ST7 ICP Tool
User Manual

INNC**M
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Contents

Introduction

The ST7 ICP is an ST7 microcontroller-based programming platform. The ICP can program all ST7 devices manufactured by INNCOM.

Product Identification

INNCOM ST7324 IN CIRCUIT PROGRAMMER COMPOENT LIST	
Version	**Description**
02-9492 Rev 2.1	PCBA, INNCOM ST7324 ICP
62-1507	CABLE, RIBBON 10P10W DB05 ISP—used on products with JTAG programming header. Example products: X05, TCT, TCC
62-1515.60	CABLE, ASSY ST7 ICP W/60mm SHEATH—Example products: MCM1, 3035, S217
04-4040	REGULATED P.S. 110-240V/12VDC/1A
04-1030	RS232 SERIAL CABLE 7' DB9 (MALE) / DB9 (FEMALE)
04-6061.B	PLASTIC HOUSING TCx, BOTTOM

Device Characteristics

Symbol	Parameter and Conditions	Min	Typ.	Max
	ST7 ICP—Input Voltage		12VDC	
	ST7 ICP—Current Consumption @ 12VDC		19mA	

Installing Software on PC

√   Download flashbash-2.51.exe from FTP: T:\FTP\Eng_Data\Products\PC\INNCOM ST7 ICP\PC Software\Flashbash ST7 PC Software\FlashBash 2.51

√   Double click on execute file and follow instructions to install on hard-drive.

√   Done

Programming Methodology

The ICP can be used as a desktop device for programming a target through the PC and also can be used as an independent standalone device. There are three possible scenarios for programming the target device: first-time programming of the target from the PC, updating the target from the PC with revised software, and programming the target in Key Fob mode.

Each of the three scenarios requires different steps. These major steps are outlined in separate sections throughout this document. Use the three templates below and refer to the appropriate sections for desired functionality.

First-time programming from the PC

This is typically done in manufacturing. There are two steps required:

- Downloading into Target
- Setting Option Bytes

Updating target software from the PC

This is performed when there is a new feature release or bug fix. This only requires one step:

- Downloading into Target
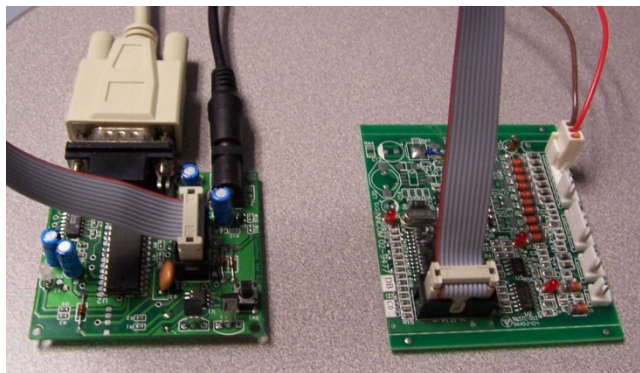
Programming the target in Key Fob mode

This is done by downloading target software directly into the programmer and disconnecting the device from the PC and its power supply. At this point, the device is capable of programming both first-time and revision targets completely independent of the PC. This only requires two steps:

- Loading the Programmer for Key Fob mode use
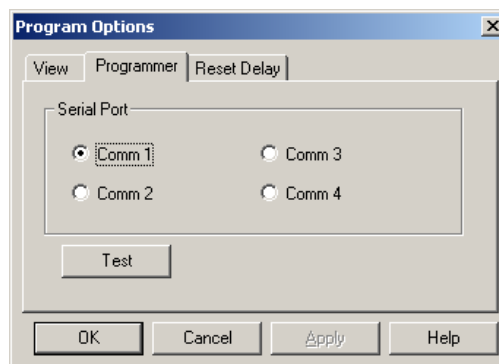- Programming the target with Key Fob

Downloading into Target

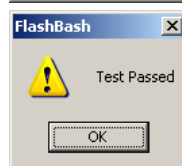(In this example, the device that is being programmed is an X05.)

√   Connect INNCOM ST7 ICP to serial port and 12VDC power supply.

√   Start FlashBash program.
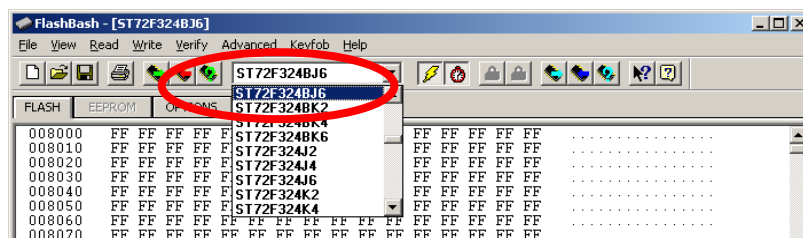

√   Select View > Program Options from menu

√   Press the "Test" button for communication test.

√   Connect programming cable and power-up target.

√ Select target: Micro from dropdown menu.

Refer to the option bytes section at the end of this document for micros used by device. Most use ST7F324BJ6.
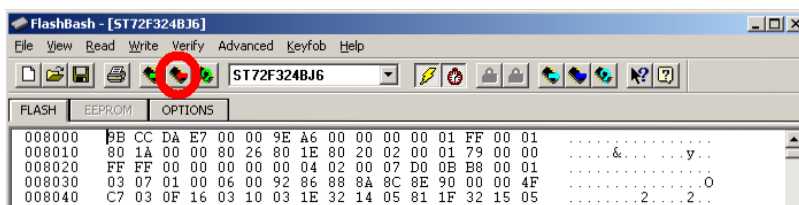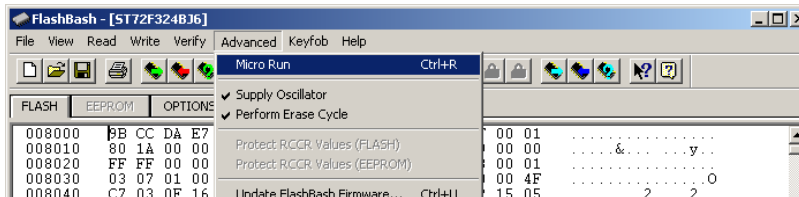
√ Select Flash Tab

√ Load target software: File > Open… > xxxxx.s19

√ Write to target device: Write > Current or click highlighted button

√ Reset target: Advanced > Micro Run

Skip this step if option bytes are to be set. Reset target after setting option bytes.

√ Updated programming is done.

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Setting Option Bytes

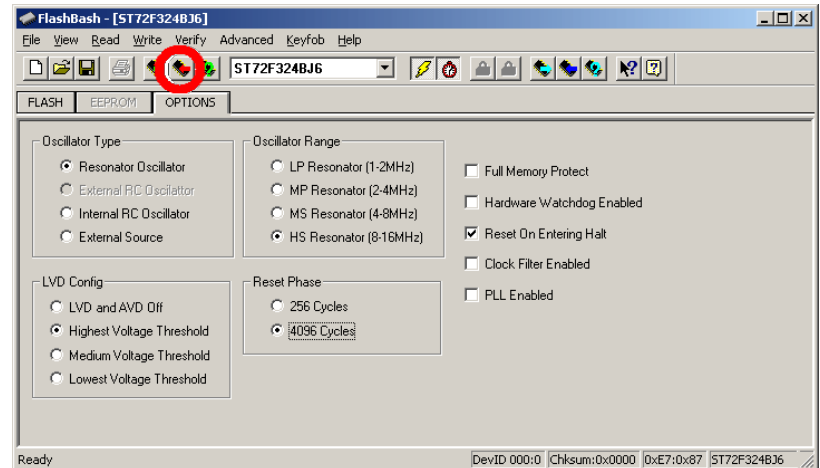(In this example, the device being programmed is an ST72F324BJ6 micro device.)

√ Select Options Tab and set option bytes. In this example the option bytes are 0xE7:0x87.
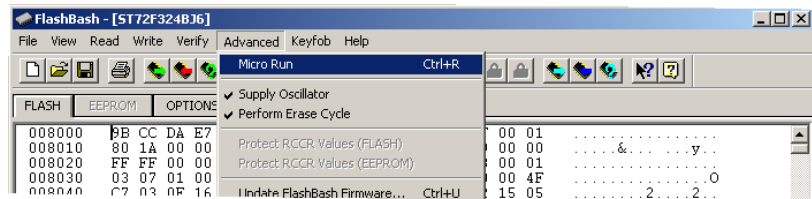
Check the settings by viewing the bottom menu bar.
Refer to the option bytes section at the end of this document for correct settings. Settings specific to selected micro chip.
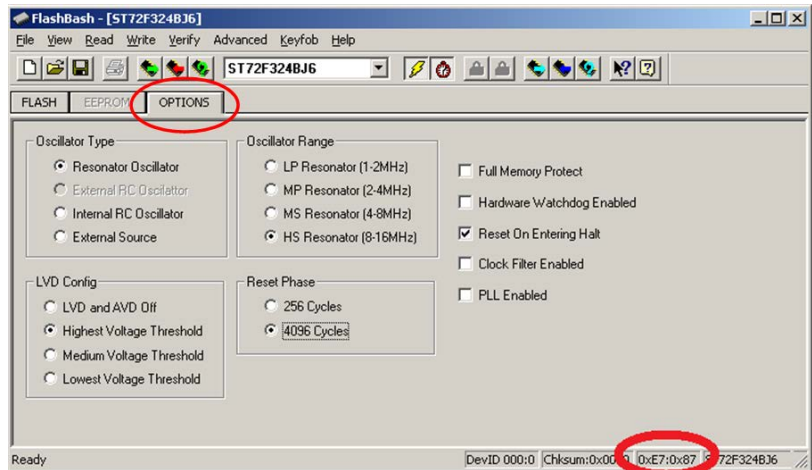
√ Write to target device: Write > Current or click highlighted button.

√ Reset target: Advanced > Micro Run.

√ Programming of Option Bytes is done.
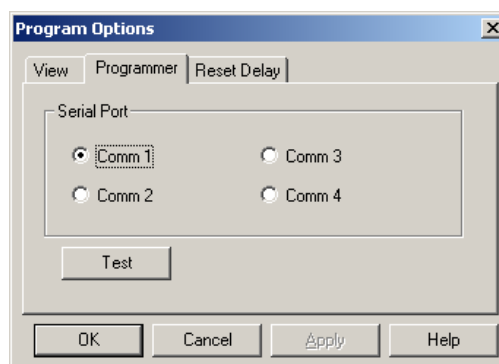
Loading Programmer for Key Fob Mode Use

(In this example, the device being programmed is an X05.)

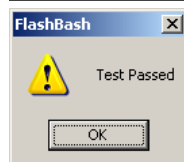√   Connect INNCOM ST7 ICP to serial port and 12VDC power supply.

√   Start FlashBash program.
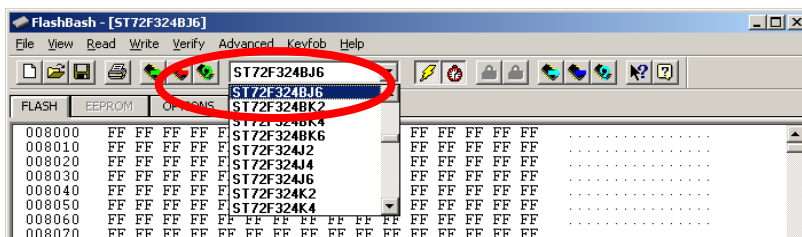
√   Select View > Program Options from menu.

√   Press the "Test" button for communication test.
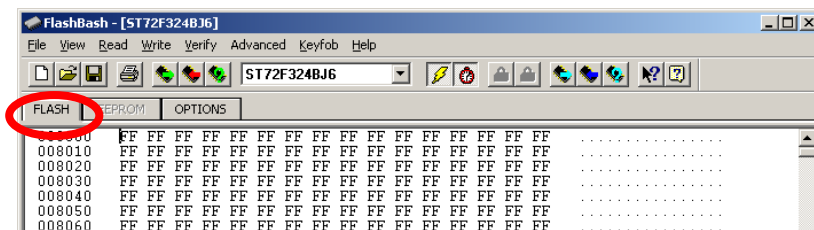
√   Connect programming cable and power-up target.

√   Select target Micro: from dropdown menu.
Refer to the option bytes section at the end of this document for micros used by device. Most use ST7F324BJ6.
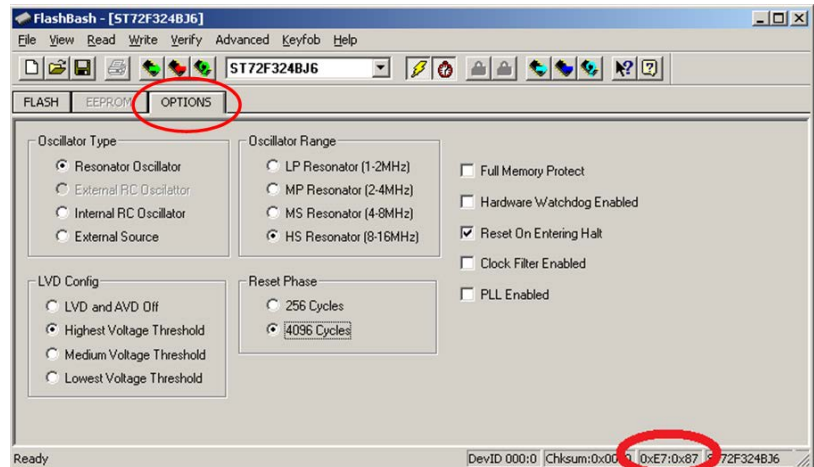
√   Select Flash Tab.

√   Load target software: File > Open… > xxxxx.s19.

√ Select Options Tab and set option bytes. In this example the option bytes are: 0xE7:0x87.

Check the settings by viewing the bottom menu bar.

Refer to the option bytes section at the end of this document for correct settings. Settings specific to selected micro chip.
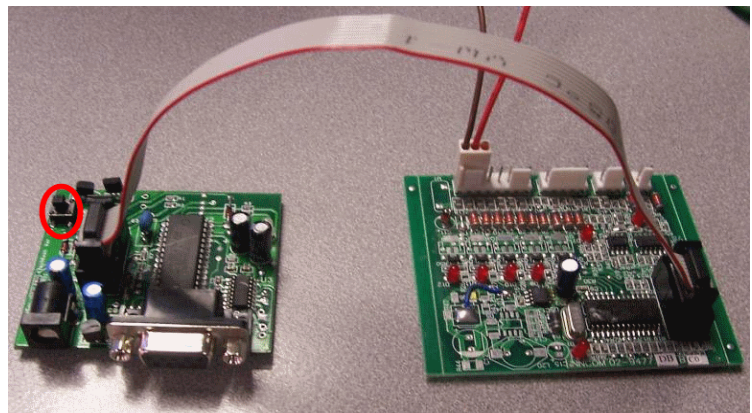

√ Write to Key Fob: Keyfob > Write.

LED on ICP will light green while downloading is in progress. When LED goes off, disconnect programmer from power and serial cable.
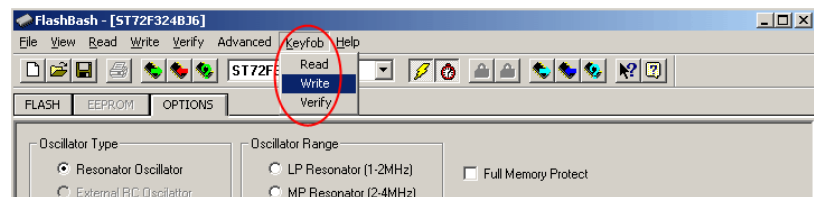
√ Programmer is now ready to be used to program target.

Programming the Target with Key Fob

√ Programming target device:

Power target. Connect ICP cable (refer to appropriate photo for cable connection to target).

√ Momentarily press button on ICP for approximately 1 second until green LED lights. Release button.

√ Green LED will stay lit for the complete programming cycle.

√ After programming cycle ends, LED will blink GREEN for success and RED for failure.

Picture shows connection to X05 using 62-1507 cable and push button.

√ Press button on ICP until GREEN or RED light goes out.
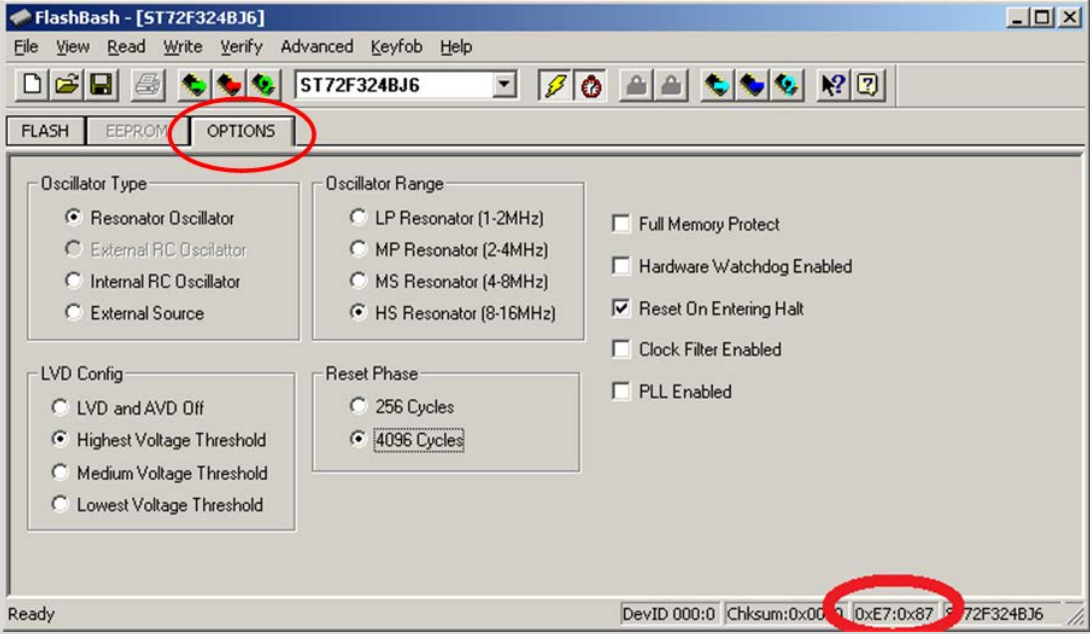
√ To reset target, remove ICP cable connection from programmer and reconnect. LED on target will begin rapid blinking.

√ Remove cable from target after rapid blinking stops.

√ Programming is done
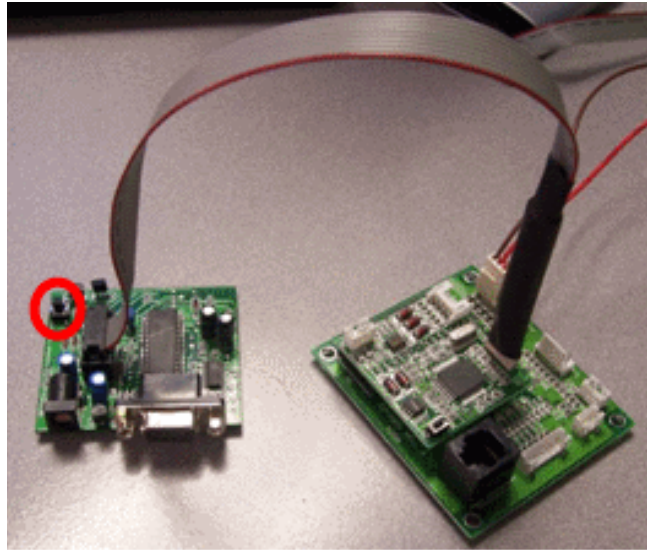
Picture shows connection to MCM1 using 62-1515.60 cable and push button.

Option Bytes

Microcontroller	Option byte settings	Products
ST72C104G1/G2	0xFC:0x8B	X05
Notes on PCB board versions: Rev C0 and below use ST72C104G1 microprocessor. Rev C1 and above use ST72C104G2 microprocessor.		

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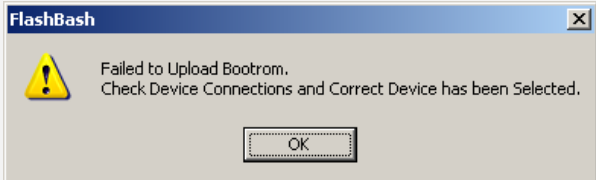| Microcontroller	Option byte settings	Products
ST72F324BJ6	0xE7:0x87	CD564, X05B, MCM1D254, S217, 3035, TCS, TCT, TCC, L207RF, GDA Speakerphone, GDA CommCard, MCM1_VAV2, B564, D254_DIN, X06_DIN, S55x, Glass Series, MCM4, P564, P563, X05R, X05W, X07, X08

Troubleshooting Guide

Problem	Possible solution
Writing to target while programming from the PC causes this dialog box to popup:	• Check that target is powered and programming cable is securely inserted. • Intermittent operation may suggest that the programming cable is faulty. • Test with different programmer, target, and cables.
Attempting to multitask while writing to the target may cause a failure:	• Suspend activity on PC while writing to target.

Improper use of programming cables may cause programmer to fail.	• There are currently 2 cables for use with the programmer. Refer to 1.1 Product Identification at the beginning of this document for cable part numbers. Refer to photos below for additional identification of JTAG cable.
	Correct Cable—notice keys are on the right with cable colors matching. Wrong Cable—notice keys on opposite sides with cable colors matching.

Pending Features

Date	Feature
04-Oct-2005	Add single button to Flashbash user interface to refresh current file and execute download into target.
16-Nov-2005	Add option to Flashbash user interface for enabling /disabling writing of option bytes while in Key Fob mode.

Document Revision History

Date	Description
07-Jul-2005	First draft
03-Oct-2005	Updated for programming in Key Fob
16-Nov-2005	Made document corrections for consistency and added Troubleshooting Guide section.
14-Jan-2010	Added notes and screen captures to note typical ST7324J6 Micro; reformatted to new template.
12-Nov-2013	Changed micro to ST7324BJ6; updated photos; formatted to Honeywell style.

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