

**Hpe**<sup>®</sup> mini

**Hardware prototyping and  
evaluation board**

Lattice ECP2-50



Hpe is the abbreviation of "Hardware prototyping and evaluation". For this purpose, usually expensive hardware is necessary. A financial effort, that many companies cannot afford.

We are proud to present a cheap alternative to access this market: The Hpe\_mini is a low cost version of the Hpe\_compact board, which is being used successfully by the industry. Since it comprehends the basic Hpe\_compact functions, it is easy to upgrade later on.

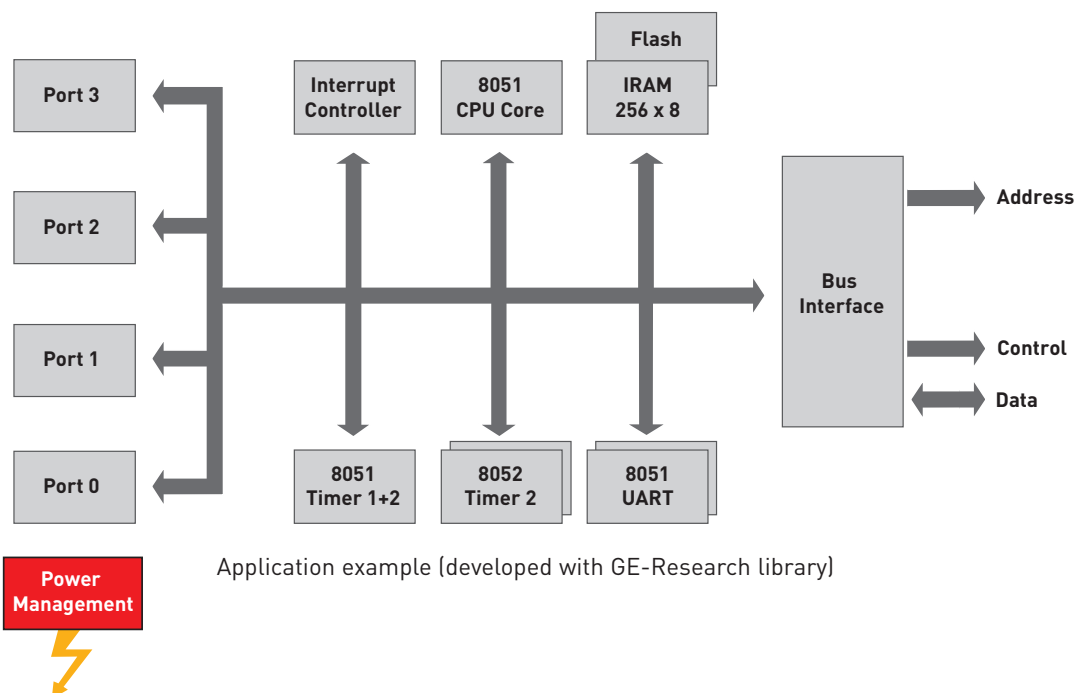
The block diagram stated below is an example for a 1 clock/machine-cycle 8051, which runs up to 50 MHz. We can deliver this CPU with different applications, for example as a WEB server.

The Hpe\_mini is mainly used for

- SOC development of 8 - 32 bit systems
- Special solutions for controller and interfaces
- Development of complex designs

Many universities and training centres world-wide use this board for teaching and research. In order to get the most out of a course, every attendee should be equipped with an own board. Our low-cost development platform is ideally suited for that.

In addition you can use a 32 bit LEON3 CPU, an ARM bus compatible SPARCV8 CPU. The complete system with Ethernet, UART's, Interrupt Controller and Debug Support Unit needs less than 50% of the available logic elements. LINUX is available. Please ask us for details.



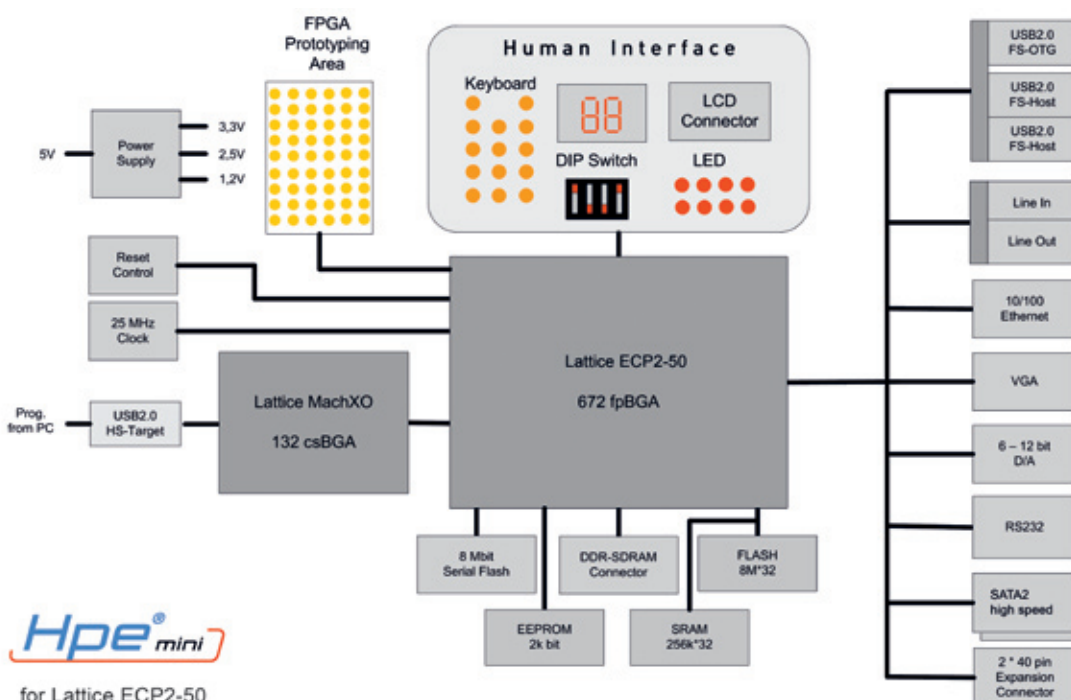
## Functionality and interfaces

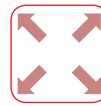
### Components

- 1x Lattice ECP2-50 FPGA
- 1x Lattice LCMX0640 CPLD
- 1x Configuration - Flash
- 256 Mb Flash (8M\*32) for CPU system
- 8 Mb SRAM (256k\*32) for CPU system
- 1x SODIMM for DDR-SDRAM
- 1x USB2.0 HS (FPGA programming, Flash config.)
- 1x JTAG (CPLD und FPGA programming, Flash config.)
- 1x 9-Pin RS232 serial connector
- 1x 15-Pin VGA connector (monitor)
- 1x Ethernet 10/100M, full/half Duplex
- 2x USB2.0 FS Host
- 1x USB2.0 FS OTG
- 2x SATA2 high speed connector
- 1x ext. components for 6-10bit D/A converter
- 1x Hpe expansion connector for 46 usable I/Os
- 1x Prototyping area FPGA
- 1x Prototyping area CPLD
- 1x Power supply connector for 5V DC
- 1x 25MHz oscillator

### Human Interface

- 8x LEDs with test-pins for every LED
- Dual digit seven segment display
- 1x Green LED (power supply)
- 1x Blue LED (config. done)
- 3x 4 Push button key matrix
- 4x DIP switch
- 1x Single-step button





**Included in delivery:**

- Power supply
- USB programming cable
- GE-Research support package (applications, all data sheets and manuals as pdf files)

The Hpe\_mini comes with a board support package.

This software includes all required tools to develop designs for the FPGA. Additional functions and examples help you to start up easily.

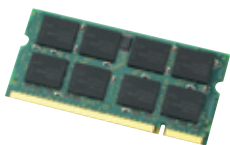
**ispLEVER Starter (free download)**

- Design entry for VHDL and Verilog HDL
- Precision and Synplify synthesis tools
- IP-Express generate complete modules (Makros)
- Placement and Routing software

**Gleichmann Electronics Research free IPs**

- UART, I2C, CAN 2.0b, USB, Ethernet, LCD controller, ...
- 8052 VHDL code
- Keil monitor on demand
- Complete webserver application available
- LEON3 (32-bit, IEEE-1754 SPARC V8) VHDL code, complete development environment and LINUX
- Several test programs in VHDL source code

**Additionally available:**



DDR SODIMM module  
256 MB, 512 MB, 1 GB



LCD Truly 2\*20  
char. with cable

Detailed information on this product as well as all pricing information is available under [www.ge-research.com](http://www.ge-research.com).

**GE Research**

Phone: +43 7236 3343 499

Mail: [sales@ge-research.com](mailto:sales@ge-research.com)

[www.ge-research.com](http://www.ge-research.com)

