

Программно — аппаратный комплекс «Илифия» ТУ 26.60.12-001-30176328-2020

Инструкция по программированию

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Процесс программирования программно-аппаратного комплекса «Илифия» осуществляется с помощью специализированного MicroUSB кабеля, предоставляемого компанией — производителем.

Программирование (установка программного обеспечения) осуществляется с помощью приложения STM32CubeProgrammer, предоставляемого производителем микроконтроллера STM32 компанией ST Microelectronics. Загрузить приложение можно по ссылке: https://www.st.com/en/developmenttools/stm32cubeprog.html

All features

- Erases, programs, views and verifies the content of the device Flash memory
- Offers a command-line interface for automation through scripting
- Supports Motorola S19, Intel HEX, ELF, and binary formats
- ST-LINK firmware update
- Enables secure firmware creation using the STM32 Trusted

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	Part Number	General Description	Latest version 🔶	Download 🔶	All versions
+	STM32CubePrg-Lin	STM32CubeProgrammer software for Linux	2.9.0	Get latest	Select version \smallsetminus
+	STM32CubePrg-Mac	STM32CubeProgrammer software for Mac	2.9.0	Get latest	Select version \lor
+	STM32CubePrg-W32	STM32CubeProgrammer software for Win32	2.9.0	Get latest	Select version \vee
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Download

Затем заполнить поля и нажать «Download». Приложение будет скачано на компьютер.

Необходимо произвести установку приложения STM32CubeProgrammer и запустить его.

Pre STN	132CubeProgrammer	- 🗆 X
STM32 Cube	Programmer (1997)	F 🕨 У 🛧 ភ
	Memory & File edition	Not connected
	Device memory Open file +	ST-LINK 🗢 Connect
	Address Size Data width 32-bit V Find Data 0x Read V	ST-LINK configuration Serial number No ST-L
OB		Port SWD 🔻
СРИ		Frequency (kHz) Mode Normal
swv		Access port 0
<u>ل</u>	No data to display	Reset mode Software reset 💌
		Shared Disabled Debug in Low Power mode External loader _ Target voltage _ Firmware version _ Firmware upgrade
	Log Live Update Verbosity level 1 2 3	Target information Board Device
	13:30:28 : STM32CubeProgrammer API v2.8.0	Type Device ID Revision ID Flash size CPU
$\textcircled{\begin{tabular}{ c c c c } \hline \hline & \hline \end{array}}$		Bootloader Version
?		

Затем необходимо подключить прибор «Илифия» к ПК с помощью **специализированного USB кабеля**. На протяжении всего процесса программирования необходимо удерживать кнопку включения питания прибора.

Проверьте, что драйвер устройства установлен правильно, для чего откройте «Диспетчер устройств».





В приложении STM32CubeProgrammer в выпадающем списке в правом верхнем углу выберите «USB».

₽rg STIV	132CubeProgrammer			- 0	×
STM32 Cube	Programmer	🕦 f	D y :	* 5	7
Ξ	Memory & File edition			Not connec	cted
	Device memory Open file +	S	T-LINK	Connect	
	Address Size Data width 32-bit v Find Data 0x Read	▼ U/	ART of	guration ST-L 🔻	ø
OB		O ^T	TA Wi equency (kHz)	>	-
CPU		Ma	ode Nor	mal	
swv		Ac	cess port 0 set mode coff	wara rosot	*
	No data to display	Sh	ared Disa	ibled -	0
		De Ext Tai Fir	bug in Low Power mo ternal loader _ rget voltage _ mware version _	de	
			Farget info	rmware upgra mation	de
	Log Live Update Verbosity level 1 2 13:36:28 : STM32CubeProgrammer API v2.8.0	3 Bo	ard wice		-
	13:45:05 : Error: No debug probe detected.	Contraction Contra	vice ID vision ID ish size		
$\textcircled{\begin{tabular}{ c c c c c } \hline \hline & \hline \hline & \hline \\ \hline & \hline & \hline \\ \hline & \hline & \hline \\ \hline & \hline &$		Во	otloader Version		-
?		% 🛞			



STM32 Cube	132CubeProgrammer			💿 f	×
≡	Memory & File edition				🛑 Not connected
	Device memory Open file +				USB Connect
*	Address Size	Data width 32-bit 👻 Find I	Data Ox	Read V P	USB configuration
OB				S	erial number 200364500000
CPU				v	0x0483
swv				R	lead Unprotect (MCU)
		No data to display			
	Log	Live Up	date Verbosity level	1 2 3	larget information
	13:36:28 : STM32CubeProgrammer API v2.8.0 13:45:05 : Error: No debug probe detected.			4	vevice ype Device ID levision ID lash size
					PU lootloader Version
?				0% 🛞	

После этого должно обнаружиться устройство обновления прошивки, если этого не произошло, то нажмите «Обновить».

Нажмите «Connect», после чего изображение экрана станет подобным представленному ниже.

Device (memory	Open file +	-				USB Disconnect USB configuration
Address	0x0800	0000 - Size	0x400	Data width 3.	2-bit 🔻 Find	Data Ox Read •	Port USE1 -
A	ddress	0	4	8	с	ASCII	Serial number 200364500
0x0800	00000	20015980	08035C11	08034FA5	08034FA7	.Y\¥0§0	PID EXCLOSED
0x0800	00010	08034FA9	08034FAB	08034FAD	00000000	©0«00	0xdf11
0x0800	00020	00000000	00000000	00000000	08022015		VID 0x0483
0×0800	00030	08034FAF	00000000	08021FB9	08034FB1	-0 ¹ ±0	Read Upprotect (MCU)
0×0800	00040	08035F59	08035F5D	08035F61	08034FC9	Y]aÉO	Read Onprotect (MCO)
0×0800	00050	08035F65	08035F69	08035005	0803501F	eiPP	
0×0800	00060	08035021	0803503B	0803503D	08035F6D	!P;P=Pm	
0×0800	00070	08035F71	08035F75	08035F79	08035F7D	quy}	
0×0800	08000	08035F81	08035F85	08035F89	08035F8D		
0×0800	00090	08035F91	08035F95	08035F99	0803503F	?P	
0×0800	0A00	08035F9D	08035FA1	08035FA5	08035FA9	¥0	
0×0800	000B0	08035FAD	08035FB1	08035FB5	0801FA11	±µú	×
Log					Live U	pdate Verbosity level 💿 1 💿 2 💿 3	Board
13:51:37 13:51:37 13:51:37 13:51:37 13:51:37 13:51:37 13:51:37	: Size : UPLOADIN : Size : Address : Read progr : Data read s : Time elapse	: 308 Bytes G : 1024 Bytes : 0x8000000 ress: uccessfully ed during the read op	eration is: 00:00:00	.006			Device STM32H1 Type M Revision ID Ox4 Revision ID Flash size 2 MB - Defa CPU Cortex-1 Bootloader Version

Далее необходимо перейти на вкладку «Erasing & programming»



Memory & File editio	n									O Co	onneo
Memory & file edition	+								USB	•	Disco
Erasing & programming	Size	0x400	Data width	32-bit 💌	Find Data	Ox	Read		US Port	3 configurat	ion
	_	4	8	с		ASCII					
OB Option bytes	80	08035c11	08034FA5	08034FA7	7 .Y.	∖¥0§0		^	Serial number		2003
	A9	08034FAB	08034FAD	00000000	00	«00			PID	0xdf11	
CPU MCU core	00	00000000	00000000	08022015	5				VID	040482	
	AF	00000000	08021FB9	08034FB1	L -0.	¹ ±0				040405	
	59	08035F5D	08035F61	08034FC9	γ]aÉO			Read Unprotec	(MCU)	
	65	08035F69	08035005	0803501F	e	iPP					
	21	0803503B	0803503D	08035F60	D !P.	;P=Pm					
	71	08035F75	08035F79	08035F70	-p (uy}					
	81	08035F85	08035F89	08035F80							
	91	08035F95	08035F99	0803503F	·	?P					
	9D	08035FA1	08035FA5	08035FA9		i¥0					
								>			
				Liv	ve Undate	Verbosity level	1 2	3	Tai	get informa	tion
🔛 Fault Analyzer - BETA				C.	re opuure				Device		STI
<u> </u>	_							\$	Type Device ID		
External loaders	0								Revision ID		2.140
							-		CPU		2 MB Co
\sim									Bootloader Ver	sion	

Затем необходимо указать путь к файлу прошивки в формате *.hex, поставить соответствующие галочки и нажать «Start Programm...».

Erasing & Programming						Connected
Download	Frase flash m	emory [Frase external men	nory	USB 🔹	Disconnect
File path C:\Users\Istomin\Downloads\bm_v85_Ite_162.i Browse Browse		Erase sele	cted sectors Ful	chip erase	Port USB config	uration
Start addr	Select	Index	Start Address	Size	Serial number	2003645000
Skip flash erase before programming		0	0x08000000	128K _	PID	if11
Verify programming УКАЖИТС ПУТЬ	K	1	0x08020000	128K	VID	0483
Run after programming		2	0x08040000	128K	Read Unprotect (MCU)	
Поставьте эти Start Programm		3	0x08060000	128K		
		4	0x08080000	128K		
галочки		5	0x080A0000	128K		
Full chip erase		6	0x080C0000	128K		
✓ Download file		7	0x080E0000	128K		
Option bytes commands -ob		8	0x08100000	128K 🗸		
Log Live L	Jpdate Ve	rbosity le	vel 🖲 1 🔘	2 🔘 3	Target info Board	rmation
13:51:37 : Size : 308 Bytes 13:51:37 : UPLCADING 13:51:37 : Size : 1024 Bytes 13:51:37 : Address : 0x8000000					Device Type Device ID Revision ID Flash size	STM32H7x0 MCL 0x450 - 2 MB - Defaul
13:51:37 : Read progress: 13:51:37 : Data read successfully					CPU Bootloader Version	Cortex-M



Отображение в окне статуса сообщения «Download verified successfully» указывает на успешное завершение процесса прошивки.

Отпустите кнопку включения питания прибора и отключите кабель USB.