ELECTRO SYSTEMS ASSOCIATES

ESA MICROCONTROLLER AND MICROPROCESSOR TRAINERS

For Embedded Systems Courses

ESA ARM EVALUATION BOARDS

ESA KEIL MCB 2140

ESA KEIL ARM 7 Evaluation Board for LPC 2148

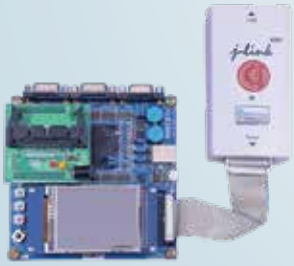
- 60 MHz ARM7TDMI processor- LPC 2148 based MCU
- On-Chip Memory: 512KB Flash and 32KB RAM
- USB 2.0 Full Speed – USB Device
- 2 Serial Ports, SD Card Interface and 2 push-buttons
- Analog Voltage Control for ADC Input
- Amplifier and Speaker
- Debug Interface Connectors 20-pin JTAG (0.1 inch connector)
- Provision to work with Interfaces

ESA KEIL MCB 1760

ESA KEIL ARM CORTEX M3 Evaluation Board for 1768

- 100MHz ARM Cortex-M3 processor- LPC 1768 based MCU in 100-pin LQFP
- On-Chip Memory: 512KB Flash and 64KB RAM
- Color QVGA TFT LCD
- 10/100 Ethernet Port
- USB 2.0 Full Speed - USB, USB-OTG, and USB Host
- 2 CAN interfaces, 2 Serial Ports, SD/MMC Card Interface, 5-position Joystick and push-button
- Analog Voltage Control for ADC Input
- Amplifier and Speaker
- Debug Interface Connectors
  - 20-pin JTAG (0.1 inch connector)
  - 10-pin Cortex debug (0.05 inch connector)
- Provision to work with Interfaces

ESA KEIL MCB 2929



ESA KEIL ARM968E-S Evaluation Board for LPC 2929

- 125MHz LPC2929 ARM968E-S processor-based MCU in 144-pin LQFP
- On-Chip Memory: 768KB Flash, 56KB RAM, & 16KB EEPROM
- External Memory: 1MB SRAM
- Color QVGA TFT LCD with touch screen
- USB 2.0 Full Speed - USB, USB-OTG, & USB Host
- 2 CAN Interfaces, Serial Ports, 5-position Joystick and push-button
- MicroSD Card Interface
- Analog Voltage Control (2) for ADC Input
- 20 PIN JTAG (0.1 inch connector)
- Provision to work with Interfaces

ESA SEGGER J-LINK EDU

JTAG Debugger

- ESA SEGGER J-Link EDU Supports multiple target interfaces (JTAG, SWD)
- Supports up to 3Mbytes/s download speed
- Supports multi-core de-bugging
- Supports an unlimited number of software breakpoints in flash memory
- Cross platform support (Microsoft Windows, Linux, Mac OS X)
- Support ARM 7/9/11, Cortex™, Microchip PIC32™, Renesas RX™ CPUs
- Supported by all major IDEs such as
  - Keil MDK-ARM
  - GDB-based IDEs and
  - SEGGER Embedded Studio

ESA SEGGER EMPOWER

ESA SEGGER emPower Evaluation Board

- Kinetis MK66FN2M0VMD18, 180 MHz ARM Cortex-M4 based core with DSP instructions and Single Precision Floating Point unit
- 1.8" LCD module (resolution 160x128)
- External debug interface (19-pin Cortex-M); incl. trace
- USB device: High speed, B-type connector (as on J-Link)
- 2 MB program flash memory, 256 KB RAM and 4 KB FlexRAM
- NAND Flash 1GBit
- Joystick 4(+1)-way, 3 expansion interfaces providing I2C, SPI buses, UART, GPIO/timer, analog input, power; compatible to 3.3 V SExI modules, Micro SD card connector
- Two 16-bit SAR ADCs and two 12-bit DAC
- Ethernet controller with RMII interface to external PHY and hardware IEEE 1588 capability
- USB high-/full-/low-speed On-the-Go with on-chip high speed transceiver
- USB full-/low-speed OTG with on-chip transceiver
- CAN, SPI, I2C and UART modules
- Secure Digital Host Controller (SDHC)

ESA 16 BIT MICROPROCESSOR TRAINERS

ESA 86/88-2

8086 based Microprocessor Trainer

- Works with either 8086 or 8088 processors. Operates at 8MHz
- Operates on Single 5V Power Supply
- Provision for on-board NDP 8087
- Peripheral controllers: 8279, 8288, 8251, 8259, 8253 and 8255
- Stand alone and Serial mode of operation
- Stand alone user interface is 7-segment display and on board key pad. RS232 for serial mode
- Built-in one line Assembler/Disassembler in serial mode
- Provision to work with Interfaces

ESA 86/88-3

8086 based Advanced Microprocessor Trainer

- Works with either 8086 or 8088 processors. Operates at 8MHz
- Operates on Single 5V. Optional ±12V Power Supply required for Optional ADC and DAC
- Provision for on-board NDP 8087
- Peripheral controllers: 8288, 8251, 8259, 8253, SCN2681, and 8255
- Optional Onboard 12 bit ADC 1674 and 8 bit DAC 0800
- Stand alone user interface is 20x4 LCD and PS2 Keyboard. RS232/RS485 for serial mode
- Built-in one line Assembler/Disassembler
- Provision to work with Interfaces

ESA 86/88E

8086 based Low cost Microprocessor Trainer

- Works with either 8086 or 8088 processors. Operates at 5MHz
- Operates on Single 5V Power Supply
- Provision for on-board NDP 8087
- Peripheral controllers: 8288, 8284, 8251, 8042, 8253 and 8255
- Stand alone user interface is 20x4 LCD and PS2 Keyboard. RS232/USB(VCP) for serial mode
- Built-in one line Assembler/Disassembler
- Provision to work with Interfaces

ESA 8 BIT MICROCONTROLLER TRAINERS

ESA 31

8051 based Microcontroller Trainer

- Works with Intel 8051 based controller Operates at 11.0592 MHz
- Operates on 5V Power Supply
- Peripheral controllers: 8155, 8251, 8279, 8253 and 8255
- Stand alone user interface is 7-segment display and on board key pad. RS232 for serial mode
- Built-in one line Assembler/Disassembler in serial mode
- Provision to work with Interfaces

ESA 51E

8051 based low cost Microcontroller Trainer

- Works with Intel 8051 based controller. Operates at 11.0592 MHz
- Operates on Single 5V Power Supply
- Peripheral controllers: 8042, 8253, 8155 and 8255
- Stand alone user interface is 20x4 LCD and PS2 Keyboard. RS232/USB(VCP) for serial mode
- Built-in one line Assembler/Disassembler
- Provision to work with Interfaces

ESA 51

8051 based Advanced Microcontroller Trainer

- Works with Intel 8051 based controller. Operates at 11.0592 MHz
- Operates on Single 5V. Optional ±12V Power Supply required for Optional ADC and DAC
- Peripheral controllers: 8042, 8253, SCN2681, and 8255
- Optional on-board 12 bit ADC 1674 and 8 bit DAC 0800
- Stand alone user interface is 20x4 LCD and PS2 Keyboard. RS232 for serial mode
- Built-in one line Assembler/Disassembler
- Provision to work with Interfaces

ESA MCB 51

8051 based Single Chip MCU Trainer

- Works with AT89C51ED2/RD2 Operates at 11.0592 MHz
- Operates on Single 5V Power Supply
- The power full on-chip flash monitor provides communication with Keil µ Vision Debugger
- On-board ISP support for On-chip flash programming
- On-Board LCD (16x2), interfaced to port lines.
- On board UART to USB convertor
- Provision to work with Interfaces
- Push buttons for INT0 ,INT1 and Reset

ESA MCB 51-2

8051 based Advanced Single chip MCU Trainer

- Works with AT89C51ED2/RD2 Operates at 11.0592 MHz
- Operates on Single 5V Power Supply
- On board UART to USB convertor, 8255 PP, ACE TL16C550 for RS-232C port
- Powerful monitor in EPROM helps in integration of MCB 51-2 with Keil µVision Debugger
- System configuration using on-board DIP switches
- LEDs connected to port P1 for program testing
- On-board EEPROM (24AA010) with SPI interface
- Push buttons for INT0, INT1 and Reset
- Supports ISP, Keil Debugging, and Provision to work with Interfaces

ESA 8 BIT MICROPROCESSOR TRAINERS

ESA 85-2

8085 based Advanced Microprocessor Trainer

- Based on Intel 8085 processors. Operates at 3.072 MHz
- Operates on 5V. Requires ±12V, 30V for EEPROM programmer
- Peripheral controllers: 8259, 8251, 8279, 8253 and 8255
- Stand alone user interface is 7-segment display and on board key pad. RS232 for serial mode
- Built-in one line Assembler/Disassembler in serial mode
- Onboard EPROM Programmer features a 28-pin ZIF socket to program all standard EPROMs 2716 through 27512
- Provision to work with Interfaces

MPS 85-3

8085 based Microprocessor Trainer

- Based on Intel 8085 processors. Operates at 3.072 MHz
- Operates on Single 5V Power Supply
- Peripheral controllers: 8251, 8279, 8253 and 8255
- Stand alone user interface is 7-segment display and on board key pad. RS232 for serial mode
- Built-in one line Assembler/Disassembler in serial mode
- Provision to work with Interfaces

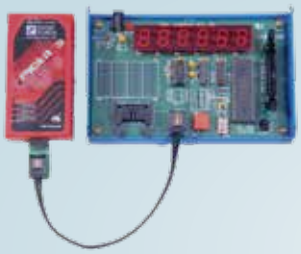
ESA 85E

8085 based low -cost Microprocessor Trainer

- Based on Intel 8085 processors. Operates at 3.072 MHz
- Operates on Single 5V Power Supply
- Peripheral controllers: 8251,8253, 89C2051 and 8255
- Stand alone user interface is 20x4 LCD and PS2 Keyboard. RS232 for serial mode
- Built-in one line Assembler/Disassembler
- Provision to work with Interfaces

ESA PERIPHERAL INTERFACE CARDS (PIC) TRAINERS

ESA SAR PIC 03



PIC 16F87x based microcontroller Trainer

- Works with PIC 16F87x Operates at 4 MHz
- Operates on Single 5V Power Supply
- MPLABIDE to Develop program in Assembly and C
- Six multiplexed seven-segment display
- Provision to work with Interfaces

ESA LP PICKIT 3

PIC In-circuit Debugger/programmer

- ESA PICKIT 3 along with ESA PIC makes a full setup to carry out PIC related experiments in MPLAB environment
- It can either be used as programmer or debugger
- Supports programmable V_{pp}/V_{dd}, Full speed USB

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