Flashen des STM32MiniBoards

Benötigt werden neben dem STM32MiniBoard:

- Hardware: ST-Link V2 (z. B. von <u>AliExpress</u> oder <u>ebay</u>)
- Software: ST-Link/V2 , siehe: <u>http://www.st.com/en/development-tools/st-link-v2.html</u>
- Installation der ST-Link/V2-Software: <u>https://www.youtube.com/watch?v=ONzRL06Umfo</u>

Danach im Geräte-Manager von Windows unter "USB-Geräte" kontrollieren, ob die Installation erfolgreich war.



ST-Link mit STM-32-MiniBoard verbinden (Achtung: Die Anschlussbelegung am ST-Link ist nicht einheitlich, auf Beschriftung achten):



ST-Link V2 öffnen und "Target" sowie "Connect" anklicken:

5 STM32 ST-LINK	(Utility	- 0 X
File Edit View	Target ST-LINK External Loader Help	
File Edit View	Target ST-LINK External Loader Help Connect CTRL+D 32 bits ✓ Erase Chip CTRL+E 32 bits ✓ Erase Bank1 Erase Bank2 32 bits ✓ Erase Sectors Program Program & Verify CTRL+P Blank Check Memory Checksum Target memory compare with file Option Bytes CTRL+B MCU Core Automatic Mode Settings Settings Settings	Device D Device ID Revision ID Flash size LiveUpdate
Disconnected	Device ID :	Core State : No Memory Loaded

"Target" und "Program & Verify" anklicken:

5 STM32 ST-LINK	Utility			_		×
File Edit View	Target ST-LINK External Loa	ader Help				
🗀 🔲 💾 -	Connect					
Memory display	Disconnect C	TRL+D	Davica STM22E10vy Madium dan			
	Frase Chin C	TRI + F	Device ID 0x410	isity		
Address: 0x080	Erace Bank1	32 bits	Revision ID Rev X			
Device Memory @ (Frace Bank?		Flash size 64KBytes			
Target memory, Add	Erase Sectors				Liveu	pdate
Address	Erase Sectors		ASCII			^
0x08000000	Program	071A1	.P. YaŸa;a			_
0x08000010	Program & Verify CT	FRL+P 000000	£a¥a§a			
0x08000020	Blank Check	071A9				_
0x08000030	Memory Checksum	02C9D	« q q			
0x08000040	Target memory compare	with file)071B9	³ qµq·q ¹ q			
0x08000050	Option Bytes CT	TRL+B)071C1	» q ½ q ¿ q Á q			
0x08000060	MCII Core)071C9	à q Å q Ç q É q			
0x08000070	med core)071D1	MíqïqÑq			
0x08000080	Automatic Mode)071D9	Ó q Õ q × q Ù q			~
<	Settings					>
11:41:16 : ST-LINK SI 11:41:16 : ST-LINK FI 11:41:16 : Connected 11:41:16 : Connectio 11:41:16 : Connectio 11:41:16 : Debug in L 11:41:16 : Debug in L 11:41:16 : Device flat 11:41:16 : Device flat	N : 53FF68064885555155201287 rmware version : V2J27S6 d via SWD. uency = 4,0 MHz. n mode : Normal. cow Power mode enabled. :0x410 s Nize : 64KBytes mily :STM32F10xx Medium-density					
Debug in Low Power m	node enabled.	Device ID:0x410	Core State : Live Update Dis	sabled		

Hex-Datei auswählen (im Beispiel: "Standard"-WS2812) und auf "Öffnen" klicken:

👼 STM32 ST-	LINK Utility				_	
File Edit Vi	ew Target ST-LINK	External Lo	ader Help			
🖴 🗖 🕻	5 Öffnen					×
-Memory displa	← → • ↑ <mark> </mark>	> PC6 >	Downloads > Wordclock-hex	✓ Ö "Wordclock-he	x" durchsuchen 🔎	
Address: 0	Organisieren 🔻	Neuer Ordr	her		= - 🔟 🤅	
Device Memory	🕹 Schnellsveriff	N	ame	Änderungsdatum	Тур	^LiveUpdate
Target memory,	Schneizughn		wc12h-stm32f103-apa102.hex	17.03.2017 11:47	HEX-Datei	
Address	Desktop	*	wc12h-stm32f103-sk6812-rgb.hex	17.03.2017 11:47	HEX-Datei	^
0x08000000	🕂 Downloads	*	wc12h-stm32f103-sk6812-rgbw.hex	17.03.2017 11:47	HEX-Datei	
0x08000010	🔮 Dokumente	*	wc12h-stm32f103-ws2812-grb.hex	17.03.2017 11:47	HEX-Datei	
0x08000020	📰 Bilder	*] wc12h-stm32f103-ws2812-rgb.hex	17.03.2017 11:47	HEX-Datei	
0x08000030	DC6] wc12h-stm32f401-apa102.hex	17.03.2017 11:47	HEX-Datei	
0x08000040	PC0] wc12h-stm32f401-sk6812-rgb.hex	17.03.2017 11:47	HEX-Datei	
0x08000050	GH_MOBIL (G:)] wc12h-stm32f401-sk6812-rgbw.hex	17.03.2017 11:47	HEX-Datei	
0x08000060	A Network] wc12h-stm32f401-ws2812-grb.hex	17.03.2017 11:47	HEX-Datei	
0x08000070	r Netzwerk] wc12h-stm32f401-ws2812-rgb.hex	17.03.2017 11:47	HEX-Datei	
0x08000080] wc12h-stm32f411-apa102.hex	17.03.2017 11:47	HEX-Datei	
<] wc12h-stm32f411-sk6812-rgb.hex	17.03.2017 11:47	HEX-Datei	v >
11:41:16 : ST-L		<			>	
11:41:16 : ST-L 11:41:16 : Con		Dateiname	wc12h-stm32f103-ws2812-grb.hex	✓ Supported File	s (*.bin *.hex *.sri ∨	
11:41:16 : SWI 11:41:16 : Con				Öffnen	Abbrechen	
11:41:16 : Dev	CE 1D:0X410					
11:41:16 : Devi	ce flash Size : 64KBytes ce family :STM32E10xx Me	dium-density				
	Le reinig for foer toxy fic	and the second cy				
Debug in Low Po	wer mode enabled.		Device ID:0x410	Core State : Li	ve Update Disabled	
parag in contro				1 coro scaco i ci	is spasse produced	

Flashen mit "Start" beginnen:

5 STM32 ST-LINK	Utility					_		\times		
File Edit View Target ST-LINK External Loader Help										
🖴 🔲 🖕 🔇	u 🖉 🐨	8 🙆 🔜								
Memory display	₩ \ 7 ¢			Device	CTM20E10 Madium d	la maile :				
Hemory display				Device ID	0x410	ensity				
Address: 0x0800	00000 ~ Si:	ze: 0xC218	Data Width: 32 bits 🗸	Revision ID	Rev X					
Device Memory @ 0	x08000000 :	Download [wc12	h-stm32f103-ws2812-grb.hex]		×					
[wc12h-stm32f103-ws	s2812-grb.he	Shart address	0-08000000							
Address	0	Start address						^		
0x0800000	20005000	File path	C:\Users\Günter\Downloads\Wordclock-h	ex\wc12h-stm3	Browse			_		
0x08000010	08007A8B	Extra options								
0x08000020	00000000		Skip Flash Erase Skip) Flash Protection	n verification					
0x08000030	08007A93	Verification								
0x08000040	08007A9B		Verify while programming O Verify after programming							
0x08000050	08007AA3	Click "Start" to pr	Click "Start" to program target.							
0x08000060	08007AAB									
0x08000070	08001FED	A 0								
0x08000080	08007ABB	Arter programmi	Arter programming							
<	1			riden memory er	looksum			>		
15:48:07 : Connected	inniware versio divia SWD		Start Cancel]				~		
15:48:07 : SWD Freq	uency = 4,0 M	ITZ.								
15:48:07 : Connectio 15:48:07 : Debug in L	n mode : Norm .ow Power mod	ial. de enabled.								
15:48:07 : Device ID:	:0x410									
15:48:07 : Device far	mily:STM32F1) xx Medium-density	,							
15:52:06 : [wc12h-st	m32f103-ws28	812-grb.hex] opene	d successfully. sum : 0x00438B41							
Debug in Low Power n	node enabled.		Device ID:0x410	C	Core State : No Memory 🤇	Grid Selected				

Erfolgreiches Flashen wird im unteren Fenster angezeigt:

遍 STM32 ST-LINK	Utility						_		×
File Edit View	Target ST-LI	NK External Lo	oader Help						
🖴 🖥 🖕 <	Ç. 🔗 📡	🧟 🔜							
Memory display						Device	STM32F10xx Medium-density		
Addresse 0x0800	00000	0×C219	Data Widt	the 22 hits		Device ID	0x410		
Address. 0x0000	3120	. 0xc210	Data Wid			Revision ID	Rev X		
Device Memory @ 0	×0800000 · =		£102	h have		Flash size	64KBytes		
Target memory Addr	ess range: [0x08	e : wc12n-stm32	103-WS2812-gr 1218]	b.nex				LiveUp	date
Address	o	4	0	C	ASCIL				^
Address	0	4	0	000074.00	ASCII				-
0x08000000	20005000	08007A41	08007A87	08007A89	.P. A	z∓z‰z.			- 1
0x08000010	08007A8B	08007A8D	08007A8F	0000000	< Z Z	Z			_
0x08000020	0000000	0000000	0000000	08007A91		'z			
0x08000030	08007A93	0000000	08007A95	08003C8D	" z	•z<			
0x08000040	08007A9B	08007A9D	08007A9F	08007AA1	• z z	Ÿ z ; z			
0x08000050	08007AA3	08007AA5	08007AA7	08007AA9	£z¥	z§z©z.			
0x08000060	08007AAB	08007AAD	08007AAF	08007AB1	« z :	zz±z			
0x08000070	08001FED	08007AB5	08007AB7	08007AB9	íµz	z ¹ z			
0x08000080	08007ABB	08007ABD	08007ABF	08007AC1	» z ½	z¿zÁz.			
<	1								>
11-1-11 0 - Connection mode - Normal. 11:41:16 : Debug in Low Power mode enabled. 11:41:16 : Device ID:0x410 11:41:16 : Device flash Size : 64KBytes 11:41:16 : Device flash Size : 64KBytes						^			
11:49:41 : [wc12h-stm32f103-ws2812-grb.hex] opened successfully. 11:49:41 : [wc12h-stm32f103-ws2812-grb.hex] checksum : 0x00438B41 11:51:26 : Memory programmed in 19s and 312ms. 11:51:26 : VenficationOK 11:51:26 : Programmed memory Checksum: 0x00438B41						×			
, Debug in Low Power n	Debug in Low Power mode enabled. Device ID:0x410 Core State : Live Update Disabled								

Zum Abschluss ST-Link trennen:

🖷 STM32 ST-LINK Utility — 🗆 🗙							
File Edit View	Target ST-LINK External L	oader Help					
🖴 🔲 🛛 💾 -	Connect						
Memory display	Disconnect	CTRL+D	CTM22E10vv Medium density				
	Frase Chin (TRI + F	0x410				
Address: 0x080	Erase Pank1		Rev X				
	Erase Danki		64KBytes				
Device Memory @ (Erase Bank2			LiveU	pdate		
larget memory, Add	Erase Sectors						
Address	Program				_		
0x08000000	Program & Verify C	TRL+P			- 11		
0x08000010					_		
0x08000020	Blank Check						
0x08000030	Memory Checksum						
0x08000040	Compare device memor	y with [wc12h-stm32f103-ws2812-grb.hex]					
0x08000050	Option Bytes 0	TRL+B			_		
0x08000060	MCU Core				_		
0x08000070	A				_		
0x08000080	Automatic Mode				v .		
<	Settings				>		
11:41:16 : Debug in L	.ow Power mode enabled.				^		
11:41:16 : Device ID:	0x410						
11:41:16 : Device fan	nily :STM32F10xx Medium-densit	(- 10		
11:49:41 : [wc12h-st	m32f103-ws2812-grb.hex] open	ed successfully.					
11:51:26 : Memory programmed in 19s and 312ms.							
11:51:26 : Verification	nOK ad mamary Chadraumy 0x004295	41					
11.51:20 ; Programm	eu memor y checksum; 0X004566	11			\checkmark		
Debug in Low Power n	node enabled.	Device ID:0x410	Core State : Live Update Disabled				

Fertig!