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# SPI-DirectC v1.1 & DirectC v3.1 Release Notes

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## What's New in this Release

SPI-DirectC v1.1 and DirectC v3.1 introduces programming support of security components for Microsemi's SmartFusion2 and IGLOO2 devices.

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.

## SARs Fixed:

- SAR 56660: Remove engineering sample ID check.
- SAR 57359: Speed up programming of M2S and M2GL devices. (DirectC only)
- SAR 57573: Slow down clock frequency when programming eNVM component only of M2S and M2GL devices.
- SAR 61362: Change default ERASE/PROGRAM Action to Disable Fabric Quickly (via RLOCK Prog). (DirectC only)
- SAR 50282: Add security component programming support for M2S and M2GL devices.
- SAR 61525: Enhance device ID detection by adding a check for Microsemi manufacturer ID.
- SAR 54735: Update DirectC End User Agreement.
- SAR 59528: IO goes tri-stated after programming completed.
- SAR 59458: Add SPI\_Release at the end of programming. (SPI-DirectC only)

## Supported Families

DirectC v3.1 is available to support IGLOO® nano—the world's lowest power FPGA, IGLOO, IGLOO PLUS, IGLOO2, ProASIC®3, ProASIC nano, ProASIC3L (excluding M1 variants), SmartFusion2, SmartFusion, and Fusion.

SPI-DirectC v1.1 is available to support the 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
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 v3.1

[DirectC v3.1](#) (13 MB)

## Download SPI-DirectC v1.1

[SPI-DirectC v1.1](#) (7 MB)



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