# SmartPRO 5000U-PLUS Programmer

*Full support to the programming of PCF7952*

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## Document Information

| TYPE | CONTENT |
|------|---------|
| Key words | SmartPRO 5000U programmer, PCF7952 |
| Abstract | This document describes the advantages of SmartPRO 5000U programmer on programming the PCF7952 chip. |

# Revision History

| Version | Rev. Date | Modifications |
|---------|-----------|---------------|
| V0.00 | 2012-05-02 | Original version created |
| V0.10 | 2011-05-03 | Translated to English |

# Content

# Description

SmartPRO  is  a  series  of  universal  programmer,  Within  the  series,  SmartPRO 5000U-PLUS  and  SmartPRO  T9000-PLUS  both  support  the  programming  to PCF7952  chip;  also  they  can  be  upgraded  to  support  all  similar  chips.  This document provides a brief description on how to use SmartPRO series programmer to  program  PCF7952;  also  provides  a  small  performance  comparison  and  lists out  some  customers  feedbacks  to  illustrate  the  advantages  of  SmartPRO programmers on programming PCF7952.



**Picture 1-1   Product Picture**

# Performance Comparison

The following is a performance comparison with other programmers

## 2.1 Comparison with J-Link

SmartPRO series universal programmer has more convenient programming functions comparing to J-Link emulator tools. Detail comparison is listed as below:

**Table 2-1: SmartPRO vs. J-Link**

| Programmer | SmartPRO | J-Link |
|---|---|---|
| Programming speed [1] | 3.9 second | 4.5 second [2] |
| Pin detection | Support | Not support |
| Offline programming | Support | Not support |
| Over current detection [3] | Support | Not support |
| ICP | Support (5000U-PLUS) | Support |
| Mass production | Support | Not support |
| Operation | Simple | Complicated |

[1] *Speed test including Erase, Programming, Verification, and Set protection four steps;*

[2] *This speed is tested under IAR environment, for download command mode, it would be slower;*

[3] *A kind of protection to prevent reverse insertion of chips*

## 2.2 Advantages on programming

SmartPRO series programmer is a kind of universal programmer, it supports the programming to most of commonly used chips, including ARM, DSP, FPGA, CPLD, NOR Flash, NAND Flash, EPROM and EEPROM. Comparing to J-Link emulator tools, the SmartPRO series programmer has the following advantages:

1. Pin detection: The SmartPRO programmer can detect the pin connection status of a chip, if a pin of the chip to program is not correctly connected, the software interface can give out warning to notify user. This could effectively improve the efficiency of the programming, increase the life span of the adapter and the successful rate of programming. For offline programming, only all pins are correctly connected, will the programming start; this could prevent misoperations.

2. Over current detection: if a chip is inserted in reverse position, the programmer will not program and will give out a warning to indicate the reverse state to prevent damage to chips.

3. Convenient settings for programming: user can combine several single step operations to define a combo action, after definition, a single press on the mass programming button can run through all predefined steps in a combo action.

4. Offline programming: SmartPRO programmer supports the offline programming, which means that user does not require a PC to connect with the programmer; this function is very convenient for factory mass and pipelining production.

5. Mass production capability: a real support to asynchronous operations on 4 programming sites, achieve no waiting and non-stop programming with 4 programming sites. For mass programming, the non-stop programming is crucial for time-saving; it can greatly improve the efficiency and the capacity of production.

# Programming PCF7952

The SmartPRO series programming provides a user-friendly and convenient software interface for online programming; also its simple keypad operations allows user to master the offline programming quickly; Figure 3-1 shows the flow of programming.
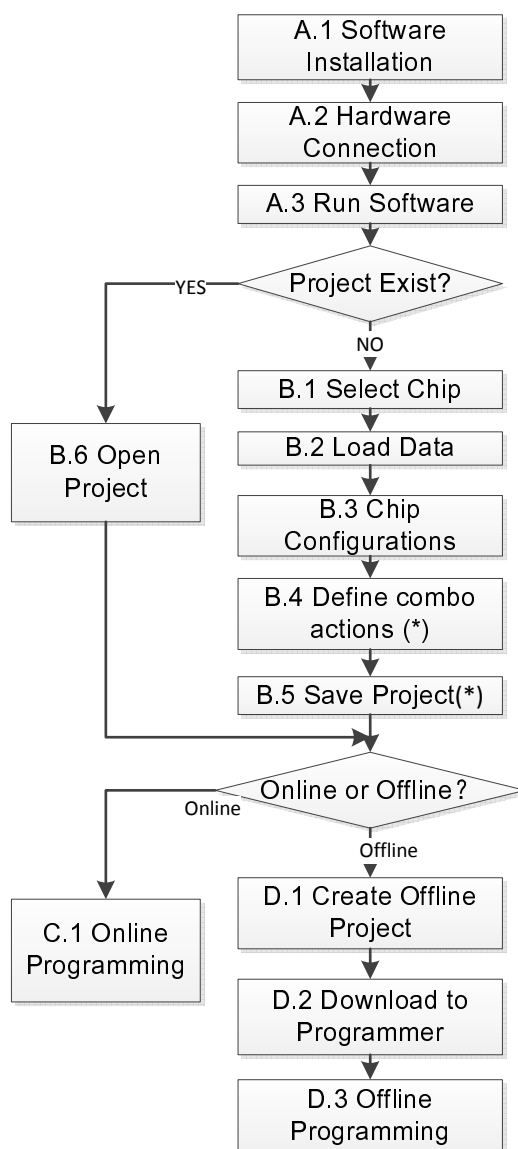
```
                    ┌─────────────────────┐
                    │ A.1 Software        │
                    │ Installation        │
                    └─────────┬───────────┘
                    ┌─────────▼───────────┐
                    │ A.2 Hardware        │
                    │ Connection          │
                    └─────────┬───────────┘
                    ┌─────────▼───────────┐
                    │ A.3 Run Software    │
                    └─────────┬───────────┘
           YES───────◇ Project Exist? ◇
            │                 │ NO
            │       ┌─────────▼───────────┐
            │       │ B.1 Select Chip     │
            │       └─────────┬───────────┘
   ┌────────▼─────┐ ┌─────────▼───────────┐
   │ B.6 Open     │ │ B.2 Load Data       │
   │ Project      │ └─────────┬───────────┘
   └──────────────┘ ┌─────────▼───────────┐
                    │ B.3 Chip            │
                    │ Configurations      │
                    └─────────┬───────────┘
                    ┌─────────▼───────────┐
                    │ B.4 Define combo    │
                    │ actions (*)         │
                    └─────────┬───────────┘
                    ┌─────────▼───────────┐
                    │ B.5 Save Project(*) │
                    └─────────────────────┘

           Online──◇ Online or Offline? ◇
            │                 │ Offline
   ┌────────▼─────┐ ┌─────────▼───────────┐
   │ C.1 Online   │ │ D.1 Create Offline  │
   │ Programming  │ │ Project             │
   └──────────────┘ └─────────┬───────────┘
                    ┌─────────▼───────────┐
                    │ D.2 Download to     │
                    │ Programmer          │
                    └─────────┬───────────┘
                    ┌─────────▼───────────┐
                    │ D.3 Offline         │
                    │ Programming         │
                    └─────────────────────┘
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**Figure 3-1: Programming flow**

# Customer Feedbacks

The following table listed out two of our major customers that using PCF9752, they both reported that our programmer perfectly supports the programming to this chip:

**Table 4-1: PCF9752 Customers with good feedback**

| Customer name | Programmer | Programming mode |
|---|---|---|
| BYD Auto (China) | SmartPRO 5000U | ICP and Socket Adapter |
| Shanghai NAEN Automobile Technology Co., Ltd. | SmartPRO 5000U | Socket Adapter |

# Supportted List

The following table listed out all chips which have been supported by SmartPRO 5000U-PLUS:

**Table 5-1: Supportted List**

| Part Number | Adapt | Part Number | Adapt |
|---|---|---|---|
| PCF7922@ICPLine | | PCF8582C | |
| PCF7922@TSSOP20 | ZY290D | PCF8582C@SOIC8(3.9mm) | ZY300A |
| PCF7961@ICPLine | | PCF8582D | |
| PCF7961@TSSOP20 | ZY290D | PCF8582D@SOIC8(3.9mm) | ZY300A |
| PCH7970@SSOP28 | ZY291A | PCF8582E | |
| PCH7970@SSOP24 | ZY291A | PCF8582E@SOIC8(3.9mm) | ZY300A |
| PCF7941@TSSOP20 | ZY290A | PCF8582F | |
| PCF7941@ICPLine | | PCF8582F@SOIC8(3.9mm) | ZY300A |
| PCF7952@TSSOP24 | ZY290A | PCF8594C | |
| PCF7952@ICPLine | | PCF8594C@SOIC8(3.9mm) | ZY300A |
| PCA24S08D@SOP8 | ZY300A | PCF8594D | |
| PCA24S08DP@TSSOP8 | ZY200A | PCF8594D@SOIC8(3.9mm) | ZY300A |
| PCA9500@SO16 | ZY328A | PCF8594E | |
| PCA9500@TSSOP16 | ZY290A | PCF8594E@SOIC8(3.9mm) | ZY300A |
| PCF85102C | | PCF8598C | |
| PCF85102C@SOIC8 | ZY300A | PCF8598C@SOIC8(7.5mm) | ZY328A |
| PCF85103C | | PCF8598D | |
| PCF85103C@SOIC8 | ZY300A | PCF8598D@SOIC8(7.5mm) | ZY328A |
| PCF85116 | | PCF8598E | |
| PCF85116@SOIC8 | ZY300A | PCF8598E@SOIC8(7.5mm) | ZY328A |