● No, not this time

Click Next to continue.

Follow the steps showed in the snap shots below to complete the installation.

A. Win XP operation system:



Found New Hardware Wizard

Welcome to the Found New Hardware Wizard

This wizard helps you install software for:

DediProg SF Programmer driver

If your hardware came with an installation CD or floppy disk, insert it now.

What do you want the wizard to do?

○ Install the software automatically (Recommended)

● Install from a list or specific location (Advanced)

Click Next to continue. 1

2 < Back | Next > | Cancel

Found New Hardware Wizard

Please choose your search and installation options.

● Search for the best driver in these locations.

Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.

☐ Search removable media (floppy, CD-ROM...)

☑ Include this location in the search:

C:\Program Files\Dediprog\SF100\USB Driver\Win

3 Browse

...Windows does not guarantee that ...ware.

6 Next > | Cancel

Browse For Folder

Select the folder that contains drivers for your hardware.

Adobe
Avira
AvRack
Dediprog
EM100
SF100
USB Driver
ST7 Driver
WinUSB Driver

4

To view any subfolders, click 5 above.

OK | Cancel

Found New Hardware Wizard

Please select the best match for your hardware from the list below.

Dediprog Emulator driver

Description	Version	Manufacturer	Location
Dediprog USB driver	Unknown	Dediprog Inc.	c:\windows\i
DediProg SF Programmer driver	6.0.6000.16386	DediProg Inc.	c:\program fi

7

This driver is not digitally signed!

Tell me why driver signing is important

8 < Back | Next > | Cancel

Found New Hardware Wizard

Please wait while the wizard installs the software...

Hardware Installation

The software you are installing for this hardware:

DediProg SF Programmer driver

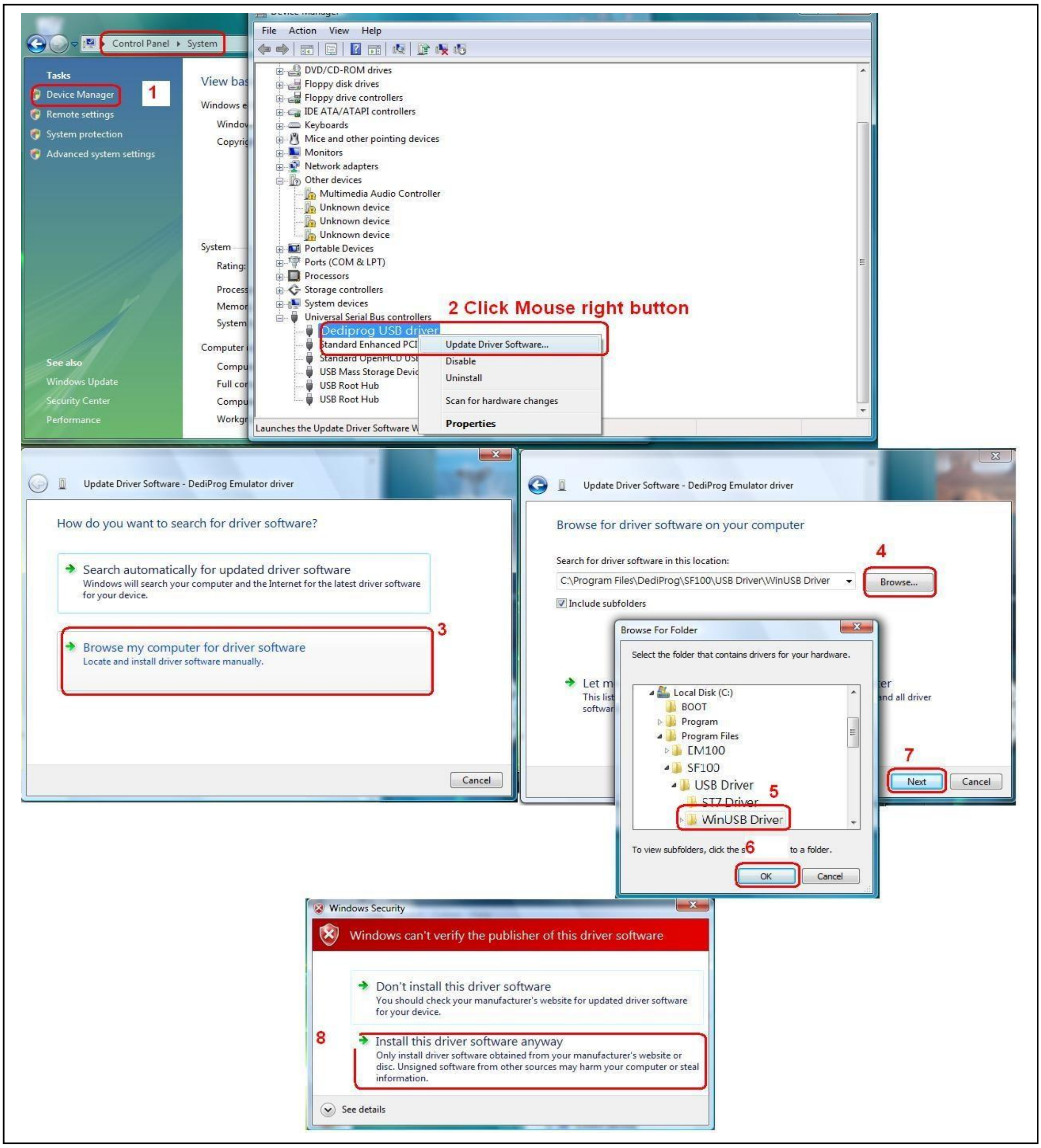
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)

Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.

9 Continue Anyway | STOP Installation

< Back | Next > | Cancel

B. Win Vista & 7 Operation Systems:



Update Driver Software - DediProg Emulator driver

How do you want to search for driver software?

Search automatically for updated driver software
Windows will search your computer and the Internet for the latest driver software for your device.

Browse my computer for driver software
Locate and install driver software manually.

Browse for driver software on your computer

Search for driver software in this location:
C:\Program Files\DediProg\SF100\USB Driver\WinUSB Driver

☑ Include subfolders

Select the folder that contains drivers for your hardware.

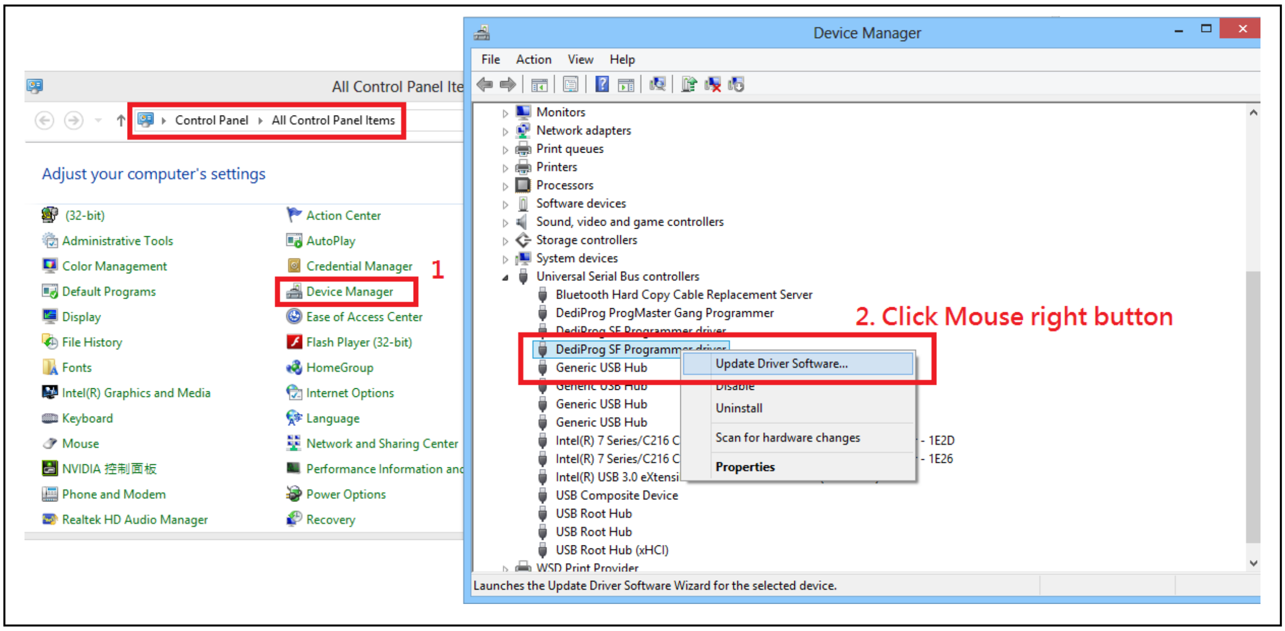
To view subfolders, click the symbol next to a folder.

Windows can't verify the publisher of this driver software

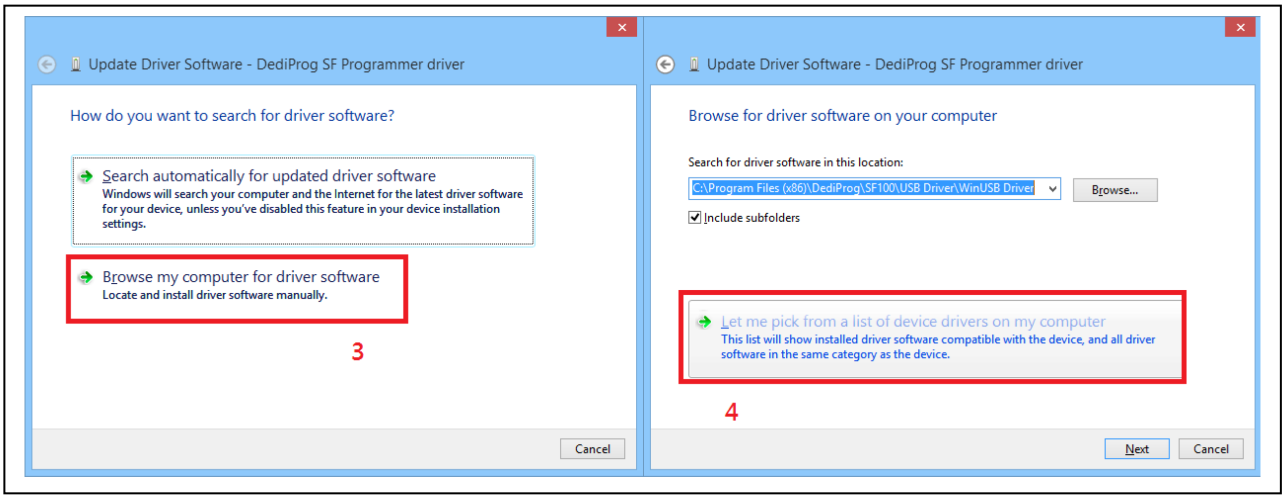
Don't install this driver software
You should check your manufacturer's website for updated driver software for your device.

Install this driver software anyway
Only install driver software obtained from your manufacturer's website or disc. Unsigned software from other sources may harm your computer or steal information.

C. Win 8 & Win 8.1 Operation Systems:



Launches the Update Driver Software Wizard for the selected device.



How do you want to search for driver software?

Search automatically for updated driver software
Windows will search your computer and the Internet for the latest driver software for your device, unless you've disabled this feature in your device installation settings.

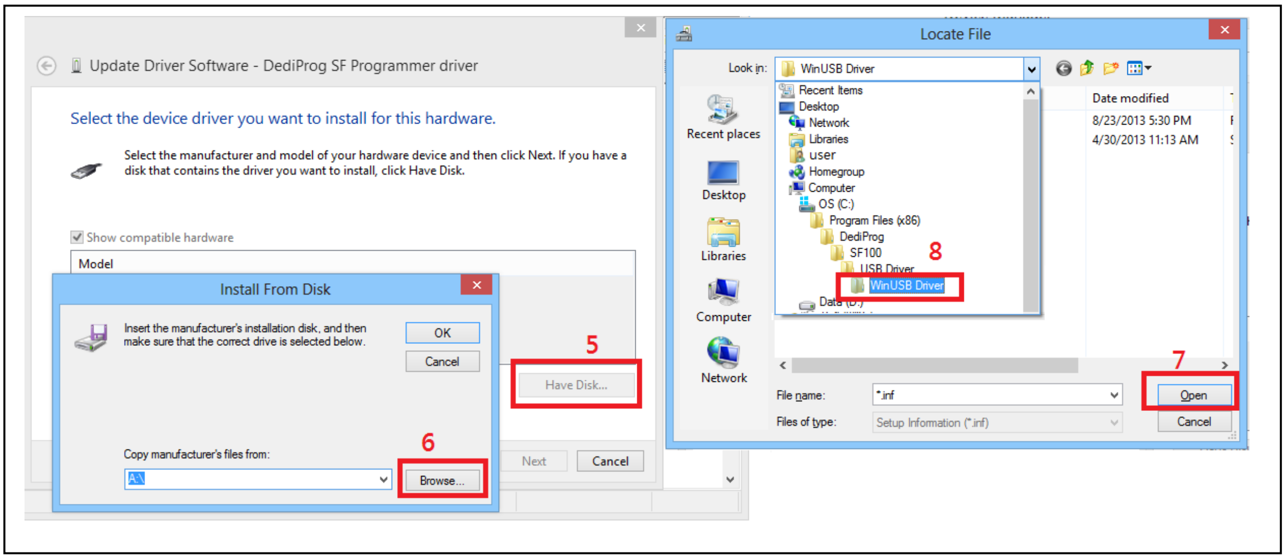
Browse my computer for driver software
Locate and install driver software manually.

Browse for driver software on your computer

Search for driver software in this location:
C:\Program Files (x86)\DediProg\SF100\USB Driver\WinUSB Driver

☑ Include subfolders

Let me pick from a list of device drivers on my computer
This list will show installed driver software compatible with the device, and all driver software in the same category as the device.



Select the device driver you want to install for this hardware.

Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.

☑ Show compatible hardware

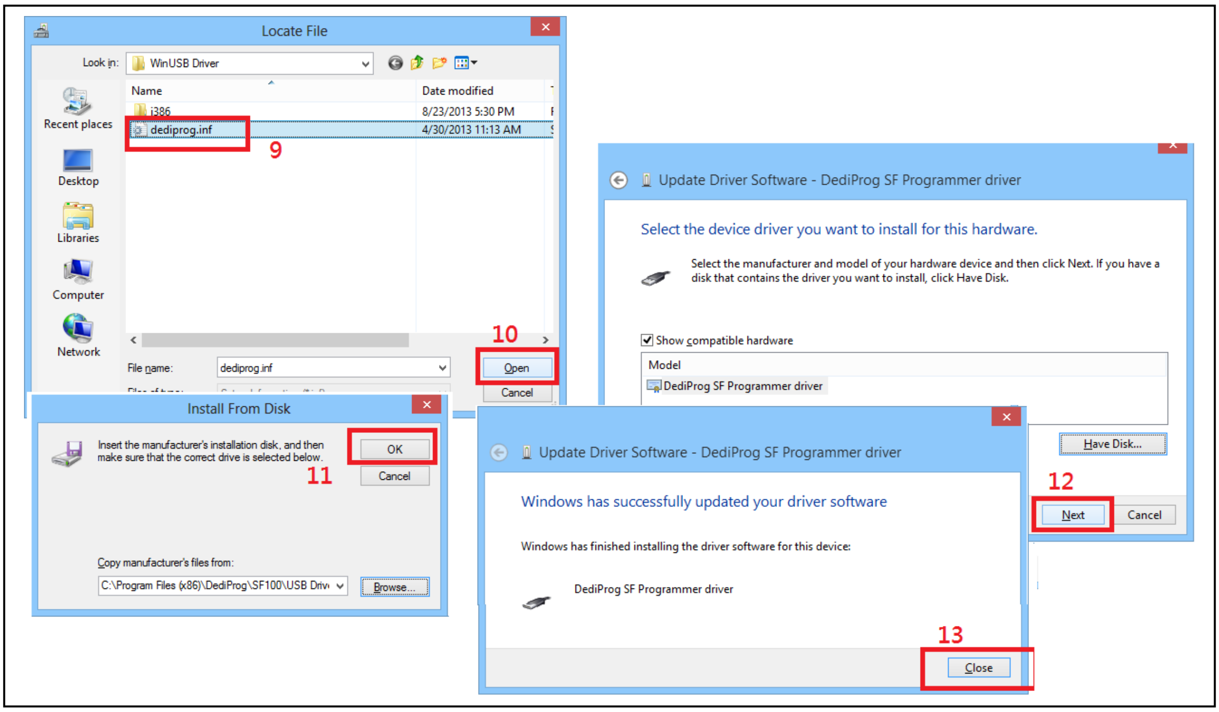
Insert the manufacturer's installation disk, and then make sure that the correct drive is selected below.

Copy manufacturer's files from: A:\

Look in: WinUSB Driver

File name: *.inf

Files of type: Setup Information (*.inf)



Name	Date modified
i386	8/23/2013 5:30 PM
dediprog.inf	4/30/2013 11:13 AM

File name: dediprog.inf

Insert the manufacturer's installation disk, and then make sure that the correct drive is selected below.

Copy manufacturer's files from: C:\Program Files (x86)\DediProg\SF100\USB Driv

Update Driver Software - DediProg SF Programmer driver

Select the device driver you want to install for this hardware.

Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.

☑ Show compatible hardware

Model: DediProg SF Programmer driver

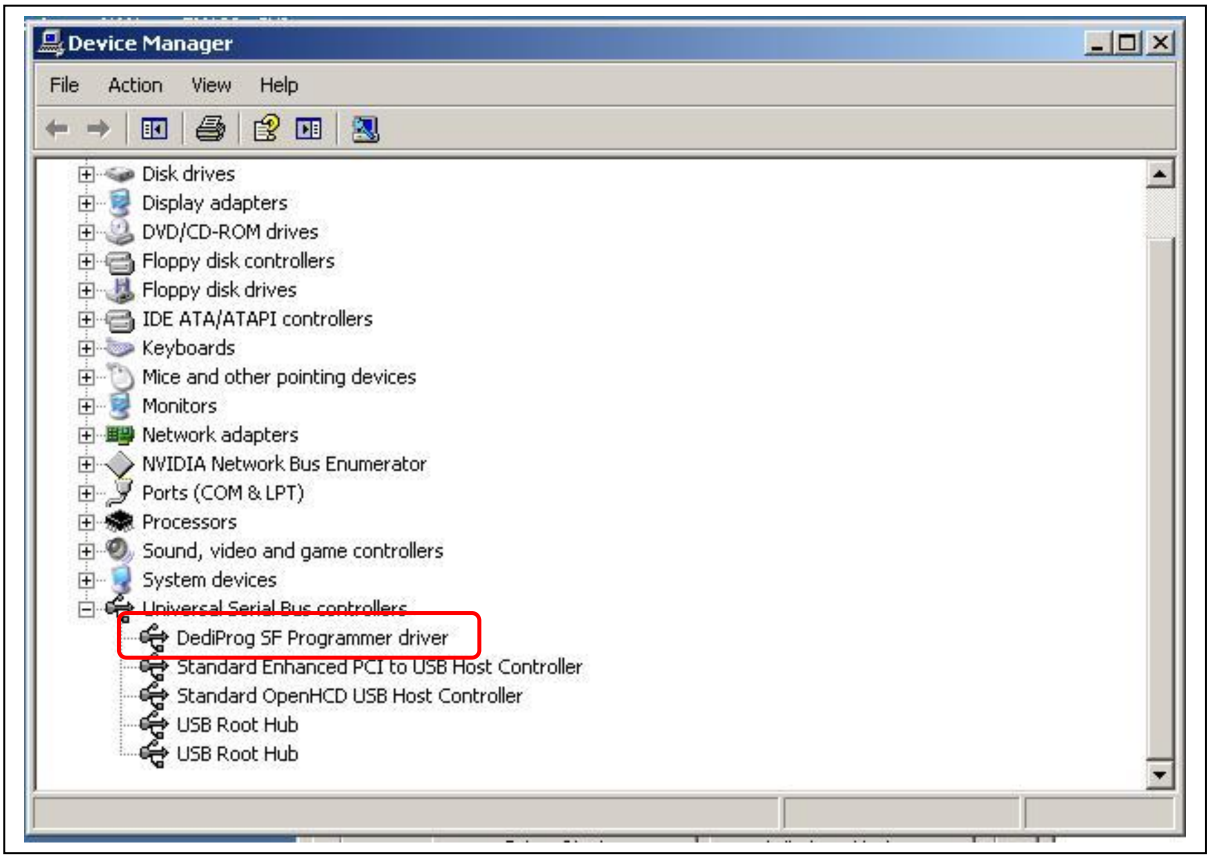
Update Driver Software - DediProg SF Programmer driver

Windows has successfully updated your driver software

Windows has finished installing the driver software for this device:

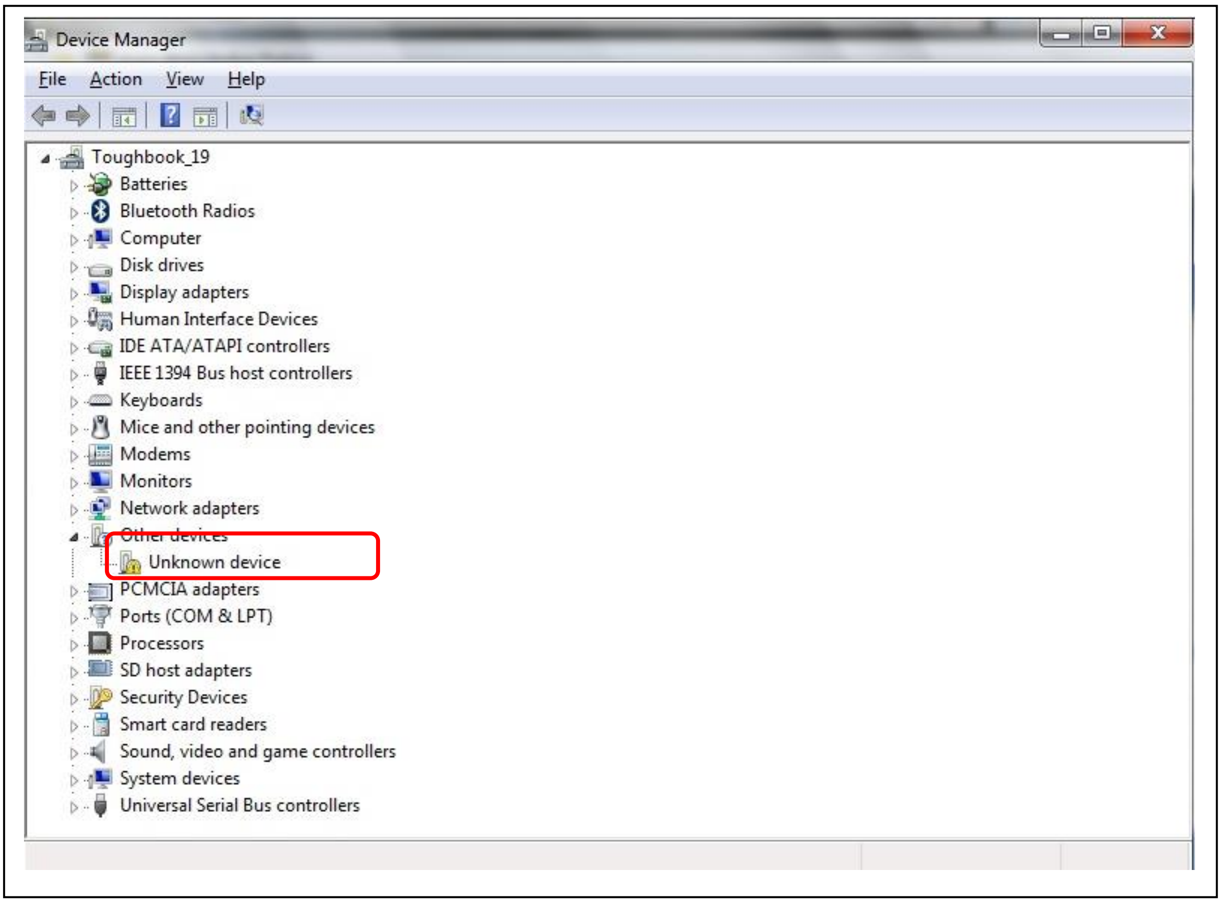
DediProg SF Programmer driver

If the USB driver is installed properly, users can find “DediProg SF Programmer driver” under device manager when the programmer is plugged into the PC.



- Disk drives
- Display adapters
- DVD/CD-ROM drives
- Floppy disk controllers
- Floppy disk drives
- IDE ATA/ATAPI controllers
- Keyboards
- Mice and other pointing devices
- Monitors
- Network adapters
- NVIDIA Network Bus Enumerator
- Ports (COM & LPT)
- Processors
- Sound, video and game controllers
- System devices
- Universal Serial Bus controllers
  - DediProg SF Programmer driver
  - Standard Enhanced PCI to USB Host Controller
  - Standard OpenHCD USB Host Controller
  - USB Root Hub
  - USB Root Hub

If no, please check "Other devices". After selecting and installing, it will show up correctly under USB controllers.



III. DediProg SF Software Engineering GUI

DediProg SF software is suited for SF100, SF600, SF600*Plus* and Backup Boot Flash Kit. The software only can be used to program serial flash memory as well as the downloading configuration contents to the reference SPI Flash embedded memory in SF600*Plus* for stand alone programming purpose. After the software and USB driver installed, please follow the steps as below before running the software.

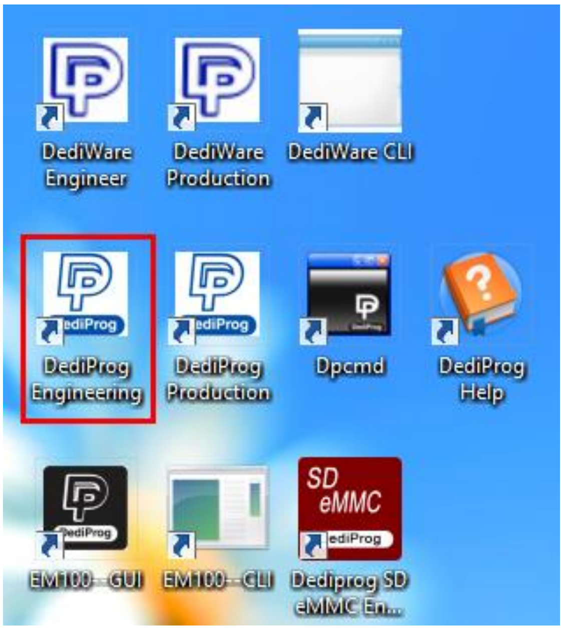
After the software installation, there will be four software icons on your desktop. Icon "DediProg Engineering" is for the engineering GUI, Icon "DediProg Production" is for the production GUI, Icon "DPCMD" is for the command line interface and icon "DediProg Help" can show the user manual.

3.1 Prepare the Environment

3.1.1 Connect the programmer to the PC through a USB cable.

- For ICP programming, connect the ICP cable to the application (please check the specification in case ISP header pin out are not known).
- For socket and stand alone programming, connect the appropriate socket adaptor to the programmer and insert a serial flash in the socket.

3.1.2 Double click the DediProg software icon on your desktop.



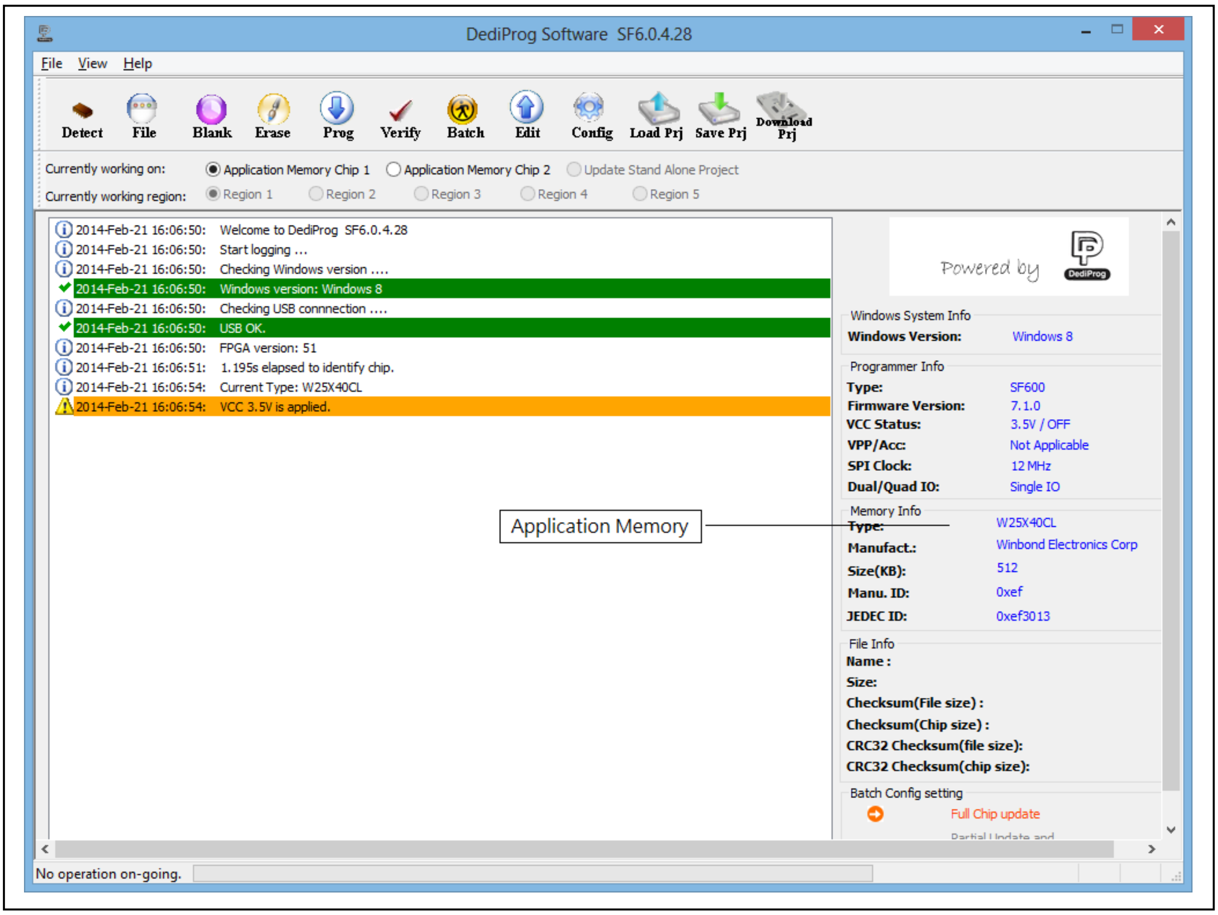
3.2 Identify the Target SPI Flash

SPI Flash Detection

Double Click the DediProg software icon on your PC desktop. The detected Serial Flash information as well as the programmer information will be displayed on the right side of the window.

DediProg software will automatically identify the SPI Flash on the application board or socket. User does not need to select SPI Flash’ s location.

Note: If user wants to work on the second target SPI Flash soldered on the application board, the application board has to be designed with proper schematic and the pin outs have to match with DediProg ISP pin outs.



Currently working on: ● Application Memory Chip 1 ○ Application Memory Chip 2 ○ Update Stand Alone Project

Currently working region: ● Region 1 ○ Region 2 ○ Region 3 ○ Region 4 ○ Region 5

```
2014-Feb-21 16:06:50:   Welcome to DediProg SF6.0.4.28
2014-Feb-21 16:06:50:   Start logging ...
2014-Feb-21 16:06:50:   Checking Windows version ....
2014-Feb-21 16:06:50:   Windows version: Windows 8
2014-Feb-21 16:06:50:   Checking USB connnection ....
2014-Feb-21 16:06:50:   USB OK.
2014-Feb-21 16:06:50:   FPGA version: 51
2014-Feb-21 16:06:51:   1.195s elapsed to identify chip.
2014-Feb-21 16:06:54:   Current Type: W25X40CL
2014-Feb-21 16:06:54:   VCC 3.5V is applied.
```

Windows System Info

Windows Version: Windows 8

Programmer Info

Type: SF600
Firmware Version: 7.1.0
VCC Status: 3.5V / OFF
VPP/Acc: Not Applicable
SPI Clock: 12 MHz
Dual/Quad IO: Single IO

Memory Info

Type: W25X40CL
Manufact.: Winbond Electronics Corp
Size(KB): 512
Manu. ID: 0xef
JEDEC ID: 0xef3013

File Info

Name :
Size:
Checksum(File size) :
Checksum(Chip size) :
CRC32 Checksum(file size):
CRC32 Checksum(chip size):

Batch Config setting

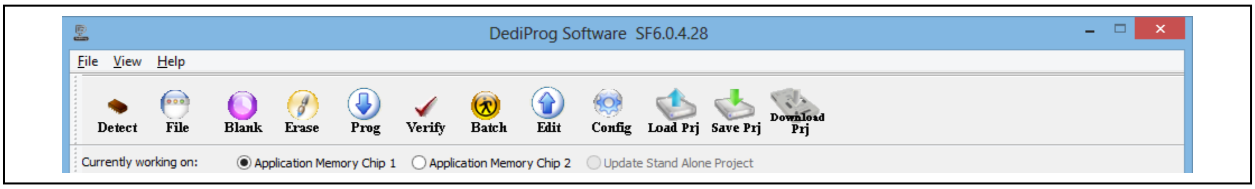
Full Chip update

Partial Update and

No operation on-going.

3.3 Tool Bar Description

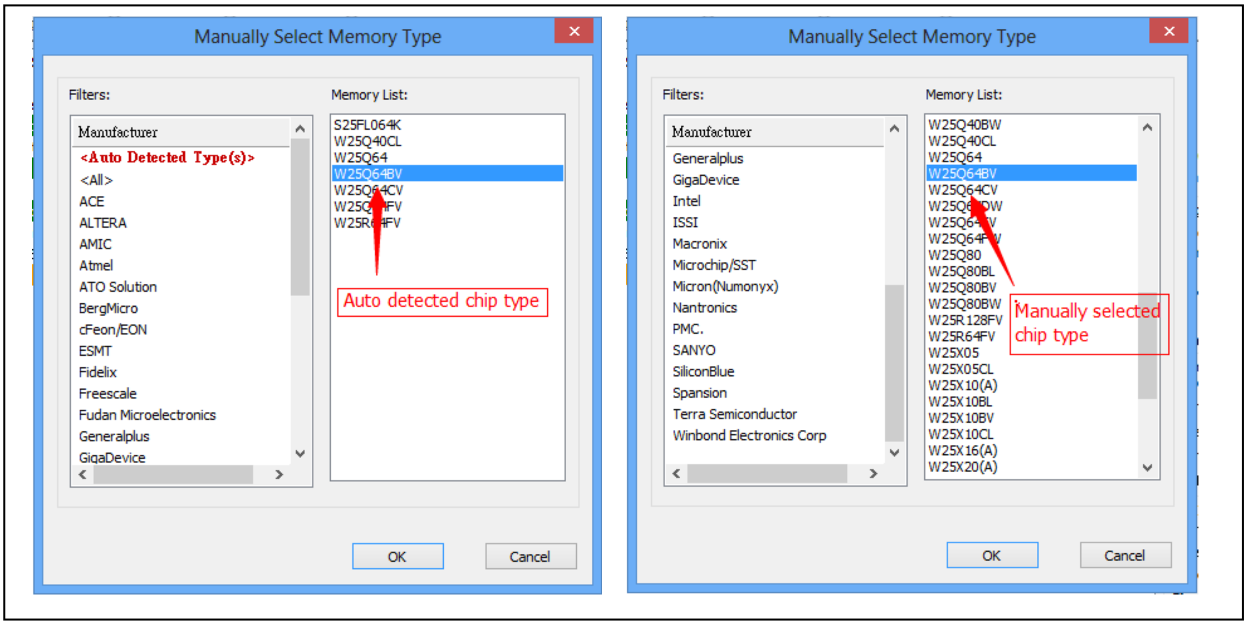
The tool bar provides all SPI Flash operations.



Currently working on: ● Application Memory Chip 1 ○ Application Memory Chip 2 ○ Update Stand Alone Project

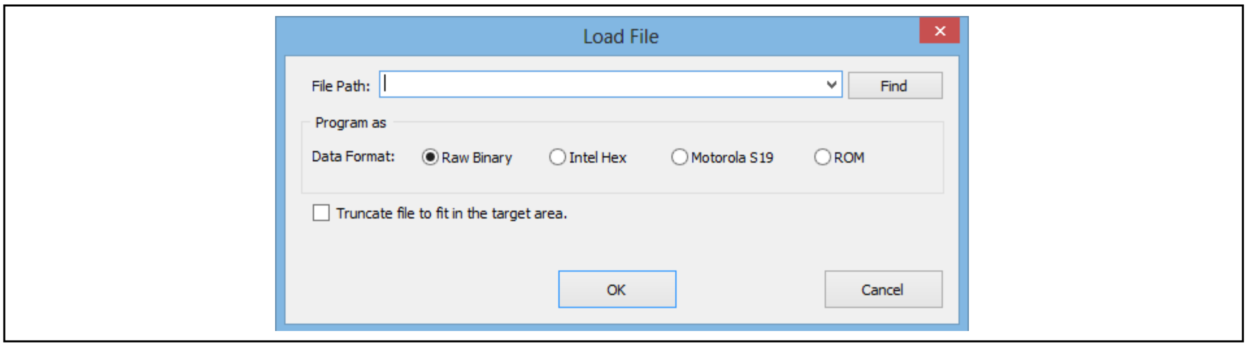
Detect

Detect Chip: when a new SPI Flash is placed, user has to click on this button to identify it and perform operations. The auto detected chip types will be displayed on the right side of the screen. In case user would like to manually select a chip type, he/she can move the mouse over the chip manufacturer on the left screen and then click on the chip type on the right screen.



File

Select image: load the file you intend to program. The loaded file size cannot be larger the application SPI Flash size.



File Path:

Data Format: ● Raw Binary ○ Intel Hex ○ Motorola S19 ○ ROM

□ Truncate file to fit in the target area.

Blank
Blank check: check if the target serial flash is Blank (All Erased)

Erase
Erase SPI Flash: Erase the full content in a Serial Flash. After "Erase" the target serial flash shall be blank.

Prog
Program: Program the selected image into the Serial Flash

Verify
Verify the checksum value of the selected image and the programmed Serial Flash content

Batch
Batch operation: The programmer will perform a pre-configured set of operations such as (reload file + erase + program + verify) all together in one click. The configuration can be set by clicking on the "Config" button. The configuration will not be changed until it is re-configured.
Press start button can do batch function when user run the SF software.

Edit
When click on Edit, the programmer will by default display the selected file content. User can click on "read" to read and display the chip contents. See "Edit window description" for more details.
Config
This allows users to configure advanced settings. See "advanced settings window description" for more details

Load Prj
Load the existed project to execute the programming operation.

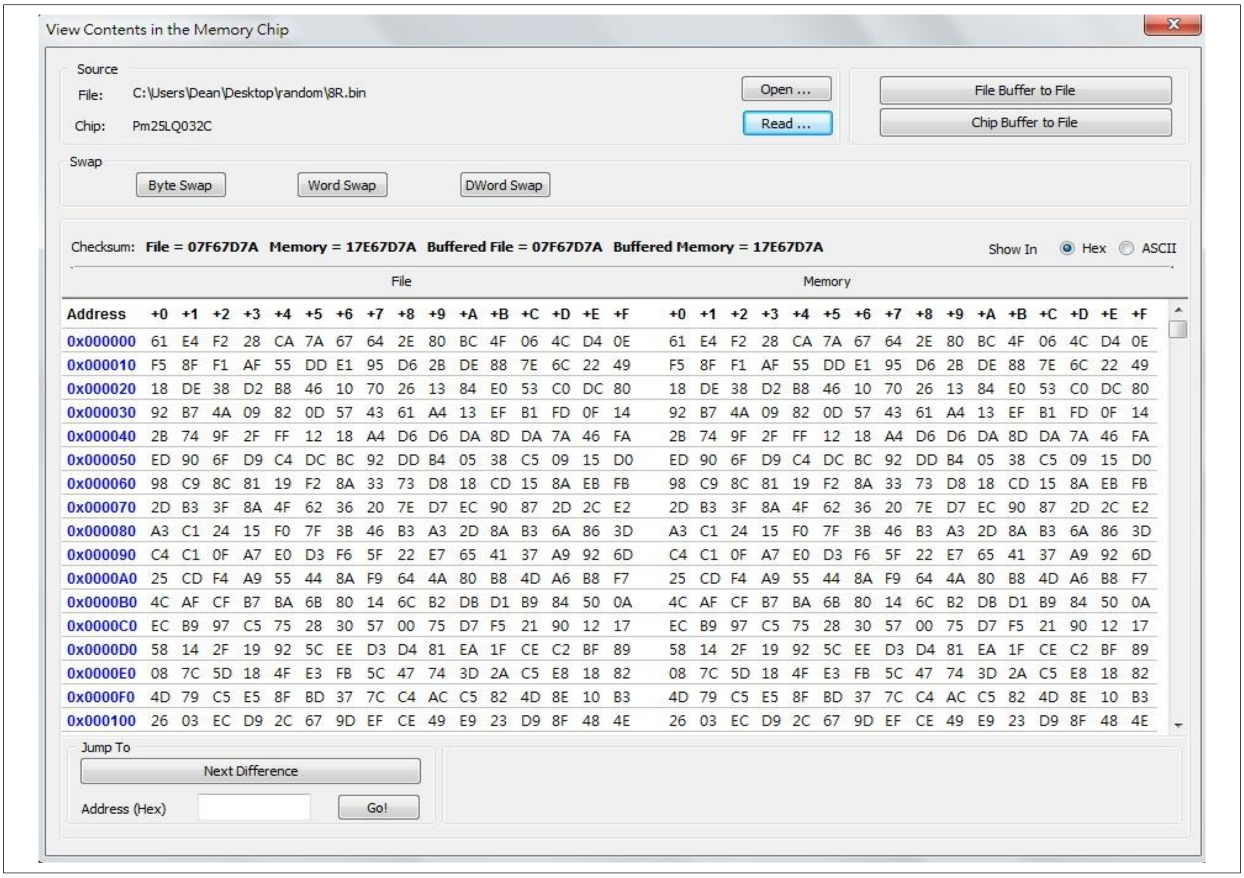
Save Prj
Save all programming settings to a project file for reducing re-setting action.

Download Prj
SF600*Plus* only, please refer to Chapter 7- **VII. Stand Alone Mode (SF600*Plus* only).**

3.4 Edit Window Description

SPI Flash content display:
In the edit window, file contents and chip contents can be displayed in the same time so that user can make the comparison. By default the selected file contents are displayed once the user enters into the edit window.

The user can click on “Open” if another file contents are to be shown. The user can click on “Read” in order to read the chip contents are display them on the edit window as well. Checksum of file contents and chip contents are displayed.



Source
File: C:\Users\Dean\Desktop\random\8R.bin
Chip: Pm25LQ032C

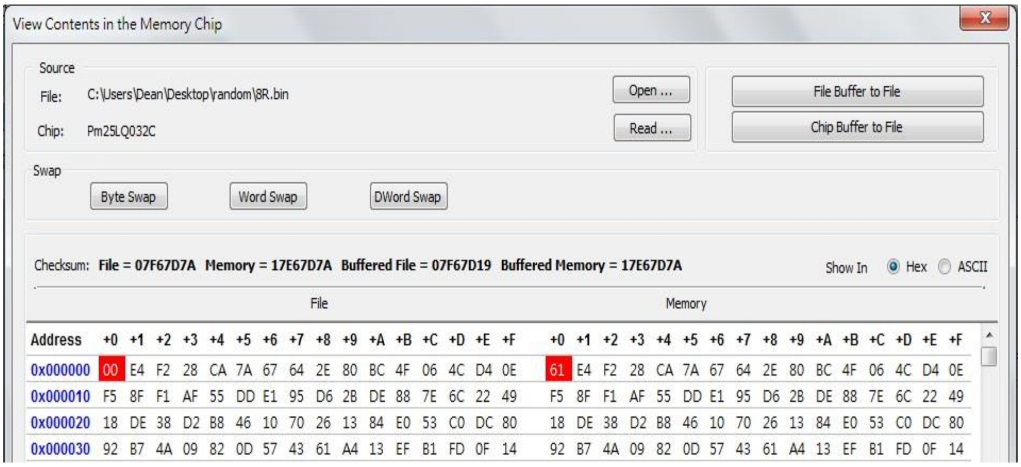
Checksum: **File = 07F67D7A Memory = 17E67D7A Buffered File = 07F67D7A Buffered Memory = 17E67D7A**

Show In ● Hex ○ ASCII

Address (Hex):

```
                                       File                                                           Memory
Address   +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +A +B +C +D +E +F    +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +A +B +C +D +E +F
0x000000  61 E4 F2 28 CA 7A 67 64 2E 80 BC 4F 06 4C D4 0E    61 E4 F2 28 CA 7A 67 64 2E 80 BC 4F 06 4C D4 0E
0x000010  F5 8F F1 AF 55 DD E1 95 D6 2B DE 88 7E 6C 22 49    F5 8F F1 AF 55 DD E1 95 D6 2B DE 88 7E 6C 22 49
0x000020  18 DE 38 D2 B8 46 10 70 26 13 84 E0 53 C0 DC 80    18 DE 38 D2 B8 46 10 70 26 13 84 E0 53 C0 DC 80
0x000030  92 B7 4A 09 82 0D 57 43 61 A4 13 EF B1 FD 0F 14    92 B7 4A 09 82 0D 57 43 61 A4 13 EF B1 FD 0F 14
0x000040  2B 74 9F 2F FF 12 18 A4 D6 D6 DA 8D DA 7A 46 FA    2B 74 9F 2F FF 12 18 A4 D6 D6 DA 8D DA 7A 46 FA
0x000050  ED 90 6F D9 C4 DC BC 92 DD B4 05 38 C5 09 15 D0    ED 90 6F D9 C4 DC BC 92 DD B4 05 38 C5 09 15 D0
0x000060  98 C9 8C 81 19 F2 8A 33 73 D8 18 CD 15 8A EB FB    98 C9 8C 81 19 F2 8A 33 73 D8 18 CD 15 8A EB FB
0x000070  2D B3 3F 8A 4F 62 36 20 7E D7 EC 90 87 2D 2C E2    2D B3 3F 8A 4F 62 36 20 7E D7 EC 90 87 2D 2C E2
0x000080  A3 C1 24 15 F0 7F 3B 46 B3 A3 2D 8A B3 6A 86 3D    A3 C1 24 15 F0 7F 3B 46 B3 A3 2D 8A B3 6A 86 3D
0x000090  C4 C1 0F A7 E0 D3 F6 5F 22 E7 65 41 37 A9 92 6D    C4 C1 0F A7 E0 D3 F6 5F 22 E7 65 41 37 A9 92 6D
0x0000A0  25 CD F4 A9 55 44 8A F9 64 4A 80 B8 4D A6 B8 F7    25 CD F4 A9 55 44 8A F9 64 4A 80 B8 4D A6 B8 F7
0x0000B0  4C AF CF B7 BA 6B 80 14 6C B2 DB D1 B9 84 50 0A    4C AF CF B7 BA 6B 80 14 6C B2 DB D1 B9 84 50 0A
0x0000C0  EC B9 97 C5 75 28 30 57 00 75 D7 F5 21 90 12 17    EC B9 97 C5 75 28 30 57 00 75 D7 F5 21 90 12 17
0x0000D0  58 14 2F 19 92 5C EE D3 D4 81 EA 1F CE C2 BF 89    58 14 2F 19 92 5C EE D3 D4 81 EA 1F CE C2 BF 89
0x0000E0  08 7C 5D 18 4F E3 FB 5C 47 74 3D 2A C5 E8 18 82    08 7C 5D 18 4F E3 FB 5C 47 74 3D 2A C5 E8 18 82
0x0000F0  4D 79 C5 E5 8F BD 37 7C C4 AC C5 82 4D 8E 10 B3    4D 79 C5 E5 8F BD 37 7C C4 AC C5 82 4D 8E 10 B3
0x000100  26 03 EC D9 2C 67 9D EF CE 49 E9 23 D9 8F 48 4E    26 03 EC D9 2C 67 9D EF CE 49 E9 23 D9 8F 48 4E
```

The difference between file contents and chip contents are highlighted with the “Red Fonts”. User can click on the “next difference” button to search for the next different content between the chip and the file contents.



File: C:\Users\Dean\Desktop\random\8R.bin

Chip: Pm25LQ032C

Checksum: File = 07F67D7A Memory = 17E67D7A Buffered File = 07F67D19 Buffered Memory = 17E67D7A

```
Address   +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +A +B +C +D +E +F   +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +A +B +C +D +E +F
0x000000  00 E4 F2 28 CA 7A 67 64 2E 80 BC 4F 06 4C D4 0E   61 E4 F2 28 CA 7A 67 64 2E 80 BC 4F 06 4C D4 0E
0x000010  F5 8F F1 AF 55 DD E1 95 D6 2B DE 88 7E 6C 22 49   F5 8F F1 AF 55 DD E1 95 D6 2B DE 88 7E 6C 22 49
0x000020  18 DE 38 D2 B8 46 10 70 26 13 84 E0 53 C0 DC 80   18 DE 38 D2 B8 46 10 70 26 13 84 E0 53 C0 DC 80
0x000030  92 B7 4A 09 82 0D 57 43 61 A4 13 EF B1 FD 0F 14   92 B7 4A 09 82 0D 57 43 61 A4 13 EF B1 FD 0F 14
```

Chip buffer to file

This will save the chip contents into a user named binary file.

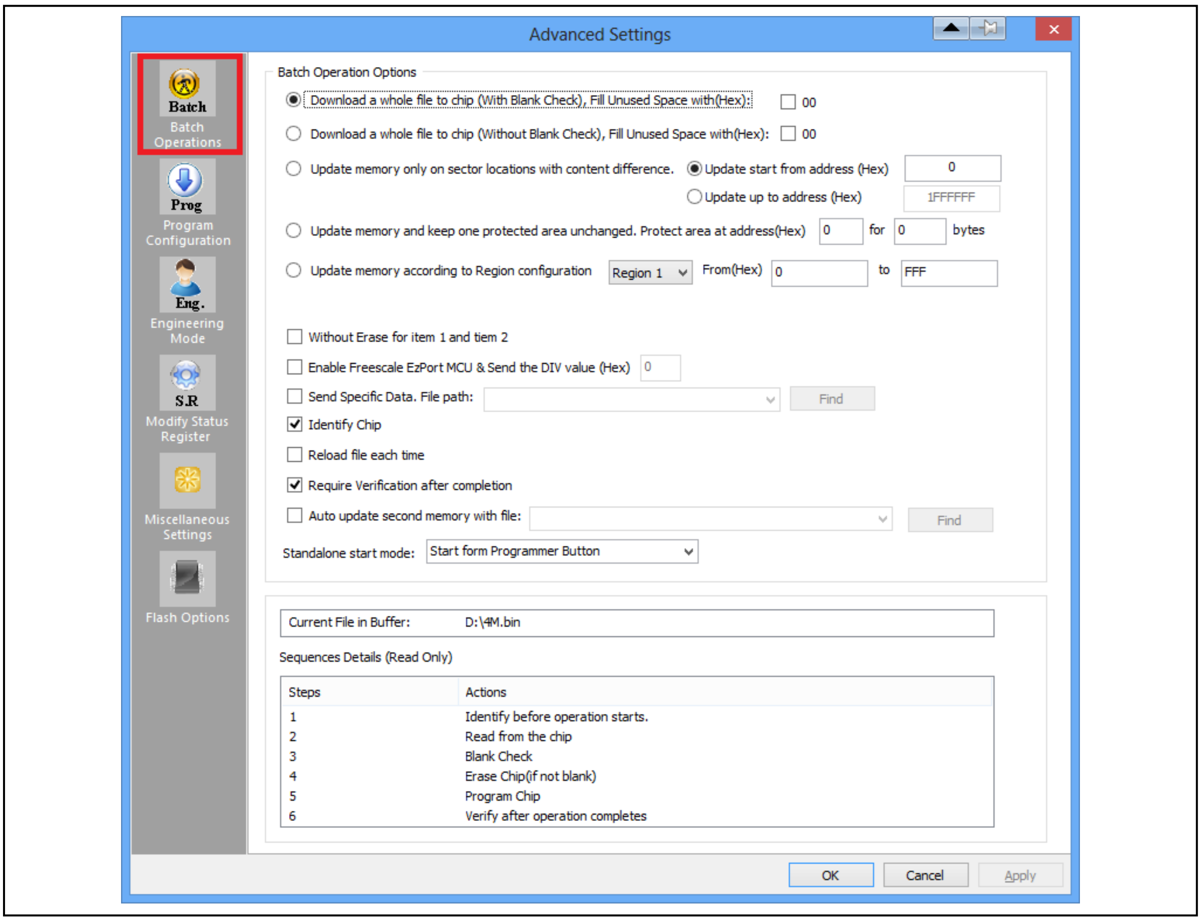
File buffer to file

File buffer can be modified in real time. This button will save the file buffer contents into a user named binary file.

3.5 Configuration Window Description

This feature allows users to configure advanced settings

3.5.1 Batch Operation Option



Batch Operation Options

● Download a whole file to chip (With Blank Check), Fill Unused Space with(Hex): □ 00

○ Download a whole file to chip (Without Blank Check), Fill Unused Space with(Hex): □ 00

○ Update memory only on sector locations with content difference. ● Update start from address (Hex) 0
○ Update up to address (Hex) 1FFFFFF

○ Update memory and keep one protected area unchanged. Protect area at address(Hex) 0 for 0 bytes

○ Update memory according to Region configuration Region 1 From(Hex) 0 to FFF

□ Without Erase for item 1 and tiem 2

□ Enable Freescale EzPort MCU & Send the DIV value (Hex) 0

□ Send Specific Data. File path:

☑ Identify Chip

□ Reload file each time

☑ Require Verification after completion

□ Auto update second memory with file:

Standalone start mode: Start form Programmer Button

Current File in Buffer: D:\4M.bin

Sequences Details (Read Only)

Steps	Actions
1	Identify before operation starts.
2	Read from the chip
3	Blank Check
4	Erase Chip(if not blank)
5	Program Chip
6	Verify after operation completes

A. Update a Whole file with Blank check

When user clicks “Batch”, the following operations will be automatically executed:

1) Read the memory content

2) Blank check (check if Chip is erased)

3) Erase the whole memory if not blank

4) Program the whole memory with the file

5) Verify if the memory content is identical with the programmed file.

B. Update a Whole file without Blank check

When the user clicks on Batch button, the following operations will be automatically executed:

1) Erase the whole memory

2) Program the whole memory with the file

3) Verify if the memory content is identical with the programmed file.

C. Update memory only on sector locations with contents difference or Smart update

User can select the sector locations to have the file programmed.

- **Update start from address (Hex):**

  To program a whole file starting from address 0 of a chip.

- **Update up to address (Hex):**

  To program a whole file, ending at the last address of a chip. The default ending address will automatically calculated by the software according to memory size.

When the user clicks on Batch button, the following operations will be automatically executed:

1) Read the memory content

2) Compare the memory content from the given address with the file at the 64KB sector base

3) Erase only the 64KB sectors with some differences

4) Program only the erased sectors with the file data of the corresponding address

5) Verify the data on the updated 64KB sectors

Smart Update can be used in the following cases:

- A small file can be programmed or updated at a given address without any change on the rest of the memory (local update).
- A file with only minor change compare to the memory content can be quickly updated. The sectors without difference are kept unchanged.

Remark:
The file data which are identical with the target memory but with an address shift (after compilation) will be interpreted as different and will not benefit of the Smart update advantages.

D. Update memory and keep one protected area unchanged

When the user clicks on Batch button, the following operations will be automatically executed:

1) Read the memory content from the given address for the given length

2) Insert the read memory contents into the file buffer

3) Erase the whole chip

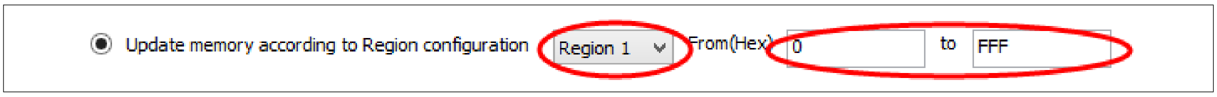
4) Program the whole chip with the updated file in step 2

5) Verify the programmed data

E. Update memory according to Region configuration

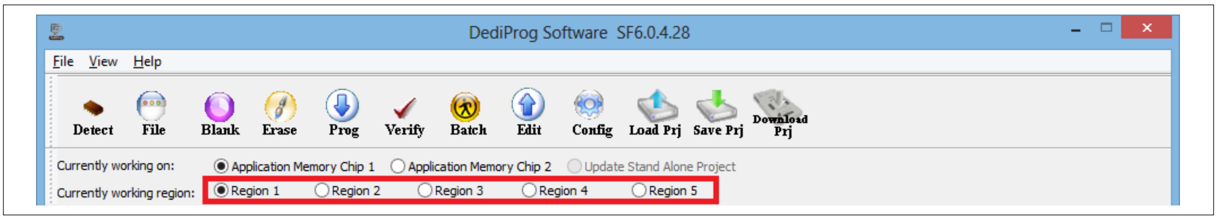
Sometimes user only wants to update some part of the data in SPI Flash. User can use this function to update the data in the assigned region. This function saves time when debugging.

1) Assign the Region and set start & end address of the Region.



● Update memory according to Region configuration Region 1 From(Hex) 0 to FFF

2) Select working region



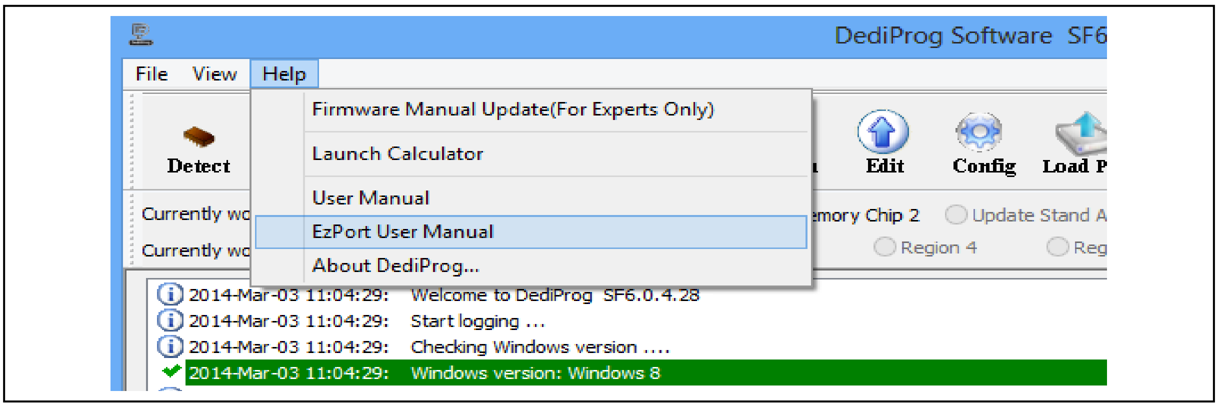
DediProg Software SF6.0.4.28

Currently working on: ● Application Memory Chip 1 ○ Application Memory Chip 2 ○ Update Stand Alone Project

Currently working region: ● Region 1 ○ Region 2 ○ Region 3 ○ Region 4 ○ Region 5

F. Enable Freescale EzPort MCU & Send the DIV value (Hex)

If the box is checked, the programmer will automatically enable EzPort. Details please see the « Help →EzPort User Manual»



2014-Mar-03 11:04:29: Welcome to DediProg SF6.0.4.28
2014-Mar-03 11:04:29: Start logging ...
2014-Mar-03 11:04:29: Checking Windows version ....
2014-Mar-03 11:04:29: Windows version: Windows 8

G. Send Specific Data

If the box is checked, the software will load and send the engineering SPI sequence defined and saved in the “Engineering Mode” Configuration window. This option allows user to create his/her own SPI instruction.

H. Identify Chip

If the box is checked, the software will identify before operation starts.

I. Reload file each time

If the box is checked, the software will load the same file from the source destination each time before the batch operations (refresh). This option is helpful when another software update the file in parallel (like compiler).

J. Require Verification after completion

If this box is checked, the software will verify the contents between the source file and the programmed Serial Flash contents after the batch operations.

Methods Comparison:

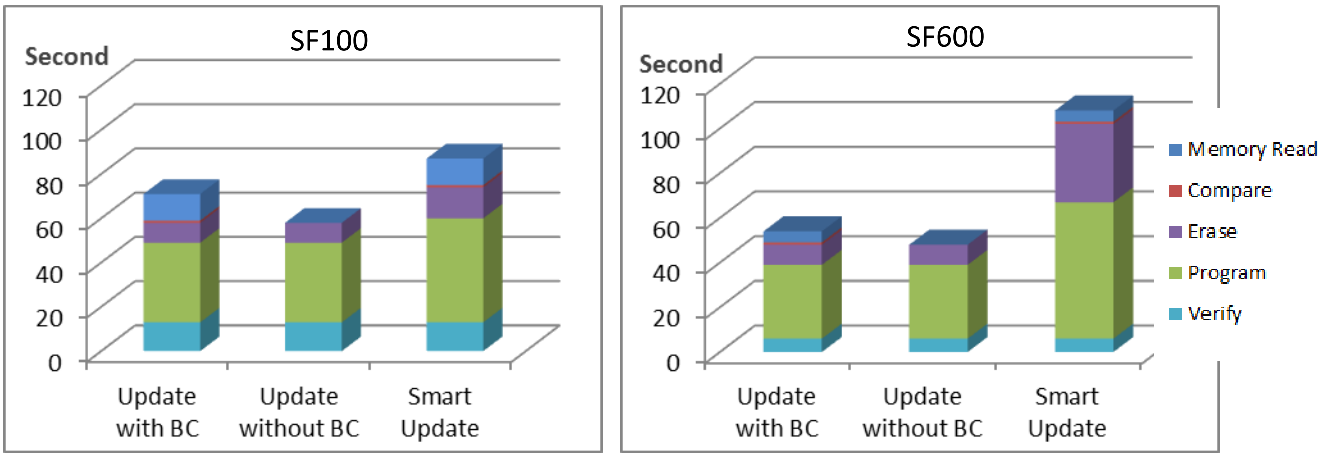
Case 1:

64Mb Serial flash update with 64Mb file totally different. Memory has been previously programmed and need to be totally erased.

Function	Update with BC		Update without BC		Smart Update	
Model name	SF100	SF600	SF100	SF600	SF100	SF600
Memory Read	12	5	x	x	12	5
Compare	1	1	x	x	1	1
Erase	9	9	9	9	14	35
Program	36	33	36	33	47	61
Verify	13	6	13	6	13	6
TOTAL	**71**	**54**	**58**	**48**	**87**	**108**

Time unit: second

Comparison Chart



Conclusion:

If the memory needs to be completely erased for a file update, the “Update without Blank Check” is the optimum choice.

Time Saving:

SF100 save <u>33%</u>; SF600 save <u>55%</u>

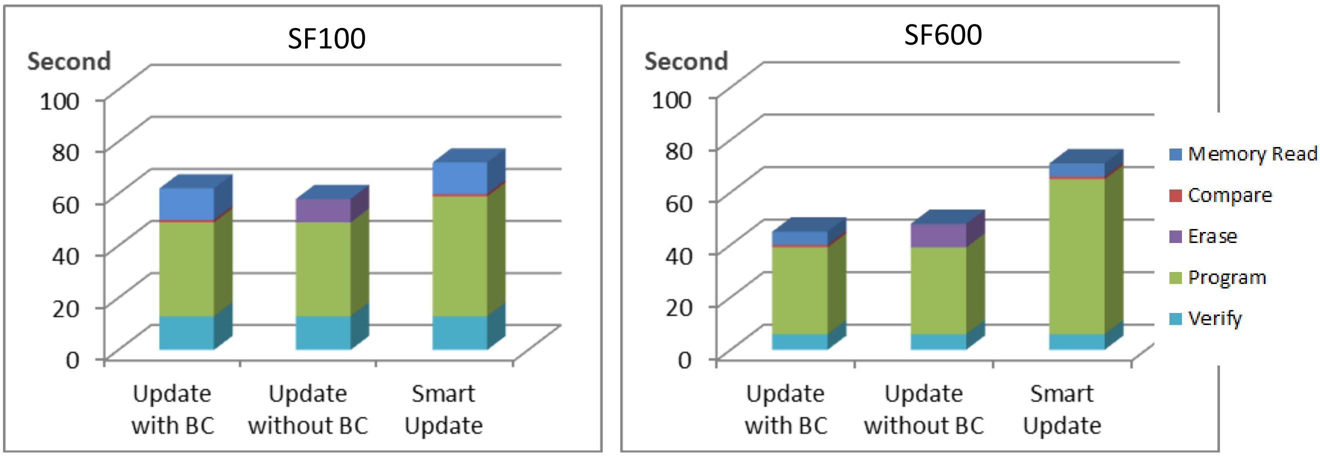
Case 2:

64Mb Serial flash programming with a 64Mb file. Memory has never been programmed (from supplier).

Function	Update with BC		Update without BC		Smart Update	
Model name	SF100	SF600	SF100	SF600	SF100	SF600
Memory Read	12	5	x	x	12	5
Compare	1	1	x	x	1	1
Erase	0	0	9	9	0	0
Program	36	33	36	33	46	59
Verify	13	6	13	6	13	6
TOTAL	**62**	**45**	**58**	**48**	**72**	**71**

Time unit: second

Comparison Chart



Conclusion:

If the memory is blank (from supplier), the "Update with Blank Check" or "Smart update" is the optimum choice.

Time Saving:

SF100 save <u>19%</u>; SF600 save <u>37%</u>

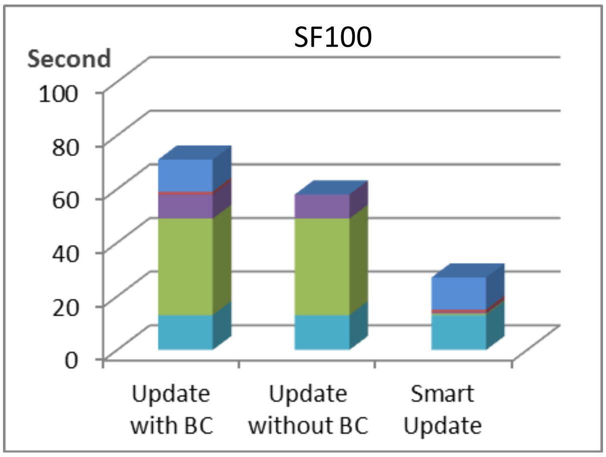
Case 3:

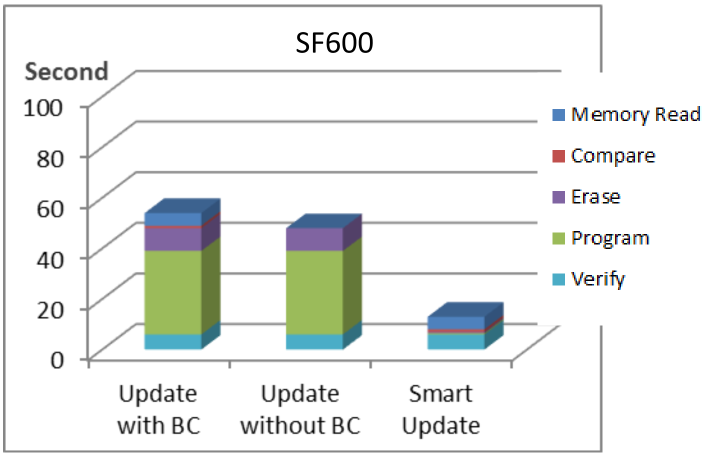
64Mb Serial flash update with a 64Mb file with only data differences on 1 block or a small file of 1 block size only at a specified address.

Function	Update with BC		Update without BC		Smart Update	
Model name	SF100	SF600	SF100	SF600	SF100	SF600
Memory Read	12	5	x	x	12	5
Compare	1	1	x	x	1	1
Erase	9	9	9	9	0.5	0.5
Program	36	33	36	33	0.5	0.5
Verify	13	6	13	6	13	6
TOTAL	**71**	**54**	**58**	**48**	**27**	**13**

Time unit: second

Comparison Chart





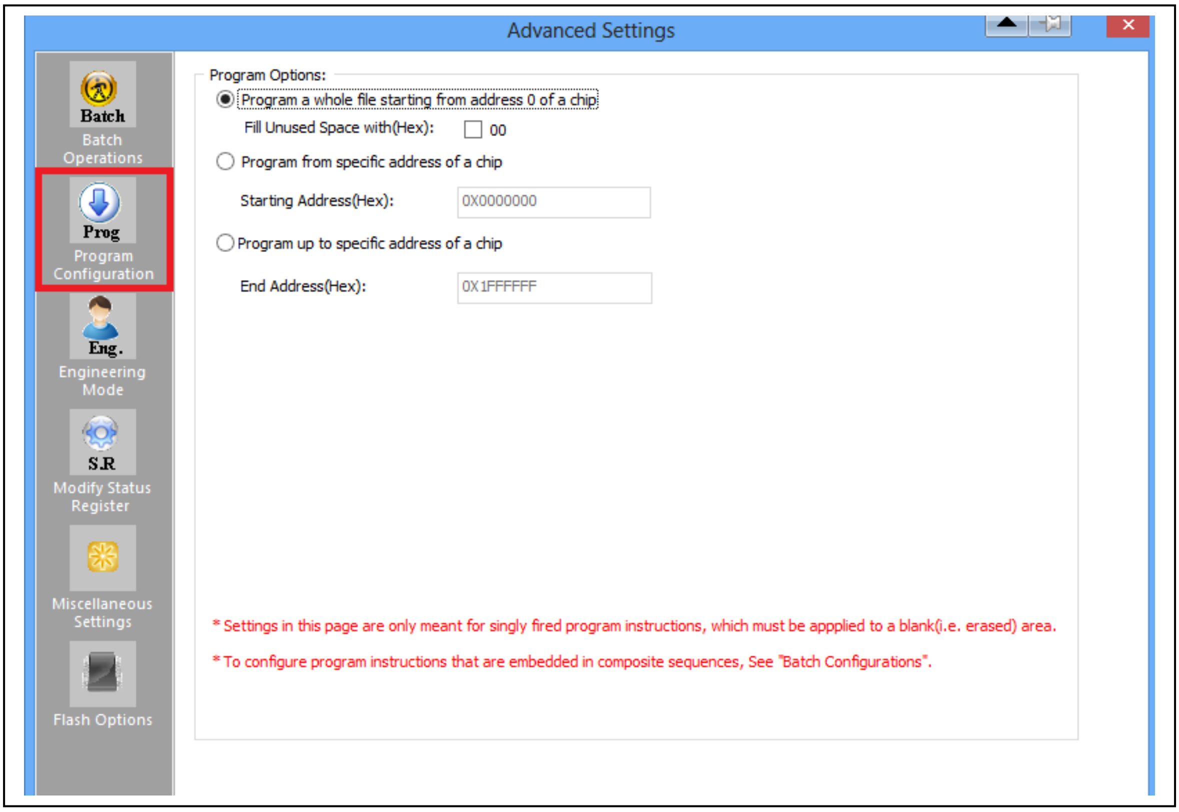
Conclusion:

If the difference between the memory content and file are small or if the file to be programmed is small, the “Smart update” is the optimum choice.

Time Saving:

SF100 save 62%; SF600 save 76%

3.5.2 Program Configurations



Program Options:

● Program a whole file starting from address 0 of a chip

Fill Unused Space with(Hex): □ 00

○ Program from specific address of a chip

Starting Address(Hex): 0X0000000

○ Program up to specific address of a chip

End Address(Hex): 0X1FFFFFF

* Settings in this page are only meant for singly fired program instructions, which must be appplied to a blank(i.e. erased) area.

* To configure program instructions that are embedded in composite sequences, See "Batch Configurations".

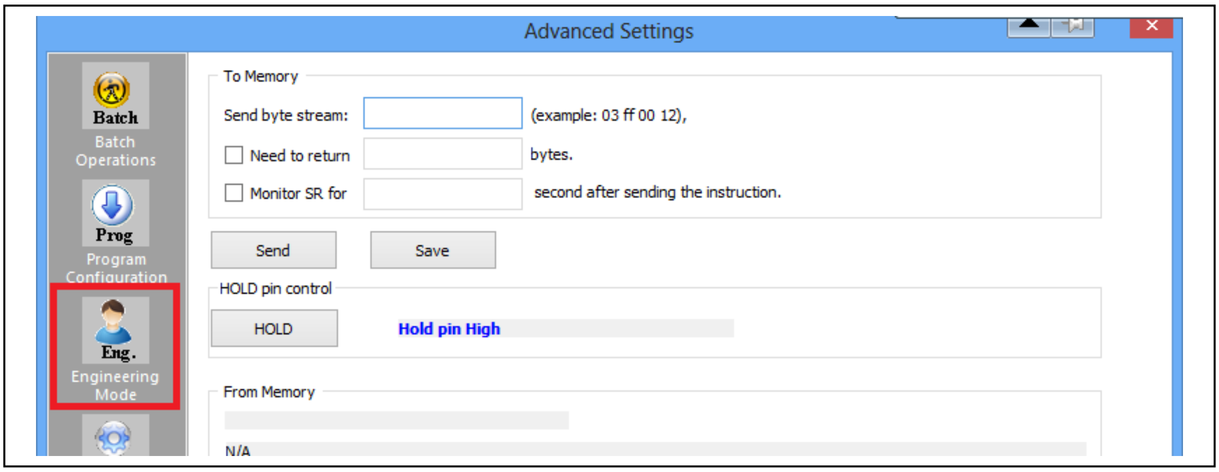
A. Program a whole file starting from address 0 of a chip

B. Program from specific address of a chip: To program a whole file starting from address 0 of a chip.

C. Program up to specific address of a chip: To program a whole file, ending at the last address of a chip. The default ending address will automatically calculated by the software according to memory size.

If the file is smaller than the target Serial Flash, user can define how to fill the rest of the SPI Flash. By default FFh or 00h if selected in the interface.

3.5.3 Engineering Mode



Advanced Settings

To Memory

Send byte stream: (example: 03 ff 00 12),

□ Need to return bytes.

□ Monitor SR for second after sending the instruction.

HOLD pin control

Hold pin High

From Memory

N/A

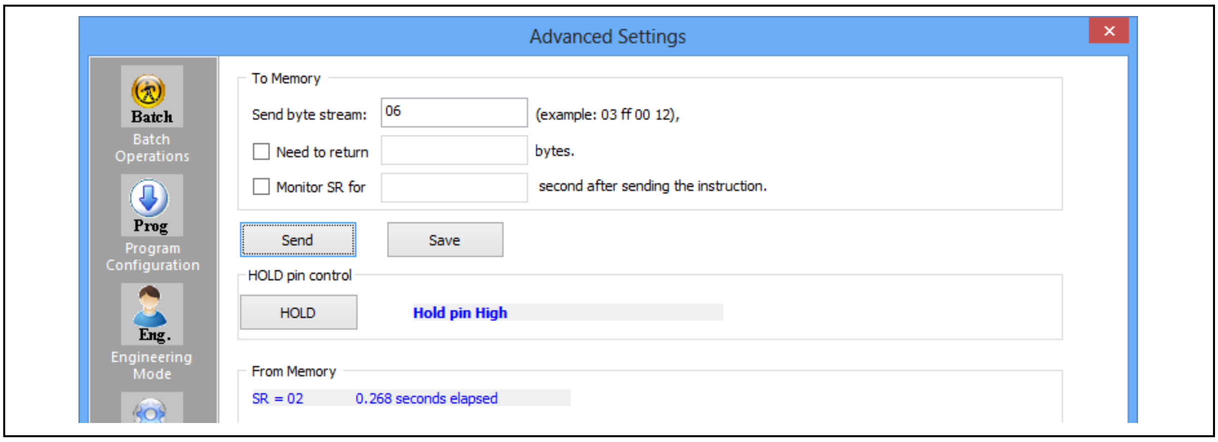
This function allows users to define their own SPI command and send it directly to the target SPI flash. This option is powerful as all the not standard SPI commands can be generated even if not supported by our programmer.

Users can define the data bytes to be sent from the programmer to the SPI Flash and the number of bytes to be returned. Users can also define if the status register WIP bit has to be polled to check if the SPI Flash is busy or ready.

Users can save the stream data for future use by click on the "Save" button.

For example:
User wants to write "01 02 03" data bytes at the address "00 00 00" and verify.

> **First:** programmer needs to set the WEL bit by sending the WREN (06h) command to the SPI Flash as described below:



Advanced Settings

To Memory

Send byte stream: 06 (example: 03 ff 00 12),

□ Need to return bytes.

□ Monitor SR for second after sending the instruction.

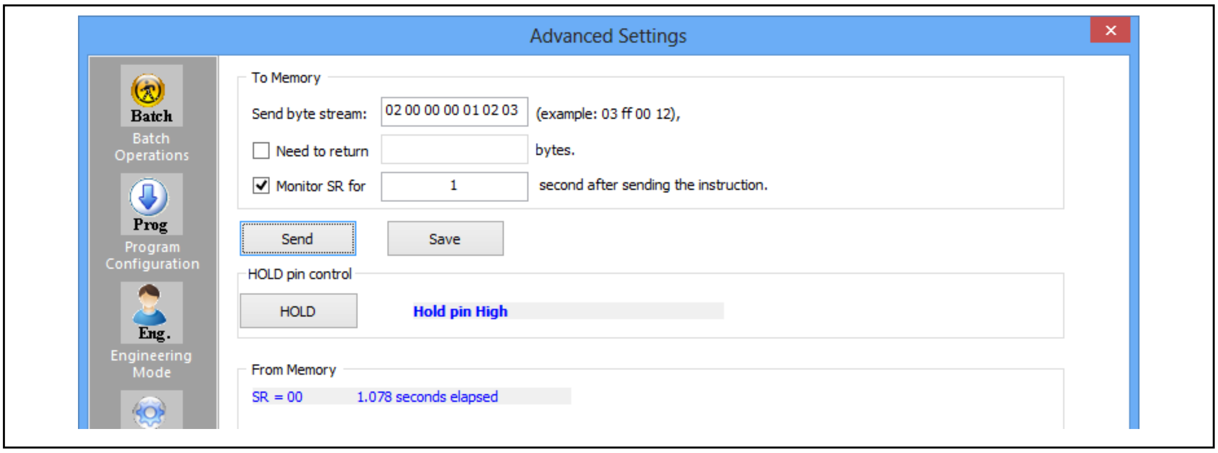
HOLD pin control

Hold pin High

From Memory

SR = 02 0.268 seconds elapsed

Second: programmer needs to send the programming instruction “02h” followed by the address “00 00 00” and the data “01 02 03” and monitor the Status register WIP bit as described below:



Send byte stream: 02 00 00 00 01 02 03 (example: 03 ff 00 12),

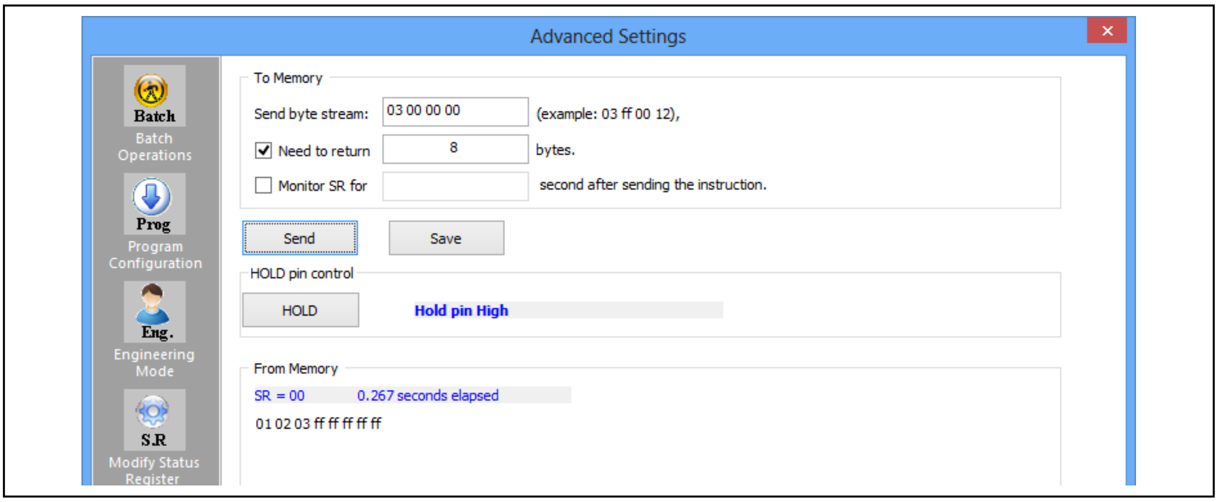
□ Need to return bytes.

☑ Monitor SR for 1 second after sending the instruction.

Hold pin High

SR = 00 1.078 seconds elapsed

Third: The programmer need to verify the SPI Flash content by sending the Read instruction “03h” and the address “00 00 00” then read the return bytes from the SPI Flash (we read 8 bytes in the following example):



Send byte stream: 03 00 00 00 (example: 03 ff 00 12),

☑ Need to return 8 bytes.

□ Monitor SR for second after sending the instruction.

Hold pin High

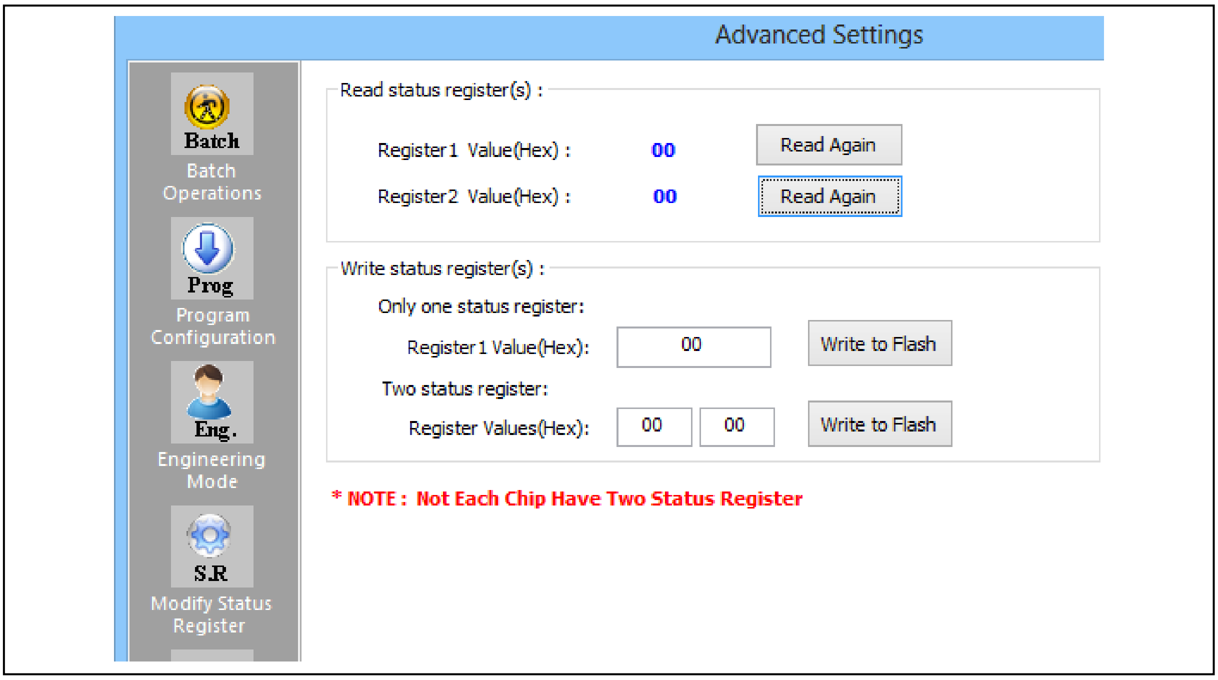
SR = 00 0.267 seconds elapsed

```
01 02 03 ff ff ff ff ff
```

The return bytes from the SPI Flash are displayed in the “from SPI Flash” window: “01 02 03 FF FF FF FF FF”.

The engineering mode can be used to send any instruction to the SPI Flash.

3.5.4 Modify Status Register



Read status register(s) :

Register1 Value(Hex) : 00

Register2 Value(Hex) : 00

Write status register(s) :

Only one status register:

Register1 Value(Hex): 00

Two status register:

Register Values(Hex): 00 00

* NOTE : Not Each Chip Have Two Status Register

This function allows users to modify or read the status register(s) value of the target serial flash.

Please note each chip has their own command to write status registers.

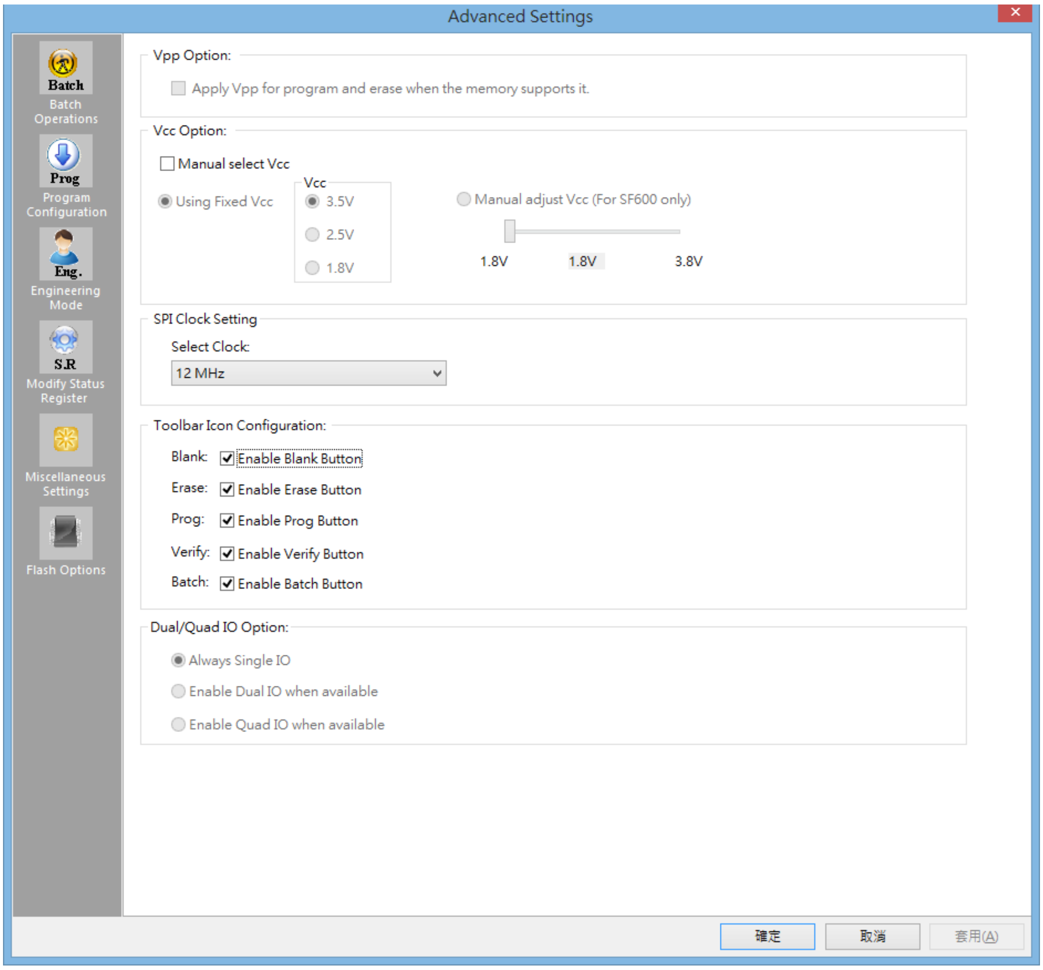
For chip only has one status register:

- For write: “06h” to set the Write Enable and “01h” and user data” to write the status register
- For Read: “05h” to read the status register

For chip has two status registers:

- Please refer to the device specification for parameter setting.

3.5.5 Miscellaneous Settings



Vpp Option:

□ Apply Vpp for program and erase when the memory supports it.

Vcc Option:

□ Manual select Vcc

● Using Fixed Vcc

Vcc: ● 3.5V ○ 2.5V ○ 1.8V

○ Manual adjust Vcc (For SF600 only) 1.8V 1.8V 3.8V

SPI Clock Setting

Select Clock: 12 MHz

Toolbar Icon Configuration:

Blank: ☑ Enable Blank Button

Erase: ☑ Enable Erase Button

Prog: ☑ Enable Prog Button

Verify: ☑ Enable Verify Button

Batch: ☑ Enable Batch Button

Dual/Quad IO Option:

● Always Single IO

○ Enable Dual IO when available

○ Enable Quad IO when available

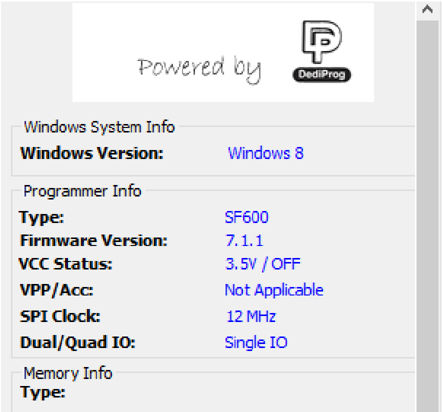
A. Vpp Option

This setting allows user to enable the Vpp option so the High voltage is applied on the SPI Flash Wp pin to reduce the programming and erasing time.

This option can only be enabled on Serial Flash supporting the Vpp feature.

B. Vcc Option

SF series programmers support 3.5V, 2.5V, and 1.8V Vcc. The default VCC status will be 3.5V when plug in the programmer without IC on it. User is able to modify the Vcc configuration and the Vcc setting will be changed and saved until next modification.



Windows System Info

Windows Version: Windows 8

Programmer Info

Type: SF600

Firmware Version: 7.1.1

VCC Status: 3.5V / OFF

VPP/Acc: Not Applicable

SPI Clock: 12 MHz

Dual/Quad IO: Single IO

Memory Info

Type:

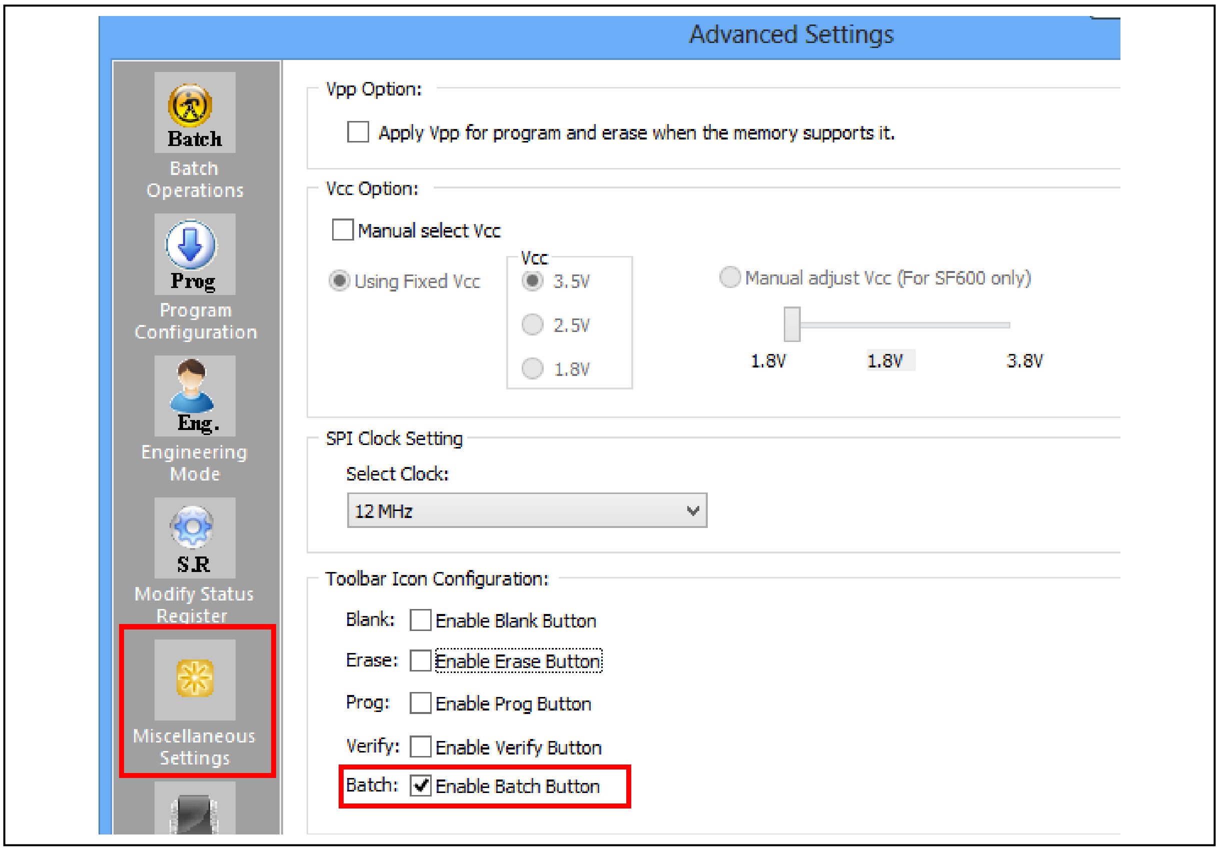
C. SPI Clock Setting

The SPI clock frequency can be adjusted by user to fit the application requirements or SPI Flash performance. Notice that the SPI Flash frequency is defined in the supplier specification for a maximum capacitance usually of 30pf or 15pF max. The application is therefore designed to not exceed this maximum capacitance. In circuit programming does not fulfill anymore this original design as additional capacitance will be added according to the cable length and programmer. Therefore, user cannot expect to program the on board SPI flash according to the maximum frequency of the datasheet as the SPI flash will not be able to drive such capacitance at such high frequency.

In order to comply with the different capacitance and SPI flash driving capability, DediProg provides frequency adjustment of the programmer. Frequency needs to be reduced if the data timings do not comply with the specification.

D. Tool Bar ICON Configuration

Users can hide some tool bar icons if they unselect the icon items in the “tool bar icon configuration setting”. For example, if the engineer only wants the operators to use batch icon, he/she can leaves only batch icon selected and save the setting. The operators will only see the batch icon on the tool bar.


Advanced Settings

Vpp Option:

□ Apply Vpp for program and erase when the memory supports it.

Vcc Option:

□ Manual select Vcc

● Using Fixed Vcc — Vcc: ● 3.5V ○ 2.5V ○ 1.8V

○ Manual adjust Vcc (For SF600 only) — 1.8V 1.8V 3.8V

SPI Clock Setting

Select Clock: 12 MHz

Toolbar Icon Configuration:

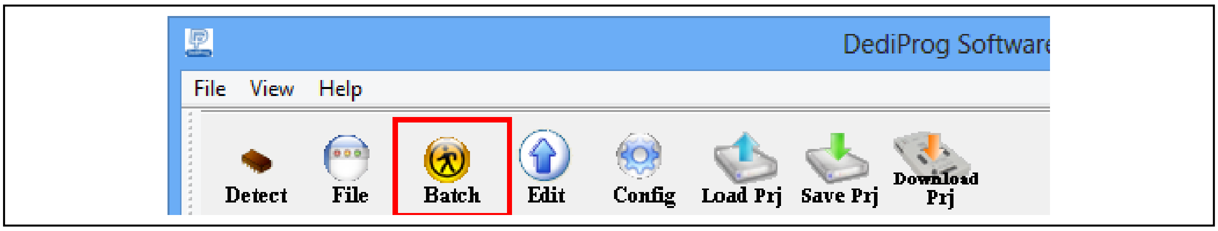
Blank: □ Enable Blank Button

Erase: □ Enable Erase Button

Prog: □ Enable Prog Button

Verify: □ Enable Verify Button

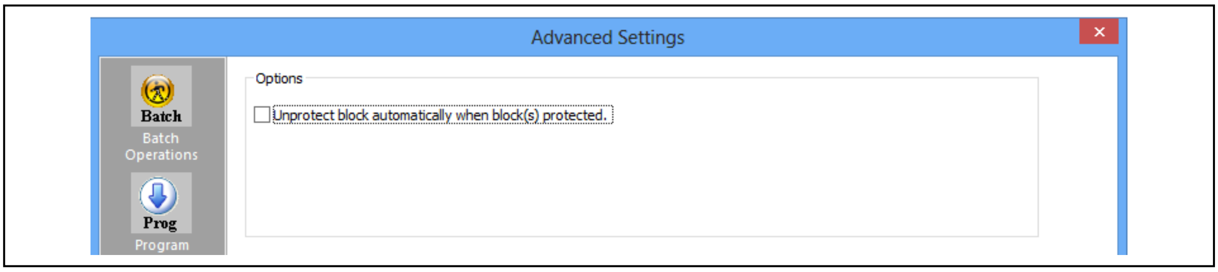
Batch: ☑ Enable Batch Button



3.5.6 Flash Option

There're three kinds of options.

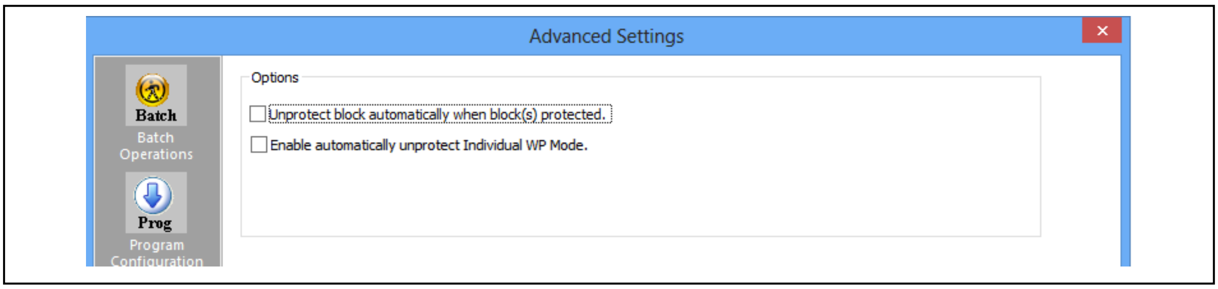
A. Unprotect block automatically when block(s) protected.



Options

□ Unprotect block automatically when block(s) protected.

B. Enable automatically unprotect Individual WP mode



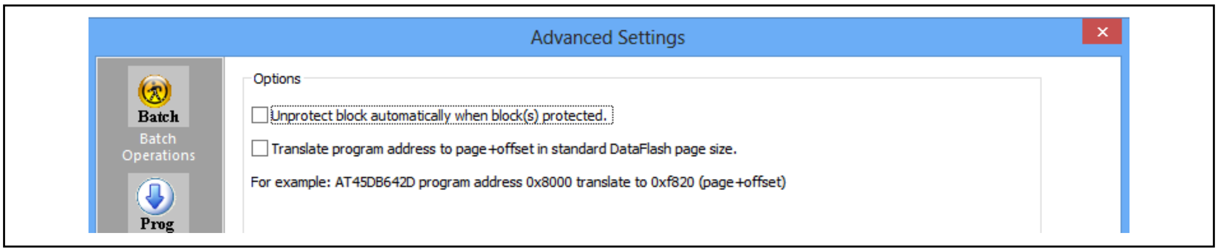
Options

□ Unprotect block automatically when block(s) protected.

□ Enable automatically unprotect Individual WP Mode.

C. Translate program address to page+offset in standard DataFlash page size.

For example: AT45DB642D program address 0x8000 translate to 0xF820 (page+offset)



Options

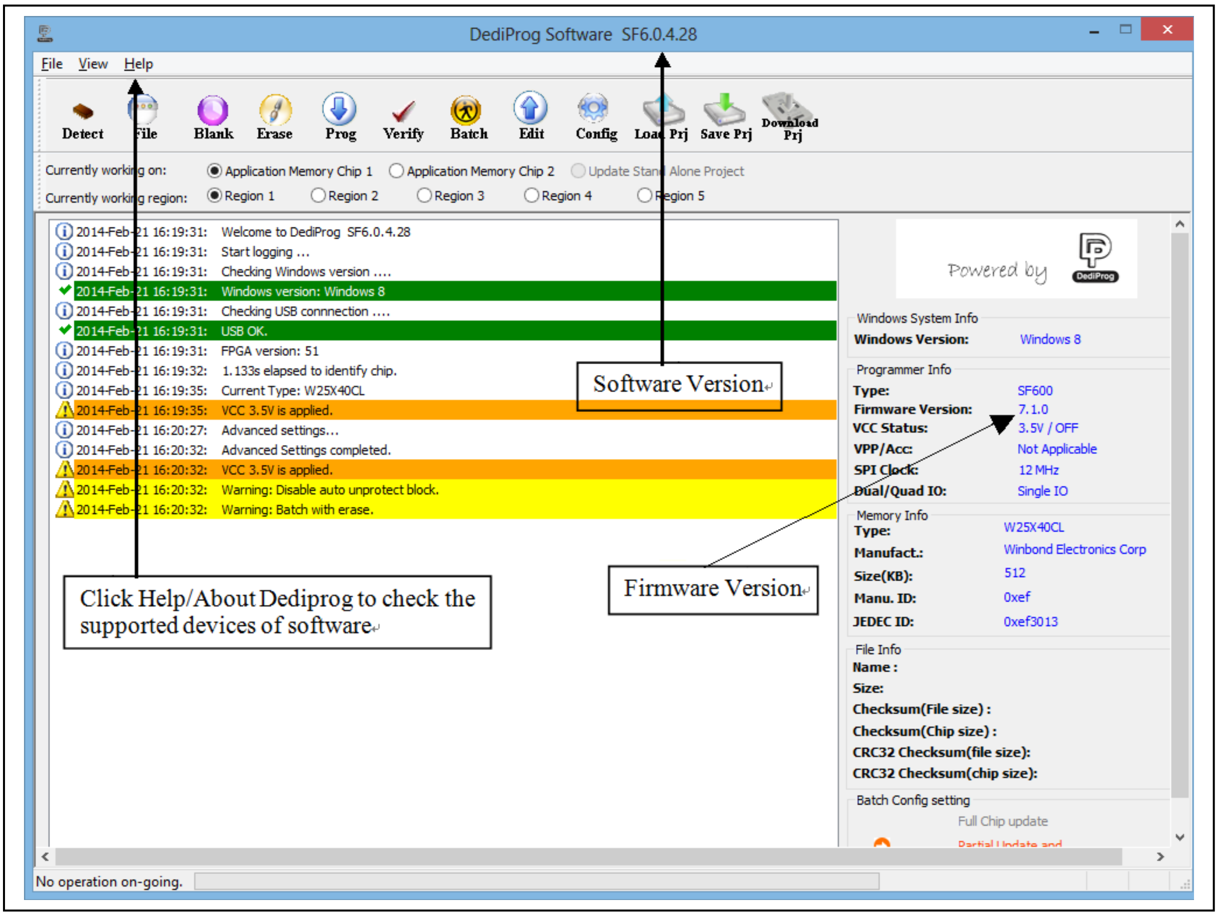
□ Unprotect block automatically when block(s) protected.

□ Translate program address to page+offset in standard DataFlash page size.

For example: AT45DB642D program address 0x8000 translate to 0xf820 (page+offset)

3.6 Supported Devices, Software Version, Firmware Version

User can check the Serial flash support list in our web site. This support list is valid for the latest software and firmware so user will have to check the current software and firmware version he is using and update it if necessary.



Currently working on: ● Application Memory Chip 1 ○ Application Memory Chip 2 ○ Update Stand Alone Project

Currently working region: ● Region 1 ○ Region 2 ○ Region 3 ○ Region 4 ○ Region 5

```
2014-Feb-21 16:19:31:   Welcome to DediProg  SF6.0.4.28
2014-Feb-21 16:19:31:   Start logging ...
2014-Feb-21 16:19:31:   Checking Windows version ....
2014-Feb-21 16:19:31:   Windows version: Windows 8
2014-Feb-21 16:19:31:   Checking USB connection ....
2014-Feb-21 16:19:31:   USB OK.
2014-Feb-21 16:19:31:   FPGA version: 51
2014-Feb-21 16:19:32:   1.133s elapsed to identify chip.
2014-Feb-21 16:19:35:   Current Type: W25X40CL
2014-Feb-21 16:19:35:   VCC 3.5V is applied.
2014-Feb-21 16:20:27:   Advanced settings...
2014-Feb-21 16:20:32:   Advanced Settings completed.
2014-Feb-21 16:20:32:   VCC 3.5V is applied.
2014-Feb-21 16:20:32:   Warning: Disable auto unprotect block.
2014-Feb-21 16:20:32:   Warning: Batch with erase.
```

Windows System Info

Windows Version:	Windows 8

Programmer Info

Type:	SF600
Firmware Version:	7.1.0
VCC Status:	3.5V / OFF
VPP/Acc:	Not Applicable
SPI Clock:	12 MHz
Dual/Quad IO:	Single IO

Memory Info

Type:	W25X40CL
Manufact.:	Winbond Electronics Corp
Size(KB):	512
Manu. ID:	0xef
JEDEC ID:	0xef3013

File Info

Name :

Size:

Checksum(File size) :

Checksum(Chip size) :

CRC32 Checksum(file size):

CRC32 Checksum(chip size):

Batch Config setting

Full Chip update

Partial Update and

No operation on-going.

Software Version

Click Help/About Dediprog to check the supported devices of software

Firmware Version

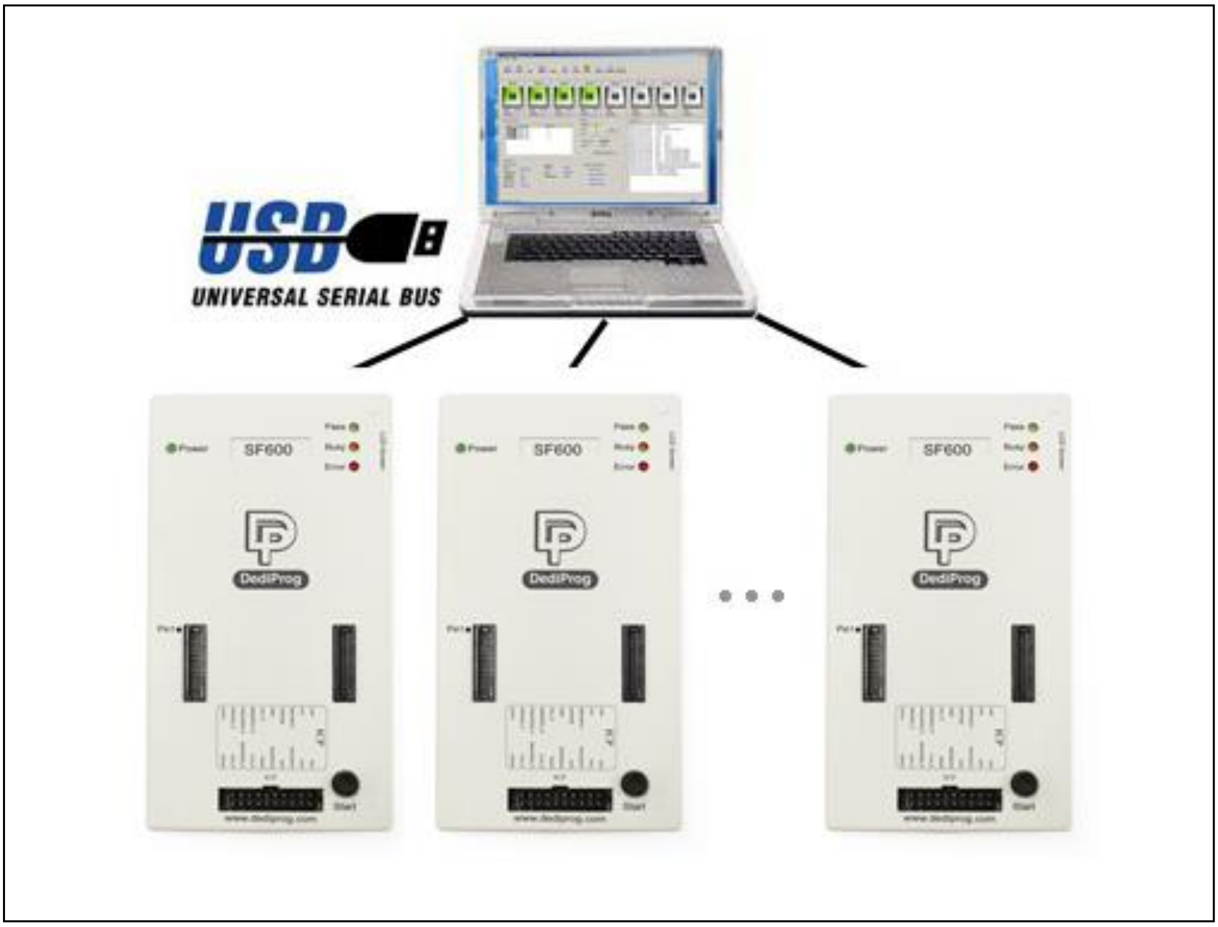
IV. DediProg SF Software Production GUI

DediProg SF software production GUI is only available after the software version 5.x.x. The production GUI allows users to plug in and operate multiple SF100/SF600/SF600*Plus* in the same time.

The new software will remove the old USB driver when it detects such driver during the installation. New USB driver is required in order to run the software and the driver will come together with the software CD ROM or it can be downloaded from DediProg website. **www.dediprog.com/download**

In order to run more than one SF programmer in the same time reliably, USB hub with individual power supply is highly recommended.

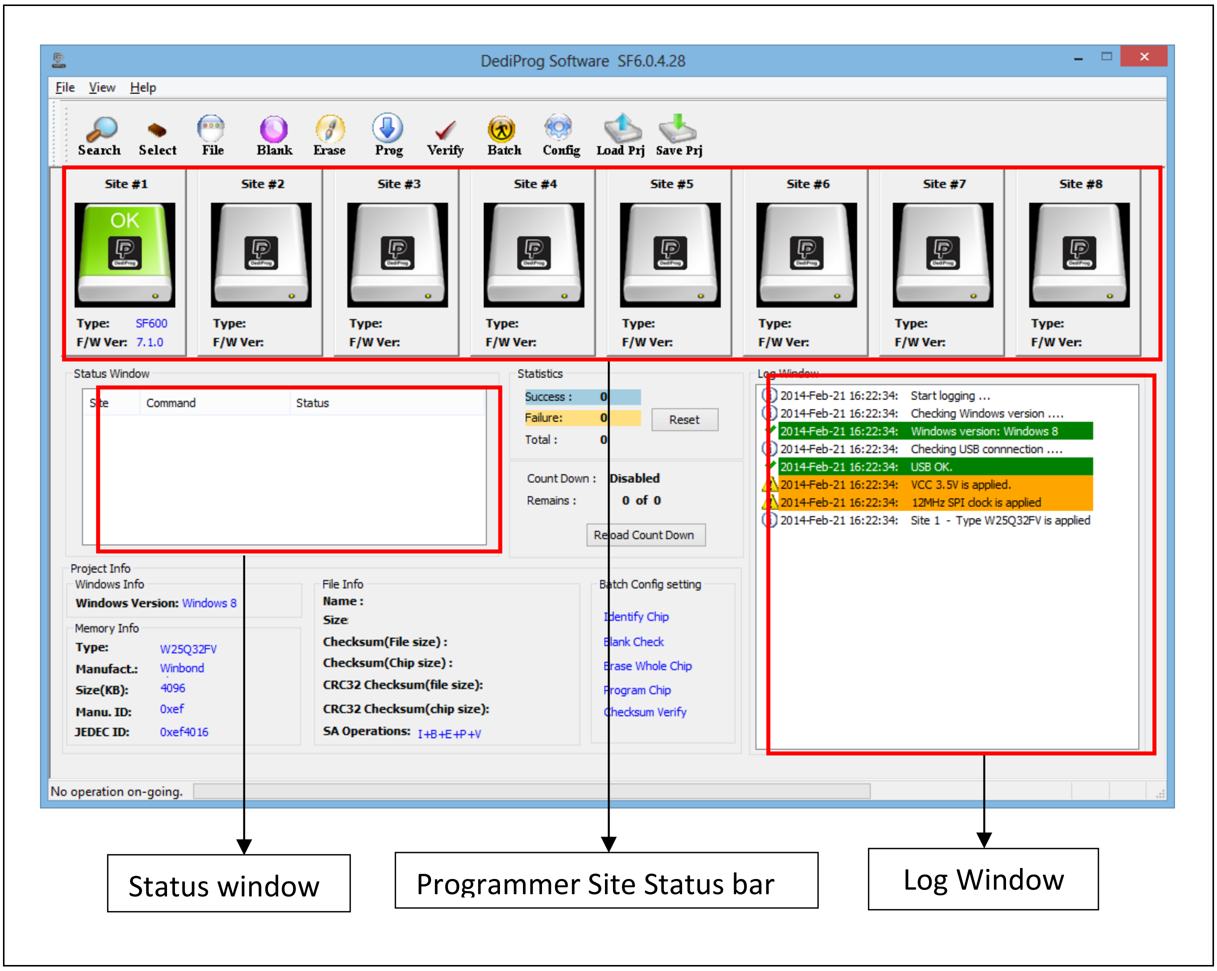
Multi-Programmers Capability for SF series programmers



In order to run production GUI, USB plug in of all the intended programmers is required prior to opening the software. It is not recommended to add (plug in) or reduce (unplug) any number of programmers when the software is already opened.

The production software does not provide auto chip detect feature and therefore “programmer search” and “chip select” are required prior to any other operations.

The production GUI manual will only illustrate the items not covered by the engineering GUI. Therefore function explanations such as Program, Erase, Blank check, etc will not be repeated here.



Site #1 — Type: SF600, F/W Ver: 7.1.0

Sites #2–#8 — Type:, F/W Ver:

Site	Command	Status

Success : 0
Failure: 0
Total : 0

Count Down : Disabled
Remains : 0 of 0

Windows Version: Windows 8

Type: W25Q32FV
Manufact.: Winbond
Size(KB): 4096
Manu. ID: 0xef
JEDEC ID: 0xef4016

Name :
Size:
Checksum(File size) :
Checksum(Chip size) :
CRC32 Checksum(file size):
CRC32 Checksum(chip size):
SA Operations: I+B+E+P+V

Identify Chip
Blank Check
Erase Whole Chip
Program Chip
Checksum Verify

```
2014-Feb-21 16:22:34:   Start logging ...
2014-Feb-21 16:22:34:   Checking Windows version ....
2014-Feb-21 16:22:34:   Windows version: Windows 8
2014-Feb-21 16:22:34:   Checking USB connnection ....
2014-Feb-21 16:22:34:   USB OK.
2014-Feb-21 16:22:34:   VCC 3.5V is applied.
2014-Feb-21 16:22:34:   12MHz SPI clock is applied
2014-Feb-21 16:22:34:   Site 1  -  Type W25Q32FV is applied
```

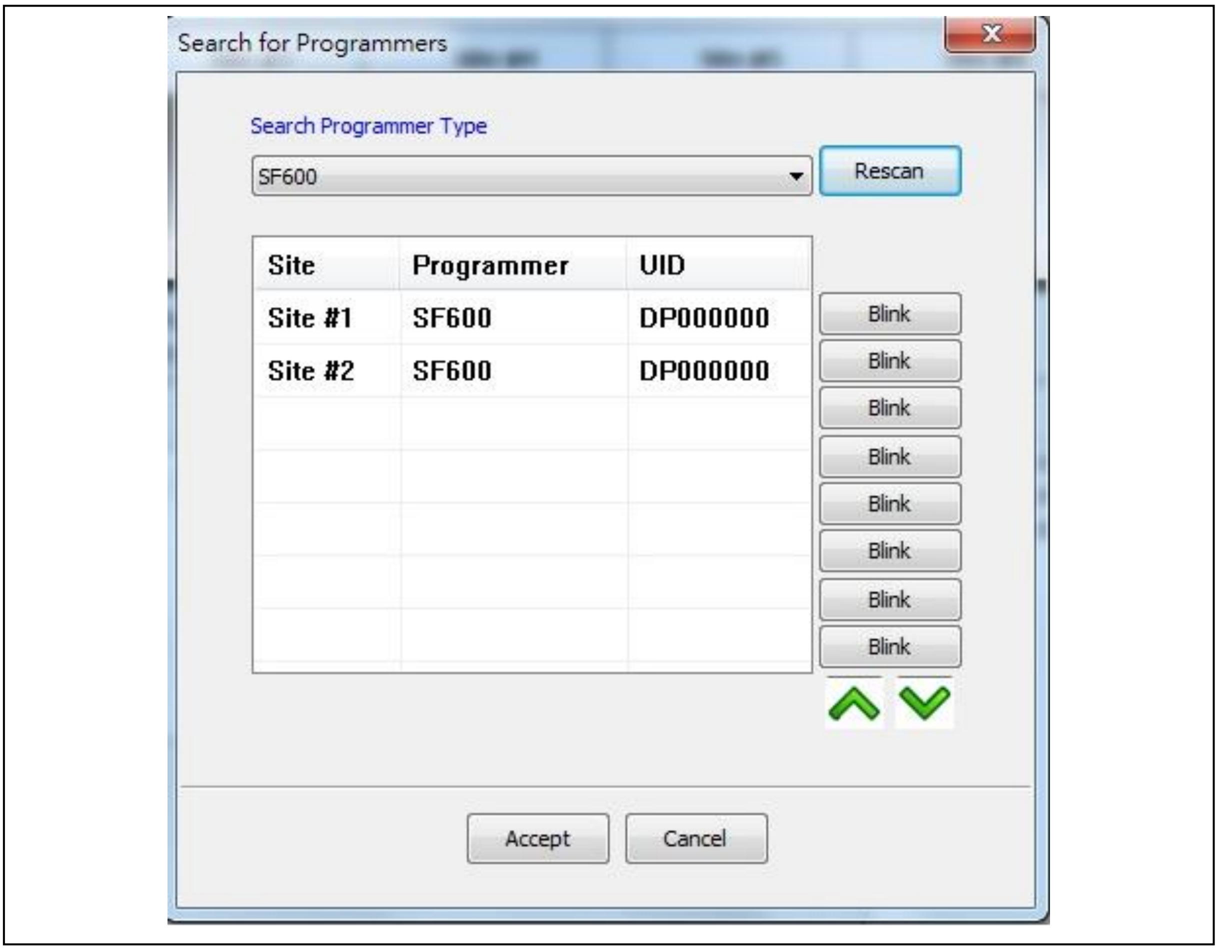
No operation on-going.

4.1 Search and Select

When click on “search”, the software will show programmer type. The default of programmer type is SF100. Please select the programmer you are using and click Rescan.

Search Programmer:

The found programmers will be listed along with site number. The site number is given by the Window OS randomly and therefore users can use the “blink”, “up” and “down” button to adjust the real sequence of the connected programmer. When click on “blink”, the connected programmer will blink on its green LED once. Users can use this feature to locate the programmer associated with its site number. For programmers with firmware version after 5.x.x, DediProg will write a serial number in the hardware before shipping out and the serial number will be displayed in the following screen snapshot.



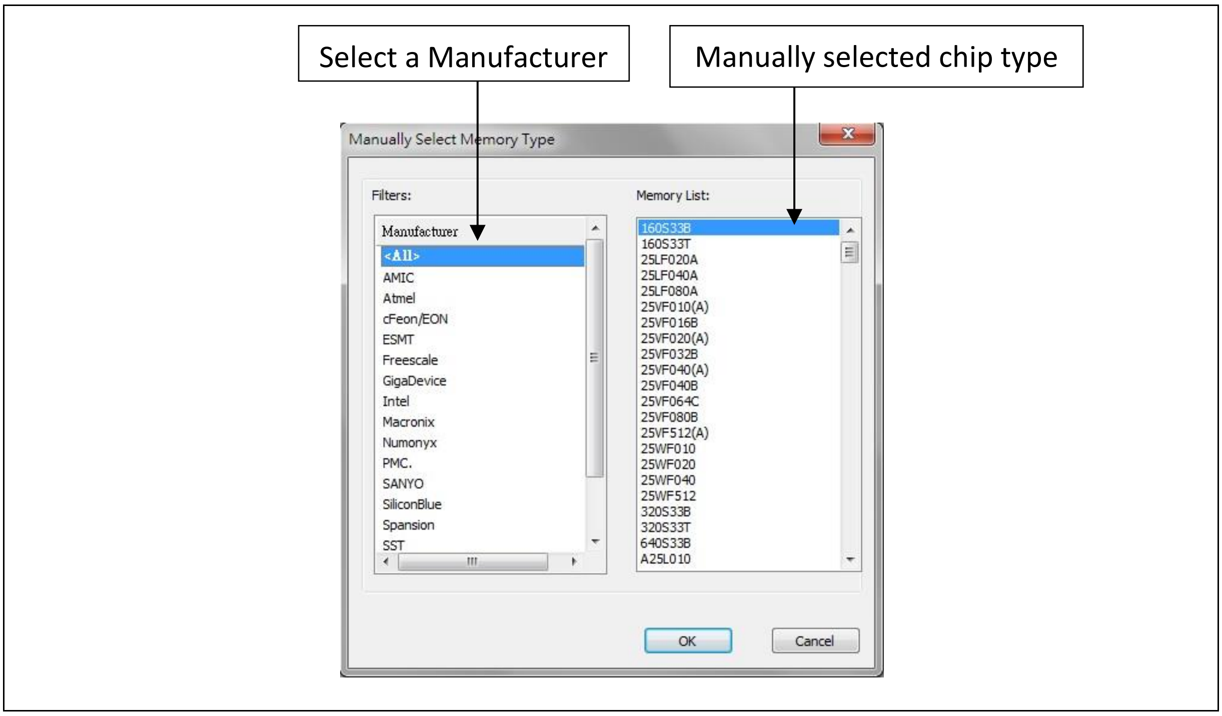
Search for Programmers

Search Programmer Type: SF600

Site	Programmer	UID
Site #1	SF600	DP000000
Site #2	SF600	DP000000

Select Memory Type:

The production software does not provide auto chip detect feature users will need to select the target memory manually.



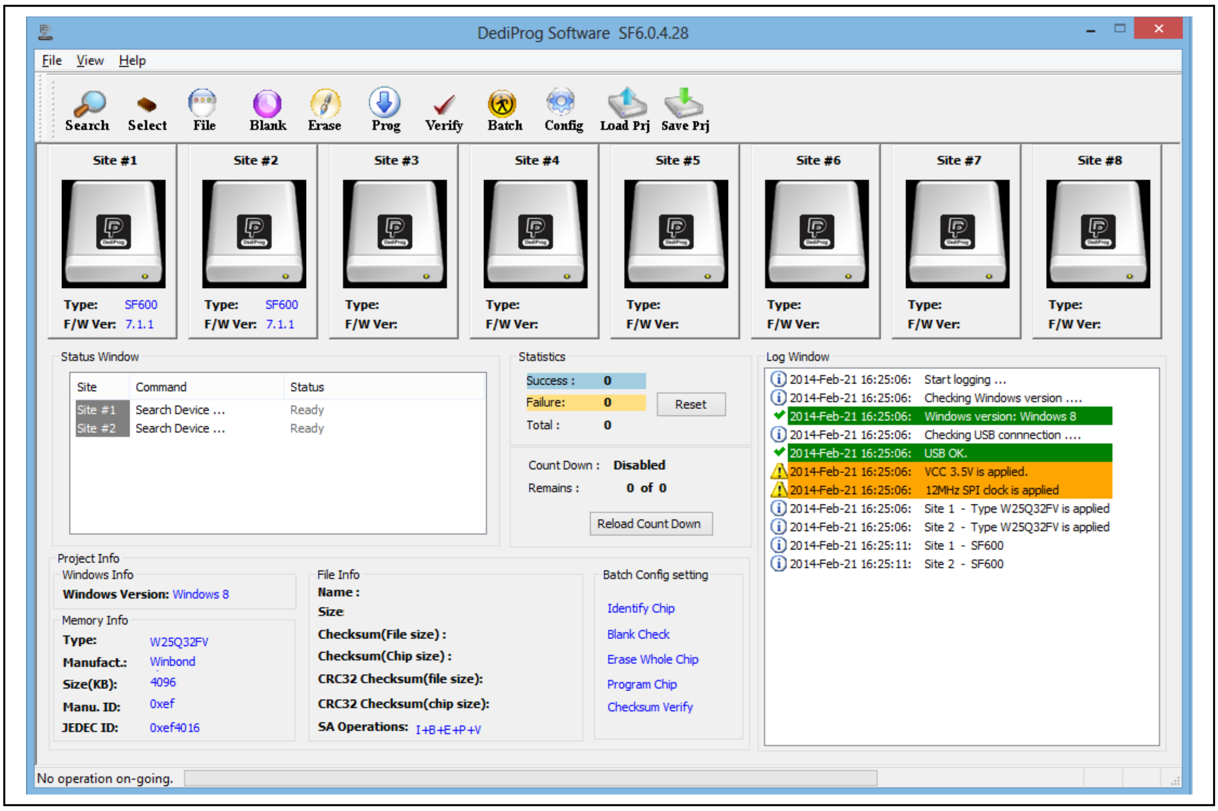
Filters:

Manufacturer
<All>
AMIC
Atmel
cFeon/EON
ESMT
Freescale
GigaDevice
Intel
Macronix
Numonyx
PMC.
SANYO
SiliconBlue
Spansion
SST

Memory List:

160S33B
160S33T
25LF020A
25LF040A
25LF080A
25VF010(A)
25VF016B
25VF020(A)
25VF032B
25VF040(A)
25VF040B
25VF064C
25VF080B
25VF512(A)
25WF010
25WF020
25WF040
25WF512
320S33B
320S33T
640S33B
A25L010

After the search step and the to-be-programmed chip is selected, the main GUI will have updated information on the Programmer SITE Status bar, the status window and the log window.



Site #1	Site #2	Site #3	Site #4	Site #5	Site #6	Site #7	Site #8
Type: SF600 F/W Ver: 7.1.1	Type: SF600 F/W Ver: 7.1.1	Type: F/W Ver:	Type: F/W Ver:	Type: F/W Ver:	Type: F/W Ver:	Type: F/W Ver:	Type: F/W Ver:

Status Window

Site	Command	Status
Site #1	Search Device ...	Ready
Site #2	Search Device ...	Ready

Statistics

Success : 0
Failure: 0
Total : 0

Count Down : Disabled
Remains : 0 of 0

Log Window

```
2014-Feb-21 16:25:06:   Start logging ...
2014-Feb-21 16:25:06:   Checking Windows version ....
2014-Feb-21 16:25:06:   Windows version: Windows 8
2014-Feb-21 16:25:06:   Checking USB connnection ....
2014-Feb-21 16:25:06:   USB OK.
2014-Feb-21 16:25:06:   VCC 3.5V is applied.
2014-Feb-21 16:25:06:   12MHz SPI clock is applied
2014-Feb-21 16:25:06:   Site 1 - Type W25Q32FV is applied
2014-Feb-21 16:25:06:   Site 2 - Type W25Q32FV is applied
2014-Feb-21 16:25:11:   Site 1 - SF600
2014-Feb-21 16:25:11:   Site 2 - SF600
```

Project Info

Windows Info

Windows Version: Windows 8

Memory Info

Type: W25Q32FV
Manufact.: Winbond
Size(KB): 4096
Manu. ID: 0xef
JEDEC ID: 0xef4016

File Info

Name :
Size
Checksum(File size) :
Checksum(Chip size) :
CRC32 Checksum(file size):
CRC32 Checksum(chip size):
SA Operations: I+B+E+P+V

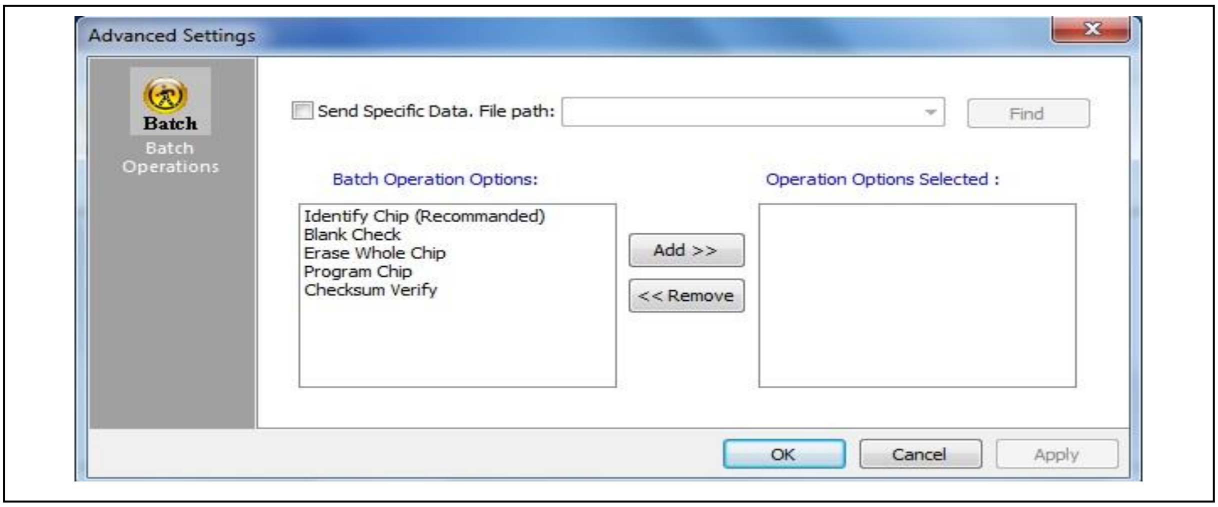
Batch Config setting

Identify Chip
Blank Check
Erase Whole Chip
Program Chip
Checksum Verify

No operation on-going.

4.2 Batch Config

By clicking on the “Config” icon, users can access to configure the batch setting.
Users may click on the option “Send Specific Data” for sending the stream data before reading/writing the device. This customized SPI sequence can be created in the “engineering interface”.
Users may click on the “Add” or “Remove” for Batch Operation Options directly.



Advanced Settings

□ Send Specific Data. File path:

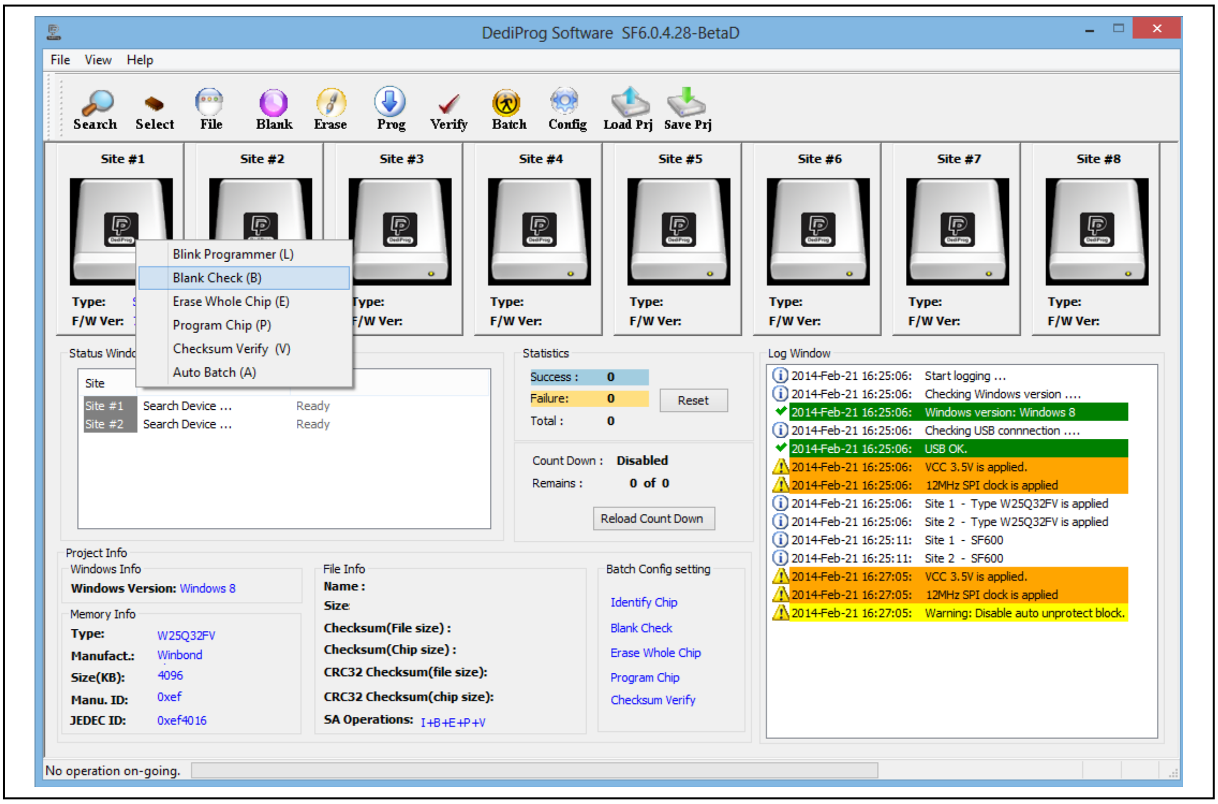
Batch Operation Options:

- Identify Chip (Recommanded)
- Blank Check
- Erase Whole Chip
- Program Chip
- Checksum Verify

Operation Options Selected :

4.3 Single Site programming

Right-click to a specific Programmer Site number, users will have the access of programming options to the pointed programmer site.



DediProg Software SF6.0.4.28-BetaD

Status Window

Site		
Site #1	Search Device ...	Ready
Site #2	Search Device ...	Ready

Statistics

Success : 0
Failure: 0
Total : 0

Count Down : Disabled
Remains : 0 of 0

Log Window

```
2014-Feb-21 16:25:06:   Start logging ...
2014-Feb-21 16:25:06:   Checking Windows version ....
2014-Feb-21 16:25:06:   Windows version: Windows 8
2014-Feb-21 16:25:06:   Checking USB connnection ....
2014-Feb-21 16:25:06:   USB OK.
2014-Feb-21 16:25:06:   VCC 3.5V is applied.
2014-Feb-21 16:25:06:   12MHz SPI clock is applied
2014-Feb-21 16:25:06:   Site 1  -  Type W25Q32FV is applied
2014-Feb-21 16:25:06:   Site 2  -  Type W25Q32FV is applied
2014-Feb-21 16:25:11:   Site 1  -  SF600
2014-Feb-21 16:25:11:   Site 2  -  SF600
2014-Feb-21 16:27:05:   VCC 3.5V is applied.
2014-Feb-21 16:27:05:   12MHz SPI clock is applied
2014-Feb-21 16:27:05:   Warning: Disable auto unprotect block.
```

Project Info

Windows Info
Windows Version: Windows 8

Memory Info
Type: W25Q32FV
Manufact.: Winbond
Size(KB): 4096
Manu. ID: 0xef
JEDEC ID: 0xef4016

File Info
Name :
Size
Checksum(File size) :
Checksum(Chip size) :
CRC32 Checksum(file size):
CRC32 Checksum(chip size):
SA Operations: I+B+E+P+V

Batch Config setting
Identify Chip
Blank Check
Erase Whole Chip
Program Chip
Checksum Verify

No operation on-going.

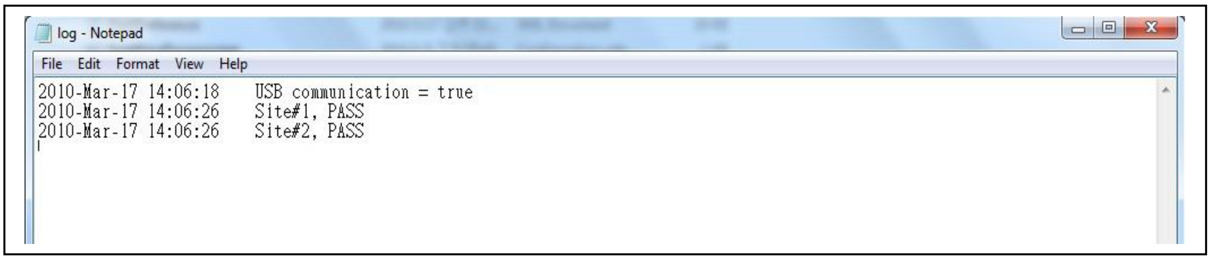
V. DediProg Windows Command Line

5.1 Introduction

The window command line has been designed to control our programmer from the other software. This feature will be convenient to synchronize the two software in development (For example: program the memory automatically after the code has been compiled) or in production (for example: Program automatically the Serial Flash via the ICT tester after the hardware has been checked).

Command result “log.txt” file will be automatically saved under following folders:
Windows XP:
C:\Documents and Settings\User\Application Data\DediProg\SF100

Windows Vista, Windows 7, Windows 8 and Windows 8.1:
C:\Users\user\AppData\Roaming\DediProg\SF100



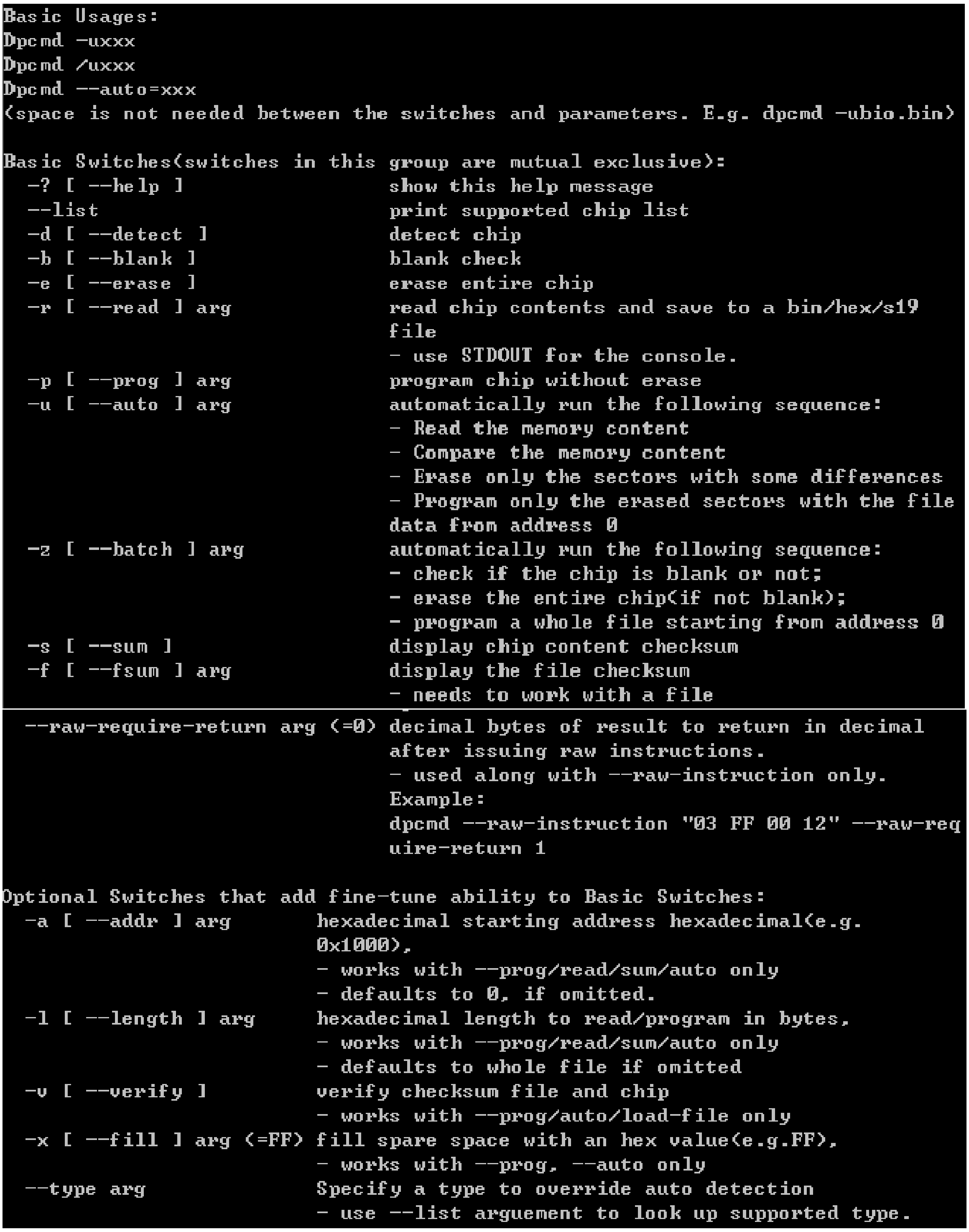
```
2010-Mar-17 14:06:18    USB communication = true
2010-Mar-17 14:06:26    Site#1, PASS
2010-Mar-17 14:06:26    Site#2, PASS
```

This .txt file has to be checked to make sure that the operation has been successful. Time stamp can also be checked to be sure that the result has been updated with a new value.

Below are the error messages in the log.txt file.
FAIL Identify Fail
FAIL Blank Fail
FAIL Erase Fail
FAIL Program Fail
FAIL Read Fail
FAIL Send Specific data Fail
FAIL Verify Fail
FAIL Unknow

To get more information about these methods please contact DediProg.

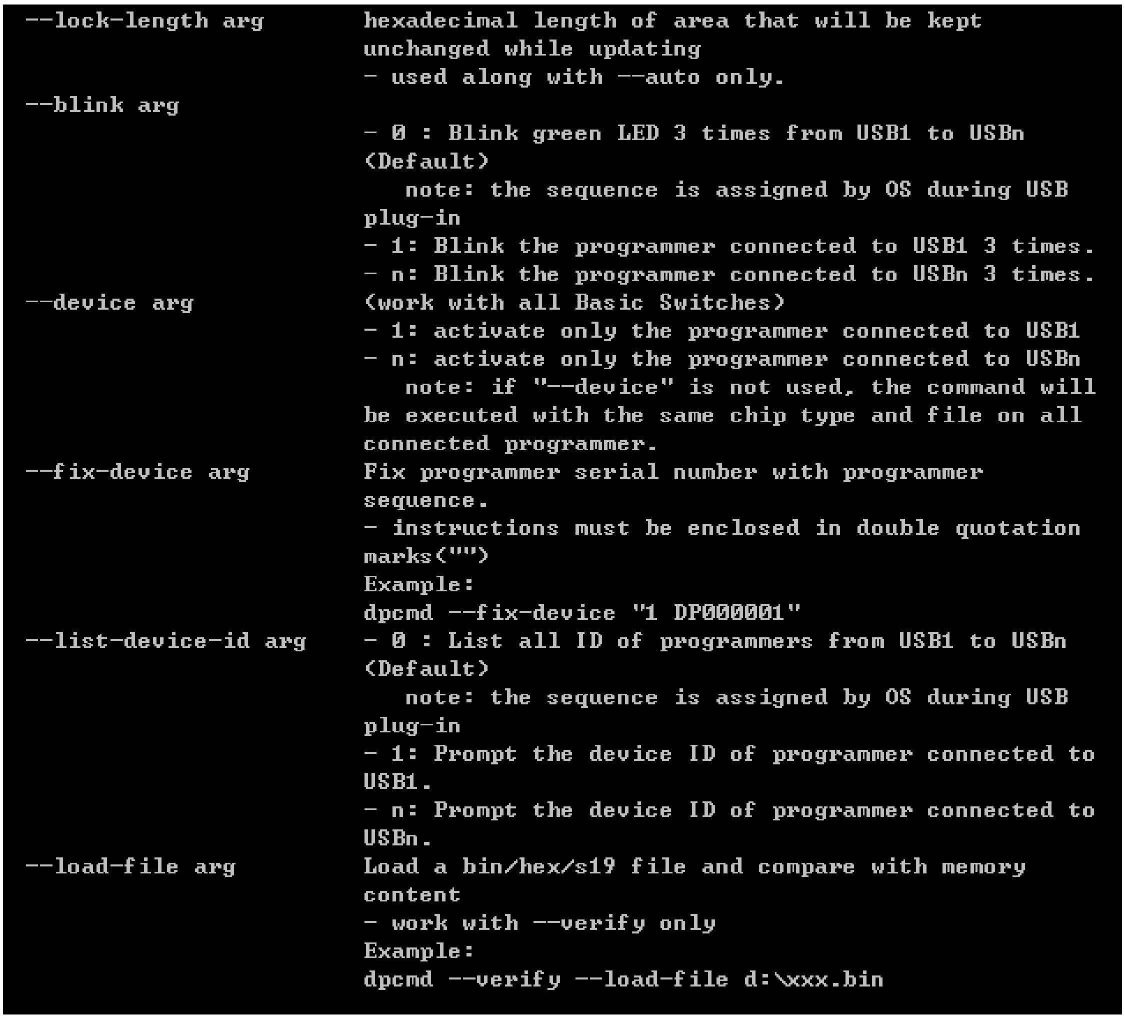
Window DOS command



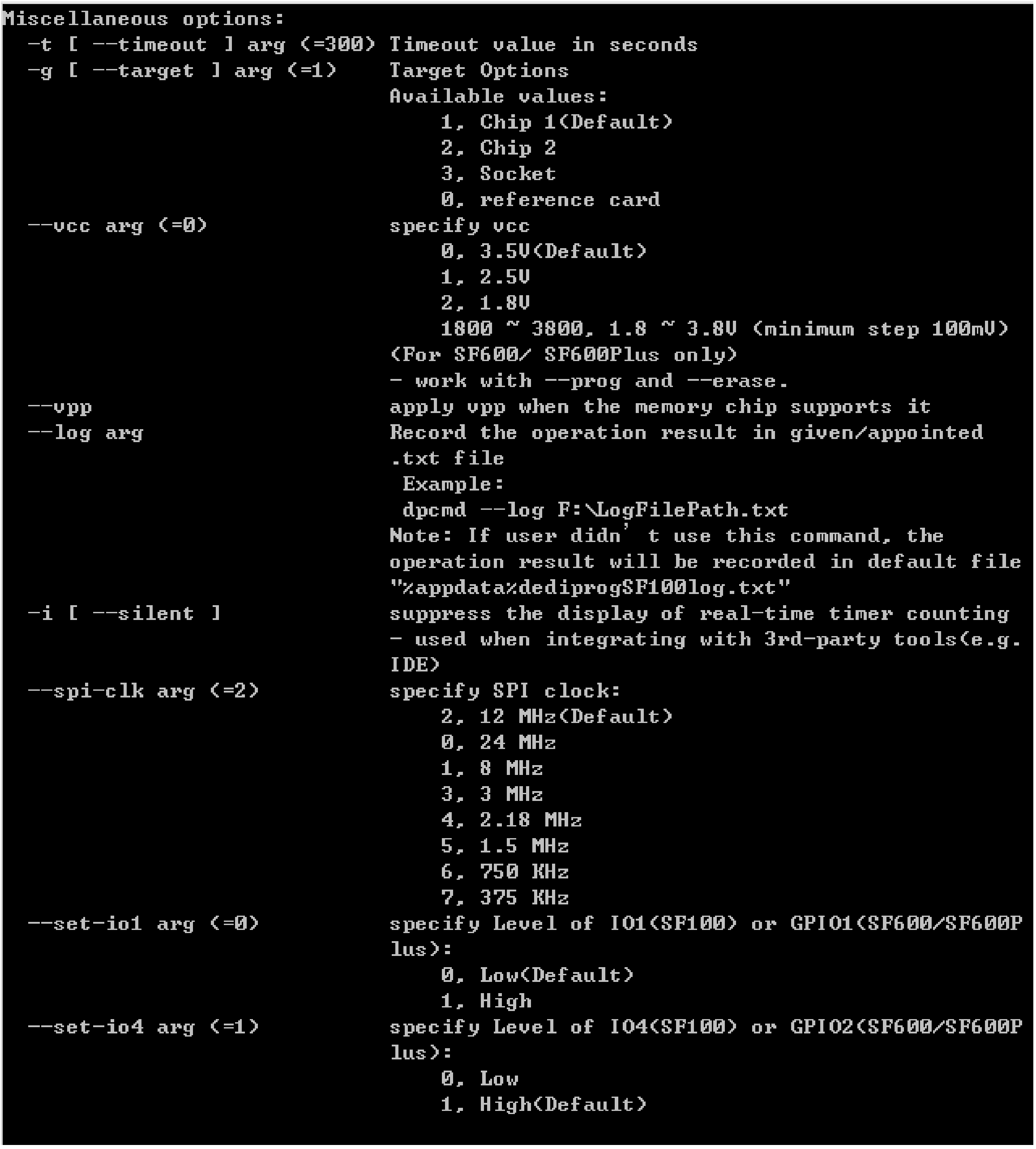
```
Basic Usages:
Dpcmd -uxxx
Dpcmd /uxxx
Dpcmd --auto=xxx
(space is not needed between the switches and parameters. E.g. dpcmd -ubio.bin)

Basic Switches(switches in this group are mutual exclusive):
  -? [ --help ]                show this help message
  --list                       print supported chip list
  -d [ --detect ]              detect chip
  -b [ --blank ]               blank check
  -e [ --erase ]               erase entire chip
  -r [ --read ] arg            read chip contents and save to a bin/hex/s19
                               file
                               - use STDOUT for the console.
  -p [ --prog ] arg            program chip without erase
  -u [ --auto ] arg            automatically run the following sequence:
                               - Read the memory content
                               - Compare the memory content
                               - Erase only the sectors with some differences
                               - Program only the erased sectors with the file
                               data from address 0
  -z [ --batch ] arg           automatically run the following sequence:
                               - check if the chip is blank or not;
                               - erase the entire chip(if not blank);
                               - program a whole file starting from address 0
  -s [ --sum ]                 display chip content checksum
  -f [ --fsum ] arg            display the file checksum
                               - needs to work with a file
  --raw-require-return arg (=0) decimal bytes of result to return in decimal
                               after issuing raw instructions.
                               - used along with --raw-instruction only.
                               Example:
                               dpcmd --raw-instruction "03 FF 00 12" --raw-req
                               uire-return 1

Optional Switches that add fine-tune ability to Basic Switches:
  -a [ --addr ] arg        hexadecimal starting address hexadecimal(e.g.
                           0x1000),
                           - works with --prog/read/sum/auto only
                           - defaults to 0, if omitted.
  -l [ --length ] arg      hexadecimal length to read/program in bytes,
                           - works with --prog/read/sum/auto only
                           - defaults to whole file if omitted
  -v [ --verify ]          verify checksum file and chip
                           - works with --prog/auto/load-file only
  -x [ --fill ] arg (=FF) fill spare space with an hex value(e.g.FF),
                           - works with --prog, --auto only
  --type arg               Specify a type to override auto detection
                           - use --list arguement to look up supported type.
```



```
--lock-length arg        hexadecimal length of area that will be kept
                         unchanged while updating
                         - used along with --auto only.
--blink arg
                         - 0 : Blink green LED 3 times from USB1 to USBn
                         (Default)
                            note: the sequence is assigned by OS during USB
                         plug-in
                         - 1: Blink the programmer connected to USB1 3 times.
                         - n: Blink the programmer connected to USBn 3 times.
--device arg             (work with all Basic Switches)
                         - 1: activate only the programmer connected to USB1
                         - n: activate only the programmer connected to USBn
                            note: if "--device" is not used, the command will
                         be executed with the same chip type and file on all
                         connected programmer.
--fix-device arg         Fix programmer serial number with programmer
                         sequence.
                         - instructions must be enclosed in double quotation
                         marks("")
                         Example:
                         dpcmd --fix-device "1 DP000001"
--list-device-id arg     - 0 : List all ID of programmers from USB1 to USBn
                         (Default)
                            note: the sequence is assigned by OS during USB
                         plug-in
                         - 1: Prompt the device ID of programmer connected to
                         USB1.
                         - n: Prompt the device ID of programmer connected to
                         USBn.
--load-file arg          Load a bin/hex/s19 file and compare with memory
                         content
                         - work with --verify only
                         Example:
                         dpcmd --verify --load-file d:\xxx.bin
```



```
Miscellaneous options:
  -t [ --timeout ] arg (=300) Timeout value in seconds
  -g [ --target ] arg (=1)    Target Options
                              Available values:
                                  1, Chip 1(Default)
                                  2, Chip 2
                                  3, Socket
                                  0, reference card
  --vcc arg (=0)              specify vcc
                                  0, 3.5V(Default)
                                  1, 2.5V
                                  2, 1.8V
                                  1800 ~ 3800, 1.8 ~ 3.8V (minimum step 100mV)
                              (For SF600/ SF600Plus only)
                              - work with --prog and --erase.
  --vpp                       apply vpp when the memory chip supports it
  --log arg                   Record the operation result in given/appointed
                              .txt file
                               Example:
                               dpcmd --log F:\LogFilePath.txt
                              Note: If user didn' t use this command, the
                              operation result will be recorded in default file
                              "%appdata%dediprogSF100log.txt"
  -i [ --silent ]             suppress the display of real-time timer counting
                              - used when integrating with 3rd-party tools(e.g.
                              IDE)
  --spi-clk arg (=2)          specify SPI clock:
                                  2, 12 MHz(Default)
                                  0, 24 MHz
                                  1, 8 MHz
                                  3, 3 MHz
                                  4, 2.18 MHz
                                  5, 1.5 MHz
                                  6, 750 KHz
                                  7, 375 KHz
  --set-io1 arg (=0)          specify Level of IO1(SF100) or GPIO1(SF600/SF600P
                              lus):
                                  0, Low(Default)
                                  1, High
  --set-io4 arg (=1)          specify Level of IO4(SF100) or GPIO2(SF600/SF600P
                              lus):
                                  0, Low
                                  1, High(Default)
```

5.2 How to Start

DediProg window dos command line software is executed by the file “dpcmd.exe.” There are three different ways to run the dos command line.

1. Double click on the “dpcmd” icon on your desktop and type in dpcmd and enter.
2. Change your dos directory to the same location where “dpcmd.exe” is located. C:\program files\dediprog\SF100
3. Type in the following command to auto directs the dpcmd command to the “dpcmd.exe” location.

Set path=%path%;”c:\program files\dediprog\SF100

5.3 Basic Usages

1. dpcmd –r "f:\file.bin",
   reads the chip and save it into a file "file.bin" in Partition f
2. dpcmd –r STDOUT –a 0x100 -l 0x23,
   reads 0x23 bytes starting from 0x100 and display it on the screen
3. dpcmd –u f:\file.bin,
   erases and then program file.bin in Partition f into the serial flash
4. dpcmd –p f:\file.bin –a 0x100,
   writes file.bin in Partition f into the serial flash starting from address 0x100
5. dpcmd –p f:\file.bin –x 0xaa,
   programs file.bin in Partition f into the serial flash and fill the rest area with 0xaa

Remarks: -a, -l only works with -p, -r, -s
Remarks: -x only works with -p
Remarks: space is not needed between the switches parameters. E.g. dpcmd –uf:\file.bin

5.4 Basic Switches

-? [--help]	Show this help message
--list	Print supported chip list
-d [--detect]	detect chip
-b [--blank]	blank check
-e [--erase]	erase entire chip
-r [--read] arg	read chip contents and save to a bin/hex/s19 file -use STDOUT for the console.
-p [--prog] arg	program chip without erase
-u [--auto] arg	automatically run the following sequence: - Read the memory content - Compare the memory content - Erase only the sectors with some differences - Program only the erased sectors with the file data from address 0
-z [--batch] arg	automatically run the following sequence: - check if the chip is blank or not - erase the entire chip(if not blank) - program a whole file starting from address 0
-s [--sum]	display chip content checksum
-f [--fsum] arg	display the file checksum
--raw-instruction arg	- needs to work with a file issue raw serial flash instructions. - use spaces(" ") to delimit bytes. - instructions must be enclosed in double quotation marks("") Example: dpcmd --raw-instruction "03 FF 00 12"
--raw-require-return arg (=0)	decimal bytes of result to return in decimal after issuing raw instructions. - used along with --raw-instruction only. Example: dpcmd --raw-instruction "03 FF 00 12" --raw-require-return 1

5.5 Optional Switches

(Specify the following switches to change default values):

-a [--addr] arg	hexadecimal starting address hexadecimal (e.g. 0x1000), - works with --prog/read/sum/auto only - defaults to 0, if omitted.
-l [--length] arg	hexadecimal length to read/program in bytes, - works with --prog/read/sum/auto only - defaults to whole file if omitted
-v [--verify]	verify checksum file and chip - works with --prog/auto/load-file only
-x [--fill] arg (=FF)	fill spare space with an hex value(e.g. FF), - works with –prog, --auto only
--type arg	Specify a type to override auto detection - use –list arguement to look up supported type.
--lock-start arg	hexadecimal starting address(e.g. 0x1000), - works with –prog/read/sum/auto only - defaults to 0, if omitted.
--lock-length arg	hexadecimal length of area that will be kept unchanged while updating - used along with –auto only.
--blink arg	- 0 : Blink green LED 3 times from USB1 to USBn (Default) note: the sequence is assigned by OS during USB plug-in - 1: Blink the programmer connected to USB1 3 times. - n: Blink the programmer connected to USBn 3 times.
--device arg	(work with all Basic Switches) - 1 : activate only the programmer connected to USB1 - n : activate only the programmer connected to USBn note: if "–device" is not used, the command will be executed with the same chip type and file on all connected programmer.
--fix-device arg	Fix programmer serial number with programmer sequence. - instructions must be enclosed in double quotation marks("") Example: dpcmd –fix-device "1 DP000001"
--list-device-id arg	- 0 : List all ID of programmers from USB1 to USBn (Default) note: the sequence is assigned by OS during USB plug-in - 1 : Prompt the device ID of programmer connected to USB1. - n : Prompt the device ID of programmer connected to USBn.

--load-file	Load a bin/hex/s19 file and compare with memory content - work with –verify only Example: dpcmd –verify –load-file d:\xxx.bin

Miscellaneous options:

Note: The programming operation always uses the default value for command. If users want to use other setting, must add the wanted option to every command.

-t [--timeout] arg (=300)	Timeout value in seconds
-g [--target] arg (=1)	Target Options Available values: 1, Chip 1(Default) 2, Chip 2 3, Socket 0, reference card
--vcc arg (=0)	specify vcc 0, 3.5V(Default) 1, 2.5V 2, 1.8V 1800 ~ 3800, 1.8 ~ 3.8V (minimum step 100mV) (For SF600/SF600*Plus* only)
--vpp	- work with –prog and –erase. Apply vpp when the memory chip supports it
--log arg	Record the operation result in given/appointed .txt file Example: dpcmd –log F:\LogFilePath.txt Note: If user didn’t use this command, the operation result will be recorded in default file “%appdata%\dediprog\SF100\log.txt”
-i [--silent]	suppress the display of real-time timer counting - used when integrating with 3rd-party tools (e.g. IDE)
--spi-clk arg (=2)	specify SPI clock: 2, 12 MHz(Default) 0, 24 MHz 1, 8 MHz 3, 3 MHz 4, 2.18 MHz 5, 1.5 MHz 6, 750 KHz 7, 375 KHz

--set-io1 arg (=0)	specify Level of IO1(SF100) or GPIO1(SF600/SF600Plus): 0, Low(Default) 1, High
--set-io4 arg (=1)	specify Level of IO4(SF100) or GPIO2(SF600/SF600Plus): 0, Low 1, High(Default)

5.6 Exit Code

```
enum ErrorCode
{
EXCODE_PASS,
EXCODE_FAIL_ERASE,
EXCODE_FAIL_PROG,
EXCODE_FAIL_VERIFY,
EXCODE_FAIL_READ,
EXCODE_FAIL_BLANK,  // 5
EXCODE_FAIL_BATCH,
EXCODE_FAIL_CHKSUM,
EXCODE_FAIL_IDENTIFY,
EXCODE_FAIL_OTHERS=99,
};
```

VI. Specific Functions (SF600 and SF600*Plus*)

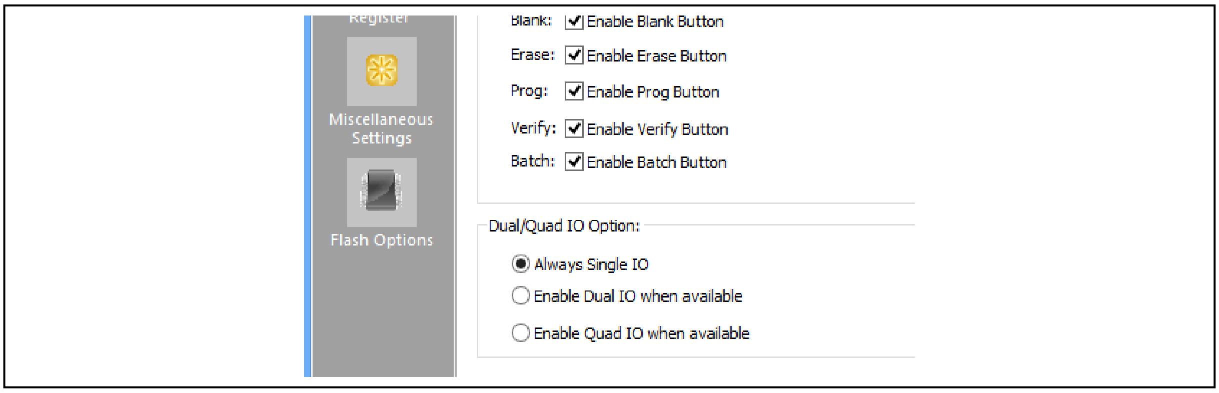
6.1 Dual/Quad IO

User can find Dual/Quad IO option in **Config/Miscellaneous Settings**.

The default of Dual/Quad IO option is “Always Single IO”.

SF600 and SF600*Plus* support Dual and Quad IO. When using a SPI Flash with Dual/Quad IO function, user can select Dual or Quad IO mode.

Note: Socket mode only support Single/Dual IO mode. When use the socket programming the Quad IO function will disable.



Blank: ☑ Enable Blank Button

Erase: ☑ Enable Erase Button

Prog: ☑ Enable Prog Button

Verify: ☑ Enable Verify Button

Batch: ☑ Enable Batch Button

Dual/Quad IO Option:

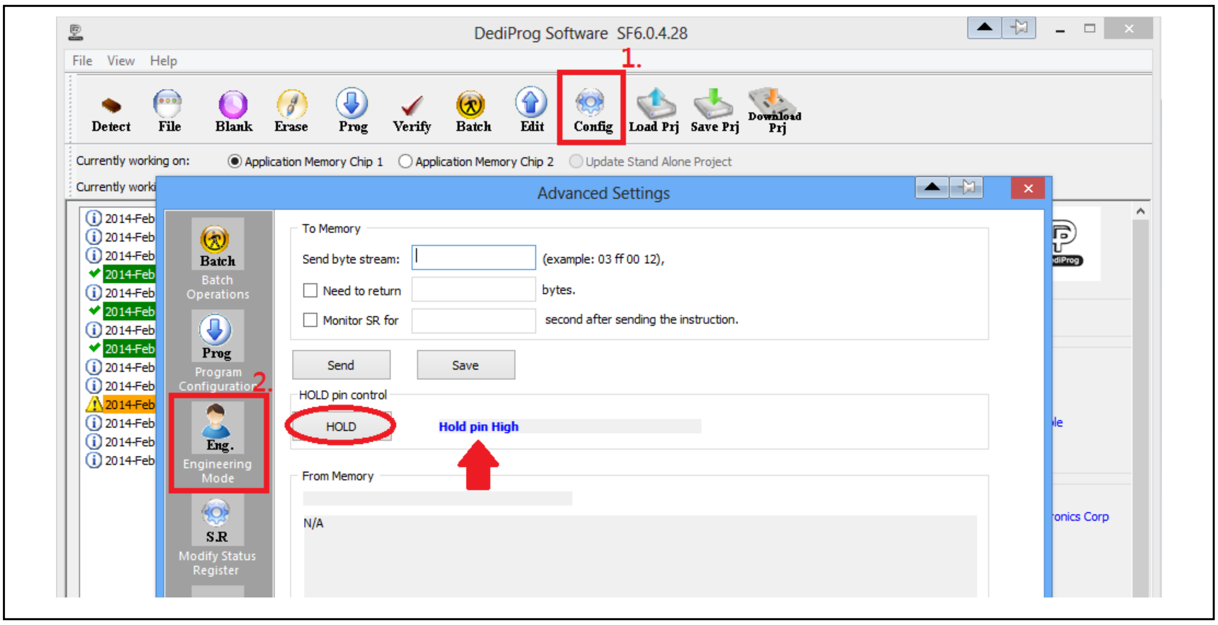
● Always Single IO

○ Enable Dual IO when available

○ Enable Quad IO when available

6.2 Hold Pin Status Setting

SF600 and SF600*Plus* programmer is available to set HOLD pin status through software. Please go through Config and change it under engineering mode. Click on HOLD button to change the status of HIGH or LOW. This function is available at SF600 and SF600*Plus.*



Currently working on: ● Application Memory Chip 1 ○ Application Memory Chip 2 ○ Update Stand Alone Project

To Memory

Send byte stream: (example: 03 ff 00 12),

□ Need to return bytes.

□ Monitor SR for second after sending the instruction.

Send Save

HOLD pin control

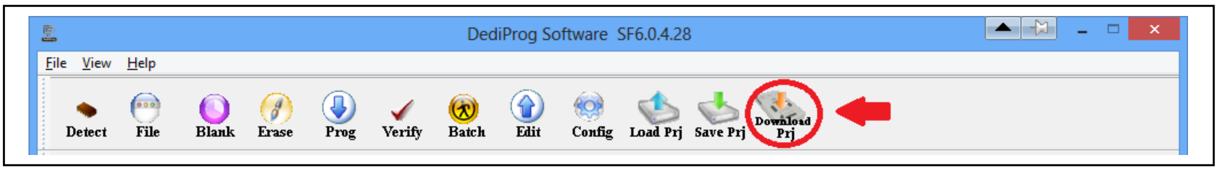
HOLD Hold pin High

From Memory

N/A

VII. Stand Alone Mode (SF600*Plus* only)

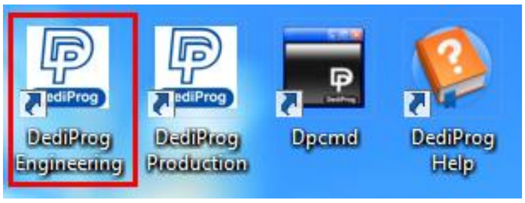
In addition to the functions provided by SF100 and SF600, SF600*Plus* further allow users download project to SF600*Plus* directly and to program serial flash memories in the standalone mode.



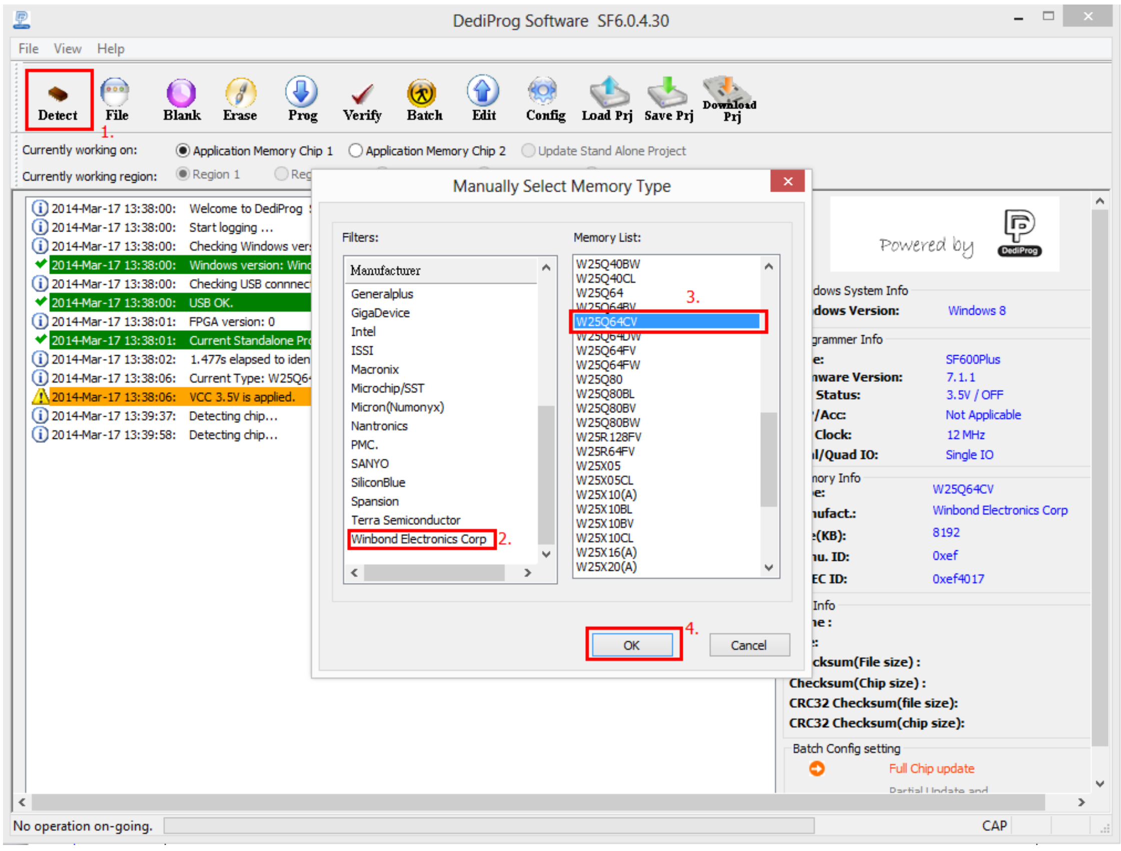
7.1 Project preparation

Prepare a stand alone programming project.

7.1.1 Open DediProg Engineer software.



7.1.2 Select IC brand and part number.



Currently working on: ● Application Memory Chip 1 ○ Application Memory Chip 2 ○ Update Stand Alone Project

Currently working region: ● Region 1 ○ Reg

```
2014-Mar-17 13:38:00:   Welcome to DediProg
2014-Mar-17 13:38:00:   Start logging ...
2014-Mar-17 13:38:00:   Checking Windows ver
2014-Mar-17 13:38:00:   Windows version: Win
2014-Mar-17 13:38:00:   Checking USB connnec
2014-Mar-17 13:38:00:   USB OK.
2014-Mar-17 13:38:01:   FPGA version: 0
2014-Mar-17 13:38:01:   Current Standalone Pr
2014-Mar-17 13:38:02:   1.477s elapsed to iden
2014-Mar-17 13:38:06:   Current Type: W25Q6
2014-Mar-17 13:38:06:   VCC 3.5V is applied.
2014-Mar-17 13:39:37:   Detecting chip...
2014-Mar-17 13:39:58:   Detecting chip...
```

Manually Select Memory Type

Filters:

Manufacturer
Generalplus
GigaDevice
Intel
ISSI
Macronix
Microchip/SST
Micron(Numonyx)
Nantronics
PMC.
SANYO
SiliconBlue
Spansion
Terra Semiconductor
Winbond Electronics Corp

2\.

Memory List:

W25Q40BW
W25Q40CL
W25Q64
W25Q64BV
W25Q64CV
W25Q64DW
W25Q64FV
W25Q64FW
W25Q80
W25Q80BL
W25Q80BV
W25Q80BW
W25R128FV
W25R64FV
W25X05
W25X05CL
W25X10(A)
W25X10BL
W25X10BV
W25X10CL
W25X16(A)
W25X20(A)

3\.

OK 4. Cancel

dows System Info

dows Version:	Windows 8

grammer Info

e:	SF600Plus
nware Version:	7.1.1
Status:	3.5V / OFF
/Acc:	Not Applicable
Clock:	12 MHz
l/Quad IO:	Single IO

nory Info

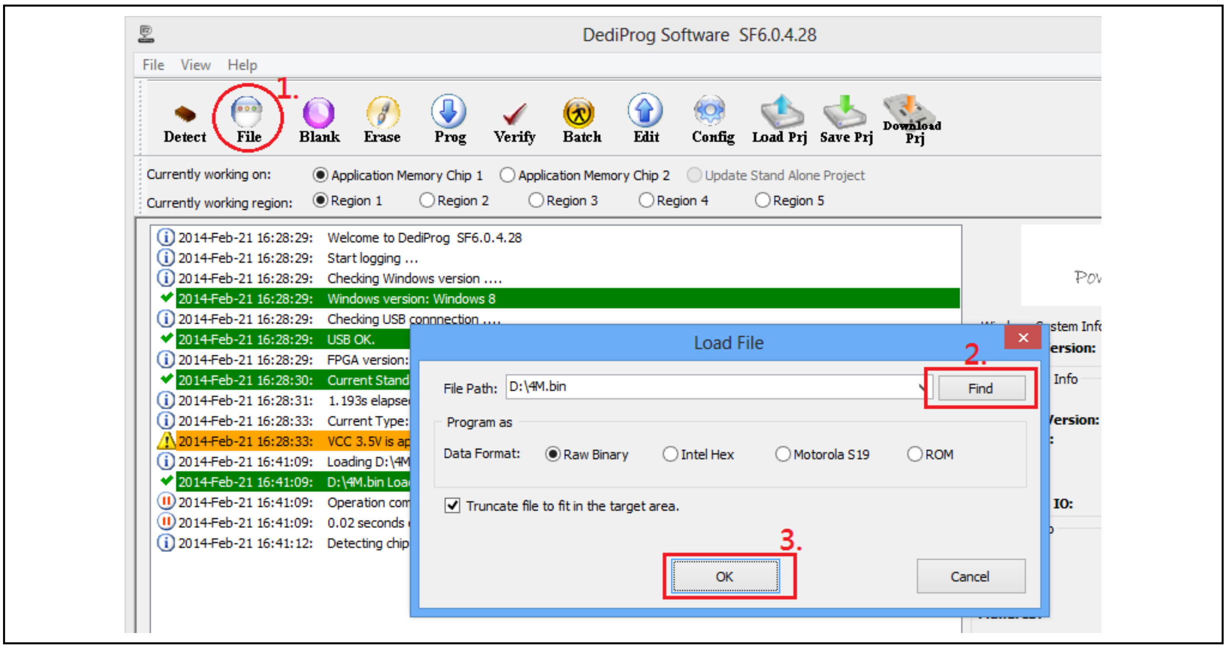
e:	W25Q64CV
ufact.:	Winbond Electronics Corp
(KB):	8192
u. ID:	0xef
EC ID:	0xef4017

Info
e :
:
cksum(File size) :
Checksum(Chip size) :
CRC32 Checksum(file size):
CRC32 Checksum(chip size):

Batch Config setting
Full Chip update
Partial Update and

No operation on-going.

7.1.3 Load the programing file.



Currently working on: ● Application Memory Chip 1 ○ Application Memory Chip 2 ○ Update Stand Alone Project

Currently working region: ● Region 1 ○ Region 2 ○ Region 3 ○ Region 4 ○ Region 5

```
2014-Feb-21 16:28:29:   Welcome to DediProg SF6.0.4.28
2014-Feb-21 16:28:29:   Start logging ...
2014-Feb-21 16:28:29:   Checking Windows version ....
2014-Feb-21 16:28:29:   Windows version: Windows 8
2014-Feb-21 16:28:29:   Checking USB connnection ....
2014-Feb-21 16:28:29:   USB OK.
2014-Feb-21 16:28:29:   FPGA version:
2014-Feb-21 16:28:30:   Current Stand
2014-Feb-21 16:28:31:   1.193s elapse
2014-Feb-21 16:28:33:   Current Type:
2014-Feb-21 16:28:33:   VCC 3.5V is ap
2014-Feb-21 16:41:09:   Loading D:\4M
2014-Feb-21 16:41:09:   D:\4M.bin Loa
2014-Feb-21 16:41:09:   Operation com
2014-Feb-21 16:41:09:   0.02 seconds
2014-Feb-21 16:41:12:   Detecting chip
```

File Path: D:\4M.bin

Program as

Data Format: ● Raw Binary ○ Intel Hex ○ Motorola S19 ○ ROM

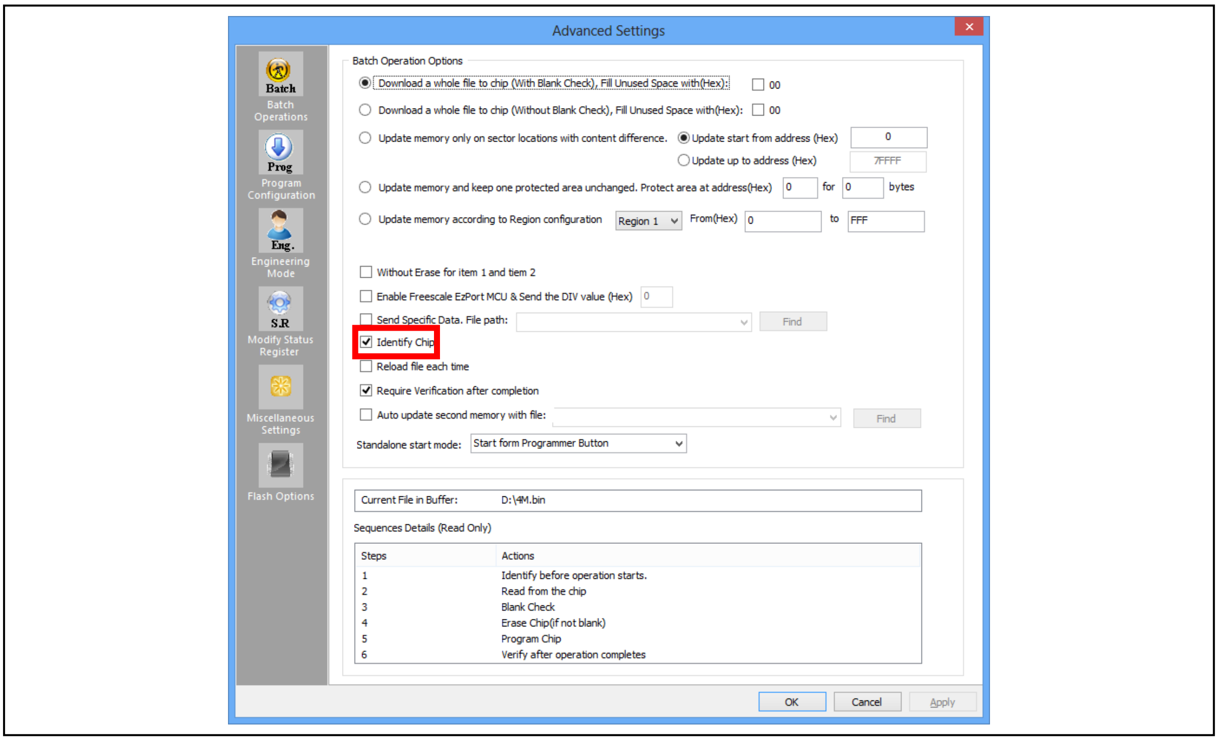
☑ Truncate file to fit in the target area.

7.1.4 Click "Config" Icon to set programming flow.

Important Notice:

"Identify Chip" is necessary for SF600*plus* stand alone programming.

Be sure to include "Identify Chip" in programming flow.



Batch Operation Options

● Download a whole file to chip (With Blank Check), Fill Unused Space with(Hex): □ 00

○ Download a whole file to chip (Without Blank Check), Fill Unused Space with(Hex): □ 00

○ Update memory only on sector locations with content difference. ● Update start from address (Hex) 0 ○ Update up to address (Hex) 7FFFF

○ Update memory and keep one protected area unchanged. Protect area at address(Hex) 0 for 0 bytes

○ Update memory according to Region configuration Region 1 From(Hex) 0 to FFF

□ Without Erase for item 1 and tiem 2

□ Enable Freescale EzPort MCU & Send the DIV value (Hex) 0

□ Send Specific Data. File path:

☑ Identify Chip

□ Reload file each time

☑ Require Verification after completion

□ Auto update second memory with file:

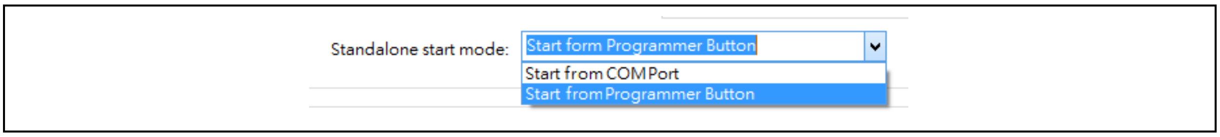
Standalone start mode: Start form Programmer Button

Current File in Buffer: D:\4M.bin

Sequences Details (Read Only)

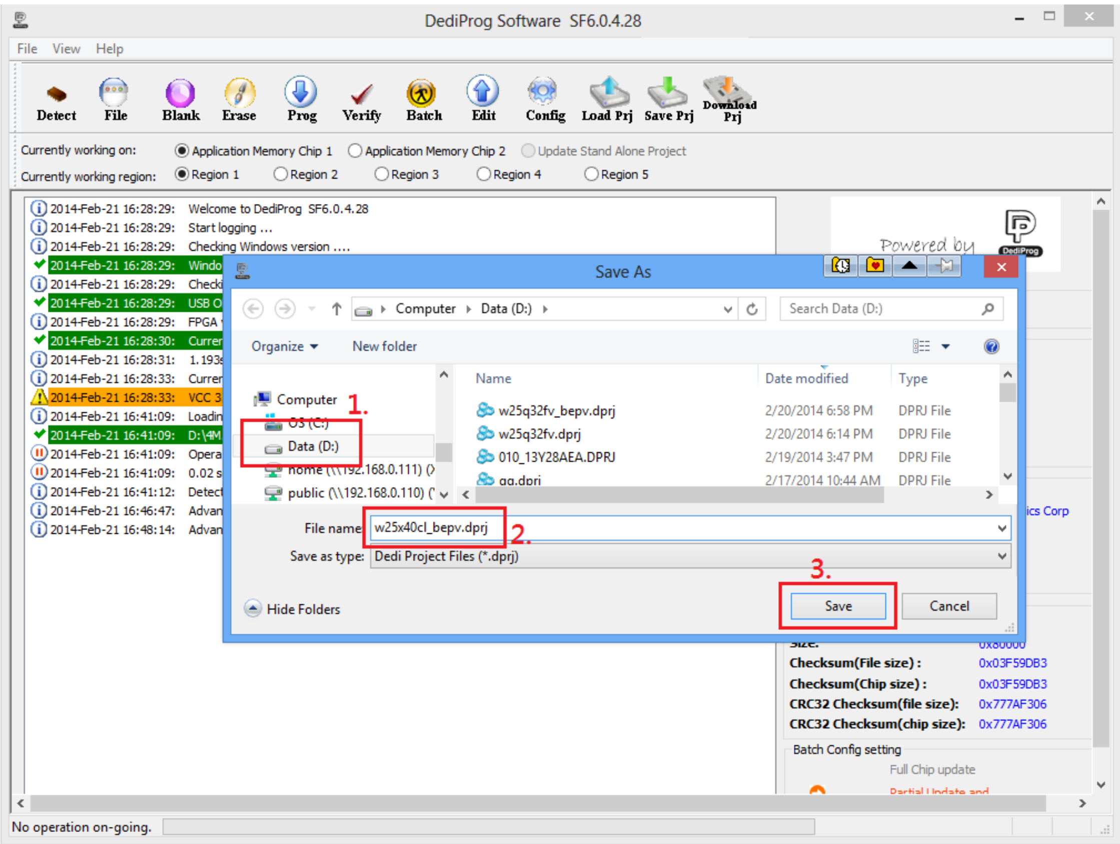
Steps	Actions
1	Identify before operation starts.
2	Read from the chip
3	Blank Check
4	Erase Chip(if not blank)
5	Program Chip
6	Verify after operation completes

7.1.5 Choosing Stand Alone start mode



Standalone start mode: Start form Programmer Button

7.1.6 Save dprj file to PC.



Currently working on: ● Application Memory Chip 1 ○ Application Memory Chip 2 ○ Update Stand Alone Project

Currently working region: ● Region 1 ○ Region 2 ○ Region 3 ○ Region 4 ○ Region 5

```
2014-Feb-21 16:28:29:  Welcome to DediProg SF6.0.4.28
2014-Feb-21 16:28:29:  Start logging ...
2014-Feb-21 16:28:29:  Checking Windows version ....
2014-Feb-21 16:28:29:  Windo
2014-Feb-21 16:28:29:  Checki
2014-Feb-21 16:28:29:  USB O
2014-Feb-21 16:28:29:  FPGA
2014-Feb-21 16:28:30:  Curren
2014-Feb-21 16:28:31:  1.193
2014-Feb-21 16:28:33:  Curren
2014-Feb-21 16:28:33:  VCC 3
2014-Feb-21 16:41:09:  Loadin
2014-Feb-21 16:41:09:  D:\4M
2014-Feb-21 16:41:09:  Opera
2014-Feb-21 16:41:09:  0.02 s
2014-Feb-21 16:41:12:  Detect
2014-Feb-21 16:46:47:  Advan
2014-Feb-21 16:48:14:  Advan
```

Name	Date modified	Type
w25q32fv_bepv.dprj	2/20/2014 6:58 PM	DPRJ File
w25q32fv.dprj	2/20/2014 6:14 PM	DPRJ File
010_13Y28AEA.DPRJ	2/19/2014 3:47 PM	DPRJ File
gg.dprj	2/17/2014 10:44 AM	DPRJ File

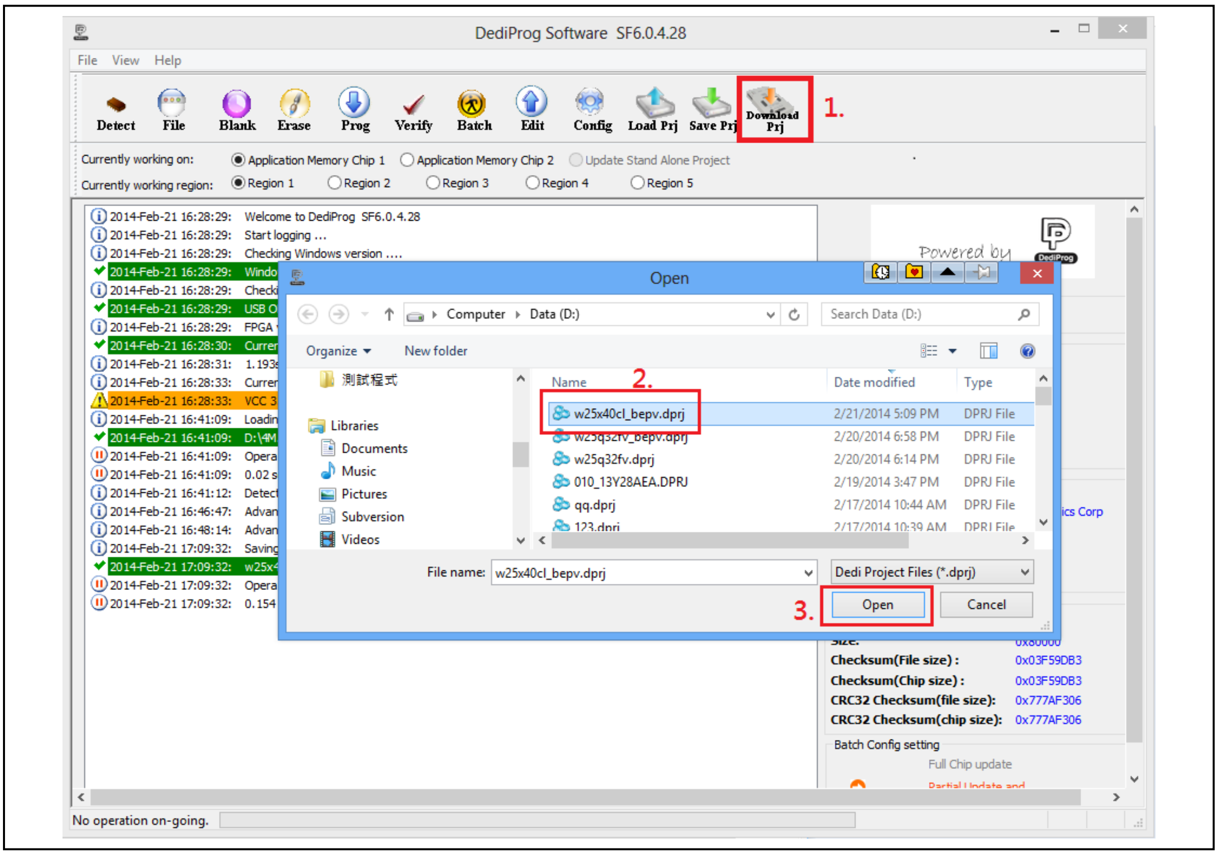
File name: w25x40cl_bepv.dprj

Save as type: Dedi Project Files (*.dprj)

Size:	0x80000
Checksum(File size) :	0x03F59DB3
Checksum(Chip size) :	0x03F59DB3
CRC32 Checksum(file size):	0x777AF306
CRC32 Checksum(chip size):	0x777AF306

No operation on-going.

7.1.7 Press “**Download Prj**” button to download project to SF600*Plus* embedded memory



Currently working on: ● Application Memory Chip 1 ○ Application Memory Chip 2 ○ Update Stand Alone Project

Currently working region: ● Region 1 ○ Region 2 ○ Region 3 ○ Region 4 ○ Region 5

```
2014-Feb-21 16:28:29:  Welcome to DediProg  SF6.0.4.28
2014-Feb-21 16:28:29:  Start logging ...
2014-Feb-21 16:28:29:  Checking Windows version ....
2014-Feb-21 16:28:29:  Windo
2014-Feb-21 16:28:29:  Checki
2014-Feb-21 16:28:29:  USB O
2014-Feb-21 16:28:29:  FPGA
2014-Feb-21 16:28:30:  Curren
2014-Feb-21 16:28:31:  1.193
2014-Feb-21 16:28:33:  Curren
2014-Feb-21 16:28:33:  VCC 3
2014-Feb-21 16:41:09:  Loadin
2014-Feb-21 16:41:09:  D:\4M
2014-Feb-21 16:41:09:  Opera
2014-Feb-21 16:41:09:  0.02 s
2014-Feb-21 16:41:12:  Detect
2014-Feb-21 16:46:47:  Advan
2014-Feb-21 16:48:14:  Advan
2014-Feb-21 17:09:32:  Saving
2014-Feb-21 17:09:32:  w25x4
2014-Feb-21 17:09:32:  Opera
2014-Feb-21 17:09:32:  0.154
```

Name	Date modified	Type
w25x40cl_bepv.dprj	2/21/2014 5:09 PM	DPRJ File
w25q32fv_bepv.dprj	2/20/2014 6:58 PM	DPRJ File
w25q32fv.dprj	2/20/2014 6:14 PM	DPRJ File
010_13Y28AEA.DPRJ	2/19/2014 3:47 PM	DPRJ File
qq.dprj	2/17/2014 10:44 AM	DPRJ File
123.dprj	2/17/2014 10:39 AM	DPRJ File

File name: w25x40cl_bepv.dprj

Dedi Project Files (*.dprj)

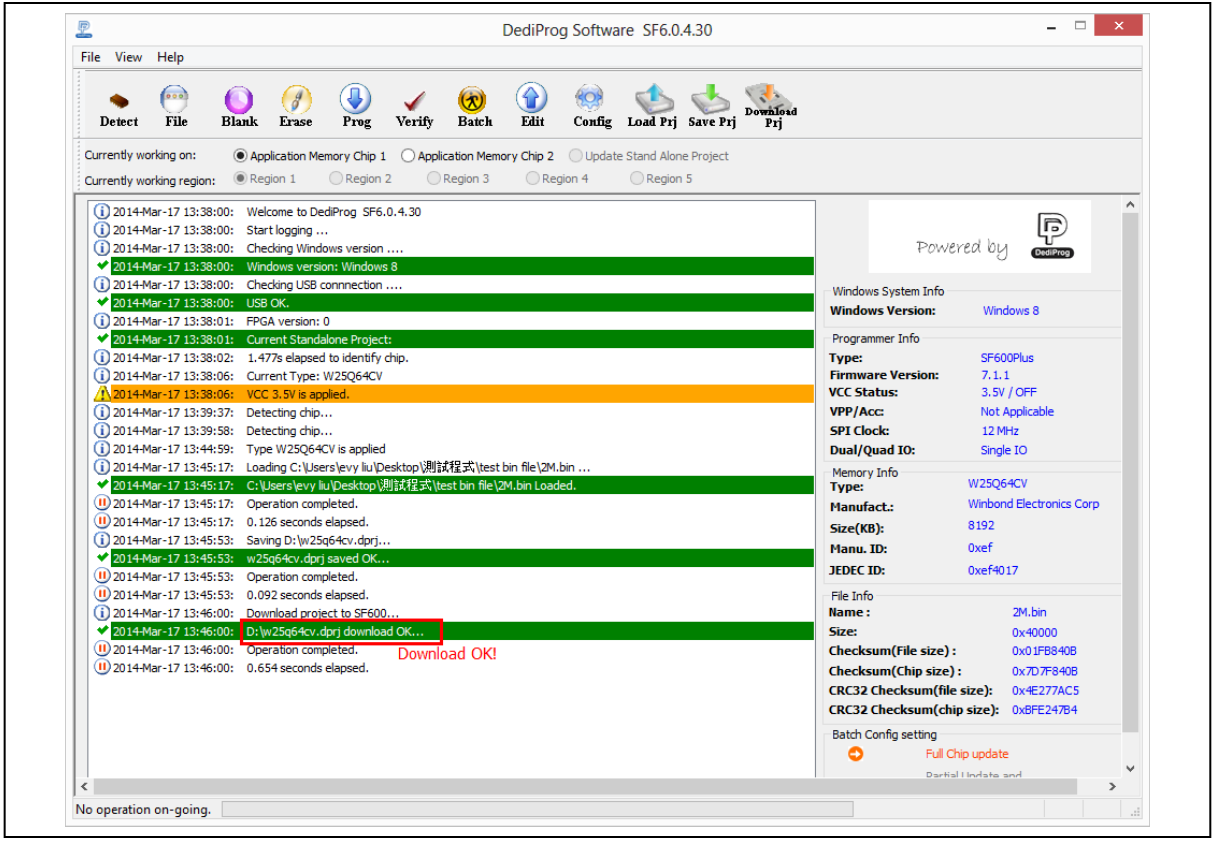
Checksum(File size) : 0x03F59DB3
Checksum(Chip size) : 0x03F59DB3
CRC32 Checksum(file size): 0x777AF306
CRC32 Checksum(chip size): 0x777AF306

Batch Config setting

Full Chip update

No operation on-going.

7.1.8 Download project successful


DediProg Software SF6.0.4.30
File View Help
Detect File Blank Erase Prog Verify Batch Edit Config Load Prj Save Prj Download Prj
Download OK!
Powered by DediProg

Currently working on: ● Application Memory Chip 1 ○ Application Memory Chip 2 ○ Update Stand Alone Project

Currently working region: ● Region 1 ○ Region 2 ○ Region 3 ○ Region 4 ○ Region 5

```
2014-Mar-17 13:38:00:  Welcome to DediProg  SF6.0.4.30
2014-Mar-17 13:38:00:  Start logging ...
2014-Mar-17 13:38:00:  Checking Windows version ....
2014-Mar-17 13:38:00:  Windows version: Windows 8
2014-Mar-17 13:38:00:  Checking USB connnection ....
2014-Mar-17 13:38:00:  USB OK.
2014-Mar-17 13:38:01:  FPGA version: 0
2014-Mar-17 13:38:01:  Current Standalone Project:
2014-Mar-17 13:38:02:  1.477s elapsed to identify chip.
2014-Mar-17 13:38:06:  Current Type: W25Q64CV
2014-Mar-17 13:38:06:  VCC 3.5V is applied.
2014-Mar-17 13:39:37:  Detecting chip...
2014-Mar-17 13:39:58:  Detecting chip...
2014-Mar-17 13:44:59:  Type W25Q64CV is applied
2014-Mar-17 13:45:17:  Loading C:\Users\evy liu\Desktop\測試程式\test bin file\2M.bin ...
2014-Mar-17 13:45:17:  C:\Users\evy liu\Desktop\測試程式\test bin file\2M.bin Loaded.
2014-Mar-17 13:45:17:  Operation completed.
2014-Mar-17 13:45:17:  0.126 seconds elapsed.
2014-Mar-17 13:45:53:  Saving D:\w25q64cv.dprj...
2014-Mar-17 13:45:53:  w25q64cv.dprj saved OK...
2014-Mar-17 13:45:53:  Operation completed.
2014-Mar-17 13:45:53:  0.092 seconds elapsed.
2014-Mar-17 13:46:00:  Download project to SF600...
2014-Mar-17 13:46:00:  D:\w25q64cv.dprj download OK...
2014-Mar-17 13:46:00:  Operation completed.
2014-Mar-17 13:46:00:  0.654 seconds elapsed.
```

Windows System Info
Windows Version: Windows 8

Programmer Info
Type: SF600Plus
Firmware Version: 7.1.1
VCC Status: 3.5V / OFF
VPP/Acc: Not Applicable
SPI Clock: 12 MHz
Dual/Quad IO: Single IO

Memory Info
Type: W25Q64CV
Manufact.: Winbond Electronics Corp
Size(KB): 8192
Manu. ID: 0xef
JEDEC ID: 0xef4017

File Info
Name : 2M.bin
Size: 0x40000
Checksum(File size) : 0x01FB840B
Checksum(Chip size) : 0x7D7F840B
CRC32 Checksum(file size): 0x4E277AC5
CRC32 Checksum(chip size): 0xBFE247B4

Batch Config setting
Full Chip update
Partial Update and

No operation on-going.

7.2 Stand Alone programming

Start Stand Alone programming.

7.2.1 **“Start from Programmer Button”** mode

Press “**Start**” button for 2 seconds to run the project in Stand Alone mode.

7.2.2 **“Start from COM Port”** mode

The Com Port design is for integrating SF600/SF600*Plus* with customer’s system. All programmer pin outs (except 5V and NC) are default with Low status. Once customer/system sends a High signal to trigger START which needs hold for one second and make the programmer working (i.e. BUSY becomes High status accordingly), SF600/SF600*Plus* will also feedback PASS or FAIL result with High signal after programming.

VIII. Firmware Support for Microsoft Windows

Kindly check the Windows OS version and refer to the following table before you upgrading to new firmware and software for SF100/SF600/SF600Plus.

If you are using Windows 8.1, please make sure the programmer firmware and SF software must be the latest version. For older Windows OS version, there's no need to upgrade the programmer FW to the latest version.

User can download the latest version on DediProg website.
www.dediprog.com/download

SF100

Windows OS	Current Firmware Version	Upgrade Firmware	Upgrade Software
Win8.1	5.x.xx and later	5.5.02	SF 6.0.4.34
	1.x.x to 4.x.x	Please contact DediProg sales	
Older versions	5.x.xx and later	5.5.xx	SF 6.0.4.34
	1.x.x to 4.x.x	There are no restriction	

SF600 / SF600*Plus*

Windows OS	Current Firmware Version	Upgrade Firmware	Upgrade Software
Win8.1 and other versions	6.x.x	6.9.0	SF 6.0.4.34
	7.x.x	7.1.1	SF 6.0.4.34
Before Win 8.1	6.x.x	earlier than 6.9.0	There are no restriction

*Please note that support and updates for older hardware versions are no longer available.

IX. Revision History

Date	Version	Changes
2010/03/19	5.5	Added: Enable EzPort Function on Configuration; log.txt file available on Commend line; Blink/Device/Fix-Device on Dpcmd.
2010/04/14	5.6	Added: Update up to address option on Batch and Program Configuration operation options.
2010/05/10	5.7	Minor improvement
2011/05/18	5.8	1. Added specific function. 2. Added region configuration programming function.
2011/08/26	5.9	Added SF600 Hold pin status setting method.
2012/01/09	6.0	Added SF600 stand alone programming.
2012/12/20	6.1	Revise the CLI detail and add exit codes.
2013/08/23	6.2	1. Added status register-2 function 2. Added the multiple-Dpcmd function.
2013/12/18	6.3	1. Remove part of SF200 and SF300 2. Remove “isolation free” from software
2014/02/25	6.4	New feature for SF600*Plus*
2014/04/28	6.5	Replenish COM Port feature of Stand Alone mode
2014/05/20	6.6	Modify log saving command
2014/06/04	6.7	1. Add –load-file command for “verify only” feature 2. Updated case study contents and testing time.
2014/08/01	6.8	1. Added IO1/IO4(SF100) and GPIO1/GPIO2(SF600/SF600*Plus* setting)
2014/10/28	6.9	Added chapter VIII. Firmware Support for Microsoft Windows

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