

# Intel Development Tools

The Quartus Prime software provides everything developers need to design for Intel FPGAs and SoCs from design entry and synthesis to optimization, verification, and simulation.

Quartus Prime is recommended for all Trenz Electronics products that are based on Intel FPGAs.

- 1 [Intel Software - Product Update Release Notes and Known Issues](#)
- 2 [Intel Devices - Erratas and Troubleshooting](#)
- 3 [Intel User Guides](#)
  - 3.1 [Intel Software Programming and Debugging](#)
  - 3.2 [Excerpt of Intel User Guides](#)
- 4 [Additional Documentation](#)
- 5 [Table of contents](#)

## Intel Software - Product Update Release Notes and Known Issues

| Version | Quartus Pro                            | Quartus Standard                            | Quartus Lite                            | Nios II EDS                 | SoC EDS                                                  |
|---------|----------------------------------------|---------------------------------------------|-----------------------------------------|-----------------------------|----------------------------------------------------------|
| 22.x    | <a href="#">Quartus Prime Pro 22.x</a> | <a href="#">Quartus Prime Standard 22.x</a> | <a href="#">Quartus Prime Lite 22.x</a> | <a href="#">Nios II EDS</a> | --                                                       |
| 21.x    | <a href="#">Quartus Prime Pro 21.x</a> | <a href="#">Quartus Prime Standard 21.x</a> | <a href="#">Quartus Prime Lite 21.x</a> | <a href="#">Nios II EDS</a> | <a href="#">SoC EDS Standard 21.x / SoC EDS Pro 21.x</a> |
| 20.x    | <a href="#">Quartus Prime Pro 20.x</a> | <a href="#">Quartus Prime Standard 20.x</a> | <a href="#">Quartus Prime Lite 20.x</a> | <a href="#">Nios II EDS</a> | <a href="#">SoC EDS Standard 20.x / SoC EDS Pro 20.x</a> |
| 19.x    | <a href="#">Quartus Prime Pro 19.x</a> | <a href="#">Quartus Prime Standard 19.x</a> | <a href="#">Quartus Prime Lite 19.x</a> | <a href="#">Nios II EDS</a> | <a href="#">SoC EDS Standard 19.x / SoC EDS Pro 19.x</a> |
| 18.x    | <a href="#">Quartus Prime Pro 18.x</a> | <a href="#">Quartus Prime Standard 18.x</a> | <a href="#">Quartus Prime Lite 18.x</a> | <a href="#">Nios II EDS</a> | <a href="#">SoC EDS Standard 18.x / SoC EDS Pro 18.x</a> |

## Intel Devices - Erratas and Troubleshooting

| Device              | Intel Link                                               |
|---------------------|----------------------------------------------------------|
| Intel MAX 10        | <a href="#">MAX 10 Errata and Troubleshooting</a>        |
| Intel Cyclone V     | <a href="#">Cyclone V Errata and Troubleshooting</a>     |
| Intel Cyclone 10 LP | <a href="#">Cyclone 10 LP Errata and Troubleshooting</a> |
| Intel Cyclone 10 GX | <a href="#">Cyclone 10 GX Errata and Troubleshooting</a> |
| Intel Agilex 5      | <a href="#">Agilex Errata and Troubleshooting</a>        |
| Intel Agilex 7      | <a href="#">Agilex Errata and Troubleshooting</a>        |
| Intel Arria V       | <a href="#">Arria V Errata and Troubleshooting</a>       |
| Intel Arria 10      | <a href="#">Arria 10 Errata and Troubleshooting</a>      |

|                  |                                                       |
|------------------|-------------------------------------------------------|
| Intel Stratix V  | <a href="#">Stratix V Errata and Troubleshooting</a>  |
| Intel Stratix 10 | <a href="#">Stratix 10 Errata and Troubleshooting</a> |

## Intel FPGA Wiki

<https://community.intel.com/t5/FPGA-Wiki/tkb-p/fpga-wiki>

## Intel FPGA Support Forum

<https://community.intel.com/t5/FPGA/ct-p/fpga>

## Intel User Guides

---

### Intel Software Programming and Debugging

| Name                                                                          | DOC ID<br><br>Quartus Pro/Standard Edition | Description                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Intel Quartus Prime Pro /Standard Edition User Guide: Programmer              | UG-20134/UG-20178                          | Describes operation of the Intel® Quartus® Prime Pro Edition Programmer, which allows you to configure Intel® FPGA devices, and program CPLD and configuration devices, via connection with an Intel® FPGA download cable. |
| Generic Flash Programmer User Guide: Intel Quartus Prime Pro/Standard Edition | UG-20227/UG-20235                          | This document describes how to use the Generic Flash Programmer. You can use the Generic Flash Programmer to load an FPGA configuration bitstream file into a Quad SPI flash memory device.                                |
| Intel Quartus Prime Pro /Standard Edition User Guide: Debug Tools             | UG-20139/UG-20182                          | The Intel® Quartus® Prime software provides a portfolio of system debugging tools for real-time verification of your design. This document describes the tools and how to use them.                                        |

### Excerpt of Intel User Guides

| Category | Name | DOC ID | Description |
|----------|------|--------|-------------|
|----------|------|--------|-------------|

|                                           |                                                                        |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------|------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dev-Guide<br>Quartus Pro Edition          | Intel Quartus Prime Pro Edition User Guide: Getting Started            | UG-20129          | <p>This user guide describes basic concepts and operation of the Intel® Quartus® Prime Pro Edition design software, including GUI and project structure basics, initial design planning, use of Intel FPGA IP, and migration to Intel® Quartus® Prime Pro Edition. This software provides a complete design environment for the most advanced FPGA and SoC designs for</p> <ul style="list-style-type: none"> <li>• Intel® Agilex™</li> <li>• Intel® Stratix® 10</li> <li>• Intel® Arria® 10</li> <li>• Intel® Cyclone® 10 GX</li> </ul>                                                   |
| Dev-Guide<br>Quartus Standard Edition     | Intel Quartus Prime Standard Edition User Guide: Getting Started       | UG-20173          | <p>This user guide describes basic concepts and operation of the Intel® Quartus® Prime Standard Edition design software, including GUI and project structure basics, initial design planning, use of Intel FPGA IP, and migration to Intel® Quartus® Prime Pro Edition. The Intel® Quartus® Prime Standard Edition software provides a complete design environment for the following device families:</p> <ul style="list-style-type: none"> <li>• Intel® Arria® 10, Arria® V, and Arria® II</li> <li>• Intel® Cyclone® 10 LP, Cyclone IV, and Cyclone V</li> <li>• MAX® series</li> </ul> |
| Dev-Guide<br>Quartus Pro/Standard Edition | Intel Quartus Prime Pro/Standard Edition User Guide: Platform Designer | UG-20130/UG-20174 | <p>The Intel® Quartus® Prime software includes the Platform Designer system integration tool. Platform Designer simplifies the task of defining and integrating custom IP components (IP cores) into your FPGA design.</p>                                                                                                                                                                                                                                                                                                                                                                 |

|                      |                                       |          |                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------|---------------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dev-Guide            | Embedded Peripherals IP User Guide    | UG-01085 | This user guide describes the IP cores provided by Intel® Quartus® Prime design software. The IP cores are optimized for Intel® FPGA devices and can be easily implemented to reduce design and test time. You can use the IP parameter editor from Platform Designer to add the IP cores to your system, configure the cores, and specify their connectivity.                                                                            |
| Dev-Guide            | Embedded Design Handbook              | EDH      | The Embedded Design Handbook complements the primary documentation for the Intel tools for embedded system development. It describes how to most effectively use the tools, and recommends design styles and practices for developing, debugging, and optimizing embedded systems using Intel-provided tools.                                                                                                                             |
| Dev-Guide<br>Nios II | Nios II Processor Reference Guide     | NII-PRG  | This handbook describes the Nios® II processor from a high-level conceptual description to the low-level details of implementation. The chapters in this handbook describe the Nios® II processor architecture, the programming model, and the instruction set.                                                                                                                                                                           |
| Dev-Guide<br>Nios II | Nios II Software Developer's Handbook | NII-SDH  | This handbook describes the basic information needed to develop embedded software for the Intel FPGA® Nios II processor. The Intel FPGA Nios II processor contains new features added after the Intel Quartus Prime 14.0 version. The chapters in this handbook describes the Nios II software development environment, the Nios II Embedded Design Suite (EDS) tools that are available to you, and the process for developing software. |

|                       |                                                                     |          |                                                                                                                                                                                                                                                                                                                             |
|-----------------------|---------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dev-Guide<br>Nios II  | Generic Nios II Booting<br>Methods User Guide                       | UG-20001 | <p>This document describes:</p> <ul style="list-style-type: none"> <li>• The Nios II processor boot copier that boots your Nios II system according to the boot memory selection</li> <li>• Nios II processor booting options and general flow</li> <li>• Nios II programming solutions for selected boot memory</li> </ul> |
| Dev-Guide<br>Nios V   | Nios® V Processor<br>Reference Manual                               | 683632   | Provides information about the Nios® V processor performance benchmarks, processor architecture, the programming model, and the core implementation.                                                                                                                                                                        |
| Dev-Guide<br>Nios V   | Nios® V Embedded<br>Processor Design<br>Handbook                    | 726952   | The handbook describes how to most effectively use the tools, and recommends design styles and practices for developing, debugging, and optimizing embedded systems using the Nios® V processor and Intel-provided tools.                                                                                                   |
| Dev-Guide<br>Nios V   | Nios® V Processor<br>Software Developer<br>Handbook                 | 743810   | The handbook describes the Nios® V processor software development environment, the tools that are available, and the process to build software to run on Nios® V processor.                                                                                                                                                 |
| Dev-Guide<br>CycloneV | Cyclone V Hard<br>Processor System<br>Technical Reference<br>Manual | cv_5v4   | Technical reference manual for Cyclone 5 HPS                                                                                                                                                                                                                                                                                |

## Additional documentation

Additional documentation can be found on the Intel website:

- [Intel® Quartus® Prime Design Software - Support Center](#)
- [Embedded Software Developer Center](#)
- [Intel® FPGA Device Support Resources](#)
- [FPGA Documentation Index](#)