

Programming and Debug Tools Release Notes v2021.2

Introduction

Microchip's Programming and Debug Tools installer is intended for laboratory and production environments where Libero® is not installed. The installer allows you to install the following tools:

- FlashPro Express
- SmartDebug
- Job Manager

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1. Programming/Debug Tools Release Notes v2021.2

1.1 Device Support

Programming and Debug Tools v2021.2 supports IGLOO[®]2, SmartFusion[®]2, RTG4[™], and PolarFire[®] families, as well as preliminary support of PolarFire SoC.

1.2 What's New in Programming and Debug Tools v2021.2

Programming and Debugging Tools v2021.2 includes the following new features and enhancements.

1.2.1 Bitstream Digest

Prior to Libero SoC v2021.2, the calculated digest of each bitstream component (Fabric, Security, eNVM, etc.) that gets logged during bitstream export did not include metadata such as the software version, design version, design name, and advanced bitstream options for PolarFire SoC. Libero SoC v2021.2 calculates the digest over the entire bitstream, including the metadata. This is embedded inside the bitstream in plaintext, logged during bitstream generation and export tools in Libero SoC, and shown in the FlashPro Express UI by hovering over the info icon of the device. This feature is available for SmartFusion2, IGLOO2, PolarFire, RT PolarFire, and PolarFire SoC families.

For more details, see the Libero SoC Design Flow User Guide for the specific device family.

1.2.2 SPI Flash Programming Enhancements

Libero SoC v2021.2 adds the following capabilities to SPI Flash programming.

- Support for loading STAGE3 initialization client when adding SPI Bitstream client in SPI Flash. Support for exporting STAGE3 file along with SPI bitstream file in the Export Bitstream dialog box.
- Support for loading binary image (.bin) SPI Flash clients.
- Programming support of Gigabit SPI Flash devices: GD25S512 and GD25Q256.
- Programming support of Micron MT25QL02G SPI Flash device.
- Programming support of Winbond W25Q128JWYIQ SPI Flash device.

For more information, see the Libero SoC Design Flow User Guide.

1.2.3 Secure Production Programming Solution Key Rotation Flow

Libero SoC v2021.2 adds the ability to securely update/rotate keys in Secure Production Programming Solution (SPPS) flows for SmartFusion2 and IGLOO2 devices.

For more details, see the Job Manager User Guide.

1.3 Resolved Issues

The following table lists the customer-reported defects and enhancement requests resolved in Libero SoC v2021.2 that have case numbers. Resolution of previously reported "Known Issues and Limitations" are also noted in this table.

Table 1-1. Customer-reported Defects and Enhancement Requests with Case Numbers

Case Number	Description	Resolution
493642-2828855802	Unused encryption keys (UEK2, UEK3) must be disabled in Key Mode Policy.	In the key Mode Policy UI check boxes for unused UEK2 and UEK3 (if UEK3 is supported for the device) are disabled and "off." When open existing designs with key mode policy set to "enable" for unused UEK2/UEK3 keys, the policy resets to disabled, programming tools that generate bitstream are invalidated, and the user is informed about changes and asked to re-run tools. Newly exported TCL scripts set UEK2/UEK3 key mode policy parameters to "false" (disabled) if the keys are not used. Existing TCL scripts that enable key mode policy for unused UEK2/UEK3 keys will error-out.
493642-2822456042	Show SPI Flash client type in design initialization and data memory report.	The SPI Flash client type is shown in the report.
493642-2863195365	Exported SPI flash .bin file is unusable when programming SPI without Flash Pro Express.	This fixes an issue introduced in Libero SoC v2021.1 where the exported SPI Flash *.bin file was not useable by third-party solutions. Libero SoC v2021.2 exports SPI Flash images in raw format to allow for third-party use.
493642-2694971261	Device Info log displays wrong CheckSum and Design name in SPI Slave programming.	Issue resolved by inspecting both TX and RX busy bits of the SPI buffers.
493642-2812502249	FlashPro6 support of W25Q128JWYIQ SPI memory device.	See section 1.2.2 SPI Flash Programming Enhancements.
493642-2695952363, 493642-2698474573	Support for Gigadevice flash memory.	See section 1.2.2 SPI Flash Programming Enhancements.
493642-2816191143	Error message correction needed.	Libero/FlashPro Express now displays the correct message for signal integrity issues.
493642-2780147696	Device info log should display Step Mark, firmware version.	DEVICE_INFO now shows Die Revision and Die Firmware Version, as requested.
493642-2663319510	Incorrect BSR description on SC_SPI_SDI / SDO of SmartFusion2 and IGLOO2 BSDL file.	SmartFusion2 and IGLOO2 BSDL files now have correct descriptions for SC_SPI_SDI and SC_SPI_SDO.
493642-2855024392	PolarFire: Print TVS_MONITOR status appropriately.	DEVICE_INFO now prints TVS status for each of the four channels only if its valid.

continued			
Case Number	Description	Resolution	
493642-2839083505	Chain stp support.	Added support to export chain stapl that programs single Microsemi device in a JTAG chain.	

Table 1-2. Customer-reported Defects and Enhancement Requests (No Case Numbers)

Description	Resolution
PolarFire: SPI: add encryption status in the CDIDAM.	A new User Security column has been added to the SPI Flash clients table.
FlashPro 6: Support Micron MT25QL02G SPI-Flash.	See section 1.2.2 SPI Flash Programming Enhancements.
Enable SPI-Flash Programming using customer STAPL file attached to IGLOO2 device.	Fixed FlashPro Express to allow loading custom stp without device density/package, enabling customers to embed custom JTAG commands that will work on any device.

1.4 Known Issues and Limitations

This topic lists known issues for SmartDebug and programming, which allow customers to keep fabric in operation state during programming and skip device startup sequence after programming.

Table 1-3. Known Issues and Limitations Associated with Libero SoC v2021.2

Family	Description
	SmartDebug
	When a dual-mode PCIe design is considered in SmartDebug, the following issues are observed in the PCIe debug feature:
PolarFire, PolarFire SoC	 For dual-PCle designs with PCl0 and PCle1 controllers, only PCle1 appears in the UI. PCle0 is not shown.
Totali lie, i otali lie 300	 When PCle0 Lane is selected, the LTSSM state is shown for PCle1. The LTSSM state for PCle0 is not shown.
	 Data Rate, Link Width, and other settings are shown for PCle1 only, but not for PCle0.
	Programming
All families	When performing any action with FlashPro 6, the following error might occur: Error: Linux FP6 programmer - cyusb_bulk_transfer error.
	This error could be caused by the programmer being out of sync with the software application.
	Workaround: Unplug the USB cable from either the programmer or the host PC, and then reconnect it to reset the programmer.

continued	Description
All families	When performing any action with the iCicle kit, the following error might occur: Error: Failed to open eFP6 HID handle. This error could be caused by the programmer being out of sync with the software application. Workaround: Unplug the USB cable from either the programmer or the host PC, and then reconnect it to reset the programmer.
PolarFire SoC	eFP6: Some testcases fail with the following error message: Error: Failed to send data to eFP6. Err = -4 Error: eFP6 connection failed. Workaround: Power cycle the iCicle board and rescan the programmers.
PolarFire SoC	For PolarFire SoC Libero designs that contain eNVM, running VERIFY_DIGEST, the device will fail after programming with the error message eNVM digest verification: FAIL. Workaround: Deselect the procedure DO_ENABLE_ENVM in the VERIFY_DIGEST action.
PolarFire SoC	For PolarFire SoC Libero designs that generate or export eNVM-only bitstreams, the generated bitstream file/job will include an ERASE action that is not applicable and does nothing. Affected releases are Libero v12.4 and later. For Libero v12.6, this issue applies for eNVM only cases with no eNVM sanitization option configured.
PolarFire SoC	For Libero designs with sNVM clients configured with no custom user security options selected and program this design on device, modifying an sNVM client content and sNVM client Fabric/MSS read/write permissions and running VERIFY action fails with the error message Failed to verify Security instead of Failed to verify SNVM. Affected releases are Libero v12.4 and later.
SmartFusion2, IGLOO2, RTG4, PolarFire, PolarFire SoC	Some users see the following error message during programming: Error: programmer 'S201QVCGH': device 'RT4G150': FP5 Scan: JTAG_ExecuteCommandSequence FP5: Error code = 4 - General device IO error. Error: programmer 'S201QVCGH': device 'RT4G150': Executing action VERIFY FAILED. Error: programmer 'S201QVCGH': FP5 SyncWithProgrammerAtPort: OpenSpecifiedHiSpeedDeviceBySerialNumber - PortB FP5: Error code = 2 - Device not found. This is most likely a USB connection issue. If for some reason the connection is interrupted, this error occurs. The error message may be different, depending on where the packet is dropped during verify. However, the error code will always be set to 4, which is "General device IO error."

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continued	
Family	Description
SmartFusion2, IGLOO2	Export Bitstream with SVF checked may fail in the Libero v2021.2 release. The actions do_read_prog_info() and dump_programming_interface() are not defined for SVF in the programming algorithm, but are always referenced in the PROGRAM action. Do not reference either function in the PROGRAM action when the file exported is SVF.
Ins	tallation and System Limitations
FlashPro6	Users with FlashPro6 drivers previously installed on their system may see the following message at the end of the installation:
	The installation of Program Debug Tool v2021.2 is finished, but some errors occurred during the install. Please see the installation log for details.
	Resolution: Uninstall existing FlashPro6 drivers and restart the system before installing Libero SoC version 2021.2. If the software is already installed, ignore the above message if installation logs do not report errors.

2. **System Requirements**

The Programming and Debug Tools v2021.2 release has the following system requirements:

- 64-bit OS
 - Windows 10 OS
 - Red Hat Enterprise Linux 7.2-7.6 and Red Hat Enterprise Linux 8.x
 - CentOS 7.2-7.6
 - OpenSUSE Leap 42.3 (SLES 12.3 equivalent)
 - Ubuntu 18.04 (Identify and Modelsim ME Pro do not directly support the Ubuntu platform. FlashPro5 programmer is not supported with Ubuntu. The Job Manager tool is not supported.)
- · A minimum of 16 GB RAM

Note: Setup instructions for using Programming and Debug Tools v2021.2 on Red Hat Enterprise Linux OS or CentOS are available in Libero SoC Linux Environment Setup User Guide.

3. Download Libero SoC v2021.2 Programming and Debug Tools

Click the following links to download Programming and Debug Tools v2021.2 on Windows and Linux operating systems:

- Program & Debug (Linux)
- Program & Debug (Windows)

Note: Installation requires administrator privileges to the system.

4. Revision History

Revision	Date	Description
A	08/2021	Initial Revision

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Contact Customer Service for non-technical product support, such as product pricing, product upgrades, update information, order status, and authorization.

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- · Fax, from anywhere in the world, 650.318.8044

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- Technical Support

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 outside the operating specifications contained in Microchip's Data Sheets. Attempts to breach these code
 protection features, most likely, cannot be accomplished without violating Microchip's intellectual property rights.
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- Neither Microchip nor any other semiconductor manufacturer can guarantee the security of its code. Code
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