



PolarFire SoC MSS Configurator (Preproduction) v2021.1

Release Notes

Introduction

To provide a seamless experience for both embedded software developers targeting the MSS and the hardware engineers developing a hardware/software solution using the MSS and the FPGA array fabric, the MSS configurator application provides a common tool to configure the PolarFire SoC MSS platform that can be used by both the software engineer and/or the FPGA hardware engineer.

The MSS configurator application can be installed as a stand-alone application or as part of the Libero SoC design tool suite, and provides the following features.

- Configuration of the MSS clocks
- Configuration of the MSS interfaces to the FPGA fabric
- Selection and assignment of the MSS peripherals to the MSS dedicated I/Os and/or the FPGA fabric dedicated peripheral interfaces
- Configuration of the MSS Bank voltages and I/O standards and attributes
- Configuration of the MSS DDR memories (DDR3/L, DDR4, LPDDR3, and LPDDR4)
- Enable the User Crypto processor for “S” devices
- Partition L2 memory into Cache, Loosely Integrated Memory (LIM), or Scratchpad
- Presets for the PolarFire SoC Icicle Kit – Bare Metal and Quad Core Linux
- Configuration of the MSS debug features
- Configuration of the Memory Partition and Protection

For details about:

- The high-level MSS architecture and its features, see the [PolarFire™ SoC product overview](#)
- This tool, see the [PolarFire SoC Standalone MSS Configuration User Guide](#).
- PolarFire SoC MSS simulation, see the [PolarFire SoC MSS Simulation User Guide](#).

Use the following links to download the MSS Configurator v2021.1 software:

- [Stand-alone MSS configurator installer \(Linux\)](#)
- [Stand-alone MSS configurator installer \(Windows\)](#)

Note: Windows installations require administrative privileges.

Table of Contents

Introduction.....	1
1. Software Features and Enhancements.....	3
2. System Requirements.....	4
2.1. Supported 64-bit Operating Systems.....	4
2.2. Random-Access Memory (RAM) Requirements.....	4
3. Known Issues.....	5
3.1. Known Issues and Limitations.....	5
4. References.....	6
5. Revision History.....	7
6. Microchip FPGA Technical Support.....	8
6.1. Customer Service.....	8
6.2. Customer Technical Support.....	8
6.3. Website.....	8
6.4. Outside the U.S.....	8
The Microchip Website.....	9
Product Change Notification Service.....	9
Customer Support.....	9
Microchip Devices Code Protection Feature.....	9
Legal Notice.....	10
Trademarks.....	10
Quality Management System.....	11
Worldwide Sales and Service.....	12

1. Software Features and Enhancements

- DDR Physical Memory Partition.
- Physical Memory Protection (PMP) for Processors.
- Memory Protection Unit (MPU) for Non-CPU Masters.
- Addition of Streaming Interface for Crypto.
- Option to exclude SD pins in Peripherals when not in use.

2. System Requirements

2.1 Supported 64-bit Operating Systems

- 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
- OpenSUSE Leap 42.3 (SLES 12.3 equivalent)
- Ubuntu 18.04 (Synopsys and Mentor do not directly support the Ubuntu platform. FlashPro5 programmer is not supported with Ubuntu.)

2.2 Random-Access Memory (RAM) Requirements

Minimum of 4 GB RAM

3. Known Issues

3.1 Known Issues and Limitations

The following table lists known issues and limitations associated with MSS Configurator v2021.1.

Table 3-1. Known Issues and Limitations Associated with MSS Configurator v2021.1

Family	Description
PolarFire SoC	<p>A bare metal example project using a platform repository release tag earlier than 2020.12 must be updated to release 2020.12 or later when using an xml configuration file generated using MSS Configurator v2.0 or later.</p> <p>Otherwise, the SoftConsole compilation fails with the following error:</p> <pre>The following definitions are missing LIBERO_SETTING_WAY_MASK_M0 LIBERO_SETTING_WAY_MASK_M1 LIBERO_SETTING_WAY_MASK_M2 LIBERO_SETTING_WAY_MASK_M3 LIBERO_SETTING_WAY_MASK_M4</pre> <p>Workaround: Update the platform in your SoftConsole project with release 2020.12 or later of the platform repository. You can download it from: https://github.com/polarfire-soc/platform.</p> <p>Alternatively, you can manually update your MPFS HAL to add the following definitions to the <code>/platform_config/mpfs_hal_config/mss_sw_config.h</code> file in your project:</p> <pre>#define LIBERO_SETTING_WAY_MASK_M0 0x00000000UL #define LIBERO_SETTING_WAY_MASK_M1 0x00000000UL #define LIBERO_SETTING_WAY_MASK_M2 0x00000000UL #define LIBERO_SETTING_WAY_MASK_M3 0x00000000UL #define LIBERO_SETTING_WAY_MASK_M4 0x00000000UL</pre>
PolarFire SoC	<p>While using a platform repository older than 2021.02 release, the L2Cache configuration is set to fixed default values.</p> <p>Workaround: Use the platform repository release 2021.02 or later in the embedded software project to use this new feature added in MSS Configurator v2.0 and later.</p>
PolarFire SoC	<p>While using a platform repository older than 2021.04 release, the Memory Partition and Protection configuration is not supported.</p> <p>Workaround: Use the platform repository release 2021.04 or later in the embedded software project to use this new feature added in MSS Configurator v2021.1 and later.</p>

4. References

See the following reference documents for further details:

- Configuration of the MSS clocks.
 - For detailed information about the MSS clocking features, see [UG0913: PolarFire SoC FPGA Clocking Resources User Guide](#).
- Configuration of the MSS interfaces to the FPGA fabric.
 - For detailed information about the MSS Fabric Interface Controller (FIC) features, see [UG0880: PolarFire SoC FPGA Microprocessor Subsystem \(MSS\) User Guide](#).
- Selection and assignment of the MSS peripherals to the MSS dedicated I/Os and/or the FPGA fabric dedicated peripheral interfaces.
 - For detailed information about the MSS Peripherals features, see [UG0886: PolarFire SoC FPGA Peripherals User Guide](#).
- Configuration of the MSS Bank voltages and I/O standards and attributes.
 - For detailed information about the MSS Banks and I/Os features, see [UG0916: PolarFire SoC FPGA I/O User Guide](#).
- Configuration of the MSS DDR memories (DDR3/L, DDR4, LPDDR3, and LPDDR4).
 - For detailed information about the MSS DDR4, DDR3, LPDDR3, and LPDDR4 features, see [UG0906: PolarFire SoC FPGA DDR Memory Controller User Guide](#).
- Configuration of the MSS debug features.
 - For detailed information about the MSS debug features, see [UG0888: PolarFire SoC FPGA Trace and Debug User Guide](#).

5. Revision History

Revision	Date	Description
C	04/2021	Contains updated content to reflect v2021.1.
B	12/2020	Contains updated content to reflect v2.0.
A	11/2020	Initial Revision

6. Microchip FPGA Technical Support

Microchip FPGA Products Group backs its products with various support services, including Customer Service, Customer Technical Support Center, a website, and worldwide sales offices. This section provides information about contacting Microchip FPGA Products Group and using these support services.

6.1 Customer Service

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

- From North America, call **800.262.1060**
- From the rest of the world, call **650.318.4460**
- Fax, from anywhere in the world, **650.318.8044**

6.2 Customer Technical Support

Microchip FPGA Products Group staffs its Customer Technical Support Center with highly skilled engineers who can help answer your hardware, software, and design questions about Microchip FPGA Products. The Customer Technical Support Center spends a great deal of time creating application notes, answers to common design cycle questions, documentation of known issues, and various FAQs. So, before you contact us, please visit our online resources. It is very likely we have already answered your questions.

You can communicate your technical questions through our Web portal and receive answers back by email, fax, or phone. Also, if you have design problems, you can upload your design files to receive assistance. We constantly monitor the cases created from the web portal throughout the day. When sending your request to us, please be sure to include your full name, company name, and your contact information for efficient processing of your request.

Technical support can be reached at soc.microsemi.com/Portal/Default.aspx.

For technical support on RH and RT FPGAs that are regulated by International Traffic in Arms Regulations (ITAR), log in at soc.microsemi.com/Portal/Default.aspx, go to the **My Cases** tab, and select **Yes** in the ITAR drop-down list when creating a new case. For a complete list of ITAR-regulated Microchip FPGAs, visit the ITAR web page.

You can track technical cases online by going to [My Cases](#).

6.3 Website

You can browse a variety of technical and non-technical information on the Microchip FPGA Products Group [home page](#), at www.microsemi.com/soc.

6.4 Outside the U.S.

Customers needing assistance outside the US time zones can either contact technical support at (<https://soc.microsemi.com/Portal/Default.aspx>) or contact a local sales office.

Visit [About Us](#) for [sales office listings](#) and [corporate contacts](#).

The Microchip Website

Microchip provides online support via our website at www.microchip.com/. This website is used to make files and information easily available to customers. Some of the content available includes:

- **Product Support** – Data sheets and errata, application notes and sample programs, design resources, user's guides and hardware support documents, latest software releases and archived software
- **General Technical Support** – Frequently Asked Questions (FAQs), technical support requests, online discussion groups, Microchip design partner program member listing
- **Business of Microchip** – Product selector and ordering guides, latest Microchip press releases, listing of seminars and events, listings of Microchip sales offices, distributors and factory representatives

Product Change Notification Service

Microchip's product change notification service helps keep customers current on Microchip products. Subscribers will receive email notification whenever there are changes, updates, revisions or errata related to a specified product family or development tool of interest.

To register, go to www.microchip.com/pcn and follow the registration instructions.

Customer Support

Users of Microchip products can receive assistance through several channels:

- Distributor or Representative
- Local Sales Office
- Embedded Solutions Engineer (ESE)
- Technical Support

Customers should contact their distributor, representative or ESE for support. Local sales offices are also available to help customers. A listing of sales offices and locations is included in this document.

Technical support is available through the website at: www.microchip.com/support

Microchip Devices Code Protection Feature

Note the following details of the code protection feature on Microchip devices:

- Microchip products meet the specifications contained in their particular Microchip Data Sheet.
- Microchip believes that its family of products is secure when used in the intended manner and under normal conditions.
- There are dishonest and possibly illegal methods being used in attempts to breach the code protection features of the Microchip devices. We believe that these methods require using the Microchip products in a manner 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.
- Microchip is willing to work with any customer who is concerned about the integrity of its code.
- Neither Microchip nor any other semiconductor manufacturer can guarantee the security of its code. Code protection does not mean that we are guaranteeing the product is "unbreakable." Code protection is constantly evolving. We at Microchip are committed to continuously improving the code protection features of our products. Attempts to break Microchip's code protection feature may be a violation of the Digital Millennium Copyright Act. If such acts allow unauthorized access to your software or other copyrighted work, you may have a right to sue for relief under that Act.

Legal Notice

Information contained in this publication is provided for the sole purpose of designing with and using Microchip products. Information regarding device applications and the like is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications.

THIS INFORMATION IS PROVIDED BY MICROCHIP "AS IS". MICROCHIP MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, STATUTORY OR OTHERWISE, RELATED TO THE INFORMATION INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE OR WARRANTIES RELATED TO ITS CONDITION, QUALITY, OR PERFORMANCE.

IN NO EVENT WILL MICROCHIP BE LIABLE FOR ANY INDIRECT, SPECIAL, PUNITIVE, INCIDENTAL OR CONSEQUENTIAL LOSS, DAMAGE, COST OR EXPENSE OF ANY KIND WHATSOEVER RELATED TO THE INFORMATION OR ITS USE, HOWEVER CAUSED, EVEN IF MICROCHIP HAS BEEN ADVISED OF THE POSSIBILITY OR THE DAMAGES ARE FORESEEABLE. TO THE FULLEST EXTENT ALLOWED BY LAW, MICROCHIP'S TOTAL LIABILITY ON ALL CLAIMS IN ANY WAY RELATED TO THE INFORMATION OR ITS USE WILL NOT EXCEED THE AMOUNT OF FEES, IF ANY, THAT YOU HAVE PAID DIRECTLY TO MICROCHIP FOR THE INFORMATION. Use of Microchip devices in life support and/or safety applications is entirely at the buyer's risk, and the buyer agrees to defend, indemnify and hold harmless Microchip from any and all damages, claims, suits, or expenses resulting from such use. No licenses are conveyed, implicitly or otherwise, under any Microchip intellectual property rights unless otherwise stated.

Trademarks

The Microchip name and logo, the Microchip logo, Adaptec, AnyRate, AVR, AVR logo, AVR Freaks, BesTime, BitCloud, chipKIT, chipKIT logo, CryptoMemory, CryptoRF, dsPIC, FlashFlex, flexPWR, HELDO, IGLOO, JukeBlox, KeeLoq, Klear, LANCheck, LinkMD, maXStylus, maXTouch, MediaLB, megaAVR, Microsemi, Microsemi logo, MOST, MOST logo, MPLAB, OptoLyzer, PackeTime, PIC, picoPower, PICSTART, PIC32 logo, PolarFire, Prochip Designer, QTouch, SAM-BA, SenGenuity, SpyNIC, SST, SST Logo, SuperFlash, Symmetricom, SyncServer, Tachyon, TimeSource, tinyAVR, UNI/O, Vectron, and XMEGA are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

AgileSwitch, APT, ClockWorks, The Embedded Control Solutions Company, EtherSynch, FlashTec, Hyper Speed Control, HyperLight Load, IntelliMOS, Libero, motorBench, mTouch, Powermite 3, Precision Edge, ProASIC, ProASIC Plus, ProASIC Plus logo, Quiet-Wire, SmartFusion, SyncWorld, Temux, TimeCesium, TimeHub, TimePictra, TimeProvider, WinPath, and ZL are registered trademarks of Microchip Technology Incorporated in the U.S.A.

Adjacent Key Suppression, AKS, Analog-for-the-Digital Age, Any Capacitor, AnyIn, AnyOut, Augmented Switching, BlueSky, BodyCom, CodeGuard, CryptoAuthentication, CryptoAutomotive, CryptoCompanion, CryptoController, dsPICDEM, dsPICDEM.net, Dynamic Average Matching, DAM, ECAN, Espresso T1S, EtherGREEN, IdealBridge, In-Circuit Serial Programming, ICSP, INICnet, Intelligent Paralleling, Inter-Chip Connectivity, JitterBlocker, maxCrypto, maxView, memBrain, Mindi, MiWi, MPASM, MPF, MPLAB Certified logo, MPLIB, MPLINK, MultiTRAK, NetDetach, Omniscient Code Generation, PICDEM, PICDEM.net, PICKit, PICtail, PowerSmart, PureSilicon, QMatrix, REAL ICE, Ripple Blocker, RTAX, RTG4, SAM-ICE, Serial Quad I/O, simpleMAP, SimpliPHY, SmartBuffer, SMART-I.S., storClad, SQL, SuperSwitcher, SuperSwitcher II, Switchtec, SynchroPHY, Total Endurance, TSHARC, USBCheck, VariSense, VectorBlox, VeriPHY, ViewSpan, WiperLock, XpressConnect, and ZENA are trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

SQTP is a service mark of Microchip Technology Incorporated in the U.S.A.

The Adaptec logo, Frequency on Demand, Silicon Storage Technology, and Symmcom are registered trademarks of Microchip Technology Inc. in other countries.

GestIC is a registered trademark of Microchip Technology Germany II GmbH & Co. KG, a subsidiary of Microchip Technology Inc., in other countries.

All other trademarks mentioned herein are property of their respective companies.

© 2021, Microchip Technology Incorporated, Printed in the U.S.A., All Rights Reserved.

ISBN:

Quality Management System

For information regarding Microchip's Quality Management Systems, please visit www.microchip.com/quality.

Worldwide Sales and Service

AMERICAS	ASIA/PACIFIC	ASIA/PACIFIC	EUROPE
<p>Corporate Office 2355 West Chandler Blvd. Chandler, AZ 85224-6199 Tel: 480-792-7200 Tel: 480-792-7277 Technical Support: www.microchip.com/support Web Address: www.microchip.com</p> <p>Atlanta Duluth, GA Tel: 678-957-9614 Fax: 678-957-1455</p> <p>Austin, TX Tel: 512-257-3370</p> <p>Boston Westborough, MA Tel: 774-760-0087 Fax: 774-760-0088</p> <p>Chicago Itasca, IL Tel: 630-285-0071 Fax: 630-285-0075</p> <p>Dallas Addison, TX Tel: 972-818-7423 Fax: 972-818-2924</p> <p>Detroit Novi, MI Tel: 248-848-4000</p> <p>Houston, TX Tel: 281-894-5983</p> <p>Indianapolis Noblesville, IN Tel: 317-773-8323 Fax: 317-773-5453 Tel: 317-536-2380</p> <p>Los Angeles Mission Viejo, CA Tel: 949-462-9523 Fax: 949-462-9608 Tel: 951-273-7800</p> <p>Raleigh, NC Tel: 919-844-7510</p> <p>New York, NY Tel: 631-435-6000</p> <p>San Jose, CA Tel: 408-735-9110 Tel: 408-436-4270</p> <p>Canada - Toronto Tel: 905-695-1980 Fax: 905-695-2078</p>	<p>Australia - Sydney Tel: 61-2-9868-6733</p> <p>China - Beijing Tel: 86-10-8569-7000</p> <p>China - Chengdu Tel: 86-28-8665-5511</p> <p>China - Chongqing Tel: 86-23-8980-9588</p> <p>China - Dongguan Tel: 86-769-8702-9880</p> <p>China - Guangzhou Tel: 86-20-8755-8029</p> <p>China - Hangzhou Tel: 86-571-8792-8115</p> <p>China - Hong Kong SAR Tel: 852-2943-5100</p> <p>China - Nanjing Tel: 86-25-8473-2460</p> <p>China - Qingdao Tel: 86-532-8502-7355</p> <p>China - Shanghai Tel: 86-21-3326-8000</p> <p>China - Shenyang Tel: 86-24-2334-2829</p> <p>China - Shenzhen Tel: 86-755-8864-2200</p> <p>China - Suzhou Tel: 86-186-6233-1526</p> <p>China - Wuhan Tel: 86-27-5980-5300</p> <p>China - Xian Tel: 86-29-8833-7252</p> <p>China - Xiamen Tel: 86-592-2388138</p> <p>China - Zhuhai Tel: 86-756-3210040</p>	<p>India - Bangalore Tel: 91-80-3090-4444</p> <p>India - New Delhi Tel: 91-11-4160-8631</p> <p>India - Pune Tel: 91-20-4121-0141</p> <p>Japan - Osaka Tel: 81-6-6152-7160</p> <p>Japan - Tokyo Tel: 81-3-6880-3770</p> <p>Korea - Daegu Tel: 82-53-744-4301</p> <p>Korea - Seoul Tel: 82-2-554-7200</p> <p>Malaysia - Kuala Lumpur Tel: 60-3-7651-7906</p> <p>Malaysia - Penang Tel: 60-4-227-8870</p> <p>Philippines - Manila Tel: 63-2-634-9065</p> <p>Singapore Tel: 65-6334-8870</p> <p>Taiwan - Hsin Chu Tel: 886-3-577-8366</p> <p>Taiwan - Kaohsiung Tel: 886-7-213-7830</p> <p>Taiwan - Taipei Tel: 886-2-2508-8600</p> <p>Thailand - Bangkok Tel: 66-2-694-1351</p> <p>Vietnam - Ho Chi Minh Tel: 84-28-5448-2100</p>	<p>Austria - Wels Tel: 43-7242-2244-39 Fax: 43-7242-2244-393</p> <p>Denmark - Copenhagen Tel: 45-4485-5910 Fax: 45-4485-2829</p> <p>Finland - Espoo Tel: 358-9-4520-820</p> <p>France - Paris Tel: 33-1-69-53-63-20 Fax: 33-1-69-30-90-79</p> <p>Germany - Garching Tel: 49-8931-9700</p> <p>Germany - Haan Tel: 49-2129-3766400</p> <p>Germany - Heilbronn Tel: 49-7131-72400</p> <p>Germany - Karlsruhe Tel: 49-721-625370</p> <p>Germany - Munich Tel: 49-89-627-144-0 Fax: 49-89-627-144-44</p> <p>Germany - Rosenheim Tel: 49-8031-354-560</p> <p>Israel - Ra'anana Tel: 972-9-744-7705</p> <p>Italy - Milan Tel: 39-0331-742611 Fax: 39-0331-466781</p> <p>Italy - Padova Tel: 39-049-7625286</p> <p>Netherlands - Drunen Tel: 31-416-690399 Fax: 31-416-690340</p> <p>Norway - Trondheim Tel: 47-72884388</p> <p>Poland - Warsaw Tel: 48-22-3325737</p> <p>Romania - Bucharest Tel: 40-21-407-87-50</p> <p>Spain - Madrid Tel: 34-91-708-08-90 Fax: 34-91-708-08-91</p> <p>Sweden - Gothenberg Tel: 46-31-704-60-40</p> <p>Sweden - Stockholm Tel: 46-8-5090-4654</p> <p>UK - Wokingham Tel: 44-118-921-5800 Fax: 44-118-921-5820</p>