



e-Link for 8-Bit MCU ICP User's Guide

Revision: V1.00 Date: May 13, 2015

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1. e-Link Introduction

The e-Link is Holtek's third generation simulator/programmer for use with Holtek Flash MCU devices. It includes both OCDS (On-Chip Debug Support) and ICP (In-Circuit Programming) functions.

2. e-Link Appearance and ICP Functions

2.1 e-Link Appearance

e-Link is the common name for the Holtek simulator/programmer hardware series all of which have the same appearance as shown below.



Figure 1. e-Link – Front



Figure 2. e-Link – Back



Figure 3. e-Link – Side

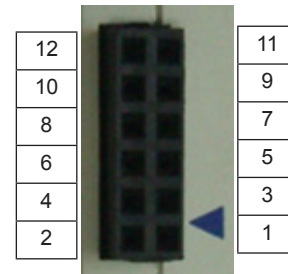


Figure 4. e-Link – Pin Assignment

2.2 e-Link ICP Functions

- Programming Holtek 8-bit Flash MCUs
- Programming EEPROMs
- Programming SPI Flash

3. e-Link ICP Usage Flow Description

3.1 HOPE3000 for e-Link Software Update

Log on to the Holtek official website (<http://www.holtek.com.cn/China/tech/tool/Mainpage1.htm>) to download and install the latest HOPE3000 for use with the e-Link.

3.2 Programming Function

The e-Link should be updated to be in the e-Link ICP mode by using the HOPE3000 for e-Link software.

3.2.1 Holtek 8-bit Flash MCU

The programming pins are shown as follows:

12	X _o	11	GND _o
10	X _o	9	ICPDA _o
8	X _o	7	X _o
6	X _o	5	ICPCK _o
4	X _o	3	ICPMS _o
2	X _o	1	VDD _o

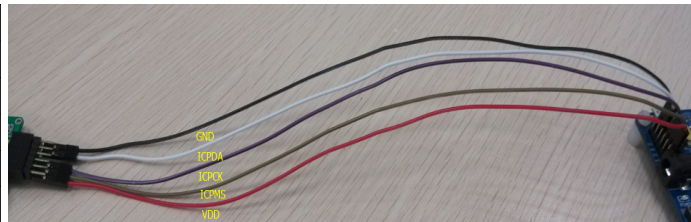


Table 1. 5-wire Connection

Figure 5

12	X _o	11	GND _o
10	X _o	9	ICPDA _o
8	X _o	7	X _o
6	X _o	5	ICPCK _o
4	X _o	3	X _o
2	X _o	1	VDD _o

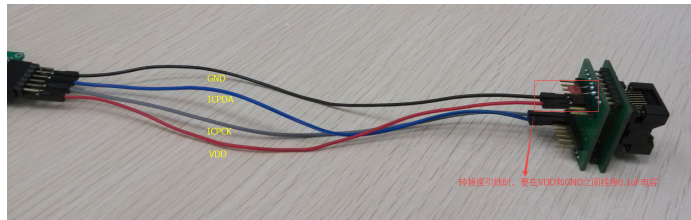


Table 2. 4-wire Connection

Figure 6

Note: When the adaptor lead is used, a 0.1μF capacitor should be connected between VDD and GND.

Before ICP operation, first click “File” → “Open” to open the MTP file to be programmed, then correctly connect the target Holtek 8-bit Flash MCU.

The initialisation interface of the HOPE3000 for e-Link software is as follows.

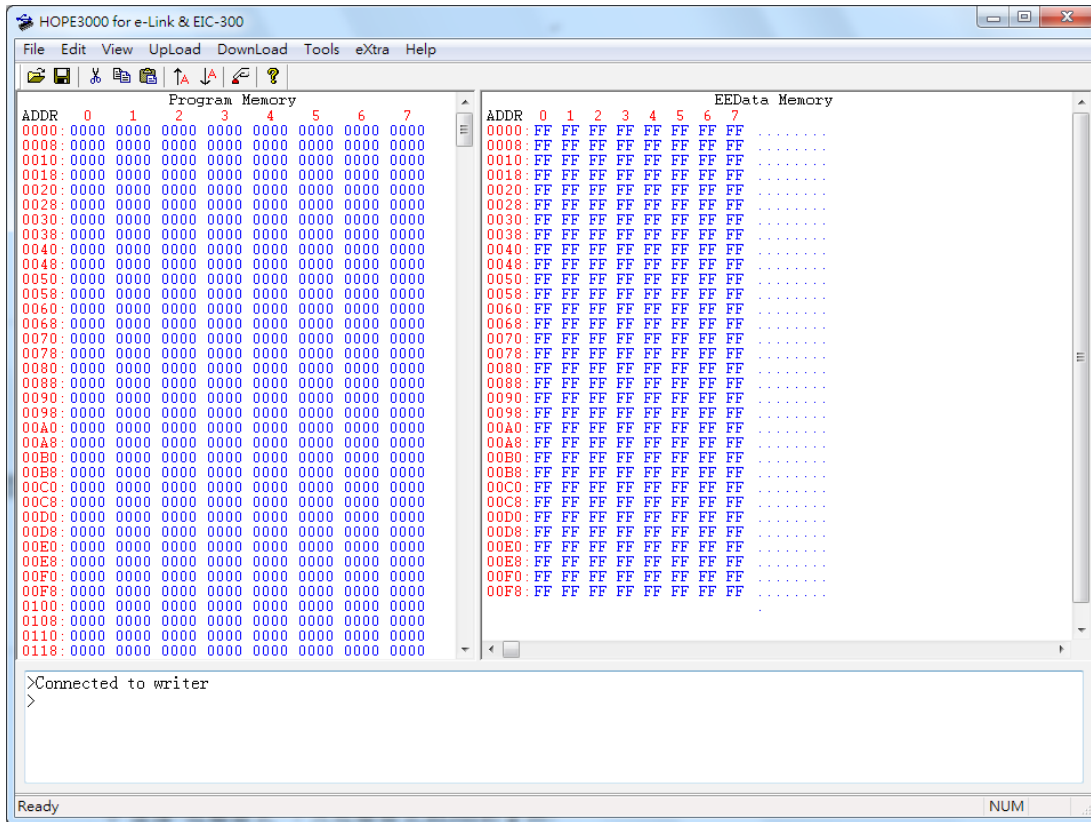


Figure 7

【Upload】

- Upload
 - The upload option includes six commands, “Program”, “EEData”, “ALL”, “Verify Program”, “Verify EEData” and “Verify All”.
- Select “Program”: Only read the Program Memory data.
- Select “EEData”: Only read the EEPROM Memory data.
- Select “ALL”: The Program Memory and EEPROM Memory data will both be read.
- Select “Verify Program”: Only verify the Program Memory data.
- Select “Verify EEData”: Only verify the EEPROM Memory data.
- Select “Verify All”: The Program Memory and EEPROM Memory data will both be verified.

Note: The read data will be shown in the corresponding window. If the data is to be stored then click the “Save” button under the “File” option.

【Download】

- Download
The download option includes eight commands, “Program”, “EEData”, “ALL”, “Auto Verify”, “Erase Program”, “Erase EEData”, “Erase All” and “Lock Chip”.
- Download Steps:
 1. Click “File/Open” to open the corresponding .MTP file.
 2. Select “Program”: The Program Memory data will be downloaded to the target MCU.
Select “EEData”: The EEPROM Memory data will be downloaded to the target MCU.
Select “ALL”: The Program Memory and EEPROM Memory data will both be downloaded to the target MCU.
 3. After the download command is executed, if the MCU programs are required to be executed, click the “Power On” function under the “Tools” option, or select the “Auto Power On” function under the “Tools” option before the download command is executed.
- Auto Verify
When this option is selected, if the download “Program”, “EEData” and “ALL” commands are executed, the system will automatically verify data for the current executing command.
- Erase
If the MCU programs or data are required to be updated, the “Erase Program” or “Erase EEData” command can be executed directly as needed. However if the MCU is locked, the “Erase All” command should be executed.
- Lock Chip
After the download command is performed, if the MCU data is required to be protected, the “Lock Chip” function under the “Download” option can be executed. This will ensure that the data written to the MCU cannot be read.

【Tools】

- Tools
This option is mainly to implement power supply control and reset function selection for the target IC.
- View Option
If this function is selected, the options setup in the HOPE3000 for e-Link will pop up.
- Reset
If this command is executed, the MCU will be forced to return to the program initial state and rerun.
- Power On
If the power has been successfully connected, then after the command is executed, the program downloaded to the MCU will run. The voltage is either 3.3V or 5V, which users can choose according to their needs.
Note: If users want to use the ICP mode, the Target Board can be supplied directly with either a 3.3V or 5V power supply. The maximum current is 300mA which should meet the needs of most target boards. If higher currents are required then an external power supply should be connected.
- Power Off
After this command is executed the target IC will have no power and the programs will not run.
- Auto Power On
Function: After the “Download”, “Upload” and other commands are executed, the system will supply power to the devices automatically.

- View S.W.A.R.T
After this command is executed, some information will pop up, such as the programmed MCU type, programming time, programming times, etc.
- Erase S.W.A.R.T
After this command is executed, the programming information will be cleared without executing again.
- Activate Writer
This option is used to register and activate the e-Link.
- F/W Update
Update F/W version for e-Link ICP Mode.

【Extra】

3.2.2 SPI Flash

For the SPI Flash programming, the current supported device part number includes the MX25 series and SST25 series.

SPI Flash Programming Pins:

12	x	11	GND
10	x	9	x
8	CEB	7	x
6	MOSI	5	x
4	SCK	3	x
2	MISO	1	VDD

Table 3

The external SPI Flash should be connected correctly; otherwise the following prompt window will pop up and normal SPI Flash programming operation cannot be carried out.

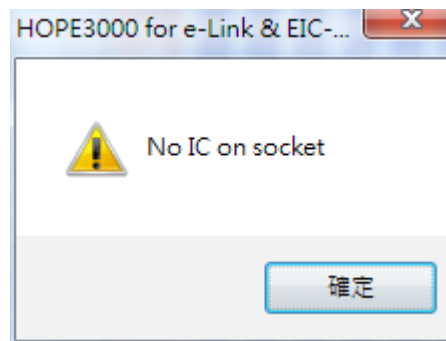


Figure 8

When the external SPI Flash is connected correctly, the following window will pop up. The “Part No.” option will show the currently connected SPI Flash type by default. Click “Open” to select the corresponding .dat file for normal programming.

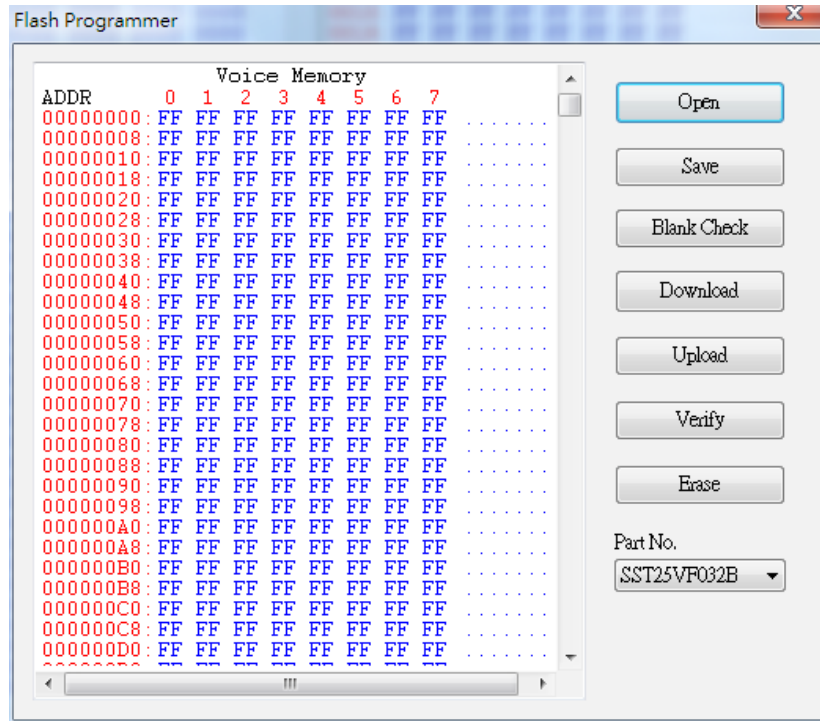


Figure 9

3.2.3 EEPROM

For the EEPROM programming, the current supported device part number is the HT24 series.

Programming Pins:

12	x	11	GND
10	x	9	x
8	x	7	x
6	SCL	5	x
4	x	3	x
2	SDA	1	VDD

Table 4

When the external EEPROM is connected correctly, if this function is used, the following window will pop up.

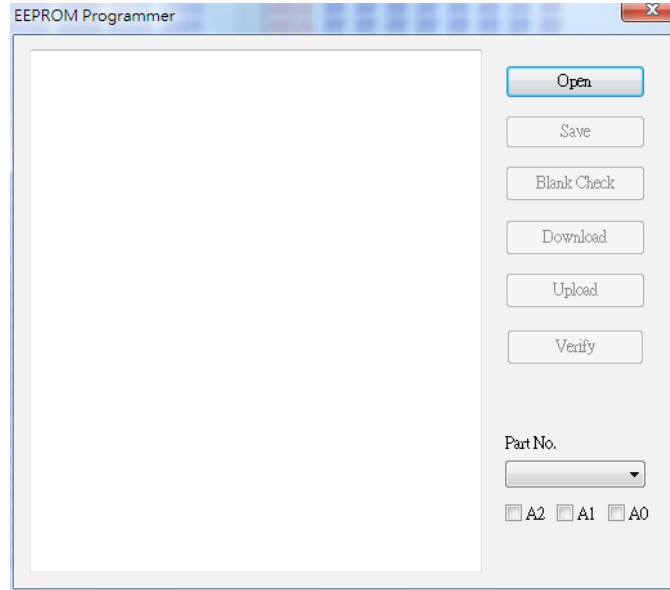


Figure 10

Click “Open” to open the corresponding .bin file as follows.

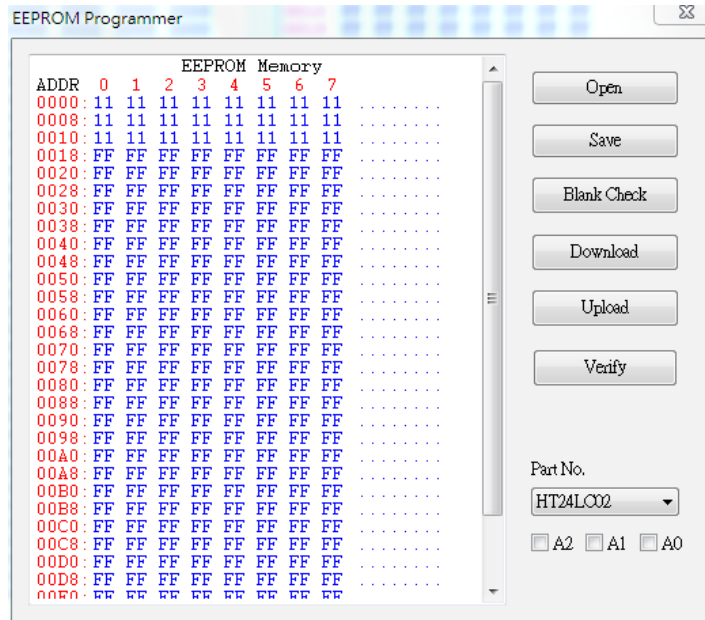


Figure 11

- Note: 1. If address pins A2, A1 and A0 are checked, the corresponding pin is high, if not checked, the corresponding pin is low and the default state is not checked.
2. Address pins A2, A1 and A0 will be adjusted according to the opened .bin file size. For example, if the opened file is 8K bits (HT24LC08), then only A2 is selectable, A1 and A0 are invalid.

4. e-Link Switch and Indicators

- **Switch**

The switch is used to reset the e-Link.

- **Indicators**

Status: Yellow indicates that programming is OK and the power is connected

Flashing: OK or power on initial state

Continuously on: Represents the execution of “Tools” → “Power On” function

Error: Red indicates the programming is in a fail state

Flashing: Fail

Active: Blue indicates whether the programming is in Ready or Busy state

Continuously off: Ready

Flashing: Busy

5. e-Link Size

- **e-Link back and side dimensions (unit: mm)**

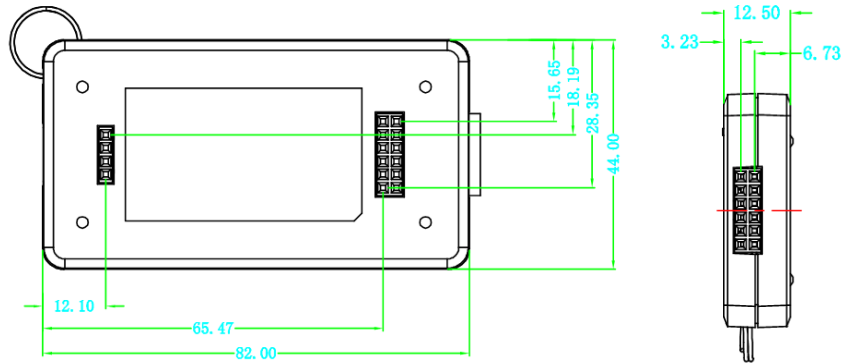


Figure 12

- **e-Link back slot dimensions (unit: mil)**

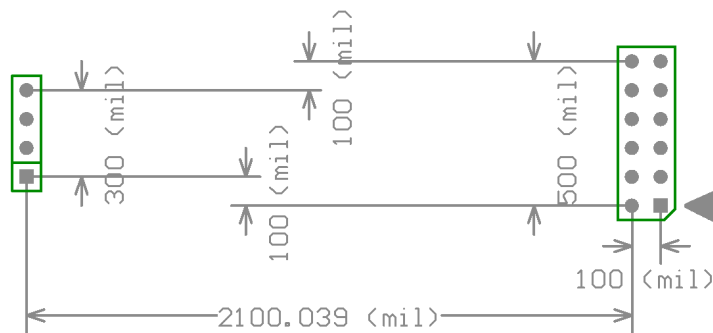


Figure 13

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