GSAS 86/88-A is an advanced version of our popular model GSAS 86/88-A. It is a powerful, general purpose 16 bit microprocessor trainer. The system expansion can be easily done through the system bus connectors. GSAS 86/88-A comes with keyboard monitor, serial monitor, single line assembler, disassembler and driver programs for parallel printer interface, PROM programmer interface. GSAS 86/88-A is delivered with comprehensive user friendly documentation and windows based communication package with on line help.

GSAS 86/88-A can be operated in two modes, (1) stand-alone mode using LCD and optional PC keyboard, (2) Terminal emulator mode with host PC. GSAS 86/88-A serial monitor supports all the standard commands in terminal emulator mode. Also object code files generated for the applications developed using PC native tools like MASM, TASM, etc. can be downloaded to GSAS 86/88-A from the PC. The advanced features of GSAS 86/88-A make it more suitable for the current day application of industries, R & D Labs and for the revised syllabus of all the educational (Engineering, Science and Technology) institutions.

MAIN FEATURES

- GSAS 86/88-A operates either in stand-alone mode (keyboard and LCD) or with host PC through its USB/RS-232-C / RS-485 interface in serial mode.
- Works with either 8086 CPU in Max Mode at a frequency of 8 MHz.
- Provision for on-board 8087 NDP.
- Keyboard and serial monitor programs support the entry of user program, editing and debugging facilities like breakpoint, single-step and full speed execution of user program.
- Built-in one line Assembler, Disassembler in both serial and stand-alone modes of operation.
- Provision for on-board memory of 1M bytes of which 896K bytes of RAM has optional battery backup.
- On-board parallel printer port.
- On-board 8 bit DAC using DAC 0800.
- Provision for on-board 12 bit ADC using AD1674.
- 48 I/O lines and three 16-bit programmable interval timers.
- On-board interrupts controller handles eight external interrupt sources. Provision for cascading through expansion connector.
- Provision for system bus expansion through ribbon cable connector.
- Driver Software for file upload / download to / from host PC

ACCESSORIES (Optional)

- Power Supply: +5V @ 3A, ±12V @ 250mA, 30V @ 100mA.
- PC keyboard for stand-alone mode of operation
- 8087 Numeric Data Processor.
- EPROM Programmer Interface (2716 through 27512)
- Interface modules for training purpose: Keyboard, Elevator, Display, Dual DAC, 12 bit 8 Channel ADC, Logic Controller, Traffic Lights, Tone Generator, Stepper Motor, Opto Isolated Input, Opto Isolated Output, Relay Output, DC Motor Interface, Temperature Controller Interface etc.
- Study card modules for 8255, 8251/8253, 8279 and 8259.
- On board 12 bit ADC (ADC1674) with 8 channel MUX.
- Parallel Printer cable.
- RS-485 interface
- 3.6V Ni-Cd Battery back-up for RAM.
- RS-232 Cable.

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CPU

8086/8088 @ 8MHz in maximum mode (Supplied with 8086 CPU)

8087 NDP

CO-PROCESSOR

MEMORY

6 JEDEC 32 pin sockets provide the following memory configuration:

ROM : 256K bytes (128 x 2) system firmware using 27C10.
RAM : 256K bytes using 628128 (128K x 2) upgradable 512K bytes using 628512 (256K x 2)

EXPANSION:

RAM : 256K bytes using 628128 (128K x 2) / 512K bytes using 628512 (256K x 2)
OR

ROM : 128K bytes using 27C512 (64K x 2) to 512K bytes using 27C020 (256K x 2)

PERIPHERALS

8255 : PPI (Programmable Peripheral Interface): Five nos. 120 programmable I/O lines. Three 8255s are used for parallel printer interface, DAC, LCD & optional ADC. Two 8255s available to user; one supplied, one optional.
8253 : Programmable Interval Timer: three 16 bit programmable timers available for user.
2681 : Dual channel UART used for serial communication USB/(RS-232-C and RS-485) supporting standard baud rates up to 38400.
8042 : UPI Universal Peripheral Interface used to interface PC keyboard in stand-alone mode.
8259A : Programmable Interrupt Controller provides interrupt vectors for 8 independent interrupt sources
8288 : Bus-controller used to generate control signals
8284 : Clock-generator used to generate clock for processor and associated peripherals.

AD 1674 : 12 bit ADC 10µs.
DAC 0800 : 8 bit DAC

INTERRUPTS

External : NMI connected to on-board switch with user defined vector INTR controlled by 8259A PIC.
Internal : Interrupt Vector 1 (Single Step Interrupt) and 3 (Break point Interrupt) reserved for monitor.

INTERFACE SIGNALS

CPU Bus : Demultiplexed and fully buffered, TTL compatible. Address, Data & Control signals are available on two 50 pin ribbon cable connectors.
Parallel I/O : 48 programmable parallel I/O lines (TTL compatible) through two 26 pin ribbon cable connectors.
Serial I/O : RS-232-C through on-board 9 pin D-type female connector, USBPort through level shifter max232, FT232 Drivers and RS-485 through on-board 9 pin D-type male connector.

TIMER SIGNALS

Signals : Timer 0,1,2 signals are brought to header.
Analog Signals : 8 analog inputs for ADC are fed through terminal blocks.
DAC output is available at a test points.

GENERAL

Power Supply : + 5V DC @ 1.3A (Approx.)
Requirement : ±12V@250mA, (max) for ADC, DAC
Dimension : (L) 365mm x (B) 275mm x (H) 55mm (Approx.)
Weight : 1300gms (Approx.)

SCOPE OF SUPPLY

1. GSAS 86/88-A Trainer
2. USB (A-B) Cable
3. Driver Software (CD) For Windows and Dos

( Note : Specifications are subject to change without prior notice )

OUR PRODUCT RANGE : EDA Tools and FPGA development boards from ALTIUM; Zeroplus logic cum protocol analyzers, Portable Microscope, Testing & Measuring Equipment, Testing & Measuring Systems, Universal Device Programmers; ARM/PIC Trainer and Interface Modules, Incircuit test and Flash Systems; In-Circuit Emulators; ROM Emulators; Microcomputer Development Systems; Add-on Cards, AD/DA cards, DIO cards, Microprinters, Microprocessor Trainers for 8085, 8086/88; Microcontroller Trainers for 8031/51 etc.

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