# SPI-DirectC v2.0 & DirectC v4.0 Release Notes

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## What's New in this Release

DirectC V4.0 now supports RTG4™ and PolarFire™ family of devices. In addition, M2S/M2GL "Verify Digest" action support has been added to both DirectC and SPI-DirectC solutions.

This version of DirectC operates on DAT files generated by Designer v8.6 or later for programming IGLOO, IGLOO nano, IGLOO PLUS, ProASIC3, ProASIC3L (excluding M1 variants), SmartFusion, and Fusion. Libero version 11.4 or later should be used to generate DAT files for IGLOO2 and SmartFusion2 devices.

Full plain text and encrypted programming support is provided for array, FlashROM, eNVM and security components. The DirectC software supports 8-, 16-, and 32-bit microprocessors.

## JTAG-DirectC SARs Fixed:

SAR 87730: Add PolarFire™ support to JTAG-DirectC solution.

SAR 90485: Add RTG4 support to JTAG-DirectC solution.

SAR 73665: M2S/M2GL - change FREQRNG to 15 before processing eNVM bitstream (without Fabric) for PROGRAM and VERIFY actions.

SAR 61877: M2S/M2GL – Add "Verify Digest" action support.

SAR 72902: M2S/M2GL – Error out if ISC_ENABLE capture register is all zeros.

SAR 85350: M2S/M2GL – Set sec_ul in dp_G4M_read_security function.

SAR 85350: M2S/M2GL – IDCODE failed when using Direct-C to program Igloo2.

SAR 63006: A3P – dp_is_core_configured does not error out if ENABLE_DISPLAY is not defined.

SAR 77647: A3P – Issue displaying FROM content.

SAR 72458: A3P – Program hangs if FlashROM content is available in DAT file.

SAR 18355: A3P – Reduce UFROM disturb duinr programming UROW.

## SPI-DirectC SARs Fixed:

SAR 85017: Add PolarFire™ support to SPI-DirectC solution.

SAR 87722: M2S/M2GL – Add "Verify Digest" action support.

SAR 76468: M2S/M2GL – Result of "Device Info" action is not accurate.

SAR 83552: M2S/M2GL – Need a short delay after ISC_DISABLE.

# Supported Families

DirectC v4.0 is available to support IGLOO® nano—the world's lowest power FPGA, IGLOO, IGLOO PLUS, IGLOO2, ProASIC®3, ProASIC nano, ProASIC3L (excluding M1 variants), PolarFire™, RTG4™, SmartFusion2, SmartFusion, and Fusion.

SPI-DirectC v2.0 is available to support the PolarFire™, IGLOO2 and SmartFusion2 families of devices.

| Product Family | Device |
|---|---|
| IGLOO | AGL015, AGL030, AGL060, AGL125, AGL250, AGL600, AGL1000, AGLE600, M1AGL250, M1AGL600 |
| IGLOO nano | AGLN010, AGLN015, AGLN020, AGLN060, AGLN125, AGLN250, AGLN030Z, AGLN060Z, AGLN125Z, AGLN250Z |
| IGLOO PLUS | AGLP030, AGLP060, AGLP125 |
| IGLOO2 | M2GL005, M2GL010, M2GL025, M2GL050, M2GL090, M2GL1050 |
| ProASIC3 | A3P015, A3P030, A3P060, A3P125, A3P250, A3P400, A3P600, A3P1000, A3PE1500, A3PE3000, M7A3P400, M7A3P1000, M1A3P250, M1A3P600, M1A3P1000, M1A3PE1500 |
| ProASIC3 nano | A3PN010, A3PN015, A3PN020, A3PN060, A3PN125, A3PN250, A3PN030Z, A3PN060Z, A3PN125Z, A3PN250Z |
| ProASIC3L | A3P250L, A3P600L, A3P1000L |
| SmartFusion2 | M2S005, M2S010, M2S025, M2S050, M2S090, M2S150 |
| PolarFire | MPF300 |
| RTG4 | RT4G150 |
| SmartFusion | A2F200, A2F500 |
| Fusion | AFS090, AFS250, AFS600, AFS1500, M7AFS600, M1AFS250,M1AFS600, M1AFS1500, P1AFS600, P1AFS1500 |

DirectC v1.3 must be used for programming ProASICPLUS (APA) devices.

Security programming is enabled. Take care when using this feature. DirectC is designed for remote reprogramming via a microprocessor. Security programming should only take place in a trusted environment. In a non-secure environment, the communications line between the PC and the remote equipment must be secured by the end customer. After altering the security settings, remote upgrades using DirectC with an encrypted STAPL file (matching the AES key programmed during altering the security settings) can be safely carried out over a non-secure communications line by the user.

# Known Issues and Workarounds

**SAR 18887**: When using the compiler option, ENABLE_CODE_SPACE_OPTIMIZATION, programming the CORE or FROM of a previously secured device, using a DAT file with a different security key will erroneously pass. The device remains in the same state prior to the operation. The CORE or FROM

programming is not executed on the device.  This SAR does not apply to the SmartFusion2 or IGLOO2 families of devices.

# System Requirements

Any development system that supports ANSI C Programming.

Microprocessor compiler for the chosen platform.

DAT file generated by Microsemi Designer Software or Microsemi Libero® Integrated Design Environment (IDE).

# Download DirectC Suite v1.0 Installer

DirectC Suite v1.0 Installer (187 MB)

## Note

DirectC Suite v1.0 contains the source, sample projects, and Libero design files for both DirectC V4.0 and SPI-DirectC v2.0 solutions.  In addition, Windows based UARTHostLoader application used to interact with the IAR sample projects is included in this installer.  Please see DirectC and SPI-DirectC user guides for more information.

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