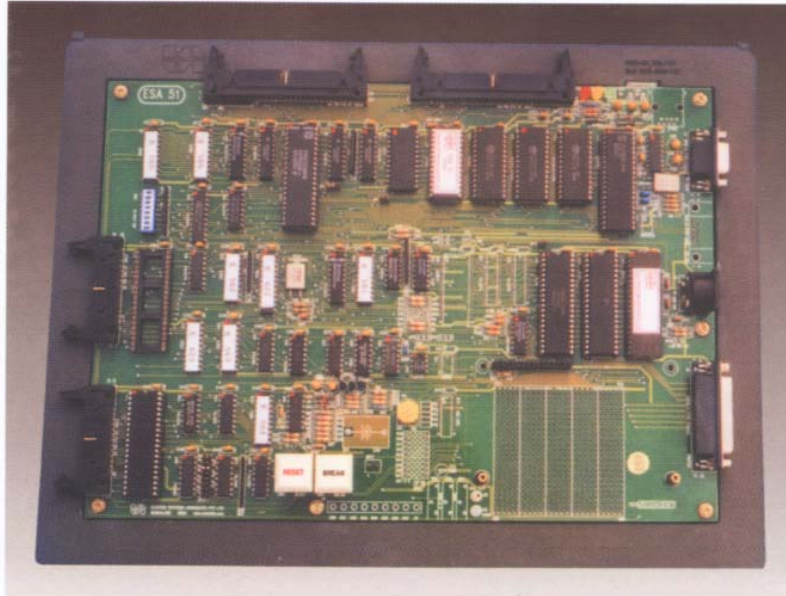




ESA 51

AN ADVANCED
MICROCONTROLLER TRAINER



Intel's MCS-51 family of microcontrollers and its derivatives are increasingly becoming popular for instrumentation and control applications due to its speed and powerful instruction set which are essential for real-time applications. This has created the need for a good trainer and development tools. ESA 51 (an advanced version of ESA 31) provides complete solution for this requirement. It can be used as a flexible instructional aid in academic institutions and a powerful development kit in R&D Labs.

ESA 51 has on-board DAC, ADC (optional) and parallel printer interface. The system firmware provides keyboard monitor, serial monitor, single line assembler, disassembler and drivers for EPROM Programmer and parallel printer interfaces. ESA 51 is supported with comprehensive and user-friendly documentation.

MAIN FEATURES

- ★ ESA 51 operates on single +5V power supply either in stand-alone mode using PC keyboard and LCD or with host PC through its RS-232-C / RS 485 interface (optional) in serial mode.
- ★ Keyboard and serial monitor programs support the entry of user programs, editing and debugging facilities like breakpoints (128K) single stepping and full speed execution of user programs.
- ★ Line assembler & disassembler in both standalone & serial modes.
- ★ Total on-board memory is 128K bytes of which 88K bytes RAM has battery backup provision.
- ★ On-board parallel printer port.
- ★ On-board 8 bit DAC using DAC 0800.
- ★ Optional on-board 12 bit ADC using AD1674.
- ★ 48 I/O lines and four programmable interval timers.
- ★ 13 port lines of 8031 brought out to the connector including INT1, RXD & TXD pins (6 lines are shared for optional 12 bit ADC).
- ★ Buffered bus signals are available through ribbon cable connector for easy system expansion.
- ★ Driver Software for file upload/download to/from host PC.

ACCESSORIES (OPTIONAL)

- ★ Power Supply +5V@3A; +12V @250mA; -12V@100mA; and +30V @ 100mA.
- ★ PC keyboard and 20 X 4 LCD module for stand-alone operation
- ★ EPROM Programmer Interface
- ★ Interface modules for training purpose: Keyboard, Elevator, Display, ADC with DAC, Dual DAC, 8 bit-16 Channel ADC, 12 bit 8 Channel ADC, Logic Controller, Traffic Lights, Tone Generator, Stepper Motor, Opto Isolated Input, Opto Isolated Output, Relay Output etc.,
- ★ 12 bit ADC (AD1674) with 8 channel MUX.
- ★ 3.6V Ni-Cd battery for power backup to RAM.
- ★ Parallel Printer cable.
- ★ RS 485 interfacing cable.
- ★ 26 core ribbon cable connector set.
- ★ 50 core ribbon cable for bus expansion.

SPECIFICATIONS

CENTRAL PROCESSOR

8031 MCU @ 11.0592 MHz.

MEMORY

Four 28 pin JEDEC sockets provide following memory configuration.

PROGRAM MEMORY

ROM : 32K bytes of system firmware using 27C256.

RAM : 32K bytes using 62256.

DATA MEMORY

RAM : 64K bytes using 62256 (32K X 2). Upper most 8K bytes are reserved for I/O addressing and I/O expansion.

PERIPHERALS

8155 : Static HMOS 256 bytes RAM with I/O ports and timer. RAM reserved for monitor, 14 bit timer is available for user and port lines are used for DAC and ADC.

8255 : PPI, Three nos. Two nos are for user, one supplied; another for user expansion. The remaining one is used for parallel printer and optional LCD.

8253 : Programmable interval timer. Three 16 bit programmable timers available for user.

SCN 2681 : Dual channel UART for serial, RS-232-C & RS 485 communication supporting all standard bauds from 110 to 19200.

8042 : Universal Peripheral Interface (Optional) used to interface PC keyboard in stand-alone mode

ADC 1674 : 12 bit ADC, 10 μ s (optional).

DAC 0800 : 8 bit DAC.

INTERRUPTS

External : INT0 is used for implementing single stepping, breakpoints and user's break switch. INT1 is available to user.

Internal : Internal timer and serial interrupts are available to user.

INTERFACE SIGNALS

Bus : STD Bus compatible bus signals available through a 50 pin ribbon cable connector.

Single chip mode : MCU port lines available through a 50 pin ribbon cable connector.

Parallel I/O : 48 TTL compatible lines (2 X 8255) brought out through two 26 pin ribbon cable connectors.

Serial I/O : RS-232-C through on-board 9 Pin D-type female connector.

RS 485 through on-board 9 Pin D-type male connector.

Printer : PC compatible parallel printer interface available on a 25 pin D type female connector.

Timer Signals : Four Timers, Three from 8253 and one from 8155 are available at the 50 pin ribbon cable connectors.

Analog Signals : 8 analog inputs for ADC are fed through terminal blocks.

DAC output is available through a test point.

POWER SUPPLY REQUIREMENT

+5V@1.6A (max)

\pm 12V@250mA (max) for ADC and DAC

Dimensions : (L) 365mm x (B) 275 mm x (H) 55mm

Weight : 1.2 Kgms

Housed in an ABS plastic moulded cabinet

SCOPE OF SUPPLY

1. ESA 51 Trainer
2. User's Manual
3. 8051 Reference Card
4. RS-232-C cable set
5. XT 51 Driver Software



OUR PRODUCT RANGE : Microprocessor Trainers for 8085, Z80, 6502, 6809, 8086/88, 68000; Microcontroller Trainers for 8031, 80C196 KB/KC, 68HC11 and interface modules; DSP Trainers for TMS320 2X, TMS 320 3X, TMS 320 5X; In-Circuit Emulators for 8085, Z80, 6502, 8048 family, 8086 / 8088, 68000 and 8051 family; ROM Emulators; Microcomputer Development Systems; Universal Device Programmers; UV Erasers; PC compatible systems and Add-on Cards, Logic Analyzer, IC Tester, AD/DA cards, DIO cards etc.; Microprinters; Printer Support Products and Software Development Tools.

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