



## Ice Zero with Lattice ICE (ICE40HX)

- **Order number:** TE0876-02

### Product information "Ice Zero with Lattice ICE (ICE40HX)"

The IceZero is a low cost general purpose Lattice FPGA platform for the RaspberryPi. It includes 4 MBit of external SRAM and 4 2x6 PMOD interfaces for 32 3.3V LVCMOS IO's to external expansion devices. The board is powered and configured over the standard 2x20 RaspberryPi header. The ICE40HX4K FPGA is fully supported by Clifford Wolf's "icoTC" [Project IceStorm](#) tool chain.

Example designs (both Verilog and Python) for the SUMP2 Logic Analyzer and general purpose GPIO (inputs, outputs, PWM servo control, etc.) are available from the Black Mesa Labs website. Mesa Bus Protocol virtual PCI 32bit communication between FPGA and Pi is supported over the Pi's 32 MHz SPI serial interface. Black Mesa Labs strives to provide multiple free open-source example designs for the IceZero platform for expanding RaspberryPi hardware interface capabilities -bitstream complete- no FPGA design experience required.

## Key Features

- FPGA: Lattice ICE (ICE40HX)
- Size: 56 x 30.5 mm
- Supported by fully open source FPGA toolchain (icoTC)
- Full FPGA design flow on Raspberry Pi (all open source)
- Fast FPGA configuration from Raspberry Pi
- Raspberry Pi HAT Compatible
- Compatible in size with Raspberry PiZero and PiZero-W
- User LED: 3
- SPI Flash for FPGA self-configuration
- User Clock: 100 MHz
- PMOD Connectors: 4 (not assembled by default)

Other assembly options for cost or performance optimization plus high volume prices available on request.

## Getting started tutorial

<https://github.com/cliffordwolf/icotools/tree/master/examples/icezero>

## Scope of Delivery

- 1 x IceZero Module with Lattice ICE40HX

## Additional Information

- Manufacturer's article number: TE0876-02
- [IceZero Schematic \(PDF\)](#)
- [Support Forum](#)

*All modules produced by Trenz Electronic are developed and manufactured in Germany.*

