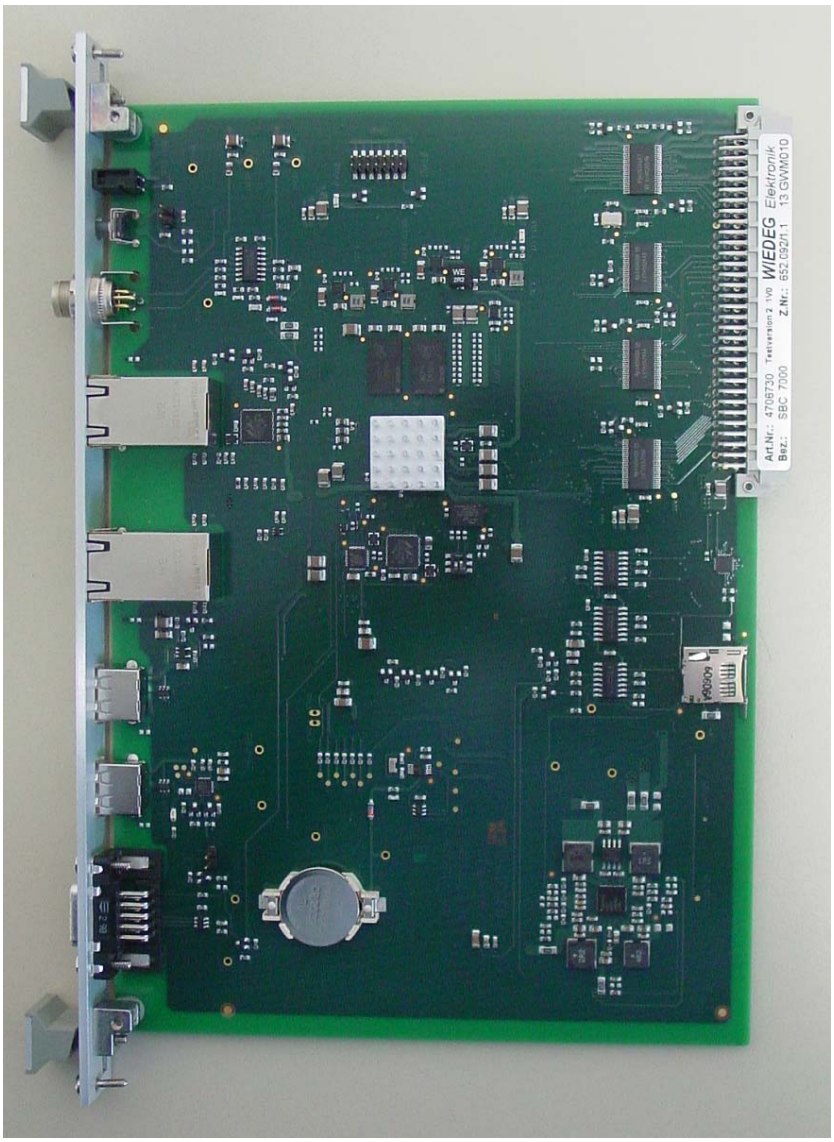
WIEDEG
ELEKTRONIK

Industrielle Elektronik für die
Steuer- und Regelungstechnik

SBC 7000 – Single Board Computer based on a XILINX Zynq 7000 System-On-Chip (SoC) with VMEbus I/O-Interface

- **Powerful CPU-Board with Dual Core ARM-Processor, FPUs and Artix7 FPGA for real time applications**
- **Use as single-board-computer**
- **By means of the VMEbus I/O-interface expandable to a complete industrial control system**
- **Considerable memory fit out (Flash, RAM, memory card) and high performance standard interfaces (2x Ethernet LAN, USB, UART)**
- **Additional analog input and trigger output for special applications**
- **VME I/O-Bus enclosing full Short I/O- and Interrupt-functionality**
- **OS9 - Embedded Systems for ARM-CPU-family as real time operating system with WIEDEG Board-Support-Package**
- **High quality and long term delivery reliability due to the entire development and manufacturing in Germany**



Product Information

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System Description

The SBC 7000 Single Board Computer System is essentially based on a XILINX Zynq 7000 System-On-Chip (SoC). It consists of Processor-System (PS) with Dual Core ARM Processor, FPUs and an Artix-7 Programmable-Logic (PL).

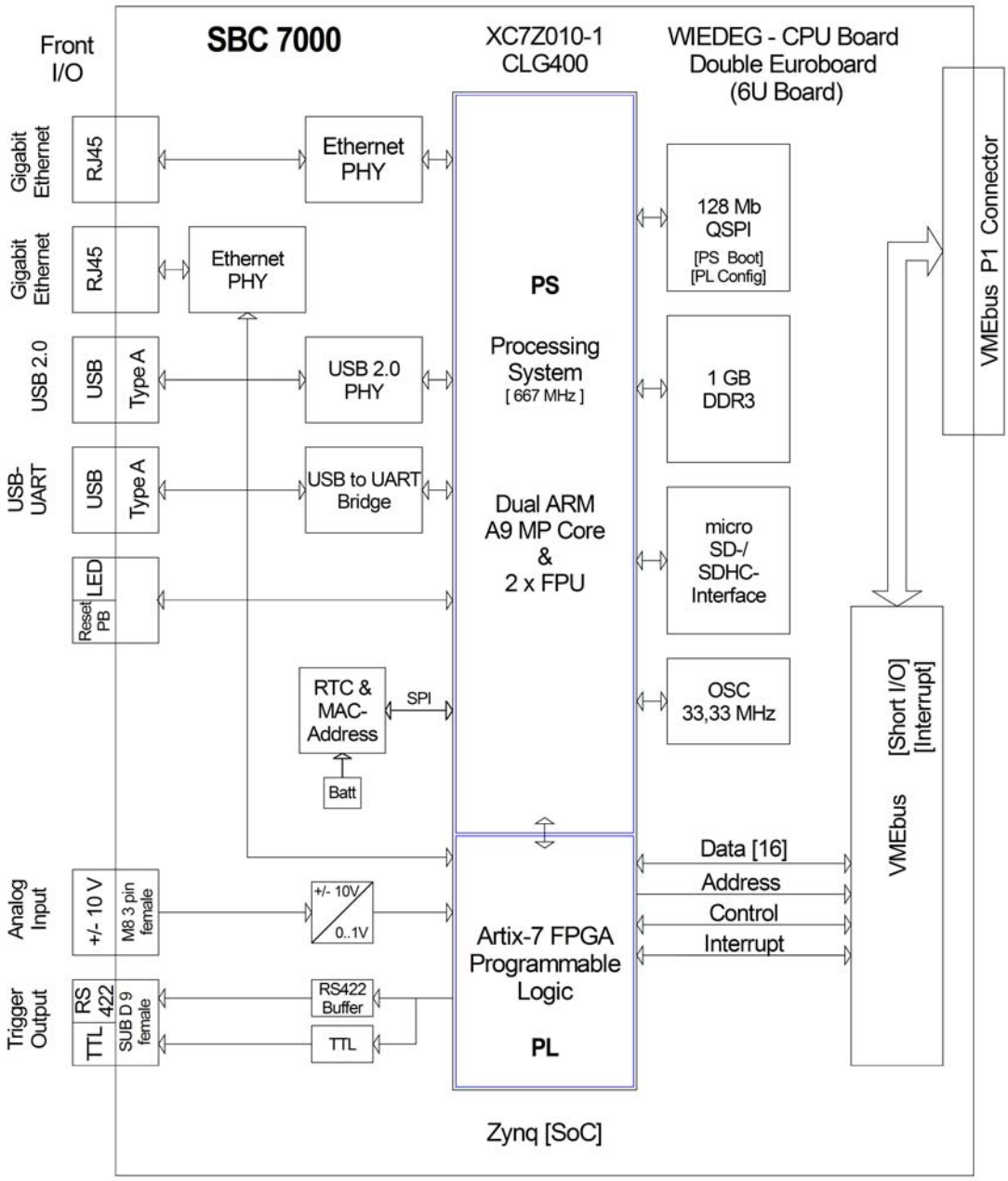
To the PS-Part the required standard hardware, consisting of Flash-, RAM- and memory card and external Ethernet-, USB- and UART-interfaces, is connected.

Further a battery buffered Real-Time-Clock-unit with MAC-addresses is linked here.

In the PL-part the special hardware-interfaces are implemented and coupled to the PS-part.

This involves on the one hand a VMEbus I/O-Interface with full Short I/O and Interrupt-functionality. By means of this interface the extension of the SBC 7000 to a complete, high performance industrial control system is made possible.

On the other hand, there is an analog-input and a trigger-output connected, which were provided for a special usage. In this application a synchronous detection of an analog measurement value was realized with this I/O.



SBC 7000 Features

Hardware Processor

- Zynq XC7Z010-1 SoC
- Processor clock rate 667MHz
- 512 KB L2 Cache
- 256 KB On-Chip Memory
- Dual Core ARM Cortex-A9 based Processor-System (PS) with programmable logic (PL)
- Vector Floating Point Units with single and double precision
- Integrated Controllers for DDR2/3, USB 2.0, 10/100/1000 Ethernet, SPI, SD/SDHC, UART a.m.o.
- Power Supply
  +5V, +12V, -12V
  (VMEbus P1 connector, ±12V for Analog IN-operation only)
- Real-Time Clock/Calendar (RTC)
  with backup-battery (CR2032 battery-socket)

Memory

- Boot Flash Memory
  128Mb QSPI NOR Flash
  Boot Flash Memory for First Stage Bootloader (FSBL), U-Boot and PL-programming-code
- 1 GB DDR3L SDRAM with ECC
- User Memory
  Micro SD- and SDHC card slot

Interfaces / I/O

- USB 2.0 “USB”
  Hi-Speed USB 2.0 ULPI Transceiver
- USB-UART “USB-UART“
  Serial port adapter - USB to RS-232
- Two Gigabit Ethernet LAN-Transceiver
  “LAN1“, “LAN 2“
  10/100/1000 Base-T IEEE 802.3 compliant
- Analog-Input “ANALOG IN“
  - Differential input +/- 10V (Interface 12 Bit ADC)
- Trigger-Output “TRIG OUT“
  RS422- and TTL-Output (Interface digital-input)

VMEbus I/O-Interface P1 Connector

- WIEDEG VMEbus I/O-Interface with full Short I/O- and Interrupt-capability

Control- / Display-Elements

- Reset Pushbutton “RESET“
- Run-LED “CPU“
- Status LEDs “PG” (Power Good), “UART”, “Done” (PL Done) on the board

MAC Addresses

- Two MAC addresses (EUI-48, stored unchangeable within RTC)

Software-Support

- Operation System
  Microware OS-9 RTOS for ARM based systems, version 6.0
- WIEDEG Board Support Package (BSP)
- Firmware Monitor
  U-Boot 2016.01

Performance

- According to Dhrystone and Whetstone-Benchmark the SBC 7000 (1 ARM core) f.i. is up to 4 times more powerful than a MVME 5100 PowerPC CPU-board

Quality / Delivery Reliability

- The entire development and manufacturing as well as product maintenance is done in Germany. Thereby high quality and long term delivery reliability is ensured