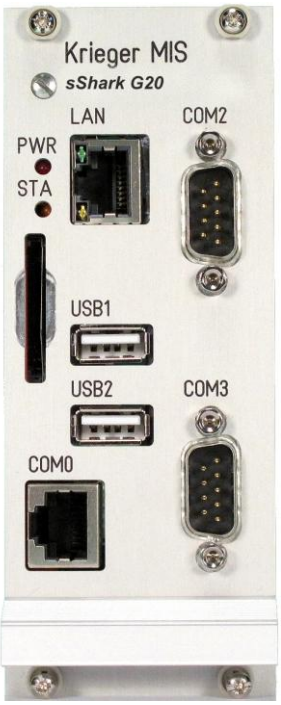
KRIEGER MIS
Mess & Informations Systeme

sShark G20

The ***sShark G20*** is a ready to use single board computer operating with Linux. It has been designed for the use in industrial standard 19 inch systems (3 height units). Based on the Fox Board G20 from ACME Systems it is the ideal solution were the flexibility of Linux combined with 32 bit computing power is required. It beats it 16 bit competitors by maintained the same level of overall system cost. Linux is a well known operating system in industrial environment due to this fact it will be a straight forward task to develop new applications or migrate existing software to the ***sShark G20*** target. Linux kernel 2.6 is supported, Debian or Gentoo distribution. Free open source software and a software development kit is available from Krieger MIS or via download from ACME Systems.

Key Features in Overview



Hardware
- CPU 32 bit ARM9 400 MHz AT91SAM9G20
- Memory 64 MB RAM 8 MB Flash,
  Micro SD-Card for Root-File-System and user data up to 8 GB
- Interfaces
  - LAN 10/100 Mb
  - 2 x USB 2.0 host
  - COM0 (console)
  - COM2 RS232 (front/rear out)
  - COM3 RS232/485 (front/rear out)
  - MMC/SD-Card Slot
  - I/O expansion via 8/16 bit card-bus equipped with DIN 41612 connector, pin-compatible to popular Intel-186 compatible based training systems
  - I2C, LCD, SPI
- Mechanical 3 height units and 6 width units for ‘slim’ model and 10 width units for ‘extendet’ model with 2 Sub-D9 connector on front panel.
- Power supply 5V or 12V (on request)

Software
- Linux operating system kernel 2.6 Debian or Gentoo distribution
- Program languages like GNU C/C++, PHP, TCL, Java, Lua
- Free software development kit from ACME Systems licensed under GPL
- Protocols like HTTP/HTTPS, FTP, TELNET, SSH, PPP, etc.
- Software like busybox, SQLite, utilities, web server, FTP, Telnet, SSH, drivers for LCD, USB, WiFi and Bluetooth dongles, modem GPRS, USB to serial converter, etc.

The ***sShark G20*** can be used in a 19 inch System multiple times to achieve a highly productive multi CPU system or along with expansion cards connected via the 8/16 bit card-bus. Expansion cards for digital I/O, analog to digital conversion, FPGA and DSP daughter boards are in panning.

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sShark G20

Microprocessor:
ATMEL AT91SAM9G20 ARM9 32 bit CPU 400 MHz 400 MIPS.

Memory:
64Mbytes of RAM 8Mbytes of FLASH for bootloader and Linux kernel
Micro SD-Card for Root-File-System and user data up to 8 GB is supported

Interface:
- One Ethernet port at 10/100Mb
- Two USB host 2.0 ports
- I2C and SPI bus
- LCD one double row 2x5 connector for alphanumeric or graphical LCDs via I2C
- COM0 RS232 RJ45, console port for easy configuration and debugging.
- COM2 RS232 via cable for front or rear mounting SUB-D9. It can be configured for all RS232 signals by means of jumpers including DCD, DTR, DSR, RTS, CTS and RI.
- COM3 RS232/485 via cable for front or rear mounting SUB-D9, RS485 half duplex.

The RS232 interfaces are protected against electronic static damage and capable to operate from 0,3 up to 230 kbps.

Expansion Bus:
One of the major key function of the ***sShark G20*** Board is the 16/8 Bit expansion bus interface made available on the back side via the DIN 41612 connector. The expansion bus can be operated in four different modes with signal level low=0V and high=5V. The following I/O pins of the Fox Board CPU module have been used for the expansion bus: PB0-3, PB10-13, PB16-21, PB30-31, PA7,9,11,22,30,31. more details of the function of each pin can be found in the document *sShark G20* pinout and the users manual.

MODE 1 - GPIO:
In this mode the specified IO pins can be used as delivered directly from FOX Board. No level shifting is applicable. All bus drivers are disabled. For this mode no special software device driver is necessary. All I/Os are 3.3V compatible unless otherwise stated. **They are NOT 5V tolerant**!

MODE 2 - 16 Bit:
In this mode the expansion bus operates in 16 bit data mode with no address multiplexing. IO-cards can be selected with means of the chip select lines (CS1-CS4). During a write cycle, the control lines will be assert as following RD\ high, WR\ low and the 16 bit data value is available on D0-D15. During a read cycle, the control lines will be assert as following RD\ low, WR\ high and the 16 bit data value will be read from D0-D15. For this operation mode a software device driver will be delivered from Krieger MIS to support the flow control of data and control lines. All I/Os are 5V compatible!

MODE 3 - 8 Bit:

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In this mode the expansion bus operates in 8 bit data mode with 8 bit address lines. IO-cards can be selected with means of the chip select lines (CS1-CS4). During a write cycle, the 8 bit address will be available on D8-D15 for decoding, the control lines will be assert as following RD\ high, WR\ low and the 8 bit data value is available on D0-D7. During a read cycle, the 8 bit address will be available on D8-D15 for decoding, the control lines will be assert as following RD\ low, WR\ high and the 8 bit data value will be read from D0-D7. For this operation mode no software device driver will be delivered by default but can be request from Krieger MIS if necessary. All I/Os are 5V compatible!

Power supply:
5 Volt (1.5 Watt) or alternatively 12 Volt (2 Watt) if requested.

MMC/SD:
The MMC/SD card connector does accept all memory cards in MMC and SD format. With the means of this connector the non volatile storage can be extended easy and cheap.

RTC:
The real time clock is buffered with a lithium-ion battery for system timekeeping in case of power less. The Linux system time will be set automatically with the RTC time during the boot process.

LED:
LED for power and status indication.

Software:
- Linux operating system kernel 2.6 are supported Debian or Gentoo distribution
- Program languages like GNU C/C++, PHP, TCL, Java, Lua
- Free available software development kit (board support package) from ACME Systems licensed under GNU Public License
- Protocols like HTTP/HTTPS, FTP, TELNET, SSH, PPP, etc.
- Software like busybox, SQLite, utilities, web server, FTP server, Telnet, SSH, drivers for LCD, USB, WiFi and Bluetooth dongles, modem GPRS, USB to serial converter, etc.

Firmware:
Remotely upgradeable through LAN, Web and FTP.

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Further information can be found at

www.krieger-mis.de

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