

# SInGrab Development Board



- ✓ PCIe 1x, 4x
- ✓ 2x 10/100/1000BASE-T Ethernet IF
- ✓ Lattice ECP5™ FPGA
- ✓ Up to 1GByte DDR3 Memory
- ✓ 2x EEPROM MAC Address Chips
- ✓ Expansion connectors
- ✓ Low profile card form factor
- ✓ Dual boot FPGA Firmware
  - ✓ Reprogrammability via PCIe
- ✓ Stand-alone power supply
- ✓ FPD-Link II (optional)

## Description

The SInGrab board is a development board based on Lattice ECP5™ FPGA technology. It perfectly works for evaluating key connectivity features of the ECP5™ FPGA, including PCI Express, Gigabit Ethernet, DDR3 and SERDES performance; this board can also be very effective during rapid prototyping and testing of an FPGA design.

In a typical frame grabbing application, the SInGrab board works as HW accelerator of the host computer CPU. The main sequence of operations that can be implemented on the board consist of:

- Image acquisition from an external source exploiting the two available Ethernet interfaces,
  - Ethernet packet processing and image reconstruction in the FPGA,
  - Image buffering in the DDR3 memory,
  - Image transfer via DMA to the host system memory.
- Additional image processing can be performed on board, depending on the availability of FPGA free elaboration resources. All these activities are executed on the SInGrab board, without affecting the host CPU performance.

The development board can be also used stand-alone, since power supply is available on board.

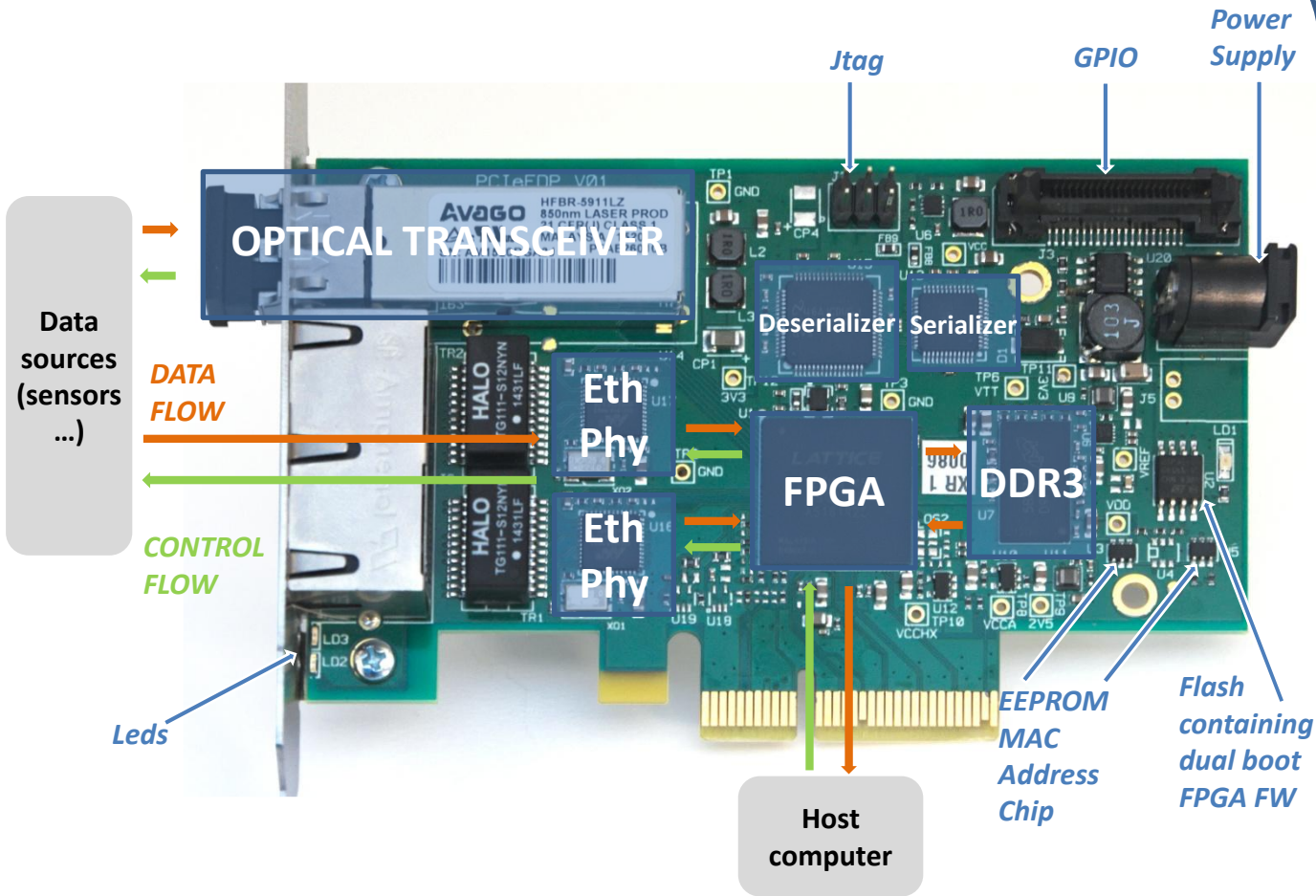
An SPI Flash Memory is mounted on board to host a dual-boot FPGA Firmware: the FPGA can be reprogrammed via PCIe; it is also available the self-refresh capability.

The 22 single-ended GPIO connectors add flexibility allowing interactions with external devices.

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# Board Architecture and Specification



	SInGrab ECP5-45	SInGrab ECP5-85
FPGA	Lattice ECP5™ – LFE5UM-45F-8BG381C	Lattice ECP5™ – LFE5UM-85F-8BG381C
DDR3 Memory	Micron - MT41K128M16JT-125:K	Micron - MT41K256M16JT-125:K
Gigabit Ethernet Transceiver 2x	Marvell – Alaska 88E1510	
SPI Serial Flash Memory	Micron - M25P32	Micron - M25P64
EEPROM MAC Address Chip 2x	Microchip Technology - 24AA025E	
100 MHz Oscillator	Silicon Labs – Standard Clock Oscillator	
GPIO 22x	Hirose Connector - FX18-40P-0.8SV	
Optical Transceiver (*)	Avago Technologies -HFBR-5911xLZ	
FPD-Link II serializer and deserializier chipset (*)	Texas Instruments - DS90UR241Q, DS90UR124Q	
Power Consumption	< 3 Watt	
Power Supply	PCIe 3.3V; External 5-24Vdc	
External Power Connector	CUI Inc - PJ-102AH; Phoenix Contact -1881448 (*)	
Temperature Operating range	+0°C / +70°C	
Size (Hmm x Lmm x Pmm)	64,4mm x 108mm x 1,67mm (Low profile card form factor)	
Certification	CE	

(\*) : Optional Component

Sanitas EG reserves the right to change the specification without notice