

SWD BLASTER ARM MCU PROGRAMMER USER MANUAL

The Earth People Technology SWD Blaster programs and provides in circuit debugging via JTAG or SWD for any ARM MCU. It connects via USB to the Host PC running Windows and is fully plug and play compatible. The SWD Blaster integrates seamlessly into the high-perfroming C/C++ compiler and debgger tool suite IAR Embedded Workbench ID for easy-to-use, fast and reliable debugging. The SWD Blaster streams the program counter, variables, and register data to the host computer to provide a view into program execution in real time.

For debugging Cortex devices, the SWD Blaster also supports the SWO (Serial Wire Output) feature, which can be used for tracing the program execution and tracking variables at predefined points in your code.

Supports all Arm7/Arm9/Arm11 cores, Arm Cortex-A/R/M cores from all Silicon Vendors with Automatic core recognition and JTAG/SWD detection. Supports target voltage range from 1.65V to 5V. Includes 0.1 inch header utilizing the MIPI-20 pinout.

The SWD Blaster provides a fast debugging platform via JTAG and SWD/SWO with download speeds of up to 1.89 MByte/sec. The JTAG and Serial Wire Debug (SWD) clocks up to 8MHz (no limit on the MCU clock speed).





1 Description

The SWD Blaster is a stand alone programmer for use with IAR Embedded Workbench and capable of debugging most ARM MCU's. It includes the I-Jet On Board Module from IAR. It also includes a USB-C connector and a 20 pin 0.1 Inch Header that maps to the MIPI-20 pinout. The SWD Blaster has a reset switch for manual reset of the target MCU. There is a level shifter chip which is powered from the target MCU board. This level shifter allows the SWD signals to match the target MCU from 1.65V to 5V.





1.1 I-Jet OBM

The I-Jet On Board Module is sourced from IAR so it is officially licensed by the company.



When the SWD Blaster is connected to a USB port on a PC loaded with the latest version of IAR Embedded Workbench, it is immediately recognized as an I-Jet. And it can be used to program the flash of the target MCU or provide in circuit debugging.



Category:						Factory Settings
General Options						
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J-Link/J-Trace				CPI Lnumber on target	0	
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PE micro	Auto	nerecr .		Preceding bits:	0	
ST-LINK						
Third-Party Driver						
TI MSP-FET						

The OBM provides full SWD JTAG in circuit emulation. The emulation speed is limited to 8MHz. However, this speed is more than adequate for most applications. The OBM provides all of the debugging power of the IAR Embedded Workbench. The user can:

- compile user code
- download, debug
- step over functions
- step into functions
- run to cursor
- run full program
- pause
- view all registers
- set breakpoints
- execute to breakpoints
- add variables to watch
- probe variables
- and all other functionality



The OBM is powered by the USB-C connection from the port of the connected PC.

1.2 USB-C Connection

The SWD Blaster communicates with a PC via the USB-C connector. Connect the cable to any USB 2.0 or higher compliant port.



When the IAR Embedded Workbench software is properly installed on the PC, the driver will automatically load.





The SWD Blaster is powered by the USB-C connection. The USB Power is used to power up the OB Module. The OB Module provides +3.3V power for external use on the SWD Blaster.





The USB connection provides the bi-directional communication path between Host PC and the SWD Blaster.

1.3 Status LED

The STATUS LED is used to indicate that the SWD Blaster has been appropriately powered from the Host USB. It will light up green. It is connected to pin 11 of the IOBM and driven with sink from the module.



1.4 Reset Switch

The Reset Push Button is used to manually reset the target MCU.





1.5 20 Pin Header

The SWD Blaster includes a 20 Pin 0.1 Inch Dual Row Shrouded Header.



This header is used to connect the

- SWDIO
- SWDCLK
- TARGET POWER
- SWO
- GROUND
- TRESET

Signals to the target MCU. The header pinout follows the MIPI-20 scheme.





The VTREF signal is power applied from the Target Device. It is used to power the output sample circuit of the IOBM. It must have the capability of supplying:

20mA

1.6 Using the SWD Blaster

The SWD Blaster must have the IAR Embedded Workbench installed on the PC. The USB driver is included in the software. Once installed, connect the SWD Blaster using a USB-C cable. Connect the USB cable to a port on the Host PC.



The driver will automatically load. The STATUS LED will light to indicate power has been correctly applied to the SWD Blaster.





The "CONNECT" LED will light up in the Green color.



If the CONNECT LED lights up in Red, it means the IOBM USB Driver did not properly. Use the 20 pin Header and Adapter Board to connect the SWD signals to the Target Board.



Use the Embedded Workbench software to connect to the target board. Write user code, compile, download and start debugging.



Category:						Factory Sett	inas
General Options]						-
Static Analysis							
Runtime Checking	1						
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TI Stellaris				CPU number on targ	et: 0		
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ST-LINK				r roooding bits.			
Third-Party Driver							
TI MSP-FET							
TT XDS							

2 Installing Software for use with SWD Blaster

The SWD Blaster uses the I-Jet On Board Module from IAR. IAR makes the software called Embedded Workbench.





PRODUCTS KNOWLEDGE INVESTORS NEWS ABOUT

Product overview

See IAR Embedded Workbench for Arm V9.30 and its powerful features in action in this video.



This software along with the SWD Blaster will allow developers to create software to run on any ARM MCU. EPT acquires the I-Jet OBM directly from IAR. So, this is an officially licensed product. The Embedded Workbench software includes all drivers for use with the SWD Blaster.

IAR provides two free versions of Embedded Workbench for download for users.

- Time Limited Embedded Workbench Full version of software expires after 14 days. No code size limitation.
- Code Limited Embedded Workbench All software features available (Download and Debugging), compiled code size is limited to 32Kbytes.

Follow the steps below to install the free version of software.

2.1 Download and install IAR Workbench

Go to the IAR Download ARM Software page





Click on the "Try evaluation software" button



At the "Use this Product" page, click on the "Download" button.





What type of license do you need?

Our tools are available in a flexible license model to suit your company needs. Together with our support and update agreements, you get the support you need in multiple time At the "Register for Evaluation" page, fill out the information, then click on the "Submit Registration" button.





Go to the email address you specified and search for the email from IAR.





Please Confirm Registration

An email has now been sent to the address you specified (@yahoo.com), asking you to confirm the registration. Follow the instructions in that email to receive information on how to proceed.



Click on the link in the email.



noreply.www1@iar.com <noreply.www1@iar.com> To: Richard Jolly

Dear Developer,

Please confirm your web registration for the product

IAR Embedded Workbench for Arm, v. 9.40, 32K Kickstart Edition

using this link

https://register.iar.com/confirm?lang=en&key=69df9e18-992a-4f00-b21d-4c5577418f9c

Unconfirmed registrations are erased from our system after 14 days.

You cannot reply to this email. Please use the Contact page on our website (http://www.iar.com/contact/) if you have any comments or questions.

Best regards,

IAR



Click on the "Download software" link

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Registration Complete

Thank you for your registration!

You have been assigned the following license number:

When you launch the application for the first time, you will be asked to specify this license number in the IAR License Manager. If the IAR License Manager does not pop-up automatically you can start it either from the Windows Start menu or from the Help menu in your IAR product.

Download software (Windows, 1.6 GB)

IAR

IAR website

Wait for the download to complete





Registration Complete

Thank you for your registration!

You have been assigned the following license number:

9403-873-161-2151

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Download software (Windows, 1.6 GB)

IAR

IAR website



Double click on the link when complete





Double click on the



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IAR	Embedded Workbench for Arm 9.40.1
L	icense Agreement
	Please read the following license agreement carefully.
	SUFTWARE LICENSE
	AGREEMENT
	December 2022
	Concerning the Products: Embedded Trust", Embedded Secure IP", IAR Embedded Workbench [®] , IAR Visual State [®] , IAR Build Tools, IAR Flash Tool
	I accept the terms of the license agreement
	○ I do not accept the terms of the license agreement
Inst	allShield
	< Back Next > Cancel
Double click on the	
	R Embedded Workbench for Arm 9.40.1
	Choose Destination Location
ł.	Select folder where setup will install files.
	Install IAR Embedded Workbench for Arm to:
	C:\Program Files\IAR Systems\Embedded Workbench 9.2 Change
Ins	stallShield

Make sure the "I-Jet" and "ST-LINK" radio boxes are selected. Then click Next.



IAR Embedded Workbench for Arm 9.40.1 USB Driver installation		×
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Accept the defaults on the next screens and click next.



Click Install



IAR Embedded Workbench for Arm 9.4	0.1		×
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Click Install to begin the installation.			
If you want to review or change any of the wizard.	your installation setting	s, click Back. Click C	Cancel to exit
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Wait until the EW is installed

IAR Embedded Workbench for Arm 9.40.1	×
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IAR Embedded Workbench for Arm is configuring your new software installation.	
Installing	
C:\\jre\bin\saproc.dll	
nstallShield	
	Cancel

When complete, click on the "Finish" button



IAR Embedded Workbench for Arm 9.40.1



Next up, the drivers will install for programming cables.

📰 Windows Security						
Would you like to install this device software?						
Name: IAR Systems Publisher: Signum Systems Corp						
Always trust software from "Signum Systems Install Do Corp".	n't Install					
You should only install driver software from publishers you trust. <u>How can lo device software is safe to install?</u>	lecide which					

Select the defaults and allow the wizards to complete the driver installation.

Once software and driver installation is complete, you will need to obtain a license. Click on the Windows button and click on the "IAR License Manager For ARM xxx" link.





The license manager will search for installed licenses. When it does not find one, you will see this message:



cense Wizard	×
Welcome ia	n.
This wizard will help you to activate your IAR Embedded Workbench for Arm license.	
If you have a license number, enter it here:	
O Use a network license	
O Register with IAR Systems to get an evaluation license	
□ Don't run the Wizard for this product at startup.	
< Back Next > Canc	:el

Here, you will refer to the previous website that displays your license number. So, select the "If you have a license umber, enter it here" and click next.





You should receive a confirmation. Click "Next"



 License Wizard
 X

 Confirm license details
 Image: Confirm license details

 Product: IAR Embedded Workbench for Arm, 32K Kickstart Edition
 Yersion: 9.40

 Locking criteria: System UUID
 License model: Permanent license

 Features:
 IAR C/C++ Compiler for Arm
 IAR Linker for Arm

 IAR Debugger for Arm
 Click Next to activate this license
 This may take more than a minute

Next > Cancel	Next >	< Back

The following message will appear.

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Confirm lie	cense details				a
Product: IAR I Version: 9.40 Locking criteri License mod∈	Embedded Workben a: System UUID Activating the license	ch for Arm,	32K Kickst	art Edition	
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Scanning...

Click "Done"



The IAR EW software is now installed and the license has been applied. You can run the software by clicking on the icon in the Windows Tray.





It will open similar to this:





So, the software is ready, but we are not ready to start creating a project for an MCU just yet. Follow the next steps to get the Board Support Package software installed. The BSP software will allow us to prepare all the project files to use in IAR EW.

2.2 ST CubeMX software installation

The SWD Blaster will support a wide range of MCUs with the list not limited to:

ST Micro

NXP

Texas Instruments

Microchip

Silicon Labs

Infineon

Toshiba



For the example purposes of this User Manual, we will focus on MCU's from ST Micro. We will install and give a tutorial on the use of ST CubeMX Board Support Package software. However, most of the above vendors have similar BSP software.

Go to the ST.com website and find the STM32CubeMX download page.



Scroll down to the bottom of the page to the download section and click on "Get latest"



Get Software

	Part Number	General Description	Latest version $\frac{\mathbb{A}}{\mathbb{A}}$	Download 🍦	All versions
+	Patch-CubeMX	Patch for STM32CubeMX	6.7.1	Get latest	
+	STM32CubeMX-Lin	STM32Cube init code generator for Linux	6.8.1	Get latest	Select version \smallsetminus
+	STM32CubeMX-Mac	STM32Cube init code generator for macOS	6.8.1	Get latest	Select version \smallsetminus
+	STM32CubeMX-Win	STM32Cube init code generator for Windows	6.8.1	Get latest	Select version \lor

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	+					Download latest			
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Search for the email from STMicro.

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Start your software download
Hi Richard
Please click on this button to validate your email address and start the download of Patch-CubeMX
Download now
If you have any further issues, please send your request to our online support using the subject line: Software download issues.
Thank you,
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Click on the "Download now" button.

The browser will store the file in the tray.

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Development Tools > Software Deve	lopment Tools > STM32 Software Development	Tools > STM32 Configurators and Code Generate	ors > STM32CubeMX >					
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	Get Sonware	Download databrief						
	Overview Documentation	Tools & Software						
	Product ove	rview						
	Description All features	Circuit Diagram Get Software Fr	eatured Videos Red	commended for you				
	Description							
STM32CubeMX is a graphical tool that allows a very easy configuration of STM32 microcontrollers and microprocessors, as well as the generation of								
📑 en.patch-cubemx.zip 🛛 🔺							8	lle wo

Double click on the link to install.

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Click "Next"

🚾 STM32CubeMX Installation Wizard

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Welcome to the Installation of STM32CubeMX 6.8.1



Accept the License terms and click "Next"




Accept the Privacy Terms and click "Next".





Accept the defaults and install.

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	tronics\STM32Cube\STM32CubeMX	
STMicroelectronics		
	O Previous O Next	9 Quit

Click on "Next"



Click "Done"





Click on the Windows Icon and click on the STM32CubeMX icon.





The software will open.





Once the software is opened, we are ready to start an MCU project.

STM32CubeMX Untitled	File	Window	Help	® ∏ ¤ ⊻ Q ☆ ⊊7
Home			New Project	Manage software installations
Open Existing Projects			I need to : Start My project from MCU ACCESS TO MCU SELECTOR Start My project from ST Board ACCESS TO BOARD SELECTOR Start My project from Example ACCESS TO EXAMPLE SELECTOR	Check for STM32CubeMX and embedded software package CHECK FOR UPDATES Instal or remove embedded software packages INSTALL / BEM/V/E Over constantion with LFBAM fool CHECK FOR UPDATES UPDA

2.3 Creating a Project for IAR Embedded Workbench

For the purposes of this example, we will be using the NUCLEO-L552ZE-Q board from STMicro. The same steps can be used for most STM32 MCU's.





The first step is to select the MCU under CubeMX. CubeMX has a built in selection tool for the specific NUCLEO boards in its catalog. So, we only need to select the board from the drop down box. First click on the "Access To Board Selector" button.



CubeMX will download the required files from an internet connection.



KTM32CubeMX Untitled					
STM32 CubeMX	File	Window	Help		
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Then you will see the selector menu.



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Click on the Drop Down box next to the "Commercial Part Number" and scroll down to the NUCLEO-L552ZE-Q.



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Click on the selection, and the Part Number will show under the Drop Down Box.



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User Button	>			

Click on the NUCLEO-L552LZE-Q icon in the lower left corner, and the details of the board will be populated under Features.

Filters						
★ 🗟 🗟 こ		Features Large Pi	cture Docs & Resources	📑 Datasheet	📑 Buy	Start Project
Commercial NUCLEO-L552ZE-Q	~	STM32L5 Series				
	+ -	NUCLEO-L552ZE-Q	STM32 Nucleo-144 developme Arduino, ST Zio and morpho c	nt board with STM32 onnectivity	L552ZE MCU, S	MPS, supports
		ACTIVE	Part Number : NUCLEO-L552ZE-Q	Unit Pric	e (US\$):20.0	
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Next, click on the "Start Project" in the upper right corner.



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Commercial NUCLEO-L552ZE-Q	~	STM32L5 Series					
۹ [+	-	NUCLEO-L552ZE-G	STM32 Nucle Arduino, ST	o-144 development Zio and morpho co	board with STM32 nnectivity	L552ZE MCU, SM	PS, supports
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Accept the defaults.



You will see an image of the L552 chip with the GPIO's pre-selected.



STM32CubeMX Untitled	STM32L552ZETxQ NUCLEO-L552ZE-Q			- 🗆 ×
STM32	File	Window Help	6	9 🖪 🖸 🄰 🗘 🛧 ភ
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You can select the various tabs under "Categories" to see the default settings that STMicro has chosen for the board. We are specifically interested in the LED Green GPIO and the LED Red GPIO.



STM32Cub	eMX Untitled: STM32L552ZETxQ NUCLEO-L552ZE-Q			- 0
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Analog ADC ADC COM COM DAC OPA OPA VREI Timers				PC6 VS VS ST-LINK_VCP_RX PC6 ST-LINK_VCP_TX PC6 PC4 PC3 PC4 PC3 PC4

Click on the "Clock Configuration" tab to see the internal and external clock setups. We are specifically interested in the "SYSCLK" which is running at 110MHz for this project.



STM32Cub	eMX Untitled: STM32L552ZETxQ NUCLEO-L552ZE-Q			- 🗆 ×
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Click on the "Project Manager" tab. Enter a project name and location on your PC.



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Click on the "Generate Code" button to create an IAR Project.



MX STM32Cul	beMX Untitled*: STM32L552ZETxQ	NUCLEO-L552ZE-Q							-	□ ×
STM32 CubeMX	F	ile Wi	indow He	lp			(19)	f 🖸 🏏	\mathbf{O}	57
Home >	STM32L552ZETxQ - NUC	CLEO-L552ZE-Q 🔪 U	ntitled - Project Manag	er 🔪				GENERATE CODE		
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		Project Settings Project Name Project Location Application Structure	Simple_L C:\Users Advance	ED_Blink relso\OneDrive\Documents\	STM32L_Test		→ Do not g	Browse		
		Toolchain Folder Location	C:\Users	nelso\OneDrive\Documents\	STM32L_Test\Simple Min Version	e_LED_Blink\ V8.50	✓ □ Generate	Under Root		
۵		Linker Settings Minimum Heap Size Minimum Stack Size	0×200 0×400							
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		Mcu and Firmware Packag Mcu Reference Firmware Package Name a	e STM32L5 and Version STM32C	52ZETxQ be FW_L5 V1.5.0						

The CubeMX will probably require a download from the internet.

to Constator			Toolchain Folder Location	C:\Users\nelso\OneDrive\Doo	uments\ST	M32L_Test\Simple	e_LED_Blink\		
de Gen	Project	t Manager Set	Toolchain / IDE tings	EWARM	\vee	Min Version	V8.50	Generate Un X	nder Root
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inced S				Yes No					
			Thread-safe Settings CortexM33						
			Enable multi-threaded support						

Accept the License and click "Finish".



🔤 Licensing Agreement X	
CubeFw L5 1.5.0 License Agreement	
Please read and accept the following agreement carefully to finish the installation:	
Click here to open the license agreement	
I have read, and I agree to the terms of this license agreement	
O I do not accept the terms of this license agreement	
Finish Cancel	

Accept any defaults during generation. Once complete, the success message will be displayed.



led support

Click on the "Open Project". The software will automatically open the IAR with all project files populated correctly.



Project - IAR Embedded Workbench IDE - Arr	rm 9.40.1
File Edit View Project ST-Link Tools	Window Help
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Simple_LED_Blink ~	
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Simple_LED_Blink - Simpl	

Click on the Application->User->Core to view the user files.



Double click on the "Main.c" file to view the main code.



Project - IAR Embedded Workbench IDE - An	n 9.40.1
File Edit View Project ST-Link Tools	Window Help
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	. < Q > ≒ ⊭ < Q > ≧ I 0
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Simple_LED_Blink ~	
Files 🌣	Y* USER CODE BEGIN Header */ 早 /**
□ Simple_LED_Blink - Simpl ✓	* @file : main.c
	* @brief : Main program body
	* gattention
🛨 🔂 main.c	* Copyright (c) 2023 STMicroelectronics.
E is stm32l5xx_hal_msp.c	* All rights reserved.
	* This software is licensed under terms that can be found in the LICENSE file
	* in the root directory of this software component. * If an UTERWER file area with this a file and it is an indicated as TS
	* If no LICENSE file comes with this software, it is provided AS-IS. *

	/* USER CODE END Header */
	/* Includes*/
	#include "main.h"
	/* Private includes*/
	/* USER CODE BEGIN Includes */
	/* USER CODE END Includes */
	/* Private typedef*/
	/* USER CODE BEGIN PTD */
	/* USER CODE END PTD */
	/* Private define*/
	/* USER CODE BEGIN PD */
	/* USER CODE END PD */
	/* Private macro*/
Simple LED Blink	/* USER CODE BEGIN PM */

Right click on the window and select options. In the editor tab, select the "Show Line Numbers" check box.

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Simple_LED_Blink Files Simple_LED_Blink - Simpl Application Application Binsinc Core Binsinc Binsinc Binsin	Image: System Configure the system clock */ DE Options /* USE Colors and Fonts /* USE V USE Colors and Fonts Not colors and Fonts /* USE Colors and Fonts Not color anging Show fold margin Show fold margin Show fold margin Particip code Colorms: Bit color Not conce browser tootps Show fold margin Show wine tootps



Scroll down to line number 112.

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Norkspace 💌 🕈 🗙	main.c >	K	
Simple_LED_Blink ~	main()		
Files	91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 111 112	<pre>/* Configure the system clock */ SystemClock_Config(); /* USER CODE BEGIN SysInit */ /* USER CODE END SysInit */ /* USER CODE END SysInit */ /* Initialize all configured peripherals */ MX, GPIO_Init(); MX_APCI_Init(); MX_APCI_Init(); MX_UCPDI_Init(); MX_UCPDI_Init(); MX_USB_PCD_Init(); MX_USB_PCD_Init(); MX_USB_PCD_Init(); MX_USB_PCD_END 2 */ /* USER CODE END 2 */ /* USER CODE END 2 */ /* USER CODE END NHILE */ while (1) { /* USER CODE END NHILE */ </pre>	
	113 114 115 116 117 118 119 120 E 121 122 123 124 125 E 126 127	<pre>/* USER CODE END WHILE */ /* USER CODE BEGIN 3 */ } /* USER CODE END 3 */ } /* Borief System Clock Configuration * Borietual Nome */ void SystemClock_Config(void) { CC_ClkInitYpeDef RCC_OscInitStruct = {0}; RCC_ClkInitYpeDef RCC_ClkInitStruct = {0}; } </pre>	
Simple LED Blink	128		
	Cincela 150	Diald Construction of	

Add the following code at line 112.



Project - IAR Embedded Workbench IDE - Arr	n 9.40.1
File Edit View Project ST-Link Tools V	Vindow Help
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	- < Q > \$ = < V > R D . • • • 0 >]
Workspace 👻 🖡 🗙	main.c x
Simple_LED_Blink ~	main()
Simple_LED_Blink	<pre>mmany /* Initialize all configured peripherals */ /* Initialize all configured peripherals */ /* USER CODE Init(); /* USER CODE Init(); /* USER CODE CODE INITE /* USER CODE END 2 */ /* USER CODE ESCIN V#ILE */ MAL_Delay(500); /* USER CODE END V#ILE */ HAL_Delay(500); HAL_OPIO_WritePin(LED_GREEN_GPIO_Port, LED_GREEN_Pin, GPIO_PIN_SET); HAL_OPIO_WritePin(LED_GREEN_GPIO_Port, LED_GREEN_Pin, GPIO_PIN_RESET); /* USER CODE END 3 */ /* USER CODE END 3 */ </pre>
	132 void SystemClock_Config(void) 133 ☐ {
Simple LED Blink	134 T RCC OscInitTypeDef RCC OscInitStruct = {0}:

Go to Projects->Rebuild All and select.



🔮 Project - IAR Er	nbec	Ided Workbend	h IDE - A	Arm 9.40.1		
File Edit View	Pro	ject ST-Link	Tools	Window	Help	
i 🗅 🗅 🔛 🝙		Add Files				- < Q > ⇆ 🗠 < 📮 > R 👂
Workspace		Add Group				
Simple LED Blink	[+]	Import File Lis	st			
		Add Project C	onnectio	on		
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Applicati	×	Remove				DC1_Init();
EWAP	+~	Consta Nam D				_PUART1_UART_Init(); <pre>ITC Init():</pre>
User		Add Evicting	roject			<pre>/CPD1_Init();</pre>
-⊞ ⊡ r		Add Existing	Project			JSB_PCD_Init(); JSER CODE BEGIN 2 */
- ⊞ ⊡ :	\$	Options			Alt+F7	
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	9	Rebuild All				USER CODE END WHILE */
	₫	Clean	-			<pre>\L_Delay(500);</pre>
	P	Batch build			F8	L_GPIO_WritePin(LED_GREEN_GPIO_Port, LED_GREE
		Clean Browse	Information	tion		L_Delay(500);
		C-STAT Static	Analysis		•	L_GPIO_WritePin(LED_GREEN_GPIO_Port, LED_GREE
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The compile process will start.



Project - IAR Embedded Workbench IDE	- Arm 9.40.1
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Simple_LED_Blink	ain()
Files Application Gamma Corre Strange Core Strange Cor	<pre>97 97 98 97 98 /* Initialize all configured peripherals */ 99 MX_GPI0_Init(); MX_ACC_Init(); 100 MX_LPUART_UART_Init(); 101 MX_UCDI Init(); 102 MX_UCDI Init(); 103 MX_UCDD Init(); 104 MX_USB_PCD_Init(); 105 /* USER CODE BEGIN 2 */ 106 107 108 /* USER CODE END 2 */ 108 109 /* USER CODE END WHILE */ 111 while (1) 112 113 /* USER CODE END WHILE */ 114 HAL_olay(500); 115 HAL_oPI0_WritePin(LED_GREEN_GPI0_Port, LED_GREEN_Pin, GPI0_PIN_RESET); 112 120 HAL_GPI0_WritePin(LED_GREEN_GPI0_Port, LED_GREEN_Pin, GPI0_PIN_RESET); 121 122 123 124 125 125 125 125 125 125 126 127 127 127 128 129 120 120 121 121 121 121 121 122 121 123 123 124 125 125 125 125 125 125 125 125 125 125</pre>
Simple_LED_Blink	
Build	
Messages system_stm3215oc.c stm3215oc_hal.c main.c stm3215oc_hal_msp.c stm3215oc_hal_ma.c stm3215oc_hal_contex.c	

If the compile is successful, you will see the following message.



Project - IAR Embedded Workbench IDE - A	rm 9.40.1		-
File Edit View Project ST-Link Tools	Window Hel	lp	
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Vorkspace 🗸 🕈 🗸	main.c x		
Simple_LED_Blink ~	main()		
Files	97	(* *-)+)-line all and containing */	
C Cimple LED Blink Simple 4	98	/* Initialize all configurea peripherals */	
Simple_LED_Blink - Simpl V	100	MX ADC1 Init();	
Application	101	MX LPUART1 UART Init();	
	102	MX_RTC_Init();	
	103	<pre>MX_UCPD1_Init();</pre>	
	104	<pre>MX_USB_PCD_Init();</pre>	
He main.c	105	/* USER CODE BEGIN 2 */	
	106	(* UCER CORE END 0 */	
□ □ □ stm 3215xx_it.c	107	/ USER CODE END 2 /	
	100	/* Infinite Loon */	
- Uutput	110	/* USER CODE BEGIN WHILE */	
	111	while (1)	
	112 🛱	1	
	113	/* USER CODE END WHILE */	
	114	HAL_Delay(500);	
	115		
	117	HAL_GPIO_WritePin(LED_GREEN_GPIO_Port, LED_GREEN_Pin, GPIO_PIN_SET);	
	118	HAL Delay(500):	
	119	()(<u>-</u>)()()()())	
	120	HAL GPIO WritePin(LED GREEN GPIO Port, LED GREEN Pin, GPIO PIN RESET);	
	121		
	122		
SIMPIE_LED_BIINK			-
ulla			
Messages			File
Simple_LED_Blink.out			
Simple_LED_Blink.hex			
Total number of errors: 0			
Total number of warnings: 0			
Resolving dependencies			
Build succeeded			

Next, connect the SWD Blaster to the PC. Then connect the SWDIO, SWDCLK, nRESET, VTREF and GROUND signals to the NUCLEO-L552ZE-Q board.





Right click on the "Simple_LED_Blink" Project. Select "Options"



Project - IAR Embed	lded Workbench IDE - Ar	rm 9.40.1		
File Edit View Pro	oject ST-Link Tools	Window	He	lp
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Vorkspace	→ ‡ ×	main.c	x	
Simple_LED_Blink	~	main()		
Files	¢	97 98		/* Initialize all configured per
E	Options	1		<pre>MX_GPI0_Init(); MX_ADC1_Init();</pre>
→ → → → → → → → → → → → → → → → → → →	Make Compile Rebuild All Clean C-STAT Static Analysis Stop Build Add Remove		>	MX_LPUART1_UART_Init(); MX_RTC_Init(); MX_UCPD1_Init(); MX_USB_PCD_Init(); /* USER CODE BEGIN 2 */ /* USER CODE END 2 */ /* Infinite Loop */ /* USER CODE BEGIN WHILE */ while (1) /* USER CODE END WHILE */
	Rename			HAL_Delay(500); HAL_GPIO_WritePin(LED_GREEN_G
	Version Control System	n	<u> </u>	HAL_Delay(500);
	File Properties	er		HAL_GPIO_WritePin(LED_GREEN_GF
Simple_LED_Blin	Set as Active			
3uild				

Messages

Simple_LED_Blink - Simple_LED_Blink Reading project nodes...

Select the "Debugger"tab.



Options for node "Simple_	LED_Blink" ×
Category:	Factory Settings
General Options Static Analysis Runtime Checking C/C++ Compiler	Setup Download Images Multicore Authentication Extra Options Plugins
Assembler Output Converter Custom Build Linker Build Actions Debugger Simulator CADI CMSIS DAP E2/E2 Lite GDB Server I-jet J-Link/J-Trace TI Stellaris Nu-Link	Driver Run to ST-LINK main Setup macros Use macro file(s) Device description file Override default \$TOOLKIT_DIR\$\corfig\debugger\ST\STM32L552ZE.ddf
PE micro ST-LINK Third-Party Driver TI MSP-FET TI XDS	

Under the "Driver" drop down box, find "I-jet" and select it.



Options for node "Simple_LE	D_Blink"						×
Category:						Factory	Settings
Static Analysis Runtime Checking							
C/C++ Compiler	Setup	Download	Images	Multicore	Authentication	Extra Options	Plugins
Assembler							
Output Converter	Driver			🗹 Ru	un to		
Custom Build	ST-L	INK	~	m	ain		
Linker	Simul	ator					
Build Actions	CADI						
Debugger	CMSI E2/E	S DAP					
Simulator	GDB	Server					
CADI	l-jet						
E2/E2 Lite	TLC	d Trace					
GDB Server	Nu-Li	ellaris nk					
I-iet	PEm	icro					
J-Link/J-Trace	ST-LI	NK					
TI Stellaris	TIM	Party Driver		debugger\	ST\STM32L552	7E ddf	
Nu-Link	TIXE)S		ucbugger	011010022002		
PE micro	_						
ST-LINK							
Third-Party Driver							
TI MSP-FET							
TI XDS							

Next, click on the "I-jet" under Category.



1 1 -	-
Category: General Options Static Analysis Runtime Checking C/C++ Compiler Assembler Output Converter Custom Build Linker Build Actions Debugger Simulator CADI CMSIS DAP E2/E2 Lite GDB Server I-jet J-Link/J-ITACE TI Stellaris Nu-Link PE micro ST-LINK Third-Party Driver TI MSP-FET TI XDS	Factory Settings Setup Interface Reset Connect during reset (default) Duration: 300 ms Delay after: 200 ms Target power Emulator Always prompt for probe selection © Leave on after debugging Switch off after debugging Switch off after debugging Serial no: Log communication \$PROJ_DIR\$\cspycomm.log
	OK Cancel

Click on the "Interface" tab.



Category:		Factory Settin
General Options		
Static Analysis		
Runtime Checking	Setup Interface	Trace Break points
	- Proho config	Probe configuration file
Output Converter	Probe coning	
Custom Build	Auto	
Linker	O From file	
Build Actions	O Explicit	CPU: Select
Debugger	1.1	
Simulator	Interface	Explicit probe configuration
CADI CMEIE DAD	JTAG	Multi-target debug system
E2/E2 Lite	OSWD	Target number (TAP or Multidrop ID): 0
GDB Server	OpITAG	Target with multiple CPUs
I-jet		CPU number on terget: 0
J-Link/J-Trace	Interface speed	
TI Stellaris	Auto data at use	JTAG scan chain contains non-Arm devices
Nu-Link	Auto detect V	Preceding bits: 0
PE micro		
ST-LINK		
TINED-Party Driver		

Under "Interface" select the "SWD" radio button.





Click on the "Trace" tab.



Options for node "Simple_LEE)_Blink"		×
Options for node "Simple_LEU Category: General Options Static Analysis Runtime Checking C/C++ Compiler Assembler Output Converter Custom Build Linker Build Actions Debugger Simulator CADI CMSIS DAP E2/E2 Lite GDB Server I-jet J-Link/J-Trace TI Stellaris Nu-Link PE micro ST-LINK Third-Party Driver TI MSP-FET TI XDS	Setup Interface Trace Brace data collection Mode: Auto Buffer limit: 100% SWO protocol Auto Manchester UART	eakpoints Allow ETB CPU clock: 110.0 SW0 prescaler: Auto SW0 on the TraceD0 pin	Factory Settings
		ОК	Cancel

Under the "Mode:" drop down box, select "None"



Category:			Factory Settings
General Options Static Analysis Runtime Checking C/C++ Compiler Assembler Output Converter Custom Build Linker Build Actions Debugger Simulator CADI CMSIS DAP E2/E2 Lite GDB Server	Setup Interface Trace Trace data collection Mode: Auto Buffer limit: None Serial (S Parallel SWO protocol On-Chip Auto Auto Auto Manchester	Breakpoints Breakpoints Allow ETB CPU clock: 110.0 SWO prescaler: Auto	MHz
I-jet J-Link/J-Trace TI Stellaris Nu-Link PE micro ST-LINK Third-Party Driver TI MSP-FET TI MSP	UUART	SWO on the TraceD0 pi	n

Click on the "Ok" button at the bottom of the window.



Category:								Factory Setting
General Options								
Static Analysis								
C/C++ Compiler	Setup	Interface	Trace	Breako	oints			
Assembler	Probe	config —	Probe	configur	ation file			
Output Converter		coning		verride de	fault			
Custom Build		ло		indo de	- Crunc			
Linker	⊖ Fn	om file						
Build Actions	ОБ	plicit	1	CPU:			Select	
Debugger	Interfa	Ca	Evolic	it prohe (configuratio	n		
CADI				ulti torract	debug gurd	tom		
CMSIS DAP		AG		Juli-Larget	debug syst	lem		
E2/E2 Lite	🔵 SI	ND	T.	arget nun	nber (TAP o	or Multidi	rop ID): U	
GDB Server	○ cJ	TAG		Target	with multiple	e CPUs		
I-jet				CPU r	umber on t	arget:	0	
J-Link/J-Trace	Interface	e speed			can obain (containe	non-Am de	vices
11 Stellaris	Auto d	etect 🗸		JUIAGS		JUNICALINS		vices
PE micro				Precei	ding bits:		U	
ST-LINK								
Third-Party Driver								
TI MSP-FET								
TI XDS								

Next, click on the Green "Download and Debug" button.



Project - IAR Embedded Workbench IDE - A	rm 9.40.1		
File Edit View Project ST-Link Tools	Window Hel	lp	
1 n n 🗖 🗖 🗖 🕹 🐰 🛍 ñ 🗏 5 d			
Workspace $\checkmark \mp X$	main.c. x		
	mainfl		
Simple_LED_Blink ~	97		
Files 🌣	98	/* Initialize all configured peripherals */	
🗆 🌒 Simple_LED_Blink - Simpl 🗸	99	<pre>MX_GPI0_Init();</pre>	
- 🖵 🛋 Application	100	MX_ADC1_Init();	
HE EWARM	101	MX_LPUARI1_UARI_INIT();	
└─── 🖬 User	102	MX_UCPD1_Tnit():	
L-🖓 🛑 Core	104	MX USB PCD Init();	
HI 🔂 main.c	105	/* USER CODE BEGIN 2 */	
Here is stm32l5∞_hal_msp.c	106		
	107	/* USER CODE END 2 */	
	100	/* Infinite Loop */	
	110	/* USER CODE BEGIN WHILE */	
	111	while (1)	
	112 日	0	
	113	/* USER CODE END WHILE */	
	115	TAL_DELAY(500),	
	116	HAL GPIO WritePin(LED GREEN GPIO Port, LED GREEN Pin, GPIO PIN SET);	
	117		
	118	HAL_Delay(500);	
	119		
	120	HAL_GPIO_WritePin(LED_GREEN_GPIO_Port, LED_GREEN_Pin, GPIO_PIN_RESET);	
	122		
Simple_LED_Blink			
Build			
Messages			File
Simple_LED_Blink.out			
Simple_LED_Blink.hex			
Total number of errors: 0			
Total number of warnings: 0			
Resolving dependencies			
Build succeeded			
Ready			

The compile and download to the target board will begin.

DDE END Ø */	
۶ The application entry الما int	point.
(oid)	
CODE BEGIN 1 */ CODE END 1 */ Configuration	Busy Restoring Desktop: Find In SWO Trace */
t of all peripherals, In t(); CODE BEGIN Init */	itializes the Flash interface and the Systick. */

Once the download has been successful, the EW software is ready to begin the debug process.



10000 B B V 000 5	CL		1.0	
Workspace V	× ma			Disassembly
		0	fe	Canal
Simple_LED_Blink	~		155	00 10:
Files © Simple_LED_Blink - Simpl +	→	<pre>a traite ved # V0_COTO_Init(void); traite ved # V0_COTO_Init(void); 3 /* USER CODE EAD PFP */ 4 /* USER CODE EAD PFP */ 5 /* Private user code 7 /* Private user code 7 /* Private user code 7 /* USER CODE EAD 0 */ 7 /* USER CODE EAD 1 */ 7 /* USER CODE EAD INIT */ 7 /* Configure the system clock */ 7 SystemClock_CODE BGCIN Split */ 7 /* USER CODE EAD Split */</pre>		Diessemby 0x800°1b10:0x800 0x800°1b10:0x800 0x800°1b10:0x800 0x800°1b10:0x800 0x800°1b10:0x8000 0x800°1b10:0x8000 0x800°1b10:0x8000 0x800°1b10:0x800 0x800°1b10:0x800 0x800°1b10:0x800 0x800°1b10:0x800 0x800°1b10:0x800 0x800°1b10:0x800 0x800°1b10:0x800 0x800°1b20:0x800 0x800°1b20:0x800 0x800°1b20:0x800 0x800°1b20:0x800 0x800°1b20:0x800 0x800°1b20:0x800 0x800°1b20:0x800 0x800°1b20:0x800 0x800°1b20:0x800 0x800°1b20:0x800 0x800°1b20:0x800 0x800°1b20:0x800 0x800°1b20:0x800 0x800°1b20:0x800 0x800°1b20:0x800 0x800°1b20:0x800 0x800°1b20 0x800°1b20:0x800 0x800°1b20 0x800°1b20:0x800 0x800°1b20 0x80
Simple_LED_Blink			P	· · · · ·
Debug Log				→ 0 ×
Log Sun Jun 11, 2023 18:31:34: : Calling Sun Jun 11, 2023 18:31:34: : Target Sun Jun 11, 2023 18:31:34: : INFO: Sun Jun 11, 2023 18:31:34: : INFO:	eset scri eset onfigurin ace 'No	SoftwareReset race using None' setting I'mode is used - trace is disabled.		^

Here, click on the White "Go" button.

Workspace 👻 A 🗙	main.c 🗙	Disassembly	+ a >
Simple_LED_Blink ~	nain() f(Go to:	
Files ● Comple_LED_Bink - Simpl ✓ H = Aplication H = Cover H = Cover	<pre>set static void MK UCPC Int(void); static void MK UCPC Int(void); d voids Cool BECD MP v /* USER COOL BOD MP v /* USER COOL BOD MP v /* USER COOL BOD M */ /* USER COOL BOD</pre>	Disessendy 0400°1b10 0400°1b14 0400°1b14 0400°1b14 0400°1b16 0400°1b16 0400°1b10 0400°1b2	0x500x 0x500 0x500 D.BTTGC-XH 0x500 0x400s 0x400s 0x4000 0x4000 0x4000 0x4000 0x4000 0x4001 0x4770 0x5089 0x100 0x480 0x100 0x100 0x10 0x100 0x100 0x100 0x100 0x1000 0x1000 0x1000 0x1000
Simple_LED_Blink		4	
Debug Log		2	¥ 0.3
Log Sun Jun 11, 2023 18:31:34: Calling rese Sun Jun 11, 2023 18:31:34: Terget rese Sun Jun 11, 2023 18:31:34: INFO: Canfig Sun Jun 11, 2023 18:31:34: INFO: Canfig Sun Jun 11, 2023 18:31:34: INFO: Canfig	cript SoftwareReset ing tace using "None'setting Vone' mode is used - trace is disabled. measure current when fjel is not powering the target.		Î

Once the code is running, the Green LED, LD1 will blink on and off with 500 ms between state changes.


MCU Programmers User Manual



Once you see the LED blink on and off, you have successfully completed your first project using IAR EW and the SWD Blaster.

Congratulations!

It is now time to create more advanced projects. Try adding the Red LED blink on and off at LD2.

2.4 Using NXP Board Support Package

TBD

2.5 Using Texas Instruments Board Support Package **TBD**

3 IAR Embedded Workbench Tools TBD



MCU Programmers User Manual