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## Programming and Debug Tools Release Notes v2021.1

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### Introduction

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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. Libero SoC Software Release Notes

## 1.1 Device Support

Programming and Debug Tools v2021.1 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 v2021.1

Programming and Debugging Tools v2021.1 includes the following new features and enhancements.

### 1.2.1 PolarFire/PolarFire SoC SPI-Flash Partial Programming in Libero

With Libero v2021.1, users can program clients anywhere within the memory space of the target SPI Flash memory device without changing the rest of the content already programmed in the device.

Because data is erased in blocks or subsectors, some data in outside the targeted memory region must be erased and restored prior to programming the specified client. This applies to subsectors on the top and bottom of the image.

As a result, observe the following guidelines when programming clients that are not subsector or block aligned:

- Programming time will increase slightly, depending on the subsector/block size. Most devices have a subsector or block size of 4096 bytes. However, certain devices from Cypress/Spansion have large sectors of 64 KByte or 256 KBytes, which will increase programming times significantly. To avoid increased programming times, specify a target address that is on a subsector/block boundary. For more information, see the specific SPI-Flash specification.
- If an erase operation fails to restore the data outside of the client memory region, this data will be lost forever and cannot be recovered. Therefore, exercise care to protect critical data by making sure all new clients do not use any memory location within the subsectors/blocks occupied fully or partially by the critical data.

### 1.2.2 Export Bitstream Advanced Options for SPI Files

Advanced options are now available for PolarFireSoC devices only.

The advanced options are always enabled if SPI file format is selected in the Export Bitstream dialog box; otherwise, the advanced options are disabled.

## 1.3 Resolved Issues

The following table lists the customer-reported defects and enhancement requests resolved in Libero SoC v2021.1 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
493642-2744828403	Providing support for JTAG reading of data integrity bits in PolarFire.	Users can now see the Data Integrity Bits value when running the <code>DEVICE_INFO</code> action in Libero and FlashPro Express.
493642-2796571518	Support for the FlashPro TCL command <code>enable_prg_type</code> support for FlashPro 5.	The command can be used to enable FlashPro 5, FlashPro 6, and embedded FlashPro 6.

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Case Number	Description	Resolution
493642-2788133376	SPI Data Storage client with Filled with 1s option is not programming the external SPI properly.	The Filled with 1s option is now supported.
493642-2771623606	PolarFire SPM: Enhance SPM GUI to clarify programming and debugging restrictions.	The <b>Disable Auto Programming and IAP Services</b> option moved from the <b>Disable programming interfaces</b> group. The option behavior has not changed

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

Description	Resolution
Instantiating a tamper macro to reset a device by asserting its <code>RESET</code> input without configuring or enabling its features causes Libero to generate an error when the <code>.spi</code> file from this image is used to configure design initialization. The error message says that the golden image cannot contain security. The tamper macro has no security feature enabled (only reset input/functionality is used) and no silicon signature and customer security is enabled. Although the SPI bitstream should not contain any security components, it does.	Users can now load an SPI file as a Recovery/Golden client in the configure design initialization tool when exported from a Libero design that instantiates the tamper macro without enabling any features.

## 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 v2021.1**

Family	Description
<b>SmartDebug</b>	
PolarFire, PolarFire SoC	<p>When a dual-mode PCIe design is considered in SmartDebug, the following issues are observed in the PCIe debug feature:</p> <ul style="list-style-type: none"> <li>For dual-PCIe designs with <code>PCI0</code> and <code>PCIe1</code> controllers, only <code>PCIe1</code> appears in the UI. <code>PCIe0</code> is not shown.</li> <li>When <b>PCIe0 Lane</b> is selected, the <code>LTSSM</code> state is shown for <code>PCIe1</code>. The <code>LTSSM</code> state for <code>PCIe0</code> is not shown.</li> <li>Data Rate, Link Width, and other settings are shown for <code>PCIe1</code> only, but not for <code>PCIe0</code>.</li> </ul>
<b>Programming</b>	
PolarFire	<p>Libero v2021.1 supports the following Micron SPI Flash memory devices:</p> <ul style="list-style-type: none"> <li>Using FlashPro5: MT25QL01G only</li> <li>Using FlashPro6: all members of N25Q and MT25Q device families</li> </ul> <p>For information about support for Flash memory devices from other vendors and device families using FlashPro6, contact Microchip Technical Support.</p>

## Libero SoC Software Release Notes

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Family	Description
PolarFire, PolarFire SoC	<p>For Libero releases v12.6 and earlier, there are two issues with SPI-Flash programming using FP3, FP4, and FP5 programmers:</p> <ol style="list-style-type: none"> <li>1. Erase operations used during standalone erase as well as program actions erases only memory region 0x0 - 0x1FFFFFF instead of the memory regions for the entire device.</li> <li>2. Polling operations are not performed properly, causing erase/program operations to show a false pass status.</li> </ol> <p>These issues are not applicable to eFP6/FP6 programmers.</p>
PolarFire, PolarFire SoC	<p>Although sNVM and eNVM are sanitized when enabled, since the action is part of the bitstream, FlashPro 6 does not report a <code>Sanitizing sNVM...</code> or <code>Sanitizing eNVM...</code> message during erase operations in a PPD flow.</p>
PolarFire and PolarFire SoC	<p>Running the programming SPI Flash actions tool fails if Generate Bitstream has not been run and displays the following error message: Please re-run 'Generate Bitstream' tool and then execute 'Run Programming Device Action' tool. This affects PolarFire in Libero versions 12.1 through 12.5 and PolarFire SoC in Libero versions 12.5 and 12.6.</p> <p>Workaround: Run the Generate Bitstream tool and run the programming SPI Flash actions tool again.</p>
PolarFire SoC	<p>eFP6: some testcase fails with the following error message:            Error: Failed to send data to eFP6. Err = -4 Error: eFP6 connection failed.</p>
PolarFire SoC	<p>For PolarFire SoC Libero designs that contain eNVM, running <code>VERIFY_DIGEST</code> after programming device fails and displays the message <code>eNVM digest verification: FAIL</code>.</p> <p>Workaround: Deselect the procedure <code>DO_ENABLE_ENVM</code> in the <code>VERIFY_DIGEST</code> action.</p>
PolarFire SoC	<p>For PolarFire SoC Libero designs that generate or export eNVM-only bitstreams, the generated bitstream file/job includes an <code>ERASE</code> action that is not applicable and does nothing.</p> <p>This issue affects Libero versions 12.4 and later. For Libero version 12.6, this issue applies for eNVM only case + no eNVM sanitization option.</p>
PolarFire SoC	<p>For Libero designs with sNVM clients configured, with no custom user security options selected, and whose design is programmed on the device, modifying sNVM client content and sNVM client Fabric/MSS read/write permissions, running a <code>VERIFY</code> action fails and displays the message <code>Failed to verify Security instead of Failed to verify SNVM</code>.</p> <p>This issue affects Libero versions 12.4 and later.</p>

.....continued	
Family	Description
SmartFusion, RTG4, PolarFire, PolarFire SoC	<p>Some users see the following error message during programming:</p> <pre>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.  .....</pre> <p>This is most likely a USB connection issue. If for some reason the connection is interrupted, this error occurs.</p> <p>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.</p>
SmartFusion2, IGLOO2	In FlashPro 5, the Device Info log shows the wrong checksum and design name during SPI Slave programming.
SmartFusion2, IGLOO2	If UEK2 is not selected in the SPM main window, the Key Mode Policy window still allows users to disable UEK2. This is not the correct behavior. UEK2 in Key Mode Policy should be grayed out if UEK2 is not entered.
Installation and System Limitations	
FlashPro6	<p>Users with FlashPro6 drivers previously installed on their system may see the following message at the end of the installation:</p> <pre>The installation of Program Debug Tool v12.5 is finished, but some errors occurred during the install. Please see the installation log for details.</pre> <p>Resolution: Uninstall existing FlashPro6 drivers and restart the system before installing Libero SoC version 12.5. If the software is already installed, ignore the above message if installation logs do not report errors.</p>

## 1.5 System Requirements

The Programming and Debug Tools v2021.1 release has the following system requirements:

- 64-bit OS
  - Windows 7 or Windows 10 OS
  - RedHat Enterprise Linux 6.6-6.11, Red Hat Enterprise Linux 7.2-7.6, and Red Hat Enterprise Linux 8.2
  - CentOS 6.6 - 6.11, CentOS 7.2 - 7.6, and CentOS 8.2
  - Ubuntu 18.04
    - Note:** FlashPro5 is not supported with Ubuntu.
  - OpenSUSE Leap 42.3 (SLES 12.3 equivalent)
- A minimum of 16 GB RAM

**Note:** Setup instructions for using Programming and Debug Tools v2021.1 on Red Hat Enterprise Linux OS or CentOS are available in [Libero SoC Linux Environment Setup User Guide](#).

### 1.6 Download Libero SoC v2021.1 Programming and Debug Tools

Click the following links to download Programming and Debug Tools v2021.1 on Windows and Linux operating systems:

- [Program & Debug \(Linux\)](#)
- [Program & Debug \(Windows\)](#)

**Note:** Installation requires administrator privileges to the system.

**2. Revision History**

Revision	Date	Description
A	04/2021	Initial Revision



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- From the rest of the world, call **650.318.4460**
- Fax, from anywhere in the world, **650.318.8044**

#### 3.2 Customer Technical Support

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- Microchip is willing to work with any customer who is concerned about the integrity of its code.
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