

BCH codes are widely used where bit errors are scattered randomly within the codeword. The Creonic Ultrafast BCH Decoder is capable of processing an entire BCH codeword per clock cycle in a pipelined way. Therefore, it achieves outstanding data rates.

The design can be parameterized at design-time to support different codeword sizes and code rates. Latency can be adjusted by insertion or removal of pipeline register stages.

## Benefits

- Throughput of one codeword per clock cycle
- Fully pipelined design
- Design-time configuration of BCH code size and code rate
- Design-time configuration of primitive polynomial
- Design-time configuration of latency for optimal resource utilization
- Bit error rate measurement
- Low-power and low-complexity design
- Available for ASIC and FPGAs (AMD Xilinx, Intel, Microchip)

## Performance Figures

- Coded throughput of up to 163.5 Gbit/s at 320 MHz (FPGA, 511 codeword bits)
- Coded throughput of up to 122.4 Gbit/s at 480 MHz (FPGA, 255 codeword bits)
- Latency in the range of 4 to 14 clock cycles (466 payload bits, 511 codeword bits))

## Applications

- Die-to-die communication
- Free-space optical (FSO) communication
- Further applications with the need for tremendous data rates

## Deliverables

- VHDL or Verilog source code or synthesized netlist
- HDL simulation models e.g. for Aldec's Riviera-PRO
- VHDL testbench
- bit-accurate Matlab, C or C++ simulation model
- comprehensive documentation

## About Creonic

Creonic is an ISO 9001:2015 certified provider of ready-for-use IP cores for wired, wireless, fiber, and free-space optical communications. All relevant digital signal processing algorithms are covered, including, but not limited to, forward error correction, modulation, equalization, and demodulation. The company offers the richest product portfolio in this field, covering standards like 3GPP 5G, DVB-S2X, DVB-RCS2, CCSDS, and WiFi. The products are applicable for ASIC and FPGA technologies and comply with the highest requirements with respect to quality and performance. For more information please visit our website at [www.creonic.com](http://www.creonic.com).

## Contact

Creonic GmbH  
Bahnhofstr. 26-28  
67655 Kaiserslautern  
Germany

Phone: +49 631 3435 9880  
Fax: +49 631 3435 9889  
Web: [www.creonic.com](http://www.creonic.com)  
E-mail: [sales@creonic.com](mailto:sales@creonic.com)

LinkedIn: [Creonic](#)  
Facebook : [Creonic](#)

---