

Lattice Diamond Software 3.14 Release Notes

Welcome to Lattice Diamond® software, the complete design environment for Lattice Semiconductor Field Programmable Gate Arrays (FPGAs).

What's New in Diamond Software 3.14

► Device Support:

- MachXO2™ (LAMXO2)
 - Performance Hardware Data Status – Final, version 34.4.
 - 256HC (-5) 2.5V/3.3V (AUTO) – CSBGA132, TQFP100
 - 640HC (-5) 2.5V/3.3V (AUTO) – CSBGA132, TQFP100
- MachXO3LF™ (LAMXO3LF)
 - Performance Hardware Data Status – Final, version 37.5.
 - 640E (-5) 1.2V (AUTO) – CSBGA132, TQFP100
 - 1300C (-5) 2.5V/3.3V (AUTO) – CSBGA132, TQFP100
 - 1300E (-5) 1.2V (AUTO) – CSBGA132, TQFP100
 - 2100C (-5) 2.5V/3.3V (AUTO) – CSBGA132, TQFP100
 - 2100E (-5) 1.2V (AUTO) – CSBGA132, TQFP100
 - 4300C (-5) 2.5V/3.3V (AUTO) – CSBGA132
 - 4300E (-5) 1.2V (AUTO) – CSBGA132
- MachXO3D™ (LCMXO3D)
 - Performance Hardware Data Status – Final, version 2.2.
 - 4300HC (-5/-6) 2.5V/3.3V (COM/IND) – FTBGA256

► Tool and Other Enhancements:

- **Diamond Installation Wizard**
 - The LATTICE_LICENSE_FILE and SALT_LICENSE_SERVER environment user variables have been added to the installation page.
 - The default Flexnet variable LM_LICENSE_FILE is now displayed on the installation page.
 - Diamond installer is updated to support QuestaSim single package, which is more than 2G in size.

- **License** – BSD licensing is added to embedded_source files under the \\sccl\diamond\3.14\embedded_source directory.
- **Platform Designer** – When using the Platform Designer tool in Diamond, the only supported operating system in Linux is RHEL 7.9.
- **Programmer** – The Deployment Tool has been updated to increase the maximum SPI Flash Size to 1Gb.
- **Simulation**
 - Diamond software now includes QuestaSim™ Lattice OEM Edition for simulation, debugging, and verification processes. The ModelSim simulator has been replaced by this new tool.
 - Since QuestaSim is a 64-bit application, it can support designs whose memory usage is greater than 4GB during simulation.
 - To be able to use the new QuestaSim Lattice FPGA edition on Diamond 3.14, you need to regenerate your license from the website.
- **Tool Options** – The “Check Controlled Device License” option has been added to Tool Options. This prevents Diamond from checking out license features that are not included in the license file.

Support for Third-Party Synthesis and Simulator Tools

The Synopsys Synplify Pro® for Lattice synthesis tool and the Siemens ModelSim Lattice Edition simulator tool are included in the Diamond software.

- ▶ **Synopsys Synplify Pro FPGA synthesis software version V-2023.09L-2**
 - ▶ Release Notes for Synplify Pro are located in ..\<install_directory>\diamond\3.14\synpbase\doc\.. The file name is release_notes.pdf.
 - ▶ A full set of documents for Synplify Pro are also located in ..\<install_directory>\diamond\3.14\synpbase\doc\..
- ▶ **Siemens QuestaSim Lattice Edition 2024.2**
 - ▶ Release Notes for QuestaSim Lattice Edition are located in <install_directory>\diamond\3.14\questasim\.. The file names are RELEASE_NOTES.html or RELEASE_NOTES.txt.
 - ▶ A full set of documents for QuestaSim Lattice Edition are located in <install_directory>\diamond\3.14\questasim\docs\pdfdocs\..
- ▶ **Siemens Questa® 2022.3**

Supported Devices

Lattice Diamond can be used with either a free license or a subscription license. The two licenses provide access to different device families.

Device Family	Free License	Subscription License
ASC	◀	◀
ECP5U	◀	◀
ECP5UM™		◀
ECP5UM5G™		◀
LatticeEC™	◀	◀
LatticeECP™	◀	◀
LatticeECP2™	◀	◀
LatticeECP2M™		◀
LatticeECP2S™		◀
LatticeECP2MS™		◀
LatticeECP3™		◀
LatticeSC™		◀
LatticeSCM™		◀
LatticeXP™	◀	◀
LatticeXP2™	◀	◀
LFMNX (Mach-NX)	License-controlled. Contact Lattice Technical Support.	

Device Family	Free License	Subscription License
LIFMD (CrossLink)	◀	◀
LIFMDF (CrossLinkPlus)	◀	◀
MachXO™	◀	◀
MachXO2	◀	◀
MachXO3D	◀	◀
MachXO3L™	◀	◀
MachXO3LF	◀	◀
Platform Manager™	◀	◀
Platform Manager 2™	◀	◀

System Requirements

The basic system requirements for Lattice Diamond are:

- ▶ Intel Pentium or Pentium-compatible PC, or AMD Opteron system support (Linux only)
- ▶ One of the following operating systems:
 - ▶ Windows 10/11 (64-bit)
 - ▶ Red Hat Enterprise Linux 8.8/7.9. The host operating system is supported in 64-bit only.
 - ▶ Ubuntu 20.04/22.04
- ▶ Approximately 5.75 GB free disk space
- ▶ RAM adequate for your FPGA design. For guidelines, see Memory Requirements.
- ▶ Network adapter and, for a floating license, network connectivity

A node-locked license is based on the physical (hard-coded) address provided by the network adapter. Network connectivity is not required for a node-locked license. In the absence of a network connection, you can install the NWLink IPX/SPX protocol to force recognition of your NIC card ID (see the Installation Notice).

A floating license requires access to the license server, so both a network adapter and connectivity are required.

- ▶ JavaScript-capable Web browser

Memory Requirements

The following table lists the minimum memory requirements (64-bit software) and the recommended memory for the Lattice Semiconductor devices supported by Diamond.

Designing for LatticeECP3 with more than 95K LUT on a Windows system requires a 64-bit operating system.

Table 1 Recommended Memory

Device	Size	Minimum	Recommended
ECP5U/UM/UM5G	All	4 GB	6 GB
LatticeEC, LatticeECP	Up to 20K LUT	1 GB	1.5 GB
	Up to 50K LUT	1.5 GB	2 GB
LatticeECP2/M	Up to 20K LUT	1.5 GB	2 GB
	Up to 50K LUT	2 GB	3 GB
	Up to 100K LUT	2 GB	4 GB
LatticeECP3	Up to 95K LUT	4 GB	6 GB
	Up to 150K LUT	6 GB	8 GB
LatticeSC/M	Up to 40K LUT	1.5 GB	2 GB
	Up to 115K LUT	2 GB	5 GB
LatticeXP, LatticeXP2	Up to 20K LUT	1 GB	1.5 GB

Device	Size	Minimum	Recommended
	Up to 50K LUT	1.5 GB	2 GB
MachXO, MachXO2, MachXO3D, MachXO3L, Mach-NX	All	512 MB	1 GB
LIFMD (CrossLink), LIFMDF (CrossLinkPlus)	All	512 MB	1 GB
Platform Manager, Platform Manager 2	All	512 MB	1 GB

Extending Memory on Windows

Note that increasing the amount of memory available to applications decreases the amount available for the file cache, paged pool, and nonpaged pool, which can affect applications with heavy networking or I/O.

Use the `BCDEdit /set increaseuserva 3072` command to set the boot entry option to 3 GB. For details, see Microsoft article “BCDEdit /set”: msdn.microsoft.com/en-us/library/ff542202.aspx

- ▶ When installing the Red Hat Enterprise Linux version, be sure to install the PERL modules XML::Parser, XML::DOM, and XML::RegExp. These PERL modules are available at www.cpan.org.

Issues Fixed

The following known issues are fixed in this release. Their workarounds are no longer needed.

Pop-up warning dialog box for UFM2 access should not be erased for the factory programmed DICE Certificate.

Devices affected: LFMNX

Bug number: SOF-132267

Diamond software displays an error when LATTICE_LICENSE_FILE is used without LM_LICENSE_FILE variable.

Devices affected: All devices

Bug number: SOF-131955

Design passes synthesis with Lattice Synthesis Engine (LSE) even with missing source files.

Devices affected: All devices

Bug number: SOF-131877

Unable to generate specific clock output frequency on the PLL IP using REFCLK.

Devices affected: LIFMDF

Bug number: SOF-132237

INITN port cannot be configured as GPIO for the MachXO3LF device despite disabling the SDM_PORT option.

Devices affected: MachXO3LF

Bug number: SOF-132174

Flash configuration fails when password protection is enabled.

Devices affected: MachXO3D

Bug number: SOF-131840



pgrcmd tool does not work for public key programming.

Devices affected: MachXO3D

Bug number: SOF-132380

Inconsistencies in PCF file generated for ispPAC-POWR607 devices using Deployment tool.

Devices affected: ispPAC-POWR607

Bug number: SOF-131969

Slave SPI Program Password Key option is missing in the Programmer tool for LCMXO3LF devices.

Devices affected: LCMXO3LF

Bug number: SOF-132037

Incorrect range of Junction Temperature for Industrial grade devices.

Devices affected: All devices

Bug number: SOF-131824

Synplify Pro crashes and displays Signal 011 error in m_gen_lattice.exe when synthesizing the source design.

Devices affected: ECP5U

Bug number: SOF-131954

Synthesis attribute ANSI-C is not working in ports declaration.

Devices affected: All devices

Bug number: SOF-132008

Known Issues for Diamond 3.14

The following are known issues for the Diamond Software 3.14. For assistance with these issues, please contact Lattice Technical support.

FAQs

The [Answer Database](#) on the Lattice Semiconductor website provides solutions to questions that many of our customers have already asked. Lattice Applications Engineers are continuously adding content to the Database.

Technical Support Assistance

Submit a technical support case via www.latticesemi.com/techsupport.

For Local Support

Contact your nearest [Lattice Sales Office](#).

Synplify Pro synthesis fails with error CL170 due to unsupported FSM instance with initial value.

Devices affected: All devices

Bug number: SOF-132375

MAP VHDL simulation errors out when the recommended instance capacity of 5000 is used in QuestaSim.

Workaround: When running gate level simulations using Questa OEM, use a Verilog netlist. Alternatively, add "-suppress 14436" to the vsim command to allow Questa to run while over the instantiation limit with severely degraded performance.

Devices affected: All devices

Bug number: SOF-132314

In Spreadsheet View, the Trace Length option is not available when exporting pin layout files for CABGA256 packages.

Devices affected: ECP5U-12, ECP5U-25, ECP5U-45

Bug number: SOF-131800, SOF-131504

If your target device is LFMNX, there may be a PIO count mismatch between Device Selector and MAP and PAR Report.

Devices affected: LFMNX

Bug number: SOF-130990