

# HƯỚNG DẪN SỬ DỤNG BOARD NuTiny-NUC140-TULA

Công ty TNHH Giải pháp TULA(<u>www.tula.vn</u>) & Tập đoàn Công nghệ Nuvoton(<u>www.nuvoton.com</u>) Page 1



## MỤC LỤC

1.	Mạch NuTiny – NUC1403
2.	Mạch nguyên lý4
3.	Hướng dẫn nạp chương trình6
4.	Sử dụng mạch NuTiny NUC140 làm mạch nạp Nulink8



1. Mạch NuTiny – NUC140



Mach NuTiny NUC140



Mach PCB



2. Mạch nguyên lý



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## Hướng dẫn Board NuTiny–NUC140 TULA V1.1 **TULA Solution** The Distributor of Quality





#### 3. Hướng dẫn nạp chương trình.

MCU trên board đã tính hợp sẵn ISP firmware để có thể nạp ISP qua cổng USB hoặc UART mà không cần sử dụng mạch nạp Nu Link.

Hướng dẫn nạp ICP và ISP tham khảo chi tiết trong tài liệu 'HUONG DAN NAP ICP va ISP MCU ARM Cortex M0 – NUVOTON'

Để nạp ISP qua cổng USB, đưa chân PB.15(pin 91) xuống đất.





NuMicro ISP Pro	ogramming Too	ol V1.44									
Connection type © USB COM		•	Connection check	Conne	cted						
Part No. NUC140VE3CN	RAM: 16384	Bytes APROM: 1310	)72 Bytes DataFl	ash: 0 Bytes	F/W Ver:2.4						
Load file	.oad file File name: Keil\Sample\NuTiny-EVB\Smpl_NuTiny-EVB_NUC140\obj\Smpl_NUTINY_100.h										
APROM	File size:	1392 Bytes	Checksum:	0x7158							
		,	en en benn								
DataFlash	File name:	C:\Program Files\Nu	voton Tools\ISPTo	ol\							
	File size:		Checksum:								
Setting File data	Config 0: 0x	FFFFF7F	Config 1: 0x	0001F000	Last config 🔹						
APROM DataFla	ash										
00000000 88 00000010 00 00000020 00 00000030 00 00000040 35 00000050 B1 00000050 93 00000070 6D 00000080 93	04 00 20 69 00 00 00 00 00 00 00 00 02 00 00 93 03 00 00 F9 01 00 00 93 04 00 00 83	0       01       00       00       89       01         0       00       00       00       00       00       01         0       00       00       00       00       00       01         0       00       00       00       00       00       01         0       00       00       00       00       8F       01         0       01       00       00       93       01         0       01       00       00       93       01         0       01       00       00       93       01	1 00 00 8B 01 0 00 00 00 00 0 00 00 8D 01 1 00 00 8D 03 3 00 00 8D 03 1 00 00 93 01 1 00 00 93 01 1 00 00 93 01	00 00 ; i. 00 00 ; 00 00 ;	· · · · · · · · · · · · · · · · · · ·						
Program	🔘 DataFlash	O APROM+Data	aFlash ⊚Erase A	1/1 All Config	PASS						
					Start						

Nạp ISP qua cổng USB



#### 4. Sử dụng mạch NuTiny Nuc140 làm mạch nạp Nulink

Để sử dụng mạch NuTiny Nuc140 làm mạch nạp Nulink, kết nối thêm trở và khối chức năng SPI1 theo sơ đồ sau:



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## Hướng dẫn Board NuTiny–NUC140 TULA V1.1 **TULA Solution** The Distributor of Quality

Nạp file NUC1xx\_ICE\_M0 trong thư mục Nu\_Link trong ổ C bằng phần mềm NuMicro ISP Programing Tool

Connection type Substantial Start Status Connection Check Disconnect Connected Conne	e About	rogram	nming T	ool												
Connection type Ourse USB Comection type Comection check Disconnect Connected Disconnect Connected Connected Connected F/W Ver:2.4 Load file File name: C:\Program Files\Vuvoton Tools\UCPTool\Vu_Link\VUC1xx_ICE_M0.bin File size: C:\Program Files\Vuvoton Tools\USPTool\ File size: C:\Program Files\Vuvoton Tools\USPTool\ File size: Checksum: Config 0: 0x FFFFFF7F Config 1: 0x 0001F000 Last config File data APROM DataFlash Config 0: 0x FFFFFF7F Config 1: 0x 0001F000 Config 0: 0x Config 0: 00 00 00 00 00 00 00 00 00 00 00 00	UVO	То										-				-
Image: State Stat	Connection type								Co	onnec	ion ch	eck				
COM	() USB								ſ	Disc	nnect		C	onneo	cted	
Ratt No.       NUC140VE3CN       RAM: 16384 Bytes       APROM: 131072 Bytes       DataFlash: 0 Bytes       F/W Ver:2.4         Load file       File name:       C:\Program Files\Nuvoton Tools\ICPTool\Nu_Link\NUC1xx_ICE_M0.bin       File name:       Ox55F1         DataFlash       File name:       C:\Program Files\Nuvoton Tools\ISPTool\       Tools\ISPTool\         DataFlash       File name:       C:\Program Files\Nuvoton Tools\ISPTool\       Tools\ISPTool\         DataFlash       File name:       C:\Program Files\Nuvoton Tools\ISPTool\       Tools\ISPTool\         DataFlash       File size:       Checksum:       O001F000       Last config         Configuration bits       Setting       Config 0: 0x       FFFFF7F       Config 1: 0x       0001F000       Last config         File data       APROM       DataFlash       O000000 0 0 40 00 20 CD 01 00 00 FF 01 00 00 01 02 00 00 ;       O	О СОМ			-												
NOC 140VE3CN       Not 110364 Bytes       ARKOM: 131072 Bytes       DataFlash       File name:       C:\Program Files\Nuvoton Tools\ICPTool\Nu_Link\NUC1xx_ICE_M0.bin         APROM       File name:       C:\Program Files\Nuvoton Tools\ICPTool\Nu_Link\NUC1xx_ICE_M0.bin         DataFlash       File name:       C:\Program Files\Nuvoton Tools\ISPTool\         DataFlash       File name:       C:\Program Files\Nuvoton Tools\ISPTool\         File size:       Checksum:       0x55F1         Configuration bits       Setting       Config 0: 0x       FFFFFF7F         Config 1: 0x       0001F000       Last config         File data       APROM       DataFlash       00000000         00000000       04 00 02 0C D0 1 00 00 0FF 01 00 00 01 02 00 00 ;       000 00 ;         000000000       04 00 02 0C D0 1 00 00 0FF 01 00 00 01 02 00 00 ;       000 00 ;         000000000       FF	Part No.		AM. 162	D.4 Dute	- 40		4. 12	107	2 0.4			- chu		_	EM Ver 2 4	
Load file       File name:       C:\Program Files\\uvoton Tools\LCPTool\\u_Link\\UC1xx_ICE_M0.bin         APROM       File name:       C:\Program Files\\uvoton Tools\LSPTool\         DataFlash       File name:       C:\Program Files\\uvoton Tools\LSPTool\         File size:       Checksum:       0x55F1         Configuration bits       Setting       Config 0: 0x         File data       APROM       DataFlash         00000000       00 40 00 20 CD 01 00 00 FF 01 00 00 01 02 00 00 ; .@.         00000000       04 00 02 0CD 01 00 00 FF 01 00 00 01 02 00 00 ; .@.         00000000       04 00 02 0CD 01 00 00 FF 01 00 00 01 02 00 00 ; .@.         00000000       FF	NUC 140VE3Ch	ч ю	AM: 105	o4 byte	S AP	ROP	4: 15	107.	2 D y i	les i		dSI1;	U Dyte:	5	1700 1001201	
APROM       File size:       67728 Bytes       Checksum:       0x55F1         DataFlash       File name:       C:\Program Files\\Nuvoton Tools\LSPTool\         File size:       Checksum:         Configuration bits         Setting       Config 0: 0x       FFFFFF7F         Config 1: 0x       0001F000       Last config         File data         APROM       DataFlash         00000000       04 00 02 0C D0 01 00 00 FF 01 00 00 01 02 00 00 ;	Load file	File r	name:	C:\	Progra	am Fi	iles≬\	Nuvo	ton <sup>-</sup>	Tools	ICPTo	ol\Nu	ı_Link≬	NUC1xx_I	CE_M0.bin	
DataFlash       File name:       C:\Program Files\\uvoton Tools\ISPTool\         File size:       Checksum:         Configuration bits         Setting       Config 0: 0x       FFFFF7F         Config 1: 0x       0001F000       Last config         File data         APROM       DataFlash         00000000       00       40       00       20       CD       1       00       00       1       02       00       00       1       02       00       00       1       02       00       00       1       02       00       00       1       02       00       00       1       02       00       00       1       02       00       00       1       02       00       00       1       02       00       00       1       02       00       00       1       02       00       00       1       02       00       00       1       02       00       0       1       02       00       0       1       02       00       00       1       02       00       00       1       02       00       00       1       02       00       00       1       02	APROM	File s	size:	677	728 By	/tes			C	hecks	um:	0x5	5F1			
DataFlash       File name:       C:\Program Files\\\uvoton Tools\\ISPTool\         File size:       Checksum:         Configuration bits         Setting       Config 0: 0x       FFFFF7F         Config 1: 0x       0001F000       Last config         File data         APROM       DataFlash         00000000       00 40 00 20 CD 01 00 00 FF 01 00 00 01 02 00 00 ; .8.         00000000       00 40 00 20 CD 01 00 00 FF 01 00 00 01 02 00 00 ; .8.         00000000       F FF F																
DataHash       File size:       Checksum:         Configuration bits       Setting       Config 0: 0x       FFFFF7F       Config 1: 0x       0001F000       Last config         File data       APROM       DataFlash       00000000       00       40       00       20       CD       1       00       00       1       02       00       00       j       .		File r	name:	C:\	Progra	am Fi	iles≬\	Nuvo	ton <sup>-</sup>	Tools	ISPTo	ol\				
Configuration bits         Setting       Config 0: 0x       FFFFFF7F       Config 1: 0x       0001F000       Last config         File data         APROM       DataFlash         00000000       00       40       00       20       00       1       02       00       00       ; €.       .         00000000       00       40       00       20       00       01       02       00       00       ; €.       .       .         00000000       FF FF       FF FF FF       FF FF FF FF FF FF FF FF FF FF FF FF FF	DataFlash	File s	File size:				Checksum:									
APROM       DataFlash         00000000       00       40       00       20       CD       01       00       00       01       02       00       00       ;       ;	Setting	Conf	fig 0: 0x	FFF	FFF 7	F			C	onfig	1: 0x	000	1F000		Last config	
00000000       00       40       00       20       CD       01       00       00       01       02       00       00       ; .e.       .e. <th>Tile Jaka</th> <th></th>	Tile Jaka															
00000010       FF	File data	lash														
00000020 FF 13 02 00 00 ; 00000030 FF 15 02 00 00 17 02 00 00 ; 00000040 19 02 00 00 19 02 00 00 00 00 00 00 00 00 00 00 ; 00000050 00 00 00 00 00 00 19 02 00 00 19 02 00 00 ; 00000060 91 DB 00 00 19 02 00 00 19 02 00 00 19 02 00 00 ; 00000070 55 0F 00 00 19 02 00 00 00 00 00 00 00 00 00 ; 00000080 00 00 00 00 00 00 19 02 00 00 19 02 00 00 ; Program ● APROM ● DataFlash ● APROM+DataFlash ● Erase All ● Config PASS Status	File data APROM Dataf	lash	00 20	CD 01	00	00	FF	01	00	00 0	1 02	00	00 ;	. 6		
00000030       FF	File data APROM Dataf 00000000 0 00000010 F	lash 0 40 F FF	00 20 FF FF	CD 01 FF FF	00 FF	00 FF	FF FF	01 FF	00 FF	00 0 FF F	1 02 F FF	00 FF	00 ; FF ;	. @		<b>^</b>
00000040       19       02       00       19       02       00	File data APROM Dataf 00000000 0 00000010 F 00000020 F	ilash 0 40 F FF F FF	00 20 FF FF FF FF	CD 01 FF FF FF FF	00 FF FF	00 FF FF	FF FF FF	01 FF FF	00 FF FF	00 0 FF F FF 1	1 02 F FF 3 02	00 FF 00	00 ; FF ; 00 ;	. @		<b>^</b>
00000060       91       DB       00       00       19       02       00       19       02       00       19       02       00       00       19       02       00       00       19       02       00       00       19       02       00       00       19       02       00       00       19       02       00	File data APROM Dataf 00000000 0 00000000 F 000000000 F 000000000 F	lash 0 40 F FF F FF F FF	00 20 FF FF FF FF FF FF	CD 01 FF FF FF FF	00 FF FF FF	00 FF FF FF	FF FF FF 15	01 FF FF 02	00 FF FF 00	00 0 FF F FF 1 00 1	1 02 F FF 3 02 7 02	00 FF 00	00 ; FF ; 00 ; 00 ;	.0		<b>^</b>
000000070       55       0F       00       19       02       00	File data APROM Dataf 000000000 0 00000010 F 00000020 F 00000030 F 00000040 1	lash 0 40 F FF F FF F FF 9 02	00 20 FF FF FF FF FF FF 00 00	CD 01 FF FF FF FF FF FF 19 02	00 FF FF FF 00	00 FF FF FF 00	FF : FF : 15 00	01 FF 02 00	00 FF FF 00	00 0 FF F FF 1 00 1 00 0	1 02 F FF 3 02 7 02 0 00	00 FF 00 00	00 ; FF ; 00 ; 00 ;	. @		<b>^</b>
OOOOOOB0         OO OO OO OO OO OO OO OO II OZ OO OO II OZ OO OO II OZ OO OO ;         -           Program         2/2         PASS           Image: APROM         DataFlash         APROM+DataFlash         Erase All         Image: Config           Status         Status         Start         Start         Start	File data APROM Dataf 000000000 0 000000000 F 000000000 F 000000000 1 00000000 0 00000000 0	lash 0 40 F FF F FF 9 02 0 00	00 20 FF FF FF FF FF FF 00 00 00 00	CD 01 FF FF FF FF 19 02 00 00	00 FF FF FF 00	00 FF FF 00 00	FF : FF : 15 00 19	01 FF 02 00 02	00 FF 00 00 00	00 0 FF F FF 1 00 1 00 0	1 02 F FF 3 02 7 02 0 00 9 02	00 FF 00 00 00	00 ; FF ; 00 ; 00 ; 00 ;	. @		<b>^</b>
Program 2/2 PASS APROM O DataFlash APROM+DataFlash Erase All Config    Status      Status	File data APROM Dataf 000000000 0 000000000 F 000000000 F 000000000 0 00000000 0 00000000 0 00000000	lash 0 40 F FF F FF 9 02 0 00 1 DB 5 0F	00 20 FF FF FF FF FF FF 00 00 00 00 00 00	CD 01 FF FF FF FF 19 02 00 00 19 02	00 FF FF 00 00 00	00 FF FF 00 00 00	FF FF 15 00 19 19	01 FF 02 00 02 02	00 FF 00 00 00	00 0 FF F FF 1 00 1 00 1 00 1	1 02 F FF 3 02 7 02 9 02 9 02 0 00	00 FF 00 00 00 00	00 ; FF ; 00 ; 00 ; 00 ; 00 ;	- @		<b>^</b>
APROM      DataFlash      APROM+DataFlash      Erase All      Config     FASS	File data APROM Datai 000000000 0 000000000 F 000000000 F 000000000 0 00000000 0 00000000 9 00000000 0 00000000 0	Eash 0 40 F FF F FF 9 02 0 00 1 DB 5 0F 0 00	00 20 FF FF FF FF FF FF 00 00 00 00 00 00 00 00 00 00	CD 01 FF FF FF FF FF FF 19 02 00 00 19 02 00 00	00 FF FF 00 00 00 00	00 FF FF 00 00 00 00	FF : FF : 15 00 19 19 00 19	01 FF 02 00 02 02 00 02	00 FF 00 00 00 00 00	00 0 FF F FF 1 00 1 00 1 00 1 00 1 00 1	1 02 F FF 3 02 7 02 9 02 9 02 0 00 9 02	00 FF 00 00 00 00 00 00	00; FF; 00; 00; 00; 00; 00; 00;	-@		•
Status Start	File data APROM Datai 000000000 0 000000000 F 000000000 F 000000000 0 00000000 0 00000000 9 00000000 0 Program	-lash 0 40 F FF F FF 9 02 0 00 1 DB 5 0F 0 00	00 20 FF FF FF FF FF FF 00 00 00 00 00 00 00 00 00 00	CD 01 FF FF FF FF 19 02 00 00 19 02 19 02 00 00	00 FF FF 00 00 00 00	00 FF FF 00 00 00 00	FF FF 15 00 19 19 00 19	01 FF 02 00 02 02 00 02	00 FF 00 00 00 00 00	00 0 FF F FF 1 00 1 00 1 00 1 00 1	1 02 F FF 3 02 7 02 0 00 9 02 9 02 0 00 9 02	00 FF 00 00 00 00 00	00 ; FF ; 00 ; 00 ; 00 ; 00 ; 00 ;	- @		•
Start	File data APROM Datai 00000000 0 00000010 F 00000020 F 00000030 F 00000040 1 00000050 0 00000050 0 00000060 9 00000070 5 00000080 0 Program	lash 0 40 F FF F FF 9 02 0 00 1 DB 5 0F 0 00	00 20 FF FF FF FF FF FF 00 00 00 00 00 00 00 00	CD 01 FF FF FF FF 19 02 00 00 19 02 19 02 00 00	00 FF FF 00 00 00 00	00 FF FF 00 00 00 00 00	FF FF 15 00 19 19 00 19	01 FF 02 00 02 02 02 02	00 FF FF 00 00 00 00 00 00	00 0 FF F FF 1 00 1 00 1 00 1 00 1 00 1	1 02 F FF 3 02 7 02 0 00 9 02 9 02 9 02 9 02	00 FF 00 00 00 00 00	00; FF; 00; 00; 00; 00; 00;	- @	PASS	•
	File data APROM Datai 00000000 0 00000010 F 00000020 F 00000030 F 00000030 F 00000030 0 00000050 0 00000050 0 Program ③ APROM Status	-lash 0 40 F FF F FF 9 02 0 00 1 DB 5 0F 0 00	00 20 FF FF FF FF FF FF 00 00 00 00 00 00 00 00 00 00	CD 01 FF FF FF FF 19 02 00 00 19 02 19 02 00 00	00 FF FF 00 00 00 00 00	00 FF FF 00 00 00 00	FF FF 15 00 19 19 00 19	01 FF 02 00 02 00 02 02	00 FF 00 00 00 00 00 00	00 0 FF F 00 1 00 0 00 1 00 1 00 1	1 02 F FF 3 02 7 02 9 02 9 02 9 02 9 02 9 02	00 FF 00 00 00 00 00	00; FF; 00; 00; 00; 00; 00;	- @	PASS	•

Như vậy, bây giờ mạch mạch NuTiny NUC140 đã có chức năng như 1 mạch nạp Nulink.