



APM32 PROG

Version: V1.0.0.5

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1 Overview

Apm32-prog is a development tool for APM32 series chips. It works with APM32 PROG PC software to complete the software programming of MCU chips.

2 Features

Support offline and online programming.

Support JTAG and SWD mode for PC programming.

Support WIN7/8/10 free drive.

Input voltage 5v, input current >= 500Ma

Power interface: USB

3 Interface

ARM JTAG Protocol

VTref	1	•	• 2	NC
nTRST	3		• 4	GND
TDI	5	•	• 6	GND
TMS	7	•	• 8	GND
тск	9	•	• 10	GND
RTCK	11	•	• 12	GND
TDO	13	•	• 14	GND
RESET	15	•	• 16	GND
DBGRQ	17	•	• 18	GND
5V-Supply	19	•	• 20	GND
5V-Supply	1/	•	• 18 • 20	GND

ARM SWD Protocol

VTref	1	•	• 2	NC
Not used	3	•	• 4	GND
Not used	5	•	• 6	GND
SWDIO	7	•	• 8	GND
SWCLK	9	•	• 10	GND
Not used	11	•	• 12	GND
SWO	13	•	• 14	GND
RESET	15	•	• 16	GND
Not used	17	•	• 18	GND
5V-Supply	19	•	• 20	GND



4 Operations

4.1 PC Interface

APM32 PROG V1.005	- 🗆 ×
Configuration Firmware About Language	
E:\桌面\APM32 PROG\mou_demo.hex Configuration	Open
Product-Series APM32F v Product-Type APM32F103VBT6 v	DownLoad(Offline)
External-Power OFF ~	Operation(Online)
Comm-Frotocol JTAG ~ StartAdd-of-Frogram Ox 0800 0000	P 11 - 0 0000000
Operation-Mode Program 🗸	BaseAddress: UxU8000000
Serial-Number SN-Configuration	DeviceID: 0x410
Address: Ox 0800 0000 Start-SN: Ox 1 Increment: Ox 1	StartAddress: 0x 0800 0000 Length(Bytes): 0x 0002 0000
Default-Config Write-Config Read-Config	Read(Online)
Operation-Record	
The file is OK-2019/10/12 13:42:13	Clear
Current-FW-Version: 00.15	ersion:

Picture 1 PC Interface



4.2 Programmer Connection

As the Programmer is connected to the computer via USB correctly (power supply: 5V/500mA), the device in red circle will display on "Device manager" in computer.

📲 Device Manager	 -		x
File Action View Help		-	
(+ -)			
⊿ 🚔 SCC22350			*
> 🗃 Batteries			
Biometric Devices			
⊳ ₁₽ Computer			
🗁 👝 Disk drives			
🔈 🖳 Display adapters			
DVD/CD-ROM drives			
a 🚛 Human Interface Devices			
HID-compliant consumer control device			
C III HID-compliant device			
HID-compliant device			
- 🕼 USB Input Device			=
USB Input Device			22
USB Input Device			
IDE ATA/ATAPI controllers			
a 🔚 Imaging devices			
HP HD Webcam [Fixed]			
Keyboards			
Mice and other pointing devices			
Monitors			
Network adapters			
Description of the second s			
Processors			
D SD host adapters			
Sound, video and game controllers			
🔋 🛛 🔤 Svstem devices	 		-

Picture 2 Programmer Connection



4.3 Download Data

4.3.1 Online Download

You can operate on MCU through the optional modes in "Parameter configuration", or clicking "Open file" to select documents with ".bin" or ".hex".

APM32 PROG V1	1.005		· · ·	- 🗆 ×	(
Configuration Fin	rmware About Language				
<Ⅰ Ling (APM32 PROG	\mcu_demo. hex			Dpen 0	
Configuration					
Product-Series	APM32F	~	DownLoad(0)	ffline)	
Product-Type	APM32F103VBT6	~			
External-Power	Power OFF	~	Operation((Jnline)	
Comm-Protocol	JTAG	~			
StartAdd-of-Progra	am Ox 0800 0000		BaseAddress: 0x080	00000	
Operation-Mode	Program	~	Flash: 128K		
🗌 Serial-Number	Page-Erase		DeviceID: 0x410)	
-SN-Configuration	· · ·				
Address: Ox	0800 0000 Start-SN:	0x 1	StartAddress: Ox	0800 0000	
Increment: Ox	1		Length(Bytes): Ox	0002 0000	
Default-Config	Write-Config	Read-Config	Read(Onl	ine)	
Operation-Record					
The file is OK- Write the configue Online-Operation	—2019/10/12 13:48:20 m ation is OK——2019/10/12 OK——2019/10/12 13:48:27	: 13:48:26		Clear	
				Dave	1
Current-FW-Version	: 00.15	Latest-FW-V	/ersion:		:

Picture 3 Online Operation on MCU



4.3.2 Offline Download

Click "Open File" to write the docs with suffix ".bin" or ".hex" into the Programmer.

APM32 PROG V1.005	
Configuration Firmware About Language	
■ Image: Line (Line and Line and Line	Open
Configuration	
Product-Series APM32F	V DownLoad(Offline)
Product-Type APM32F103VBT6	✓ 1
External-Power OFF	Operation(Online)
Comm-Protocol JTAG	~
StartAdd-of-Program Ox 0800 0000	Based Javass 0v0200000
Operation-Mode Program	V Right 198K
Page-Erase	Press. IZON
Serial-Number	DeviceID. 0x410
SN-Configuration	
Address: 0x 0800 0000 Start-SN: 0x	1 StartAddress: 0x 0800 0000
Increment: Ox 1	Length(Bytes): 0x 0002 0000
Default-Config Write-Config Read	d-Config Read(Online)
Operation-Record	
The file is OK-2019/10/12 14:01:06	Clear
Offline-OK-2019/10/12 14:01:12	
	Save
Current-FW-Version: 00.15	Latest-FW-Version:

Picture 4 Offline Programming



4.4 Read Target MCU Online

You can read the MCU data by setting the "Start address" and "Bytes", which will be shown on the pop-up dialog.

APM32 PROG V1	.005	- 🗆 X
Configuration Fin	mware About Language	
		Open
Configuration		
Product-Series	APM32F ~	DownLoad(Offline)
Product-Type	APM32F103VBT6 ~	
External-Power	Power OFF 🗸 🗸	Operation(Online)
Comm-Protocol	JTAG 🗸	
StartAdd-of-Progr	am Ox 0800 0000	Baraddrare: 0v0800000
Operation-Mode	Program 🗸	Flash: 128K
	Page-Erase	DeviceID: 0x410
Serial-Number		
Address: Ox	0800 0000 Start-SN: Ox 1	
Increment: Ox	1	StartAddress: 0x 0800 0000
		Length(Bytes): 0x 0002 0000
Default-Config	Write-Config Read-Config	Read(Online)
Operation-Record		
Write the configu	ration is OK2019/10/12 14:08:18	
Online-Operation	0K2019/10/12 14:08:49	Liear
		Save
, Current-FW-Version	00.15 Latest-FW-V	Version:

Picture 5 Read Target MCU Online



APM32 PROG V1	1.005		- 🗆 X	
Configuration Fir	rmware About Language			
			Open	
Configuration				
Product-Series	APM32F	\sim	DownLoad(Offline)	
Product-Type	APM32F103VBT6	~		
External-Power	Power OFF	\sim	Operation(OnLine)	
Comm-Protocol	JTAG	~		
Start 🔗 Waiting.			×	
Opers 47%				
🗌 Se				
-SN-L	0800 0000 Start-SN: 0x	1		
Increment: Ox	1		StartAddress: 0x 0800 0000	
			Length(Bytes): 0x 0002 0000	
Default-Config	Write-Config	Read-Config	Read(Online)	
-Operation-Record-				
Write the configu	ration is OK2019/10/12 14	4:12:30	Clear	
			Save	
Current-FW-Version:	: 00.15	Latest-FW-V	/ersion:	:

Picture 6 Reading Status

Click "Save" to save the read data.



Picture 7 Save the Read Data

🤌 мси (Dat	а																_			Х
The fil	lej	patl	n i :	5: I	E:\!	桌面	ā\M.	շող։	ata.	bii	a)	5							\langle	Save	
	00	01	02	03	04	05	06	07	08	09	0A	OB	OC	OD	OE	OF					^
08000000	50	04	00	20	01	01	00	08	BЗ	03	00	08	AB	03	00	08					
08000010	AF	03	00	08	6D	01	00	08	DЗ	08	00	08	00	00	00	00					
08000020	00	00	00	00	00	00	00	00	00	00	00	00	AD	04	00	08					
08000030	45	02	00	08	00	00	00	00	B5	03	00	08	85	06	00	08					
08000040	1B	01	00	08	1B	01	00	08	1B	01	00	08	1B	01	00	08					
08000050	1B	01	00	08	1B	01	00	08	1B	01	00	08	1B	01	00	08					
08000060	1B	01	00	08	1B	01	00	08	1B	01	00	08	1B	01	00	08					
08000070	1B	01	00	08	1B	01	00	08	1B	01	00	08	1B	01	00	08					
08000080	18	01	00	08	1B	01	00	08	1B	01	00	08	1B	01	00	08					
08000090	18	01	00	08	18	01	00	08	18	01	00	08	18	01	00	08					
USUUUUAU	18	01	00	08	18	01	00	08	18	01	00	08	18	01	00	08					
08000080	18	01	00	08	18	01	00	08	18	01	00	08	18	01	00	08					
03000000	18	01	00	08	18	01	00	08	18	01	00	08	18	01	00	08					
080000000	18	01	00	08	61	07	00	08	18	01	00	08	18	01	00	08					
080000E0	18	UI	00	08	18	10	00	08	IB	01	00	08	Dr FO	10		00					
080000100	00	10	2A 00	10	00	48	00	47	FU PP	09		08	50	U4		20					
08000100	00	40	00	41	00	40	00	41	TE PP	E(77	re vv	E(77	11	E(11	00					
00000110	TT TT	00	11	00	11	DO DO	11	D D D D	11	E(TO	11	DD DD	40	10		00					
00000120	70	47	00	22	DZ RC	D2	10	E0	12	10	01	20	49	AG	10	16					
08000130	UT TT	47	RO	22	20	16	10	BD	13	40	07	40	04	40	19	40					
08000140	40	RO	01	03	20 QJ	40 F8	07	00	98	40	10	34	100	42	Re	D3					
08000100	10	87	C8	33	10	08	00	08	30	01	00	08	00	BF	FF	F7					
08000170	10	BE	00	BF	20	21	05	48	00	FO	77	FA	00	28	FG	ΠO					
08000110	02	48	00	FO	9D	FB	CO	B2	10	BD	00	00	00	38	01	40					~

4.5 Operation Log

The operation movements and its results will be shown in the text box of operation log.

- Click "Clear" to delete the content in text box.
- Click "Save" to store the content in text box.



Picture 8 Operation Log

Uperation-Kecord	
FW Version: 00.15—2019/10/12 14:17:26 Write the configuration is 0K—2019/10/12 14:17:28 Read the configuration is 0K—2019/10/12 14:17:29	Clear
	Save

4.6 Client Update

Every time you start the client program, it will automatically detect the new version and display below notice if it is available:

Picture 9 Client Update Prompt

New Version	\times
The client has a new version, do you need to upgrade?	
是(Y) 否(N)	

Click "Yes" to automatically download the latest version in server and open the new client as finished.

Click "No" to give up update and maintain in current version.

Note: The computer should be connected to internet, which enables the automatic update in the client.

4.7 Firmware Update

As mentioned in 4.5 above, after the client update, each time you open the client program or plug/unplug the programmer, the client will determine whether a new version of firmware needs to be updated. If it is available, the client will be prompted as follows:



Picture 10 Firmware Update Prompt

New Version		×
The Firmware has a new ve	ersion, do you nee	ed to upgrade?
	是(Y)	否(N)

Click "Yes" to update the programmer firmware to the latest version of the programmer stored in the current server.

Click "No" to give up update and maintain in current version.

Note: The computer should be connected to internet, which enables the automatic update in firmware.

5 Configuration

5.1 Description

Picture11Configuration Information

Configuration			
Product-Series	APM32F	~	
Product-Type	APM32F103VBT6	~	
External-Power	Power OFF	~	
Comm-Protocol	JTAG	~	
StartAdd-of-Program Ox 0800 0000			
Operation-Mode	Program	~	
	Page-Erase		
🗌 Serial-Number			
SN-Configuration			
Address: Ox	0800 0000 Start-SN: Ox 1		
Increment: Ox	1		



5.1.1 Configuration File (Menu)

Click "Configuration File" in menu, there will be four options shown in drop-down menu: "Load", "Save", "Save as...", and "Quit"

"Load": Open the selection dialog box, you can load the saved configuration file with a suffix ".ini".

• "Save": Save the configuration file in default path.

"Save as...": Save the configuration file in indicated name and path in the pop-up dialog.

• "Quit": Withdraw from the client interface and close its program.

Note: The configuration file can't be manually amended, but can only be set through the options in client interface. It can only save the configuration file through "Save" or "Save as...", otherwise it may cause error to return to default settings.

5.1.2 "Return to default settings" Button

The parameter configuration in client interface returns to default settings.

5.1.3 "Write configuration information" Button

As the Programmer is connected to the computer via USB cable, the parameter configuration can be selected and sent to the Programmer from client interface.

5.1.4 "Read configuration information" Button

As the Programmer is connected to the computer via USB cable correctly, its configuration information is gained and updated in client interface.

5.2 Firmware

5.2.1 Firmware (Menu)

Click "Firmware" in menu, there will be two options: "Firmware version" and "Firmware update" in drop-down menu.

"Firmware version": Firmware version no. of the Programmer is gained as connecting to the computer via USB correctly.



"Firmware update": Update the firmware of the Programmer after being connected to the computer via USB correctly.

🕗 APM32 PROG V	1.005		_	\Box \times
Configuration Fig	rmware About Language			
				Open
Configuration				,
Product-Series	APM32F	~	DownLoad(Offl	ine)
Product-Type	APM32F103VBT6	~		
External-Power	Power OFF	~	Operation(Onl	ine)
Comm-Protocol	JTAG	~		
StartAdd-of-Progr	am Ox 0800 0000			
Operati 🔗 Waiti	ing		P	×
□ Seri≈ 50%				
Addre				
Increment: Ox	1		Length(Bytes): Ox 0	002 0000
Default-Config	Write-Config H	Read-Config	Read(Online	e)
Operation-Record				
FW Version: 00.1 Firmware upgradin	142019/10/12 14:38:28 ag2019/10/12 14:40:49	5		Clear
				Save
urrent-FW-Version	: 00.14	Latest-FW-Vers	ion:	

Picture 12 Firmware Updating

5.2.2 Firmware Version (Status)

Picture 13 Firmware Version Status Bar

Current-FW-Version: 00.15	Latest-FW-Version: 00.15	
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■ "Current firmware version" is that read from the connected Programmer.

■ "Latest firmware version" is the latest version no. of Programmer saved in server.

Note: "The current/latest firmware version" in above picture is only for example.

5.3 About (Menu)

Click "About" in menu, and there will be two options: "Software version" and "Help" in drop-down menu:

■ "Software version": Display information of client side

About Software	×
APM32 PROG	
Version: 1.005	
Release-Date: 2018-11-01	
ок	

Picture 14 Software Version

■ "Help": Display APM32 PROG user manual.



6 Version History

Date	Version	Changes
2019.x.x	1.0.0.1	New
2019.x.x	1.0.0.2	
2019.x.x	1.0.0.3	
2019.x.x	1.0.0.4	
2019.9.30	1.0.0.5	Added interface description; Changed the typesetting sequence

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