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БЕСПРОВОДНОЕ ПЕРЕГОВОРНО-ПОИСКОВОЕ УСТРОЙСТВО (БЕСПРОВОДНАЯ МЕТКА)

Модель

БМ-3

ТУ 26.30.11.110-001-83119069-2018

Инструкция по программированию

Изготовитель: ООО «КОНЦЕРН ГУДВИН (ГУДВИН ЕВРОПА)»

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- 1. Процесс программирования устройства БМ-3 возможен только при использовании специализированного кабеля micro-USB, предоставляемого компанией-производителем.
- 2. Подготовка к программированию заключается в установке на ПК или ноутбук приложения STM32CubeProgrammer. Скачать его можно по ссылке:

https://www.st.com/en/development-tools/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
- ST-LINK firmware update
- Supports Motorola S19, Intel HEX, ELF, and binary formats
- Supports debug and bootloader interfaces
- Enables secure firmware creation using the STM32 Trusted Package Creator tool

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	Part Number	General Description 🔶	Latest version 🗍	Download 🔶	All versions
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Приложение будет скачано на ваш компьютер. (Приложение можно запросить у

компании-поставщика!)

3. Установите скачанное приложение и запустите его

Pre STN	132CubeProgrammer	– 🗆 ×
STM32 Cube	Programmer (1997)	F 🕒 🎽 🔆 🖅
	Memory & File edition	Not connected
	Device memory Open file +	ST-LINK Connect
.	Address Size Data width 32-bit V Find Data Ox Read	ST-LINK configuration Serial number No ST-L
OB		Port SWD
CPU		Mode Normal 👻
swv		Access port 0
	No data to display	Shared Disabled T
		Debug in Low Power mode External loader _ Target voltage _ Firmware version _
		Firmware upgrade
	Log Live Update Verbosity level 1 2 3 1336/28 : STM32CubeProgrammer API v2.8.0	Board – Device – Type
		Pevice ID
\bigcirc		CPU - Bootloader Version _
?	· · · · · · · · · · · · · · · · · · ·	

4. Подключите БППУ специализированным USB кабелем, поставляемым компанией-изготовителем.

5. Проверьте, что драйвер устройства установлен правильно, для этого откройте

«Диспетчер устройств».



6. В приложении «STM32CubeProgrammer» нажмите кнопку «ST-LINK» в верхнем правом углу и в выпавшем списке выберите «USB»

STM32 Cube	32CubeProgrammer Programmer			🧐 f	-	- ×
Ξ	Memory & File edition				• •	Not connected
	Device memory Open file +				ST-LINK -	Connect
*	Address Size Data width 32-bit	Find Data 0	x	Read 🔹	UART o S	r-L ▼ Ø
OB					OTA ND Frequency (kHz)	*
CPU					Mode Norn	nal 👻
swv					Access port 0 Reset mode Softw	vare reset 💌
	No data to disp	lay			Shared Disab	oled 🔻 🕦
					Debug in Low Power mod External loader _ Target voltage _ Firmware version _	• 🗸
					Fin Target inforr	mware upgrade
	Log 13:36:28 : STM32CubeProgrammer API v2.8.0	Live Update Ver	erbosity level 💿 1 🤇	2 3	Board Device Type	-
۲	13:45:05 : Error: No debug probe detected.				Device ID Revision ID Flash size	
$\textcircled{\begin{tabular}{ c c c c c } \hline \hline & \hline \end{array} }$					Bootloader Version	-
?				0% 🛞		

Pre STIV	32CubeProgrammer				– 🗆 X	
STM32 Cube	Programmer		Q	🕸 f 🕨	y 🛪 🏹	
	Memory & File edition			WAR	Not connected	
	Device memory Open file +			USB	Connect	
.	Address Size	Data width 32-bit 🔻 Find Data	0x Read	Port	USB1 - C	\sim
OB				Serial numbe PID	r 200364500000	$\langle \rangle$
CPU				VID	0x0483	\mathbf{A}
swv				Read Unprot	ect (MCU)	
		No data to display				
	Log	Live Update	Verbosity level	3 Board Device	arget information -	
	13:36:28 : STM32CubeProgrammer API v2.8.0 13:45:05 : Error: No debug probe detected.			Type Device ID Revision ID		
$\overline{(e)}$				CPU Bootloader V	lersion –	
<u></u>						
0			0%	\otimes		

Должен обнаружить устройство, если нет – нажмите обновить.

Нажмите «Connect».

Увидите следующую информацию:

Pre STM	132CubeProgram	mmer												-		×
STM32 Cube	Programmer										19	f 🕒	y	*	5	ī
=	Memory a	& File edit	tion										•	Conne	ected	
	Device me	mory Ope	en file +									USB	*	Disc	connect	
.	Address	0x0800000	▼ Size	0x400	Data width	32-bit 💌	Find I	Data	0x	Read	*	Port	ISB config	uration		
	Addr	ress	0	4	8	c			AS	SCII						
OB	0x080000	00 20	0015980	08035c11	08034FA5	08034F	47	.Y.	.∖¥0§0		_	Serial numbe	r —	20	0364500	
	0x080000	10 08	8034FA9	08034FAB	08034FAD	000000	00	©0	«00			PID	Oxo	df11		
CPU	0x080000	20 00	0000000	00000000	00000000	080220	15				0	VID	Ox	0483		
	0x080000	30 08	8034FAF	00000000	08021FB9	08034F	31	-o.,	$\ldots \ldots ^1 \ldots \pm 0 \ldots$			A contract of the				
SWV	0x080000	40 08	8035F59	08035F5D	08035F61	08034F	9	Y]aÉO			Read Unprot	ect (MCU)			
	0x080000	50 08	8035F65	08035F69	08035005	080350	1F	e	iPP							
	0×080000	60 08	8035021	0803503B	0803503D	08035F	5D	!P	;P=Pm							
	0x080000	70 08	8035F71	08035F75	08035F79	08035F	7D	q	uy}							
	0×080000	80 08	8035F81	08035F85	08035F89	08035F	3D									
	0x080000	90 08	8035F91	08035F95	08035F99	080350	BF		?P							
	0x080000	AO 08	8035F9D	08035FA1	08035FA5	08035F	49		;¥©							
	0x080000	BO 08	8035FAD	08035FB1	08035FB5	0801FA	11		±μú		~					
0	Log						Live Up	date	Verbosity level	1 2	🔘 з	Board	larget info	irmation		
	13:51:37 : S 13:51:37 : UF 13:51:37 : S 13:51:37 : S 13:51:37 : Re 13:51:37 : Re 13:51:37 : Tir	iize : 308 PLOADING iize : 1024 Address : 0x ead progress: ata read succes me elapsed dur	Bytes 4 Bytes 48000000 isfully ring the read op	eration is: 00:00:00.	006							Device Type Device ID Revision ID Flash size CPU Bootloader V	lersion	2 M	STM32H M 0x4 1B - Defa Cortex-	7xx CU 450 sult M7
(?)										10	0% 🛞					

7. Перейдите во вкладку Erasing&programming

STM32CubeProgrammer							(19)	f 🖸 🖌	- • ×
Memory & File editio	ו								Connected
Memory & file edition	+							USB	Disconnect
Erasing & programming	Size	0x400	Data width	32-bit 🔹	Find Data	0x	Read 🔹	USB	configuration
	_	4	8	c		ASCI			USBI
OB Option bytes	80	08035c11	08034FA5	08034FA	.Υ	\¥0§0	<u>^</u>	Serial number	200364500000
	A9	08034FAB	08034FAD	0000000	00 00)«00		PID	0xdf11
CPU MCU core	00	00000000	00000000	0802201				VID	0.0400
	AF	00000000	08021FB9	08034FE	s1 ~0	0 ¹ ±0			0x0483
SWV Serial Wire Viewer	59	08035F5D	08035F61	08034F0	9 Y_]aÉO		Read Unprotect (MCU)
	65	08035F69	08035005	0803503	LF e_	iPP			
	21	0803503B	0803503D	08035F6	5D ! P	P;P=Pm			
	71	08035F75	08035F79	08035F7	D q_	uy}			
	81	08035F85	08035F89	08035F8	BD				
	91	08035F95	08035F99	0803503	F	?P			
	9D	08035FA1	08035FA5	08035FA	. 9	i¥0			
							>		
Fault Analyzer - BETA					ive Update.	Verbosity level	1 2 3	Targ Board Device Type	et information STM32H7xx MCU
External loaders	0							Device ID Revision ID Flash size	0x450 2 MB - Default
Full chip erase	read op	eration is: 00:00:00	.006					CPU Bootloader Versio	Cortex-M7 on
(?) Help							100%		

8. Укажите путь к файлу прошивки, поставьте галочки, как указано на рисунке.

Pro STIV	32CubeProgrammer						- 🗆 ×
STM32 Cube	Programmer				19	f 🕒 🎐	* 57
	Erasing & Programming						Connected
	Download	Erase flash m	emory	Erase external men	nory	USB 🔹	Disconnect
*	File path C:\Users\Istomin\Downloads\bm_v85_Ite_162.1 Browse	l	Erase sele	ected sectors Full	chip erase	Port	ISB1 🔹 💋
OB	Start addr	Select	Index	Start Address	Size	Serial number	200364500000
	Skip flash erase before programming		0	0x08000000	128К _	PID	0xdf11
CPU	Verify programming YKAЖИТС ПУТ	ък	1	0x08020000	128K	VID	0x0483
SWV	Run after programming		2	0x08040000	128K	Read Unprotect (MCI	η 📕
	Поставьте эти		3	0x08060000	128K		
			4	0x08080000	128К 🖵		
	галочки		5	0x080A0000	128K		
	Full chip erase		6	0x080C0000	128K		
	V Download file		7	0x080E0000	128K		
	Option bytes commands -ob		8	0x08100000	128K 🗸		
	Log Li	ive Update Ve	rbosity le	vel 🖲 1 🔘	2 🔘 3	Target in Board Device	nformation STM32H7vv
UETA	13:51:37 : Size : 308 Bytes 13:51:37 : UPLOADING					Type Device ID	MCU 0×450
	13:51:37 : Size : 1024 Bytes 13:51:37 : Address : 0x8000000					Revision ID	2 MR Default
$\overbrace{{}}^{\bigcirc}$	1351:37: Read progress: 1351:37: Data read successfully 13:51:37: Time elapsed during the read operation is: 00:00:00.006					CPU Bootloader Version	Cortex-M7
?					100% 🛞		

9. Нажмите «Start Programm...»

10. В конце процедуры программирования вы должны увидеть следующее сообщение:

Prg STIV	M32CubeProgrammer				- C	×
STM32 Cube	2 Programmer			y	\times	$\overline{\mathbf{N}}$
	Erasing & Programming				Not co	onnected
	File path C:\Pchela\Firmware\BMi_N8\ARM\bm_v85_Ite. File path File path C:\Pchela\Firmware\BMi_N8\ARM\bm_v85_Ite. File path File path Firmware\BMi_N8\ARM\bm_v85_Ite. File path File path FirmWare File path File path File path File path File path FirmWare File path FirmWare File path FirmWare File path FirmWare File path File path File path File path File path File path FirmWare File path File path File path File path FirmWare File path File		USB	-	Con	inect
.	Start addr Erase selected sectors Full chip e	rase	Port	USB config	DFU	- Ø
ОВ	Skip flash erase before programming	ize	Serial numb PID	•r	154.4	
CPU	Verify programming Run after programming		VID	0xi	0483	-
swv	To Warning X		Read Unpro	tect (MCU)		
	Automatic Mode Warning: Connection to device 0x450 is lost ay					
	Ownload file					
	Option bytes commands -ob					
	Start automatic mode					
	Log Verbosity level	3				
	15:19:56 : Read progress: 15:19:57 : Download verified successfully 15:19:57 : RUNNING Program			Target info	ormation	
	15:19:57 : Address: : 0x08000000 15:19:57 : Start operation achieved successfully		Device Type			
0	15:1907 / Warning, Connection to device (WHOU IS JOST 15:1958 : Disconnected from device.		Device ID Revision ID			
?	100%	\otimes	Flash size CPU			= -

Значит процедура программирования прошла успешно!