AN355 Inncom Programming Tools Reference Guide

CC Debugger Programmer
(Texas Instruments CC2430/CC2530)

ST7 Programmer
(Flashbash)

ST-Link Programmer
(STM32 V2)

Contents

Required Programmer Lookup Table

ST7 Devices – Require the ST7 Flashbash Programmer			
Inncom Device	Part#	Inncom Device	Part#
B564	01-9911	P564	01-9950
D254_DIN	01-9918	P563	01-9611
X06_DIN	01-9919	X05R	01-9837
S55X	01-9605	X05W	01-9835
MCM4	01-9982	L206 *	01-9961
X05B	03-9953	L208 *	01-9901
X07.S	01-9957.W	B574 Edge Router *	01-9437
S217 *	01-9993-ZB	PC-502	201-502
S217_MB	01-9993-MB		
PC-485	01-9905		
* These devices contain both an ST7 micro programmed with the Flash ST7 programmer AND a CC2430 radio chip that is programmed with the CC Debugger CC2430/CC2530 programmer.			

CC2430/CC2530 Radio Equipped Devices - Require the CC Debugger Programmer			
Inncom Device	Part#	Inncom Device	Part#
S541.RF	292-112	L506 Lamp Module	292-105
S541.RT3	292-119	S217.RF *	01-9993-ZB
S541.RT4	292-119	L206.RF *	01-9961
SL210 (DS22)	201-122	L208.RF *	01-9901
K594.RF	01-9912	Modeva *	03-706X
K595.RF	292-103		
* These devices contain both an ST7 micro programmed with the Flash ST7 programmer AND a CC2430 radio chip that is programmed with the CC Debugger CC2430/CC2530 programmer.			

STM32 Devices – Require the ST Link Programmer	
Inncom Device	Part#
E528.4G	01-9911
E527.4G	201-527
E529.4G	01-9488
E528_GS2.4G	British-03-7064 American-03-7066
Evora.4G	201-217
PC502.4G	201-502
Modeva.4G	03-706X (1,2,or 3 for single,double and triple gang)
X10.4G	01-9593
X47.4G	201-147
B576	201-576.P

ST7 Flashbash Programmer

The Flashbash ST7 ICP (In Circuit Programmer) is used to program Inncom 8-bit ST7 micro-controller based "CBL8" devices.
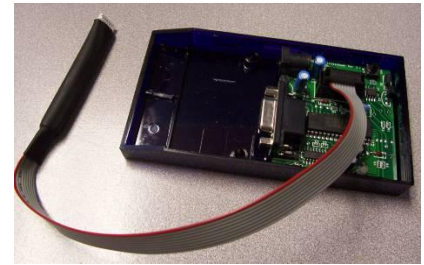
CBL8 Devices Programmed with the Flashbash ST7 ICP

B564 (01-9905)	P564 (01-9950)
D254_DIN (01-9918)	P563 (01-9611)
X06_DIN (01-9919)	X05R (01-9837)
S55X (01-9605)	X05W (01-9835)
MCM4 (01-9982)	L206 * (01-9961)
X05B (03-9953)	L208 * (01-9901)
X07.S (01-9957.W)	B574 Edge Router * (01-9437)
S217 *(01-9993-ZB)	PC-502 (201-502)
S217_MB (01-9993-MB)	
PC-485 (01-9905)	

* These devices contain both an ST7 micro programmed with the Flashbash ST7 ICP <u>AND</u> a CC2430 radio chip that is programmed with the CC2430/CC2530 CC Debugger programmer.

ST7 Programmer Kit Part Numbers

Full Kit: 03-9492

Kit Contains:

(1) 04-4040 **   REGULATED P.S. 110-240V/12VDC/1A

(1) 02-9492   PCBA, INNCOM ST7324 ICP

(1) 04-6061.B   PLASTIC HOUSING TCx, BOTTOM

(1) 62-1515.60 CABLE, ASSY ST7 ICP W/60mm SHEATH

(1) 04-1030   RS232 SERIAL CABLE 7' 9P D M/F
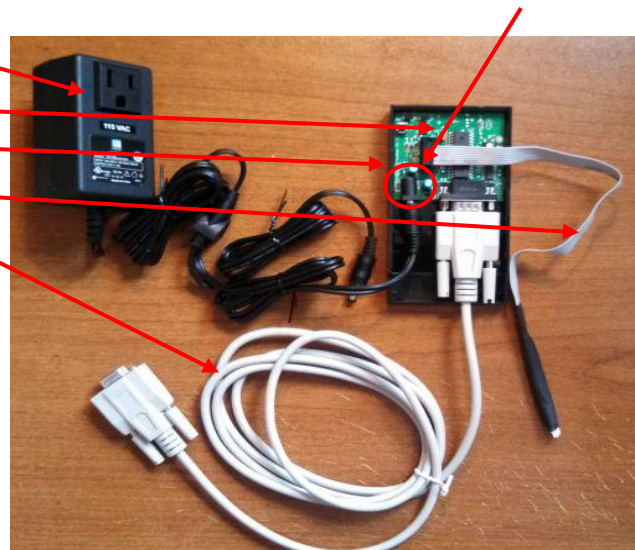
Flashbash ST7 Programmer Software Download Locations

Download the **Flashbash.exe** installer program from one of the following locations. The preferred version of Flashbash is Version 2.51:

- Local Niantic,CT FTP: T:\FTP\Eng_Data\Products\PC\INNCOM ST7 ICP\PC Software\Flashbash ST7 PC Software\Flashbash 2.51 Setup\Flashbash.exe

- HON MOVEit Link: Login with: Username: inncom_ftp   Password: !nncom4Lng
  https://filetransfer.honeywell.com/human.aspx?r=580358748&Arg12=filelist&Arg06=912884142

- HON Inncom Extranet Link: Login with HON EID and Password
https://extranet.honeywell.com/ecc/Inncom_FTP/Pages/default.aspx?RootFolder=%2Fecc%2FInncom%5FFTP%2FFile%20Portal%2FInncom%20Software%2FFlashbash%20ST7&FolderCTID=0x012000F1D72C059CA9B14887679CE3E027B3F3&View={DF84BCD0-0864-483F-9571-7EDDF0CF9F14}

Flashbash ST7 Programmer Software Installation

Flashbash ST7 Programmer Software has been tested with Windows XP and Windows 7 32/64 bit O/S.

⚠ **IMPORTANT: Read Before Installing the Flashbash Programmer Software**

✓ You must install Flashbash on a computer that has a built-in 9 pin female RS-232 serial port (preferred) , or obtain a USB-RS232 Serial adapter or PCi Express/PCMCIA serial port adapter that has a DB-9 Female connector.
   If using a laptop that does NOT have a built-in DB-9 serial port, see if the laptop manufacturer has a docking station for the laptop that has a built-in DB-9 Female serial port. This is preferred over a USB/PCi Express/PCMCIA adapter.

✓ Flashbash ONLY supports COM ports 1-4. If the physical COM port # assigned to the serial port you want to use is > 4, you will need to change the COM Port# assigned by windows to that COM port to be between 1-4. You can do this in Control Panel > Device Manager > Ports .   If there are no available COM Ports <= 4 to select, you will need to either remove other connected serial devices or un-install software that is using the serial ports to free up a COM Port <=4 .

✓ If using a USB/PCi Express/PCMCIA serial adapter and running Windows Vista/Windows 7/Windows 8, make sure you select the option to "Run as Administrator" when installing the driver for the serial port adapter, or the driver may not get installed correctly. To do this, you right-click on the driver installer program and select the option to "Run as Administrator".

✓ The Flashbash software has known "compatibility" issues with USB and PCi Express/PCMCIA serial port adapters, particularly the serial port driver provided with the adapter, and may not work with some adapters. Two adapters that have demonstrated compatibility with Flashbash are:
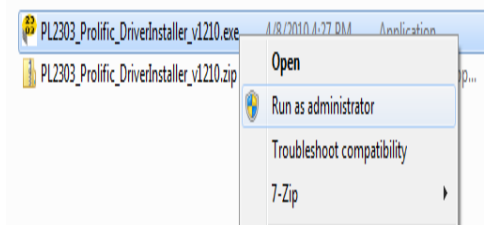
- "Cables To Go" (Model#: 46047) USB to RS-232 DB9 adapter cable

- StarTech.Com (Model# EC1S232U2) ExpressCard RS-232 serial adapter card. The computer/laptop must have an ExpressCard slot

Both of these adapters use a USB/Serial chipset made by a company named "Prolific".   It is recommended to obtain a serial adapter that uses the Prolific chipset driver.

A Prolific USB Serial adapter driver version (PL2303_Prolific_DriverInstaller_v1210.exe) is available for download from Inncom/Honeywell's "MOVEIt" FTP site that has demonstrated compatibility with Flashbash . If you find that you can't get the Prolific driver provided with your serial adapter to work with Flashbash, you can download the "PL2303_Prolific_DriverInstaller_v1210.exe" driver and install it and try it with Flashbash.   An available Inncom Application Note, "**AN343 Using USB to RS-232 and ExpressCard Serial Adapters with Inncom Flashbash and ICP Tool Software.pdf** " is available to download that goes over the steps to troubleshoot issues when using a USB/PCI Express/PCMCIA serial adapter. The following link takes you to the folder on the Inncom/Honeywell MOVEit FTP site that contains both the "PL2303_Prolific_DriverInstaller_v1210.exe" driver and the AN343 Application Note.

Log into the FTP site with Username: inncom_ftp   Password: !nncom4Lng
https://filetransfer.honeywell.com/human.aspx?r=551195196&Arg12=filelist&Arg06=912884142

**To Install Flashbash Software**:
1. Run the downloaded Flashbash.exe program
2. Left-click Run on the "Open File-Security Warning – Unknown Publisher" window if that appears.
3. Left-click Next on the "Welcome to the Flashbash Setup Wizard" window.
4. One the "Select Destination Location" window, Left-click Next to use the default install location.
5. On the "Select Start Menu Folder" prompt, just use the default folder name and Left-click Next.
6. If you want to create a desktop shortcut icon and Quick Launch icon, select these options and Left-click Next.
7. Left-click "Install" on the "Ready to Install" screen to begin installation.
8. After installation is complete, the final "Completing the Flashbash Setup Wizard" window will appear. Check the "Launch Flash" checkbox if you want to immediately run the program. Click the "Finish" button.

To Start/Run Flashbash

Select Start > Flashbash, or double-click the Flashbash shortcut icon on the desktop.
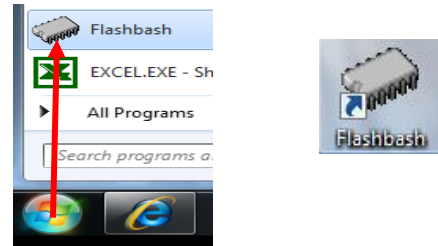
The very first time Flashbash runs after it was installed, it will attempt to use/open COM port #1 by default. If the serial port the programmer is connected to is not COM 1 you will get an "Unable to Open Comm Port" error.   Continue ahead to the next section, as it will cover changing the COM port being used.
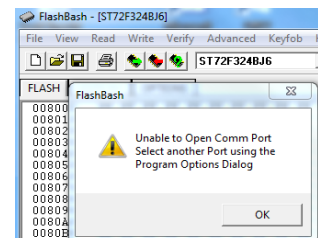
Programming Inncom Devices with the Flashbash Programmer

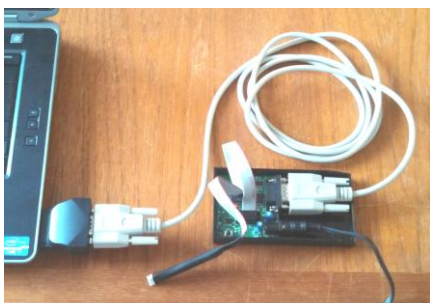There are 2 options available to program the target ST7 device:

- "Key Fob Mode" – In this mode, the desired ST7 device software is loaded and stored INTO the Flashbash programmer's non-volatile memory. The Flashbash programmer can then be connected to a target ST7 device and load the software into the target device WITHOUT the Flashbash programmer connected to the PC/laptop. This mode is used when you have multiple targets to program with the same software, or when the target device is already installed and powered.

- "Direct Download to Target" mode – In this mode, the new software is written directly into the target device through the Flashbash programmer. The Flashbash programmer must be connected to the Serial port on the computer running Flashbash and the target device gets power **FROM** the Flashbash programmer. You DO NOT separately power the target device . This is typically used when just loaded 1 or 2 devices at a workbench for testing.

To Load in Keyfob Mode:

 First load the required target device's software INTO the Flashbash programmer's memory

1. Connect Flashbash programmer to the DB-9 serial port of the computer (or USB/PCi Express/PCMCIA Serial adapter as shown in below example) running Flashbash using the 04-1030 RS232 SERIAL CABLE 7' 9P D M/F cable and connect 12VDC power to the J3 12VDC jack.
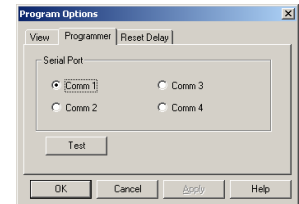**DO NOT** connect the target device to the Flashbash programmer yet.

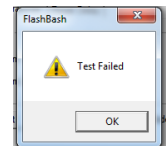2.   Start FlashBash program if not running.

3.   Select View > Program Options from the Flashbash main menu. Select the "Programmer" tab on the "Program Options" window.   Select the COM port (1,2,3 or 4) that the Flashbash programmer is connected to.

4.   Press the "Test" button to test connection between the Flashbash software and the programmer hardware. If Flashbash could communicate with the programmer, it will indicate "Test Passed". Proceed to step 5.
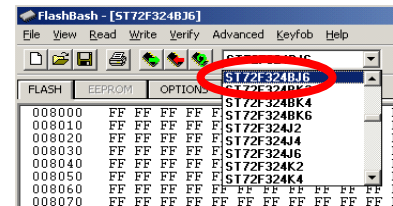
     If the test failed, refer to the "Troubleshooting Flashbash" section starting at page 13 before proceeding.
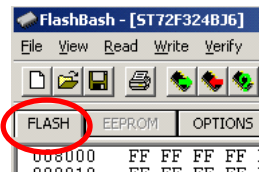
5.   Connect the programming cable between the target device and the Flashbash programmer, and power-up the target.

6.   Select the **ST7F324BJ6** Micro type from dropdown menu. All devices currently programmed use the **ST72F324BJ6**.

7.   Select the Flash tab.

8.   Browse to and load the desired target software. Left-click "File" on the main menu and select "Open…" to open a file browser from which you can browse to the location of the desired ".s19" software file. Select/highlight the desired ".s19" file and left-click "Open".
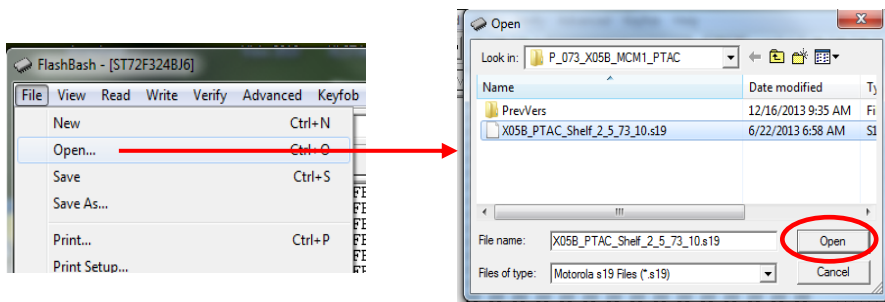
9. Select the Options Tab and set the option byte values. For the **ST72F324BJ6** micro equipped devices, select the following options:

Oscillator Type = Resonator Oscillator

LVD Config = Highest Voltage Threshold

Oscillator Range = HS Resonator(8-16 Mhz)

Reset Phase = 4096 Cycles

Reset On Entering Halt = Checked

With the proper values selected, the "Option Byte" value displayed in the lower right corner should be **0xE7:0x87**
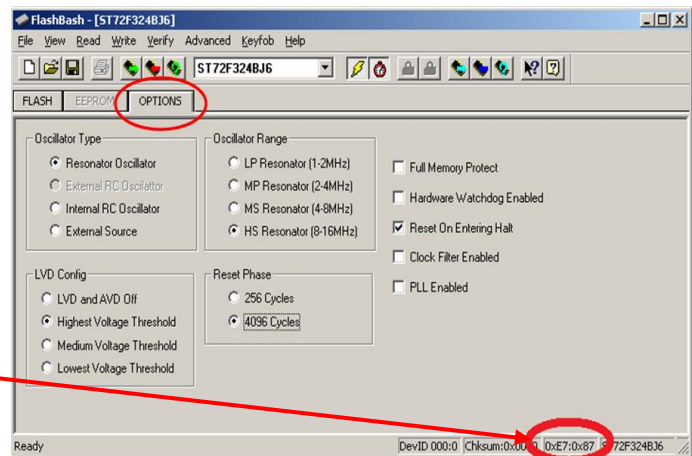
10. Write the selected software into the Flashbash device's memory.

   Select "Keyfob > Write" from the main menu, then left-click "Yes" when asked if you want to proceed to begin loading the selected software INTO the Flashbash's "keyfob" non-volatile memory.
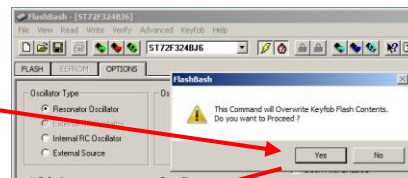
⚠️ If you receive an error "Failed to Send Command", the Flashbash software was not able to establish communication with the programmer. Go back to step 1 and verify you followed all steps correctly.

   If you continue to receive the error message and you are using a USB/PCi Express/PCMCIA Serial adapter, refer to the "Troubleshooting Flashbash" section starting at page 13 before proceeding.
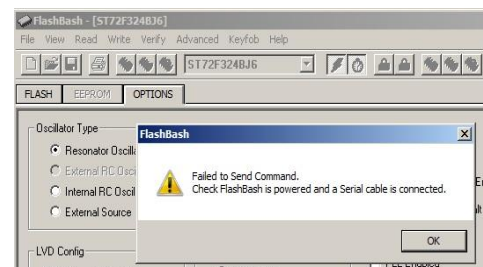
With the Desired Software Loaded Into the Programmer In Keyfob Mode, Program the Target With Keyfob

<u>DO NOT</u> power the Flashbash programmer and target device with 12VDC <u>at the same time</u>.

- If the target device is powered, DO NOT connect 12VDC to the Flashbash programmer. The Flashbash programmer will receive power from the powered target device via the connected programming ribbon cable.
- If the target device is NOT separately powered, connect 12VDC power to the Flashbash programmer.

1. Connect the 62-11515 programmer cable between the Flashbash programmer J1 socket and the ISP (In System Programmer) header on the target device. On most devices, the ISP header is labeled **H1 or H3.** On a PC-502 (CBL8), it is labeled **ISP.** It will be the only tan 8 pin header on the device that the 8 pin plug of the 62-11515 programmer cable will connect to.

2. Power the target device, or power the Flashbash programmer with 12VDC, **BUT NOT BOTH** as discussed above. In the image to the right, the target is powered from the connected 3 wire "S5 Bus" cable.

3. Press the SW1 button on the Flashbash programmer until the D2 LED on the programmer turns Green , then release the button. This starts the programming cycle.

   62-1515 Programming Cable

   D2 LED

   ISP Header

   SW1

   S5 Bus Cable Providing 12VdC Power to Target

   - The D2 LED will remain solid Green for the duration of the programming cycle.

4. When the programming cycle completes, the D2 LED will blink Green if loading was successful, or blink Red if programming failed.

5. Press the SW1 button on the programmer until the D2 LED turns OFF.

6. Unplug the 62-1515 programmer cable from the target.

7. RESET the target device by re-connecting the 62-11515 programming cable OR remove and re-connect 12VDC power to the target .
   The Green LED on the target will begin rapid blinking as it resets, then resume a slow blink. If you re-connected the 62-11525 cable to force a RESET, remove the cable after the target Green LED starts the slow blink.
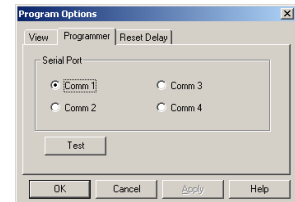
8. Programming is complete.
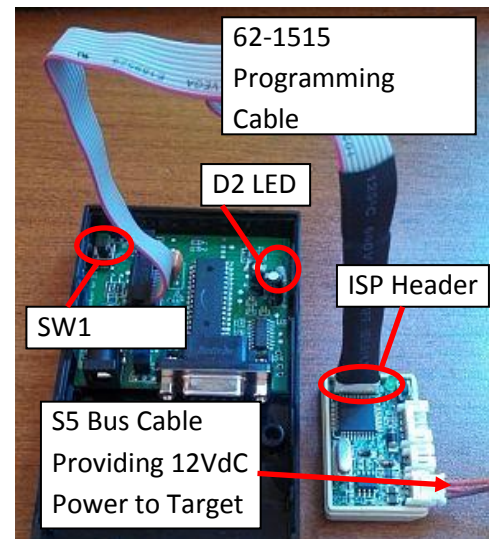
To Direct Download To Target

1. Connect Flashbash programmer to the DB-9 serial port of the computer (or USB/PCi Express/PCMCIA Serial adapter) running Flashbash using the 04-1030 RS232 SERIAL CABLE 7' 9P D M/F cable and connect 12VDC power to the J3 12VDC jack. **DO NOT** connect the target device to the Flashbash programmer yet.
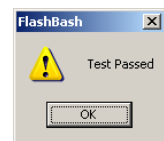
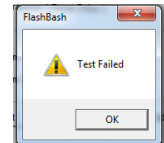2. Start FlashBash program if not running.

3. Select View > Program Options from the Flashbash main menu. Select the "Programmer" tab on the "Program Options" window. Select the COM port (1,2,3 or 4) that the Flashbash programmer is connected to.

4. Press the "Test" button to test connection between the Flashbash software and the programmer hardware. If Flashbash could communicate with the programmer, it will indicate "Test Passed". Proceed to step 5.
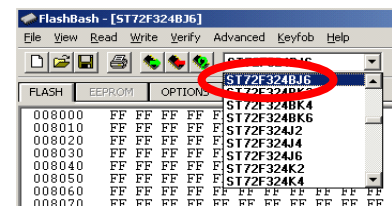
   If the test failed, refer to the "Troubleshooting Flashbash" section starting at page 13 before proceeding.

5. Connect the programming cable between the target device and the Flashbash programmer, and power-up the target.

6. Select the **ST72F324BJ6** Micro type from dropdown menu. All devices currently programmed use the **ST7F324BJ6**.

7. Select the Flash tab.
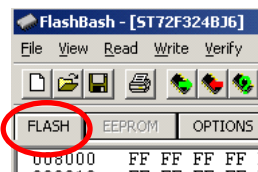
8. Browse to and load the desired target software. Left-click "File" on the main menu and select "Open…" to open a file browser from which you can browse to the location of the desired ".s19" software file. Select/highlight the desired ".s19" file and left-click "Open".

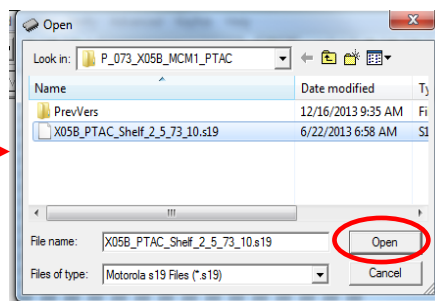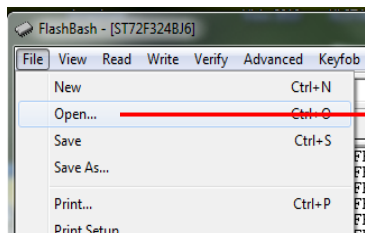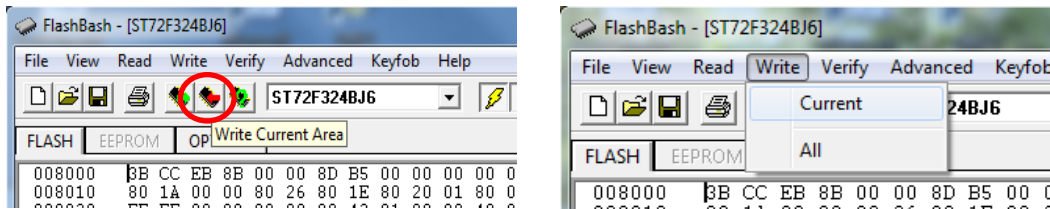9. Left-click the "Write Current Area" button, or select "Write > Current" from the menu bar to begin loading the selected software into the target.


If you receive an error "Failed to Send Command", the Flashbash software was not able to establish communication with the programmer. Go back to step 1 and verify you followed all steps correctly.

If you continue to receive the error message and you are using a USB/PCi Express/PCMCIA Serial adapter, the problem may be with the USB/PCi Express/PCMCIA Serial adapter. Go back to **IMPORTANT: Read Before Installing the Flashbash Programmer Software** in the Flashbash Software Installation section.

10. Flashbash will first erase the target device, then write the selected software into the target device's flash memory. The "Writng Flash" indication will disappear when programming is complete.

11. Reset the target device and verify that the LED on the target rapidly flashes initially, then changes to a slow flash.   Some devices may only slow flash for a few seconds then turn OFF.
- Unplug the target device from the programmer, then apply 12VDC power to the target
  OR
- RESET the target from Flashbash by selected "Advanced > Micro Run" to force the microprocessor in the device to run.
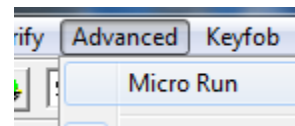
Troubleshooting Flashbash

Changing the COM Port# of a Serial Port

Flashbash can only use Serial COM Ports 1-4. Most "Built-In" serial COM Ports are mapped to COM 1 or COM 2, which can be used with Flashbash. But, USB or PCiExpress/PCMCIA Serial Port adapters (that must be used when the computer running Flashbash does not have a built-in serial port) routinely get assigned a COM Port# >4.

The current assigned COM Port# for the serial adapter can be seen in Windows Device Manager. Open Device Manager (Start Button > Control Panel > Device Manager), then find and expand the "Ports" section. In this example the Serial adapter is assigned COM 12, which can't be used with Flashbash.
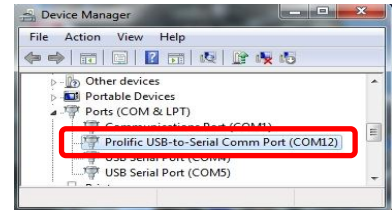

In order to use Flashbash, you must either try different USB ports and see if one maps the USB serial adapter to a COM Port# < 4, or change the COM Port# assigned to the adapter in Windows Device Manager.

If trying a different USB Port assigns the USB Serial adapter to a COM Port # <= 4, see if Flashbash will work with it.

If not, try manually changing the COM Port# assigned to the adapter via Windows Device Manager:
Note: This assumes you are using the Prolific USB Adapter mentioned/recommended earlier in this document
In this example, the USB adapter was assigned COM 12.
1. Open Windows Device Manager (Start Button > Control Panel > Device Manager) if not still there.
2. Find and expand the "Ports" section.
3. Double-click on the "Prolific USB-to-Serial Comm Port (COM 12)" to open the Properties window.
4. Select the Port Settings Tab.
5. Left-click the "Advanced..." button.
6. Left-click the "Com Port Number:" drop-down list to open.
7. Select an available COM Port# <= COM 4. Here, COM 2 is available and is selected.
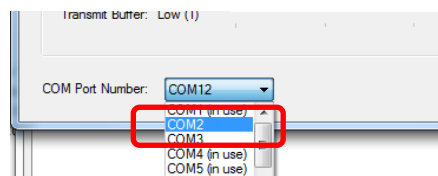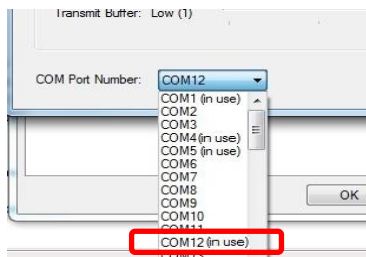
8. Left-click the "OK" button, then Left-click the "OK" button on the Properties window to close it.
9. Open FlashBash, make sure you select COM 2 for use and verify that Flashbash can program.

If you are not able to get an available COM Port# <=4 and using a USB or PCi Express/PCMCIA serial adapter, download and refer to Inncom Application Note "**AN343 Using USB to RS-232 and ExpressCard Serial Adapters with Inncom Flashbash and ICP Tool Software.pdf** ".
Log into the FTP site with Username: inncom_ftp   Password: !nncom4Lng
https://filetransfer.honeywell.com/human.aspx?r=551195196&Arg12=filelist&Arg06=912884142

"Unable to Open Comm Port" message appears when you <u>first start</u> Flashbash.

- The very first time Flashbash runs after it was installed, it will attempt to use/open COM port #1 by default. If the serial port the programmer is connected to is not COM 1 you will get this error.

- Flashbash can ONLY use serial COM Ports 1 to 4. If the COM Port the programmer is connected to is >4, Flashbash will not be able use the port. Refer to the Changing the COM Port# of a Serial Port at the beginning of the troubleshooting section.

- If Flashbash was used before, when it starts it attempts to open the COM port that it previously used. If the serial COM port #that the programmer is connected to has changed since the last time it was used, you will get this error. This happens when using a USB to serial adapter and you changed the USB port being used.
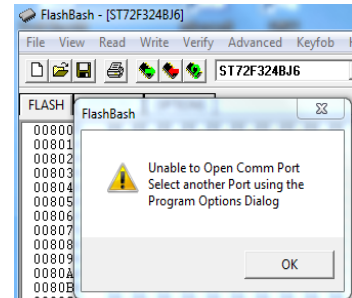
Select View > Program Options from the Flashbash main menu. Select the "Programmer" tab on the "Program Options" window. Determine what actual COM Port# the programmer is connected to, then select that COM port (1,2,3 or 4) number.
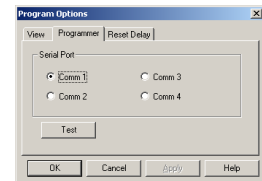
Press the "Test" button to test connection between the Flashbash software and the programmer hardware. If Flashbash could communicate with the programmer, it will indicate "Test Passed".

"Failed to Send Command " message appears when writing Keyfob mode or straight through Mode.

This message will appear when attempting to write to the Flashbash programmer in Key Fob mode, or directly writing to the target device and Flashbash can't establish communication with the programmer hardware.

- Verify the serial cable is connected between the programmer and the serial COM Port.

- If the cable connectivity looks OK, verify you have selected the correct COM port in Flashbash software.
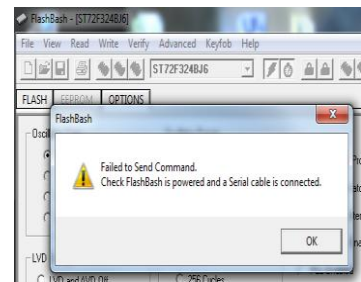
  You need to first determine what physical serial COM Port (1,2,3 or 4) you have connected the Flashbash programmer hardware to. Open Windows Device Manager , then open the "Ports" section.

  In this example, the computer has 1 built-in serial port (COM 1), one Prolific USB to Serial adapter (COM 3), and 2 other USB to Serial adapters (COM4 and COM5).

  You have the Flashbash programmer connected to the Prolific USB to Serial adapter, so this is COM 3.

  Therefore, in Flashbash select COM 3 as the serial port to be used by Flashbash, then click the Test button to verify connectivity between Flashbash and the programmer.
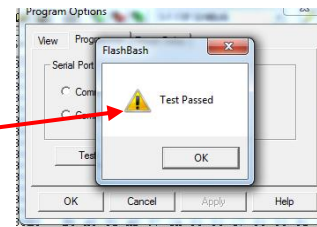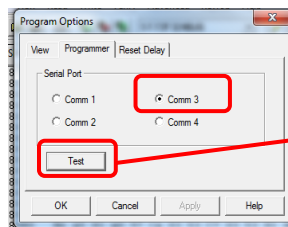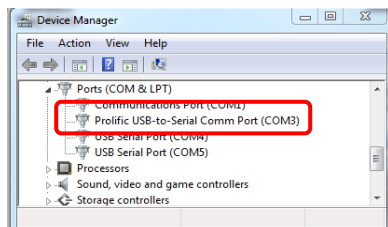
  If the "Test" button test passed, try writing to the target device in Keyfob mode or straight through mode again.

CC Debuger Programmer (Texas Instruments SmartRF CC2430/CC2530)

The CC Debugger programmer is used to program the embedded Texas Intruments CC2430/CC2530 radio chip in the Inncom devices listed below.

Device with Radios Programmed with the CC Debugger Programmer as of 3/2014
- S541.RF
- S541.RT3
- S541.RT4
- SL210(DS22)
- K594.RF
- K595.RF
- L506 Lamp Module
- S217.RF (Radio only) *
- L208.RF (Radio Only) *
- L206.RF (Radio Only) *
- Modeva (Radio Only) *

IMPORTANT! The CC2430/CC2530 radio chip <u>DOES NOT</u> typically get re-programmed in the field. It is a "fixed" software loaded into the radio at the factory. It does not require property specific customization like a thermostat. However, programming the CC2430/CC2530 radio chip is covered here in case there is the need to upgrade the CC2430/CC2530 software in the field .

Devices with an "*" after the name have both a CC2430 radio chip and a separate ST7 microprocessor chip installed and have 2 programming headers on the device. The ST7 microprocessor in these devices is programmed with the Flashbash ST7 programmer covered in section XX of this document.

All of the other devices have JUST the CC2430/CC2530 radio chip.

CC Debugger Programmer Kit Part Numbers

Full Kit: 03-8090   Kit Contains: (1) 04-8048 USB A Male to B Mini cable

(1) 02-8090 CC Debugger Programmer Device

(1) 62-1546 10-Pin to 5-Pin device programmer cable
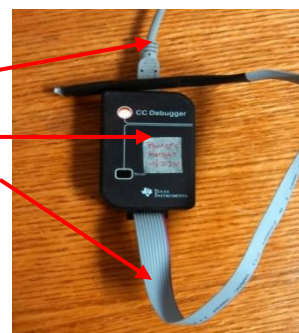
CC Debugger PC Software Download Locations

Download the **Setup_SmartRFProgr_1.12.3.exe** installer program from one of the following locations:

- Local Niantic,CT FTP: T:\FTP\Eng_Data\Products\PC\CC Debugger\PC Software\Setup_SmartRFProgr_1.12.3.zip

- HON MOVEit Link:
  https://filetransfer.honeywell.com/human.aspx?r=978603157&Arg12=filelist&Arg06=982629437

- HON Inncom Extranet Link:
  https://extranet.honeywell.com/ecc/Inncom_FTP/Pages/default.aspx?RootFolder=%2Fecc%2FInncom%5FFTP%2FFile%20Portal%2FInncom%20Software%2FCC%20Debugger&FolderCTID=0x012000F1D72C059CA9B14887679CE3E027B3F3&View={DF84BCD0-0864-483F-9571-7EDDF0CF9F14}
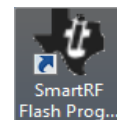

SmartRF CC2430/CC2530 CC Debugger Programmer Software Installation

The SmartRF CC2430/CC2530 Programmer Software is compatible with Windows XP, Windows 7 and Windows 8 32 /64 bit O/S.

1. Run the downloaded Setup_SmartRFProgr_1.12.3.exe program
2. Left-click Next> on the Welcome screen.
3. Left-click Next on the "Destination Folder" screen to install in the default location.
4. On the "Setup Type" screen, select the "Complete" setup type and Left-click Next.
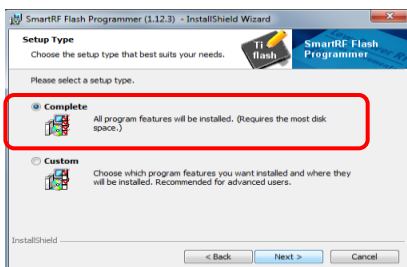
5. Left-click "Install" on the final screen to begin installation.
6. When installation is complete, you will have the option to create a desktop shortcut icon for the programmer software.
7. Installation is complete. You should see the desktop shortcut icon on the desktop:

Programming CC2430/CC2530 Radios with the CC Debugger

1. Connect the CC Debugger programmer to an available USB port using the USB Type A to Type B "mini" device cable provided with the programmer.
   Note: The first time you connect the programmer, an "Installing device driver" window will open as the driver is installed. When the driver is installed successfully, another notification will appear. You may receive these notifications in the future if you connect the programmer to a different USB port.
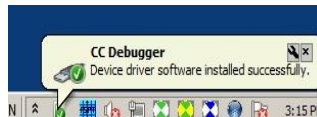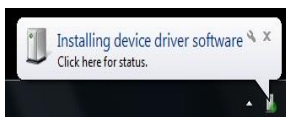
2. Connect the target device ribbon cable 10-pin connector to the 10-pin female header on the CC Debugger programmer. The connector is keyed and will only fit in one orientation.

3. Connect the target device ribbon cable 5 pin male connector to the female H1 header on the target device. The connector is keyed, so it will only fit in one orientation.
This example shows the programmer connected to an S541.RT4

H1 location for radio only devices (left to right: K595,K594,SL210(DS22),S541(RF,RT3,RT4),L506)
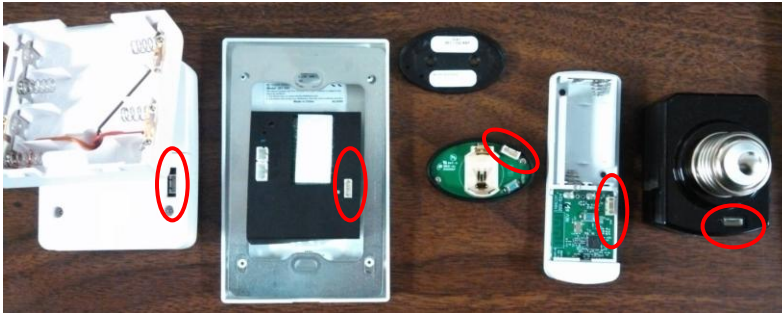
H1 location for devices with CC2430 and ST7 microprocessor (left to right: L206/L208.RF, S217.RF, PC-502 (CBL8), B574 Edge Router)

4. Start the SmartRf Flash Programmer software.
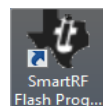
The software will automatically try to connect to the CC Debugger hardware.
If you immediate receive a screen indicating "Old Firmware on Evaluation Board", the firmware in the CC Debugger hardware needs to be upgraded. This can be done via the SmartRf Flash Programmer software.

To update the CC Debugger firmware(if required):

a. Left-click OK button on the "Old Firmware" warning window to close it.

b. In the "What do you want to program?" drop-down list, select "Program Evaluation Board". The "Update EB Firmware" button to the right will become available. 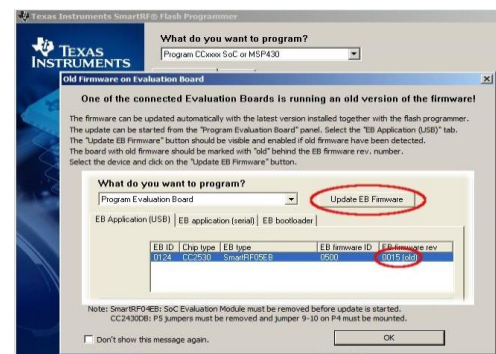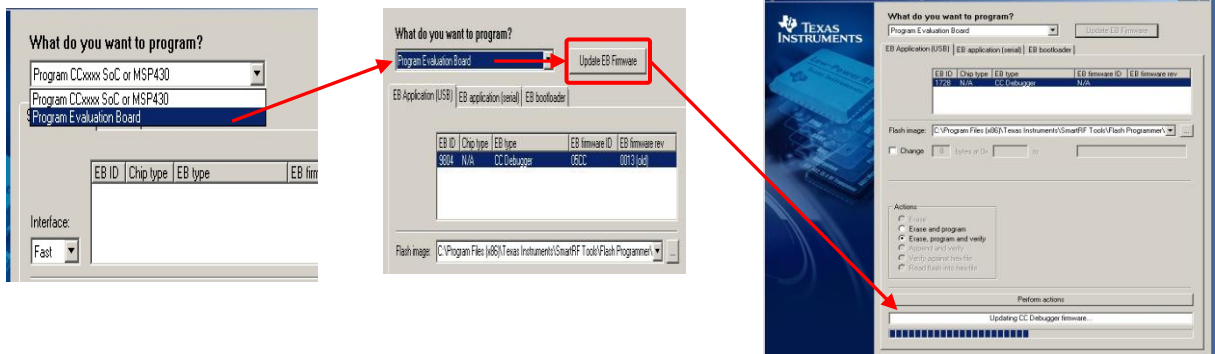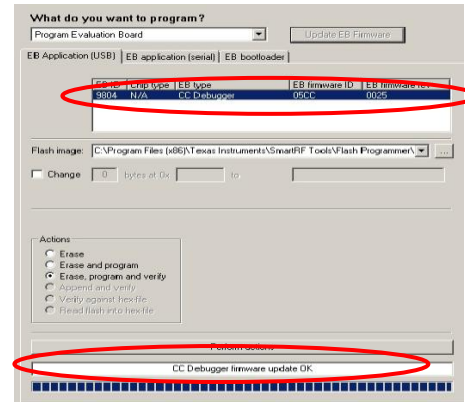Left-click the "Update EB Firmware" button to upgrade the firmware in the CC Debugger hardware. The upgrade status is displayed at the bottom.

c. When the firmware update is complete, the status at the bottom will indicate "CC Debugger firmware update OK", and hardware/firmware information about the CC Debugger will update.

5. Select "System on Chip" tab and "Program CCxxxx SoC or MSP430" from the "What do you want to program?" list if not already selected.

6. Press the **reset** button on the programmer to establish communication with the connected target device.   The Status LED in the upper left corner of the programmer should turn GREEN.
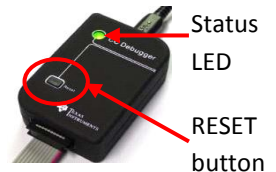
Status LED

RESET button

⚠ If the LED remains RED the CC Debugger programmer is not able to detect the CC2430/CC2530 chip in the target device.

• Verify the USB cable is correctly connected between the CC Debugger and the USB port, and the ribbon cable is connected between the CC Debugger and the H1 header on the target device.

• If LED still remains Red, try a different USB port ,a different 62-1546 10-Pin to 5-Pin device programmer cable or USB cable. If you still do not get a GREEN LED, the CC Debugger may have been damaged and you should try a new CC Debugger.

7. With the LED on the CC Debugger Green, verify the following settings on the Flash Programmer screen. The layout will differ slightly depending on if the device uses a CC2430 or CC2530 chip. The Chip Type (CC2430 or CC2530) will have automatically been detected by the CC Debugger.

Chip Type =**CC2530**

Interface = Fast

Location = Primary

Retain IEEE address when programming is Checked

Erase,program and verify is Selected

Chip Type =**CC2430**

Interface = Fast

Retain IEEE address when programming is Checked

Erase,program and verify is Selected

8. Left-click the "Read IEEE" button. The IEEE MAC address of the radio will appear in the "IEEE 0x" field and the status at the bottom will indicate the IEEE MAC address was read successfully.
YOU MUST DO THIS STEP!

9. Select and Open the software to load into the radio.

If you find yourself having to load the CC2430/CC2530 radio in the field, you will have been provided the software file or directed to an FTP download location by an Inncom representative.

Left click the "browse" button in the Flash image section to open a file browser, then browse to the location where you saved the provided or downloaded radio software file. The correct file will have a ".hex" extension and should match one of the following: (X_XX will vary with revision)

DM_FPS_9600_VX_XX.hex - Radio software for PC-502(CBL8),S217.RF, L208.RF, L206.RF, B574 Edge Router

DM_FPS_ 115200_VX_XX.hex - Radio software for Modeva light switch

DM_uCBL_S541LX_VX_XX.hex - S541.RF RF door position reporting device software

DM_uCBL_S541LXT_VX_XX.hex - S541.RT3 RF temperature reporting device software

DM_uCBL_S541LXH_VX_XX.hex - S541.RT4 RF temperature/humidity reporting device software
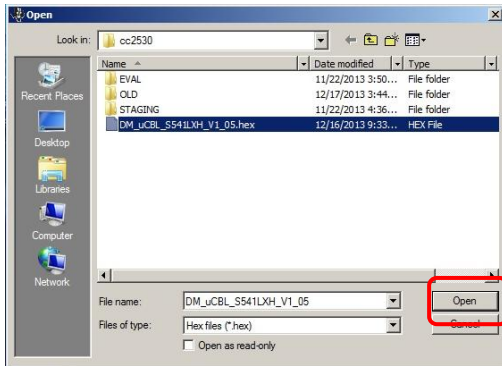
DM_uCBL_K594LX_VX_XX.hex - K594 wall or ceiling mount motion sensor software

DM_uCBL_K595LX_VX_XX.hex - K595 "low profile" wall mount motion sensor software

DM_L506_VX_XX.hex - L506 software

DM_uCBL_DS22LX_VX_XX - SL210 (DS22) software

In the following example, "DM_uCBL_S541LXH_V1_05" S541.RT4 software for the CC2530 micro in an S541.RT4 has been selected.

10. With the desired software selected and opened, left-click "Perform Actions" button to start programming the target device's radio. Most buttons/options will become grayed-out and the programming status will be displayed at the bottom.

11. When programming is complete, the status at the bottom will indicate "Erase, program and verify" is complete.
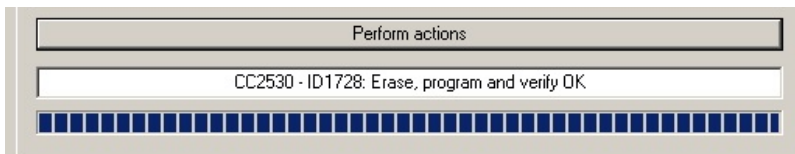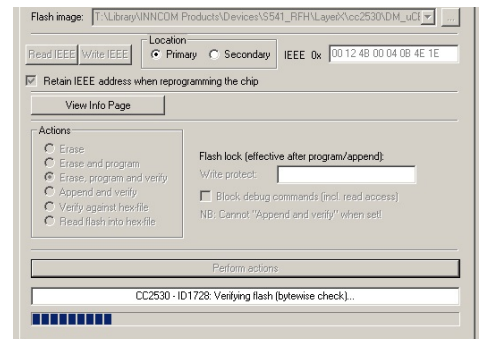
Troubleshooting

You receive a screen indicating "Old Firmware on Evaluation Board" when you open the CC Debugger software

The firmware in the programmer is old and should be updated. Simply left-click on the "Update EB Firmware" button to begin the process of updating the firmware in the programmer.

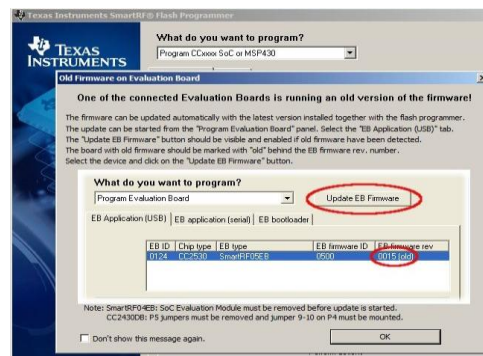This is covered in detail on page 18 of this document.

Pressing the "RESET" button on the CC Debugger programmer does not make the programmer connect to the target device and the "STATUS" LED remains RED.

⚠️ If the LED remains RED the CC Debugger programmer is not able to detect the CC2430/CC2530 chip in the target device.

- Verify the USB cable is correctly connected between the CC Debugger and the USB port, and the ribbon cable is connected between the CC Debugger and the H1 header on the target device.
- If LED still remains Red, try a different USB port ,a different 62-1546 10-Pin to 5-Pin device programmer cable or USB cable. If you still do not get a GREEN LED, the CC Debugger may have been damaged and you should try a new CC Debugger.

ST-Link V2 STM32 Programmer

The ST-Link V2 programmer is used to program the 32 bit embedded microprocessor in Inncom CBL32 devices such as the E528.4G and Evora light switch.

CBL32 Devices Programmed with the ST-Link V2 as of 3/2014

Device	STM32 Micro Used
E528.4G	STM32L152
E527.4G	STM32L152
E529.4G	STM32L152
E528_GS2.4G	STM32L152
Evora.4G	STM32F101
PC502.4G	STM32F101
Modeva.4G	STM32F101
X10.4G	STM32F101
X47.4G	STM32F101

Table 1 : STM32 Microprocessor Used

ST-Link V2 STM32 Programmer Kit Part Numbers
Full Kit: 03-0501   Kit Contains: (1) 04-8048 USB A Male to B Mini cable
                                     (1) 214-500 STM32 Programmer Device (ECO 3037 Applied to PCB)
                                     (1) 262-2109 Device programming cable for ST-Link/V2 programmer

**ST-Link V2 STM32 Programmer Software Download Locations**
Download the **STM32 ST-LINK Utility_V2.1.exe** installer program from one of the following locations. The file is stored as a Winzip file and you will need to Un-Zip once downloaded.

- Local Niantic,CT FTP: T:\FTP\Eng_Data\Products\PC\ST-LINK\PC\ST-LINK V2\STM32 ST-LINK Utility_V2.1.zip

- HON MOVEit Link: Login with: Username: inncom_ftp   Password: !nncom4Lng
  https://filetransfer.honeywell.com/human.aspx?r=1594861235&Arg12=filelist&Arg06=916628920

- HON Inncom Extranet Link: Login with HON EID and Password
  https://extranet.honeywell.com/ecc/Inncom_FTP/Pages/default.aspx?RootFolder=%2Fecc%2FInncom%5FFTP%2FFile%20Portal%2FInncom%20Software%2FST%2DLink%20STM32%20Programmer%2FST%2DLink%20Software&FolderCTID=0x012000F1D72C059CA9B14887679CE3E027B3F3&View={DF84BCD0-0864-483F-9571-7EDDF0CF9F14}

ST-Link V2 STM32 Programmer Software Installation

The ST-Link V2 Programmer Software is compatible with Windows XP, Windows 7 and Windows 8 32 /64 bit O/S.

1. Run the downloaded STM32 ST-LINK Utility_V2.1.exe program
2. Left-click "Run" on the "Open file-Security Warning" window that opens
3. Left-click "Next" on the "Welcome to the InstallShield Wizard for STM32 ST-Link Utility" window.
4. Left-click "Yes" to agree to the License Agreement.
5. On the "Choose Destination Location" window, Left-click "Next" to use the default install location and to begin installation.
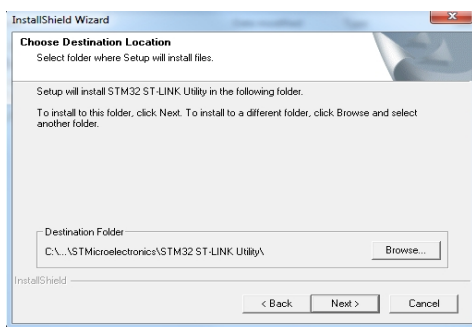
6. Left-click "Finish" on the" InstallSheild Wizard Complete" window.
7. The "STLinkDriver INstallShield Wizard" will then open. Left-click "Next".
8. On the "Choose Destination Location" window, Left-click "Next" to use the default install location.
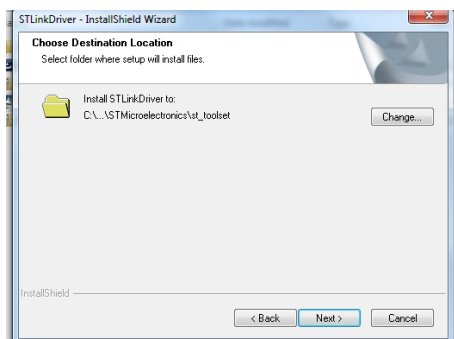
9. Left-click "Install" on the "Ready to Install the Program" window to being installation.
10. Left-click "Finish" on the "InstallSheild Wizard Complete" window.
11. A desktop shortcut will have been created:

Programming Inncom STM32 Devices with the ST-Link V2 STM32 Programmer

1. Connect the ST-Link V2 programmer to an available USB port using the USB Type A to Type B "mini" device cable provided with the programmer.
   Note: The first time you connect the programmer:
   - A "Installing device driver" window will open as the driver is installed
   - The "COM" LED will on the programmer will flash RED as the driver connects to the programmer.

   When the driver is installed has established communication with the programmer, the "COM" LED will turn solid RED and another notification will appear indicating the device driver installed successfully. You may receive these notifications in the future if you connect the programmer to a different USB port.

2. Connect the 262-2109 device programming cable's 20-pin connector to the 20-pin female header on the programmer if not already connected. The connector is keyed and will only fit in one orientation.

3. ⚠️ | Remove power from the target device being programmed if currently connected to its normal power source. The ST Link programmer provides power to the target device and can be damaged if the target is powered.

   With the target not powered, connect the 8 pin male connector of the programming cable to the tan female ICP/ISP header on the target device. The connector is keyed, so it will only fit in one orientation.
   - This will be the H1 ICP header on most CBL32 devices.
   - It is the "ISP" header on the PC-402.4G.
   - It is not labeled on the Evora switch.

   This example shows the programmer connected to an E528.4G
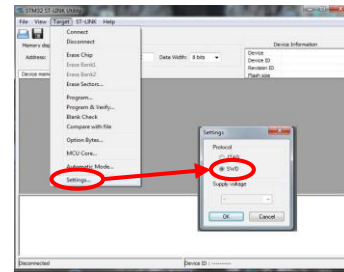

   H1 ICP
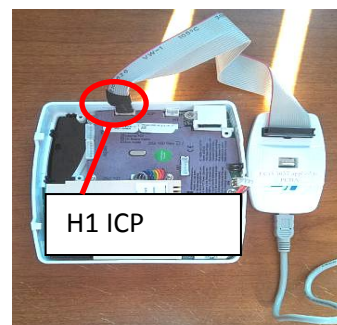
4. Start the STM32 ST-Link Utility program. Double-click the desktop shortcut, or select it from the "Start > All Programs > STMicroelectronics > STM32 ST-LINK Utility" menu.
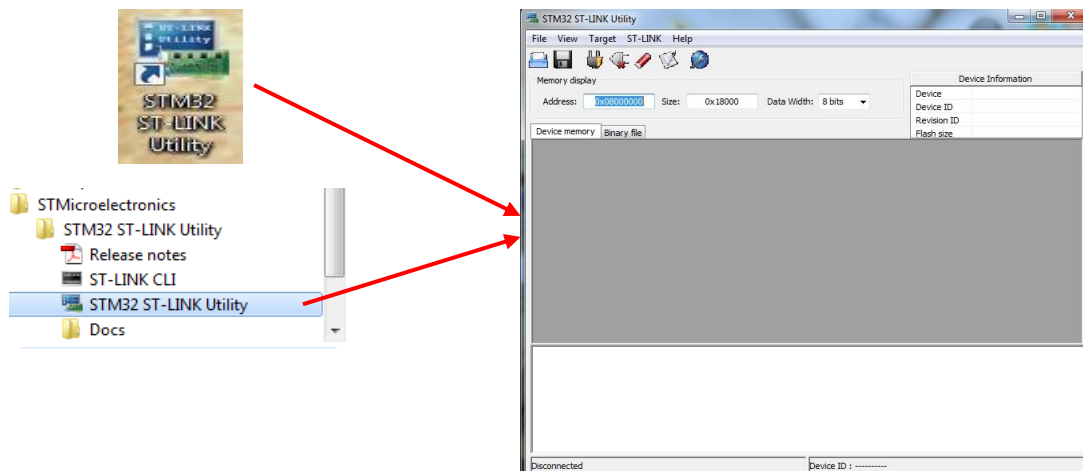
5. Set the programming protocol to "**SWD**".
    Target > Settings > Select "**SWD**" , then left-click "OK".

   If programming several devices, you only need to do this step once

6. The software will attempt to connect to the target device through the programmer. If connection is successful, the status area will show the connection and the connected devices memory values will be read and displayed. The "COM" LED on the programmer will flash GREEN/RED.
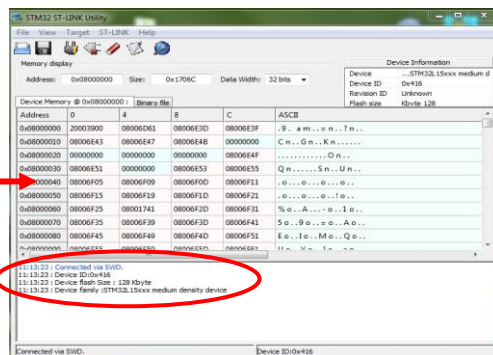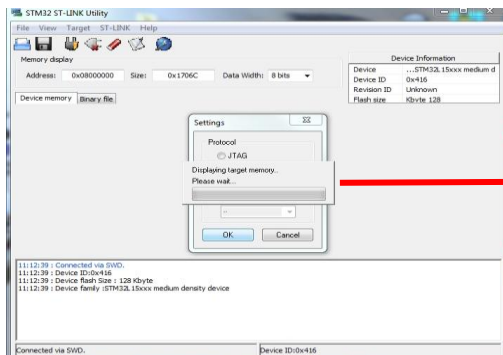
    If the "COM" LED remains solid RED and you get no indication that the target device was read, select "Target > Connect" from the ST-Link utility menu bar to force the software to connect to the target device.
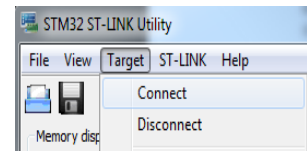
    If you continue to get no indication of a connection, or you receive a "No target connected" error messsage , try a different 262-2109 device programming cable.
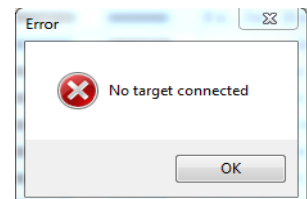
7.   If programming a CBL32 device that uses the STM32F101 microprocessor, you **MUST ERASE the STM32F101 before programming it**. As of 3/2014, the CBL32 devices listed in Table 2 use the STM32F101 micro.
The STM32F101 micro is used in devices that DO NOT have an LCD display.

|	
Evora.4G	STM32F101
PC502.4G	STM32F101
Modeva.4G	STM32F101
X10.4G	STM32F101
X47.4G	STM32F101

To ERASE the device, select "Target > Erase Chip" from the main menu.

Table 2 : CBL32 Devices That Must Be Erased Before Programming

Thermostats with LCD displays that use the STM32L152 microprocessor are automatically erased as part of the programming cycle and you typically do not have to manually erase these before programming. However, you can manually erase these devices if desired at anytime.   For example, if the device has become un-responsive for some reason and can't be programmed, you could erase the device then attempt to program it.

8.   Select the software to be loaded. CBL32 device software has a ".srec" file extension
Select File > Open File to open a standard file browser.
Browse to the location of the desired ".srec" file, select the file and Left-click "Open".
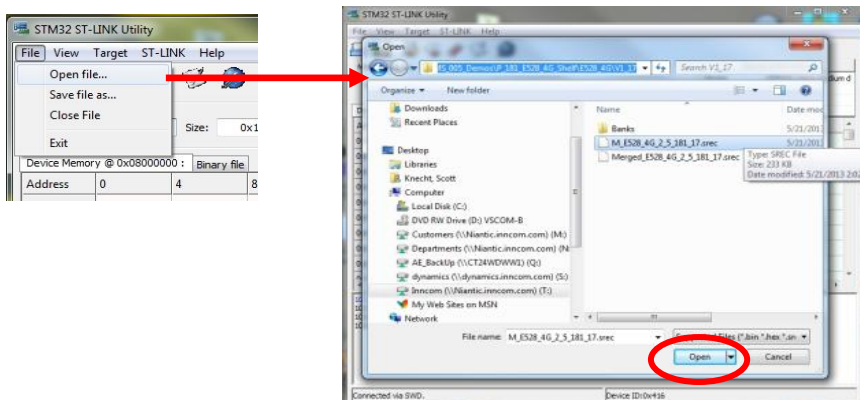
9.   If the file was opened, a message window will open indicating the file was opened successfully and ask if you want to download it now.
- Left-click OK.   The "Download" window will open.
- Left-Click the "Program" button to start programming the target CBL32 device.
- The targets Flash memory will be programmed, then verified.
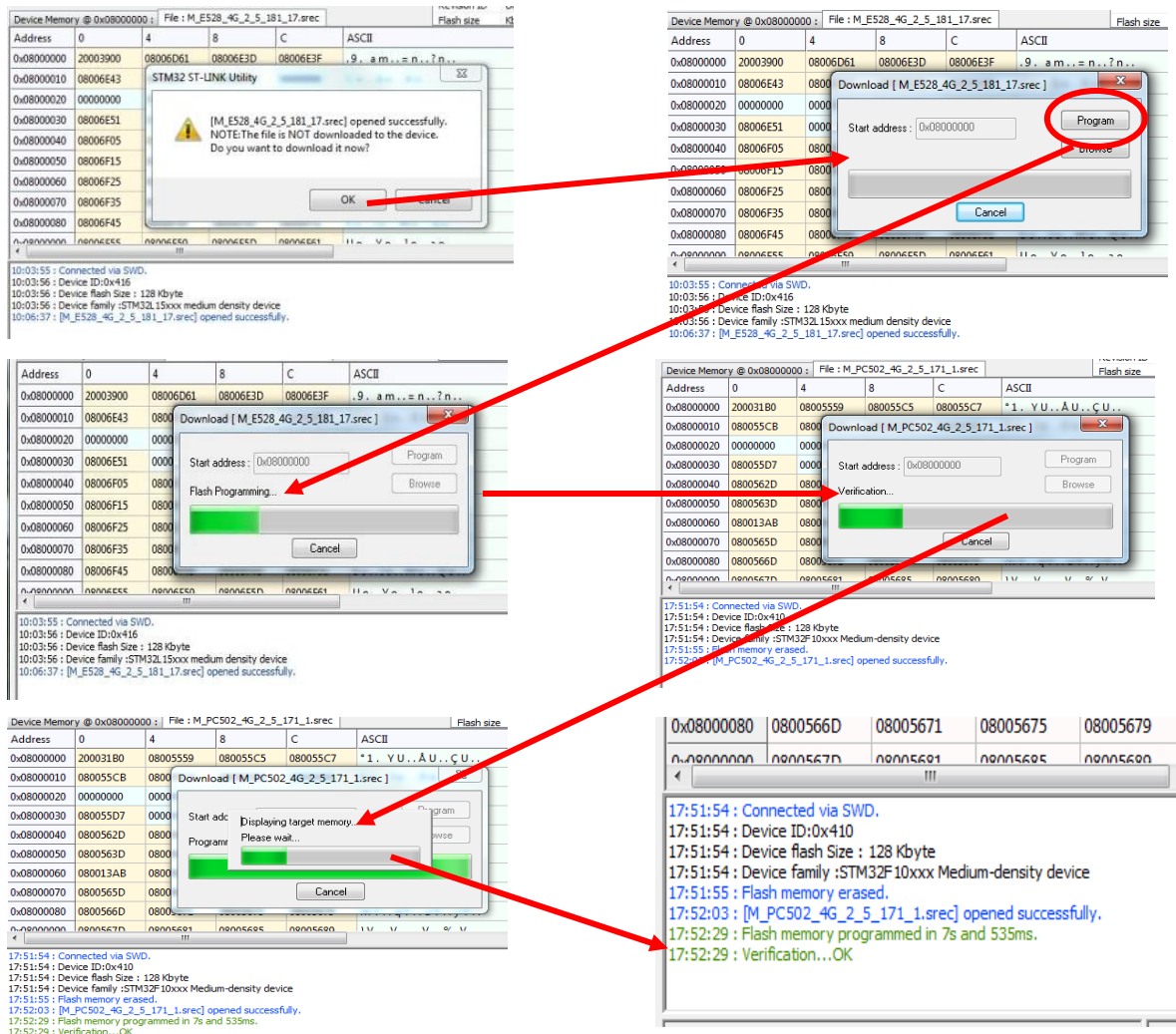
10. To program another device, connect the new device to the 262-2109 device programming cable, then select "Target > Connect" from the ST-Link utility menu bar to force the software to connect to the target device. Repeat the above steps starting at **Step 6** to program the new device

Troubleshooting the STM32 ST-Link V2 Programmer

You get a "No target connected" error when connecting to the target device to be programmed
The ST-Link software was not able to detect and connect to the target device.

Verify the 262-2109 device programming cable is fully connected between the programmer and the target device's ISP header. If it appears the cable is connected correctly, it is possible the 8-pin connector of the cable has become damaged after extended use. Try using a new 262-2109 device programming cable.
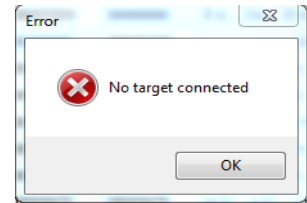
You get a "No STLink detected" " error when connecting to the target device to be programmed
The ST-Link software was not able to detect theST-Link programmer device via the USB connection.

Verify the USB cable is fully connected between the computer USB port and programmer. If the USB cable is connected, the "COM" LED on the programmer should be on and RED. If it is OFF, the programmer is not receiving power from the USB port, so either the USB cable is bad, or the USB port is bad.

Try a different USB cable. If that doesn't work, connect to a different USB port

If the "COM" LED is blinking RED, the USB port is supplying power but the ST-Link programmer device has not established communication with the ST-Link software driver. Connect the ST-Link programmer to a different USB port and see if this forces the ST-Link driver to re-install. You will get a "Device driver software installed successfully" message. Try programming again.

If you continue to receive the "No StLink detected" error message and the "COM" LED flashes RED, try un-installing and re-installing the ST-Link software.

ST-LINK/V2 status LEDs

The LED labeled 'COM' on top of the ST-LINK/V2 shows the ST-LINK/V2 status (whatever the connection type).

When the:
- LED is blinking RED: the first USB enumeration with the PC is taking place.
- LED is RED: communication between the PC and ST-LINK/V2 is established (end of enumeration).
- LED is blinking GREEN/RED: data are being exchanged between the target and the PC.
- LED is GREEN: the last communication has been successful.
- LED is ORANGE: ST-LINK/V2 communication with the target has failed.

You get a "Failure running flash loader" or "Programming Error @: 0x08000000" error when programming a device
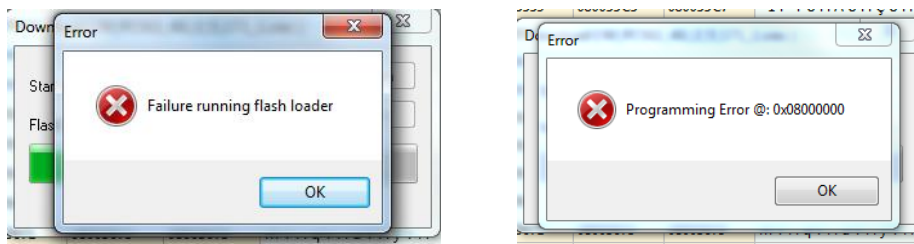
If programming a CBL32 device that uses the STM32F101 microprocessor, you **MUST ERASE the STM32F101 before programming it**, or you will get this error. As of 3/2014, the CBL32 devices listed in Table 3 use the STM32F101 micro. The STM32F101 micro is used in devices that DO NOT have an LCD display.

Evora.4G	STM32F101
PC502.4G	STM32F101
Modeva.4G	STM32F101
X10.4G	STM32F101
X47.4G	STM32F101

To ERASE the device, select "Target > Erase Chip" from the main menu.

Table 3 : CBL32 Devices That Must Be Erased Before Programming

With the target devices microprocessor erased,   select "Target > Program and Verify" to begin programming the device. Or, left-click the "Program Verify" button.
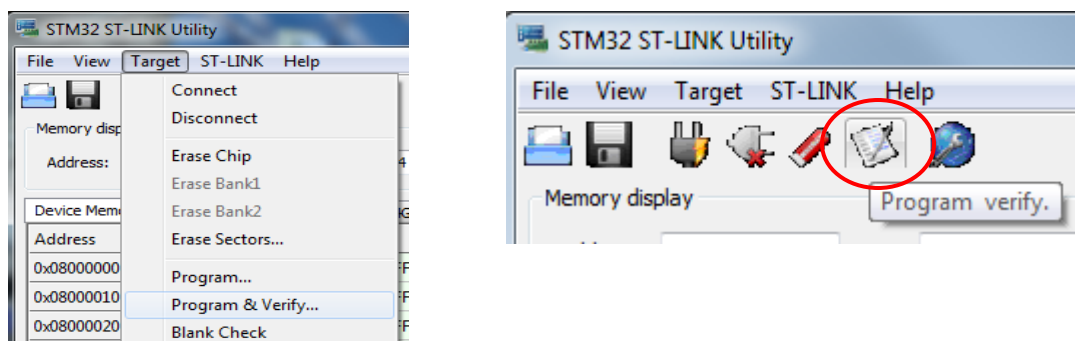
Revision History

Initial Release   4/22/14