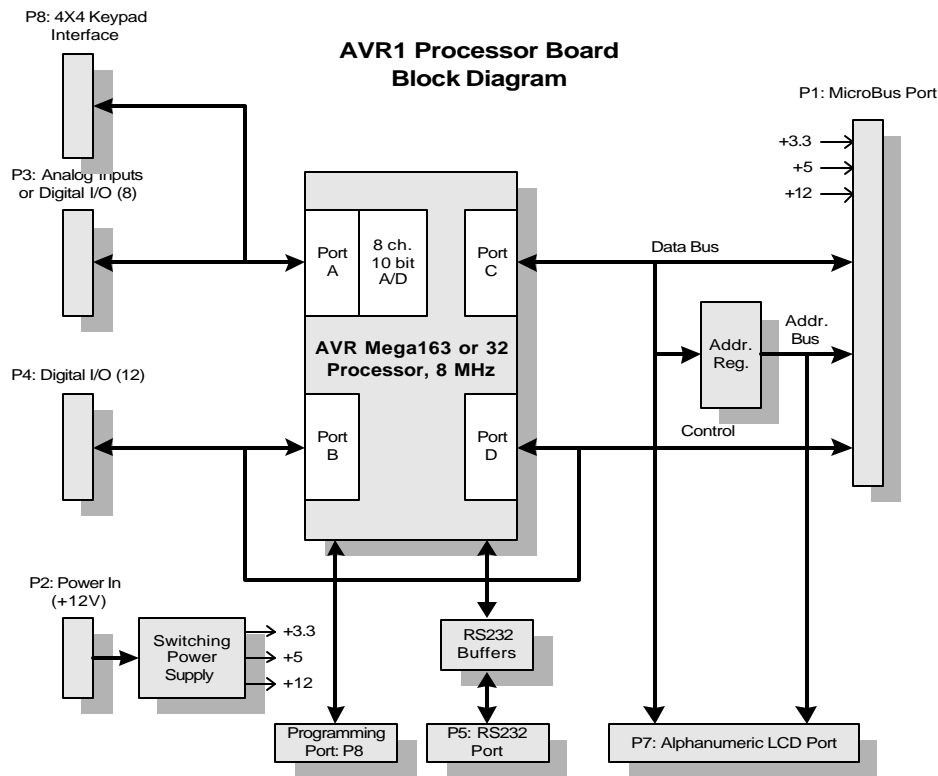


MicroBus (logo) AVR1 Embedded Processor Board

General Description

The MicroBus AVR1 Embedded processor boards are core processors designed for embedded systems. The two versions, AVR1-163 and AVR1-32 are functionally and software compatible with the exception of memory size. The AVR-32 also has a JTAG interface for use with a low cost and powerful JTAG In Circuit Emulator.

AVR 1 Version	Processor	Flash PROM	RAM	EPROM	JTAG
AVR1-163	AT MEGA163	16KB	1KB	512B	NO
AVR1-32	AT MEGA32	32KB	2KB	1KB	YES



AVR1 processors are based on the powerful AVR Mega microprocessors; RISC-based Harvard architecture processors (separate program and data space) that execute most instructions in a single clock cycle at 8 MHz resulting in nearly 8MIPS processor speed. The instruction set is designed from the ground up to execute compiled C programs very quickly and efficiently. Their large on-chip Flash memory capacity allows significant size programs to be run, keeping system costs down.

AVR1 provides interfaces for digital I/O, Analog A/D in, RS232 serial, alphanumeric LCD and keypad interfaces, a powerful timer and PWM outputs allowing it to stand-alone in many applications. Systems requiring additional I/O can be expanded via the simple and powerful MicroBus to include other MicroBus I/O devices such as graphic LCD displays and high performance sensor interfaces. See the MicroBus web site at www.micro-bus.com for available products and the MicroBus specification.

As an example of C coding efficiency, a complete instrument product application with 800 lines of C code including floating point math and I/O libraries fit in just 57% of the smaller AT MEGA163. This application used the ImageCraft ICCAVR Pro compiler.

Despite their high performance, power consumption of AVR1 board is less than 100mW. Power saving modes can reduce power consumption to the milliwatt level.

The AVR-32 uses the JTAG interface for powerful and low cost programming and emulation. It provides on-chip hardware breakpoint and debug logic to be used with the low cost Atmel JTAG emulator. The AVR1-32 can be used as the development board for the lower cost AVR1-163.

AVR1 Features

- ?? Based on single chip Atmel AVR Mega 163 and Mega 32 processors
- ?? 8 MHz processor speed with near 8 MIPS performance
- ?? 16K or 32K in-system programmable FLASH memory
- ?? 1K or 2K RAM memory, 512 or 1K EEPROM memory
- ?? RS232 serial port
- ?? 10 to 18 bits of digital I/O
- ?? Analog Input: 8 Channels, 10 bit resolution A/D
- ?? LCD Alphanumeric and 16 button Keypad Interfaces
- ?? PWM Output
- ?? Three timer / counters including Input Capture and Output Compare
- ?? MicroBus I/O expansion
- ?? Switching regulator accepts unregulated +12V, provides power to MicroBus System
- ?? Watch Dog Timer and brownout detector

MicroBus I/O Expansion Boards:

- ?? **LCD1** Monochrome Graphics LCD controller
- ?? **ANA12** 12 bit Data acquisition system with sensor interfaces and D/As
- ?? **ANA20** 20 bit Data acquisition system with sensor interfaces and D/As
- ?? **DIG1** 48 bit Digital I/O expansion
- ?? **PROTO1** Hardware Prototyping board for MicroBus

Firmware Development Tools Available

Several excellent development tools are available for Atmel Processors.

- ?? ImageCraft ICC C compiler and IDE
- ?? GNU GCC compiler (Free). Other C compilers available from 3rd parties
- ?? Bascom Basic Compiler
- ?? Atmel ISP low cost programmer or JTAG-ICE (AVR1-32 only)
- ?? Atmel AVR Studio: Simulator, Programmer, Assembler (Free)

Specifications

DC Power:	<100 mW (plus MicroBus boards)	Power Input:	11.5-16.0 VDC @ 10ma
Digital I/O:	12-20 bits (1)	Analog A/D in:	8 channels 10 bits lin. 0-5.0V in
Digital I/O drive:	20ma sink	Analog Ref.:	Uses +5V +/-3%
LCD Interface:	14 pin connector to most LCDs	Keypad:	4X4 matrix via 10 pin conn. (2)
MicroBus I/F:	MicroBus Master: D8, A6	Size:	2.5" x 3.5" x 0.5"

(1): Digital I/O pins are shared with Analog inputs

(2): Keypad uses one A/D input

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