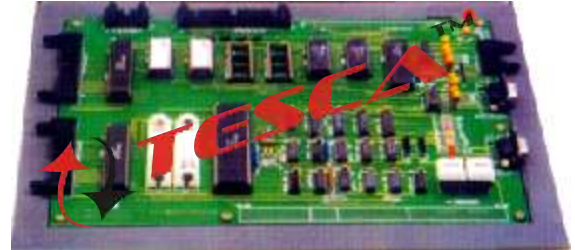


Trainer is a powerful and cost-effective complete single-board microprocessor based on the Motorola 68000 CPU supported by the popular peripheral chips from Motorola. The powerful system monitor includes one-line assembler for mnemonic entry, disassembler and Centronics printer interface driver in addition (0 the user friendly set of debug monitor commands. ABORT facility permits graceful recovery, preserving the complete user context, from "STUCK" programs. It is supported by a wide variety of interface modules making it an extremely useful educational aid. Careful bus arbitration design permits the access of all on-board resources by an off-board master making it easy to expand it into a multi-master configuration. Thus It is a valuable aid for teaching, software and hardware development in academic institutions, research institutions and R&D labs.



Main Features

- * Operates on single +5V power supply with a PC compatible system through its RS 232 C serial communication interface.
- * Powerful system monitor permits entry of programs, debugging through breakpoint, trace and instruction step facilities.
- * Hardware debugging through Read loop, Write loop and Test memory commands.
- * Built-in one line assembler and disassembler.
- * Centronics printer Driver included in the monitor Program.
- * Interfacing with PC compatibles, with file upload / download capability.
- * Provision for multi-master design expansion.
- * ABORT facility to recover gracefully from "STUCK" programs.
- * Flexible and powerful interrupt system.
- * Supported by a variety of interface modules.

Accessories (optional)

- * Interface Modules: Keyboard, Elevator, Display, ADC using DAC, Dual Slope ADC, Dual DAC, Logic Controller, Traffic Lights, RTC, 18 Column Numeric Printer etc.,
- * 68020 / 68881 upgrade: A plug in replacement for 68000 processor which allows all the advanced features of the 68020 and 68681.
- * Centronics printer interface cable.
- * 50 core ribbon cable connector set.

CPU : 68000 at 8 MHZ

MEMORY

- ROM :** Four JEDEC compatible 28 pin sockets provide. 128K Bytes using 4 X 27256 256K Bytes using 4 X 27512 System firmware is supplied in 2 X 27256. Rest is for user expansion.
- RAM :** Four 28-pin sockets Logive 128K bytes using 4 X 62256. 64K Bytes supplied using 2 X 62256. Reset is for user expansion

Peripherals:

- 68681 Dual UART :
To provide two RS-232C Ports 8 output lines, counter timer etc.
- 68230 Parallel Interface / Timer:
To provide 16 I/O lines, 8 user defined lines and 24 bit counter timer with 5 bit (+32) prescaler.

Interrupts:

On-board interrupt priority encoder, On-board autovector generation. Complete flexibility in selecting on-board / off-board interrupt sources. Level 7 interrupt is dedicated for implementing ABORT function.

Bus

Buffered TTL Compatible bus signals brought out to Spectra Strip type 50 pin ribbon cable connector for easy expansion.

Bus arbitration signals available on connector. Provision for accessing on-board resources by off board Master.

Interface Signals

- Parallel 110 :** 24 lines of TTL compatible signals brought out to Spectra Strip type 26 pin ribbon cable connectors.
- Serial 110:** Two RS 232 C ports with standard MODEM control signals through on-board 9 pin D-type connectors.

Scope of Supply

1. 68K-2 Trainer
2. XT68K2 Driver Software
- 3 RS-232C cables set.
4. User's Manual

Note: Specifications are subject to change.

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Specifications:

Central Processor

8031 / 8051 @ 11.0592 Mhz

Memory

Four 28 pin JEDEC sockets provide
Following memory configuration

Program Memory

ROM : 32K bytes of system firmware using 27256.

RAM : 32K bytes using 62256.

Data Memory

Ram : 64K bytes using 62256 (32K X2). 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 parallel printer and optional LCD.

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

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

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

ADC 1674 : 12 bit ADC, 10ms (optional)

DAC 0800 : 8 bit DAC

Interrupts

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

Internal : On chip timer and serial interrupts are available to
user

Interface Signals

Bus : STD bus compatible bus signal 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.

Optional on chip serial port adaptor for
extra RS-232-C Port

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

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

Analog Signals : 8 analog inputs for ADC are fed through
on-board terminal blocks
DAC output is available through a test
point

General:

Power Supply : + 5V @ 1.6A (max)

Requirement : ± 12V @ 100mA (max) for ADC and
DAC

Housed in ABS plastic moulded cabinet

Scope of Supply

1. ESA 51 Trainer
2. User's Manual
3. 8051 Reference Card
4. RS-232-C cable
5. Windows / DOS / Linux Driver Software CD

Note: Specifications are subject to change.

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