How to Download Keil MDK-ARM Version 5 with Device Family Packs

Update for MSP432 July 24, 2016

This tutorial is intended for downloading Keil Microcontroller Development Kit for ARM (MDK-ARM) version 5 with Device Family Packs.

Starting version 5 the device support software component is separated from the MDK software and called Device Family Packs. As release v5.11a, many ARM microcontroller Device Family Packs are available. Software development with Device Family Packs is slightly different from software development in MDK v4.

This tutorial was written with v5.11a. As the time of revision, v5.17 was released and the procedure in the tutorial has been verified to work with v5.17. Also the MSP432 CMSIS Update is added.

Downloads

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2.	In	the	next	page,	click	on	"Product	Downloads."

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3. In the next page, click on "MDK-ARM v5"

4.



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5. In the next page, click "MDK511A.EXE" to download the development software kit. The file is over 300 MB and will take a while to download.



6. After downloads are complete, you should see the file in your download folder.

The model of the m

Installation

8.

7. Double click on the icon of mdk511a.exe in the download folder. Windows may block the execution and

display	а	warning	screen.		Click	"R	un	anyway"	button.
	Windows	ows protec	cted you	r PC	n from startin	a Ruppina	this ann m		
	at risk.			ynizeu ap		g. Numming		igni par your PC	
	Publisher: App:	Unknown Publishe mdk511a.exe	er						
						Rur	i anyway	Don't run]
When	the	Welcome	dialog	box	pops	up,	click	"Next"	button.
-		Seti	up MDK-ARM	V5.11a			<u> </u>		
Welc Re	come to Keil I elease 6/2014	MDK-ARM			T	CEI pols by A	RM		
Thi	s SETUP progra	am installs:							
ME	DK-ARM V	i.11a							
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lt is	recommended	that you exit all Windo	ws programs befor	e continuing	with SETUP.				
Foll	ow the instructi	ons to complete the pr	oduct installation.						
— Keil M	IDK-ARM Setu	p		<< Back	Next >>	Can	cel		

9. In the next License Agreement dialog box, check "I agree ..." and click "Next" button.

icense Agreement			
Please read the following license agreement car	refully.	Tools by	ARM
To continue with SETUP, you must accept the te agreement, click the check box below.	erms of the License Agreem	ent. To accept the	
END USER LICENCE AGREEMENT FOR	MDK-ARM		^
THIS END USER LICENCE AGREEMEN BETWEEN YOU (EITHER A SINGLE IND ARM LIMITED ("ARM") FOR THE USE O LICENCE. ARM IS ONLY WILLING TO CONDITION THAT YOU ACCEPT ALL CLICKING "I AGREE" OR BY INSTALLIN	NT ("LICENCE") IS A L IVIDUAL, OR SINGLE L IF THE SOFTWARE AC LICENSE THE SOFT OF THE TERMS IN NG OR OTHERWISE U	EGAL AGREEMEN EGAL ENTITY) AND COMPANYING THI WARE TO YOU OF THIS LICENCE. B SING OR COPYING	T S N Y G V
agree to all the terms of the preceding Licer	nse Agreement		
eil MDK-ARM Setup			
eil MDK-ARM Setup		-	

10. In the next Folder Selection dialog box, accept the defaults and click "Next" button.

Press 'Next' to install MDK-ARM to these	e folders. Press 'Browse' to select diffe	erent folders for installation.
C Destination Folders		
Core: C:\Keil_v5		Browse
Pack: C:\Keil_v5\ARM\PACK		Browse
		1

11. In the next Customer Information dialog box, fill the information and click "Next" button. The installation of

MDK	and	several	software	packs	will	start.
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Set	tup MDK-ARM V5.11a	1
Customer Information Please enter your information.		
Please enter your name, the name of the	e company for whom you work and your E-mail a	address.
First Name:		
First Name:		
First Name:		
First Name: Last Name: Company Name: E-mail:		
First Name: Last Name: Company Name: E-mail: Cell MDK-ARM Setup		

12. When installing ULINK device drivers, Windows will block it and asks for confirmation. If you are not sure

you	will	not	need	it,	just	click	"Install"	button.
		С	:\Keil_v5\ARM\I	ULINK\Insta	allULINK.exe	-		
Instal	lling ULINK	Drivers .						
			Win	dows Secu	rity	×		
		Nar Pub	ne: KEIL - Tools By lisher: ARM Ltd	ARM Universa	SOTTWARE ? Il Serial Bus			
		Always tru	ust software from "A	ARM Ltd".	Install	Don't Install		
		You shoul I decide w	d only install driver hich device softwar	software fron re is safe to in:	n publishers you stall?	u trust. <u>How can</u>		

13. When the installation is complete, this dialog box will appear. Click "Finish" button.

Setup MI	DK-ARM V5.11a	
Keil MDK-ARM Setup completed MDK-ARM V5.11a		
MDK-ARM Core Setup has performed all request	ed operations successfully.	
🔽 Show Release Notes.		
Kell MUK-ARM Setup		

14. After MDK v5 is installed, it will automatically prompt the user to install the Device Family Packs.

troller Softwar Device Suppor Device Suppor Device Suppor tex-M4 CM4xo t Gecko Serie pard Gecko Set	× Summary 10 Devices 10 Devices 122 Devices 238 Devices 172 Devices 81 Devices
troller Softwar Device Suppor Device Suppor Device Suppor tex-M4 CM4xo t Gecko Serie pard Gecko Set	/ Summary 10 Devices 10 Devices 122 Devices 238 Devices 172 Devices 81 Devices
/ Gecko Series B→ ♥ No nder Gecko Series B→ ♥ No 0 Gecko Series B→ ♥ Re wice Support B→ ♥ Sp yrmance Series B→ ♥ Sp wrance Series B→ ♥ Te Packs B→ ♥ Te Leak Series De B→ ♥ To Es Device Supp B→ ♥ To Es Device Supp B→ ♥ To Boards Boards	4 Devices Pack Installer Welcome to the Keil Pack Installer Pack Installer List and manage Software Packs. Install a Pack for access within µVision. List and manage Software Packs. Install a Pack for access within µVision. List example projects. Copy projects and launch µVision for testing examples. List supported devices. Select a device to show related Packs and examples. List supported boards, Select a board to show related Packs and examples.
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15. After reading the descriptions, click "OK" button in the smaller dialog box to close it. It will take few minutes to download and populate the most current packs information and verify whether there are any updates available.

16. To install a Device Family Pack, you need to select one of the devices or boards on the left panel of the Pack Installer. The required pack(s) to support your device/board selection will appear on the right panel. For example, if you plan to use Texas Instruments MSP432P401R LaunchPad, drill down the Devices list to Texas Instruments->MSP432 Family->MSP432P-> MSP432P401R. The required and optional packs appear on the right panel Packs tab.

	Pack Installer - C:\Keil_v5.15\ARM\PACK – 🗖						
<u>File Packs Window H</u> elp							
Device: Texas Instruments - MSP432P401	R						
Devices Boards		Packs Examples	1 Packs Examples b				
Search: • X		Pack	Action	Description			
Device /	Summary		Device Specific	1 Pack			
Nordic Semiconductor	7 Devices		TexasInstruments::MSP432	Install	Device Family Pack for Texas Instrum		
• Nuvoton	394 Devices		Generic	10 Packs			
	270 Devices		ARM::CMSIS	🔶 Up to d.	CMSIS (Cortex Microcontroller Softw		
🕂 🔍 Renesas	2 Devices		Keil::ARM_Compiler	🔶 Up to d.	Keil ARM Compiler extensions		
🗉 🔗 Silicon Labs	357 Devices			✤ Install	Jansson is a C library for encoding, d		
👳 🔮 SONIX	43 Devices		Keil::MDK-Middleware	🔶 Up to d.	Keil MDK-ARM Professional Middlew		
Spansion	381 Devices		Keil::MDK-Network_DS	Install	Keil MDK-ARM Professional Middlew		
STMicroelectronics	567 Devices			Install	IwIP is a light-weight implementation		
E Yexas Instruments	341 Devices		Micrium::RTOS	Install	Micrium software components		
ELM3S Series	219 Devices		Oryx-Embedded::Middleware	✤ Install	Middleware Package (CycloneTCP, C		
🗉 🏤 LM4F Series	50 Devices		wolfSSL::CyaSSL	Install	Light weight SSL/TLS and Crypt Libra		
🗉 🏄 MSP432 Family	1 Device		YOGITECH::fRSTL_ARMCMx_E	Install	YOGITECH fRSTL Functional Safety E		
B → MSP432P	1 Device		=				
MSP432P401R	ARM Cortex-M4, 48 MHz, 128 kB RA		-				
🗉 🏄 Tiva C Series	71 Devices	•	•		► I		
Output					άX		
Refresh Pack descriptions							
Ready					ONLINE		

- 17. A yellow diamond in Action column (such as ARM::CMSIS) indicates the pack is installed but an update is available. A green diamond (Keil::MDK-Middleware) indicates the pack is current. A grey diamond (TexasInstruments::MSP432) shows that the device pack is available for download. The light-weight IP and light-weight SSL are optional. Click on the Update button for CMSIS and Install button for MSP432 to download and install these packs. The packs are downloaded from Keil website and built locally. It may take several minutes depending on the computer and Internet speed. When the pack installations are complete, the diamond in the button will turn green. You may click several Install buttons and the installations will be queued.
- 18. When the installations are complete, the diamonds in the buttons will turn green.

😂 Pack Installer - C:\Keil_v5.15\ARM\PACK – 🗖								
Eile Packs Window Help								
Pevice: Texas Instruments - MSP432P401R								
Devices Boards	4	4 Packs	Examples		4			
Search: • X		Pack		Action	Description			
Device /	Summary	Device Spe	cific	1 Pack				
Nordic Semiconductor	7 Devices	🖭 TexasIn	struments::MSP432	🔶 Up to d	Device Family Pack for Texas Instrum			
Nuvoton 394 Devices		⊟ Generic	□ Generic					
	270 Devices	ARM::CMSIS		🔶 Up to d	CMSIS (Cortex Microcontroller Softw			
Renesas	2 Devices	E Keil::AR	M_Compiler	Up to d	Keil ARM Compiler extensions			

19. If for some reasons, such as download errors, the installation was not completed, a message will appear at the bottom of the window to state the error. You may try to install it again.

Install TI Debug Drivers

20. The MSP432 LaunchPad has a built-in XDS110 debugger that allows you do download and debug the target MSP432 device. In order for the Keil IDE to communicate with the XDS110 debugger, drivers need to be installed on the PC.

XDS110 drivers

The XDS110 drivers maintain the communication between the host PC and the XDS110 debugger on the MSP432 LaunchPad.

21. Download XDS110 drivers from http://energia.nu/files/xds110_drivers.zip.

If you are installing the drivers on a Windows 8 or newer operating system, please refer to the next section to enable installation of drivers without signature.

After the drivers zip file is downloaded, unzip the folder to a location that you will find easily such as the Desktop. To install them, you need to connect the MSP432 LaunchPad to the PC with the USB cable. When Windows found the new hardware device, it will attempt to install the device drivers and failed. You need to go into Device Manager and do update driver then browse to the drivers folder (where you unzipped the drivers earlier) to find the files for installation.

When the devices drivers are properly installed, you should see these three devices at the Device Manager:

- Ports (COM & LPT)
 - XDS110 Class Application/User UART (COM17)
 XDS110 Class Auxiliary Data Port (COM16)
 - Texas Instruments Debug Probes
 - NDS110 Class Data Port
 - State All State

Windows 8 Driver Signature

Windows 8 or 8.1 may block driver update if the driver is not properly signed. To allow installation of drivers not properly signed, Professor Valvano of UT posted this procedure: http://users.ece.utexas.edu/~valvano/edX/InstallDrivers8.htm

MSP432 CMSIS Update

Texas Instruments is bringing the software development package to conform to the CMSIS. The release is scheduled in March 2016 and a beta release is available now. For all the new software developments, the beta release should be used so that comes March 2016, there is no need to modify the programs.

Install MSP432 CMSIS Update

The register naming in the text follows the CMSIS convention. You need to perform MPS432 CMSIS update of the Keil uVision to use the same syntax.

The details of MSP432 CMSIS Update are described in

http://processors.wiki.ti.com/index.php/MSP432_CMSIS_Update?DCMP=epd-mcu-msp-

gen&HQS=MSP432CMSIS

- 22. Launch Keil uVision.
- 23. Click Pack Installer button and the Pack installer window will open.



24. Click refresh button to reload the latest catalog of all the device software packs. This may take a few minutes.

🛞 Pack Installer - C:\Kei	I_v5.20\ARM\PACK			- 🗆 ×				
File Packs Window H	Eile Packs Window Help							
Device:								
Devices Board	is D	Packs Examples	5	4				
Search:	• ×	Pack	Action	Description				
Device /	Summary	Device Specific	0 Packs	No device selected				
🖃 🍄 All Devices	3655 Devices	Generic	18 Packs					
ABOV Semi	6 Devices	ARM::CMSIS	🔶 Up to d	CMSIS (Cortex Microcontroller So				
Ambig Micro	8 Devices	ARM::CMSIS-Dri	Install	CMSIS-Driver Validation				
Analog Dev	16 Devices	ARM::CMSIS-RTO	Install	CMSIS-RTOS Validation				
💷 🕈 ARM	26 Devices	ARM::mbedClient	Install	ARM mbed Client for Cortex-M d				
🕀 📍 Atmel	260 Devices	■ ARM::mbedTLS	Install	ARM mbed Cryptographic and SS				
Cypress	425 Devices		Install	mbed OS Scheduler for Cortex-M				
GigaDevice	40 Devices		Up to d	Keil ARM Compiler extensions				
Holtek	19 Devices	E Keil::Jansson	Install	Jansson is a C library for encodinc				
Infineon	151 Devices	E Keil::MDK-Middl	Up to d	Keil MDK-ARM Professional Midc				

25. After the pack catalog is refreshed, click on the + sign in front of Texas Instruments in Devices tab to open it then click on MSP432P4xx Series. Under the Packs tab in the other half of the window, the TexasInstruments::MSP432P4xx_DFP will be added.



26. Click the + sign before it to expand it and click Unpack button of the latest version. It should be 2.1.0 or later.

🌺 Pack Installer - C:\Keil_v5.20\ARM\PACK							×
<u>Eile Packs Window H</u> elp							
2 Device: Texas Instruments - MSP432P4xx Series							
Devices Boards	4	J	Packs Examples				₽
Search: - X			Pack	Action	Description		
Device	Summary		Device Specific	1 Pack	MSP432P4xx	Series s	elec 🔺
MindMotion	2 Devices	7	TexasInstruments::MSP432P4xx_DFP	Install	Device Famil	y Pack fo	or Te
Nordic Semiconductor	8 Devices	-11	2.2.0 (2016-05-31)	🖄 Unpack	Device Famil	y Pack fo	or Te
🗉 🔮 Nuvoton	433 Devices		Previous		TexasInstrum	ents::MS	P43
I NXP	527 Devices		🖻 Generic	18 Packs			
Renesas	3 Devices		ARM::CMSIS	Up to d	CMSIS (Corte	ex Micro	cont
Silicon Labs	397 Devices		ARM::CMSIS-Driver_Validation	Install	CMSIS-Drive	r Validat	ion

27. When the update is done, the word Unpack will change to Remove and the word Install above also will change to Up to date.

🛞 Pack Installer - C:\Keil_v5.20\ARM	– 🗆 ×						
Eile Packs Window Help							
€ Device: Texas Instruments - MSP432P4xx Series							
Devices Boards	4	Packs Examples		٩			
Search: - X		Pack	Action	Description			
Device	Summary	Device Specific	1 Pack	MSP432P4xx Series selec 🔺			
MindMotion	2 Devices	TexasInstruments::MSP432P4xx_DF	🔶 Up to d	Device Family Pack for Te			
Nordic Semiconductor	8 Devices	2.2.0 (2016-05-31)	Remove	Device Family Pack for Te			
🗉 🔗 Nuvoton	433 Devices	Previous		TexasInstruments::MSP43			
NXP	527 Devices	Generic	18 Packs				
Renesas	3 Devices	ARM::CMSIS	🔶 Up to d	CMSIS (Cortex Microcont			
Silicon Labe	207 Devices	ARM::CMSIS-Driver_Validation	Install	CMSIS-Driver Validation			

Congratulations

Now you have completed the installation of the development tools. You are ready to write your first program for the MSP432 LaunchPad.