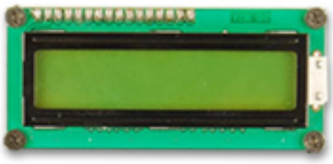
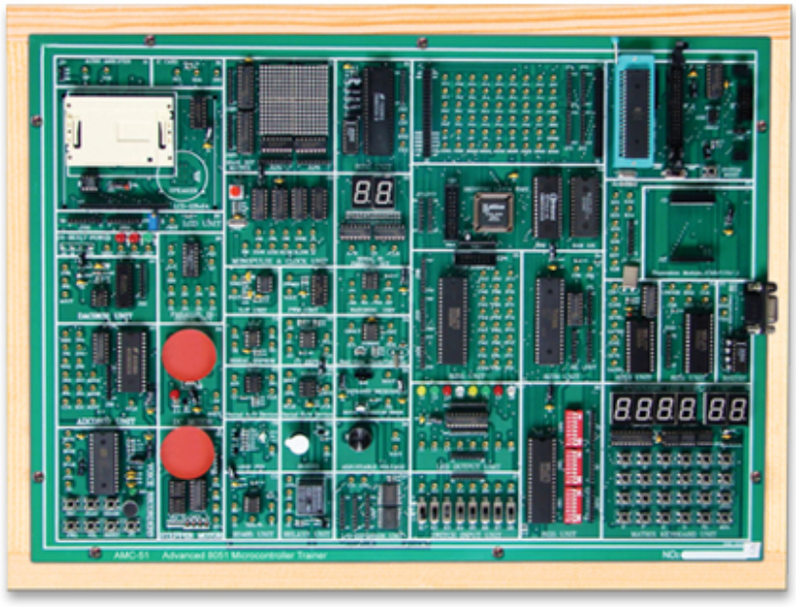
FALCON

Advanced 8051 Microcontroller Trainer

AMC-51

230/12-06-10/0





FEATURES & SPECIFICATIONS

High-speed 8051 microcontroller core:

- Pipeline command structure; 70% of the instruction execution time for one or two system clock cycles
- Speed up to 25MIPS (when the clock frequency of 25MHz)
- 22 vector interrupt sources

Memory:

- 4352 bytes of internal data RAM (4K + 256)
- 64Kbytes of FLASH memory; can be in-system programming, sector size of 512 bytes
- 64Kbytes external data memory interface (or non-programmable mode for the multiplex mode)

Digital peripherals:

- 8-byte wide port I / O (C8051F020) All are 5V tolerant voltage
- Can also use the hardware SMBus (I2CTM compatible), SPITM and two UART serial
- 16-bit programmable counter / timer array with five capture / compare modules
- 5 general-purpose 16-bit counter / timer
- Dedicated watchdog (WDT) timer

The clock source :

- Internal programmable oscillator :2-16MHz
- External oscillator: Crystal, RC, C, or external clock
- Real Time Clock (RTC) mode (with timer 3 or PCA);

Analog Peripherals:

Successive approximation (SAR) 12 ADC (ADC0)

- Programmable sample rate, maximum 100ksps
- Up to 8 external inputs; programmable as single-ended inputs or differential inputs
- Programmable amplifier gain: 16, 8, 4,2,1,0.5
- Data Dependent Windowed Interrupt Generator
- Built-in temperature sensor (± 3 ° C)

8-bit ADC (ADC1)

- Programmable sample rate, maximum 500ksps
- 8 external inputs
- Programmable amplifier gain: 4,2,1,0.5

Two 12-bit DAC

- Can synchronize the output, for generating jitter-free waveform

Two analog comparators

- 16 programmable hysteresis voltage
- Can be used to generate interrupts or reset

Voltage Reference

- Internal reference (2.4V)
- External reference input

On-chip JTAG debug and boundary scan:

- On-chip debug circuitry provides full-speed, in-system debugging
- Support breakpoints, single stepping, watch points, stack monitor; can observe / modify memory and registers
- Meet IEEE1149.1 boundary scan standard

Power supply voltage (2.7V - 3.6V) :

- Typical operating current: 10mA @ 20MHz
- Multiple power-saving sleep mode and shut down

FALCON ELECTRO - TEK PVT. LTD.
Hema Industrial Estate, Sarvoday Nagar, Jogeshwari (East), Mumbai - 400 060, INDIA
Tel : + 91 22 28348429 / 28248665 / 28346339 / 28343608. Fax: + 91 22 28370165, email: falcon@falconindia.biz, www.falconindia.biz

EXPERIMENTS

Hardware:

- P1 port switch-test
- P1 turn light test
- P3.3 input port, P1 port output test
- Industrial sequence control
- 8255 A, B, C port output square wave
- 8255 PA, PB port to control port
- 8255 control traffic lights
- Simple I / O expansion
- A/D0809 conversion
- D/A0832 conversion
- 8279 keyboard display test
- Universal printer
- Micro printer to print characters, curve, experimental character
- Calendar clock DS12887 control
- I2C memory card reading and writing test
- Voice chip ISD1730 control (recording)
- Voice chip ISD1730 control (play)
- Relay control
- Stepper motor control
- 8253 square-wave
- DC motor speed control
- 16 X 16 LED dot matrix display
- 128 X 64 LCD liquid crystal display
- 8250 programmable asynchronous communications interface (spontaneous self-closing)
- 8251 programmable communication interface
- SCM RS232/485 serial send test (two-machine communications)
- SCM RS232/485 serial receiver test (two-machine communications)
- PC-MCU communication via RS232/485

Utility interface:

- CAN bus communication interface
- Ethernet TCP / IP protocol interface
- USB2.0 communication interface
- DS18B20 in temperature measurement of a single bus
- Infrared remote control transceiver test
- TLC549 serial A / D conversion
- TLC5615 10 D / A converter serial
- PCF8563 I ² C calendar clock
- MAX813 watchdog
- V / F converter circuit
- 93C46 serial EEPROM read and write test
- AT24C02 reading and writing test
- PWM conversion
- String conversion using 74LS164 SIPO and 74LS165 PISO
- Experimental electronic music
- 8155 Interface

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