

Z12/EV

(8051 MICROCONTROLLER)

INTRODUCTION

Z12/EV is one of the experiment boards that constitute the Interactive Practical Electronics System – I.P.E.S. It consists of a set of components and circuits for performing experiments.

The lessons included in this module can be developed in:

- **Standard mode:** using the switches of the equipment and consulting the handbook;

- **Computerized mode:** the interactive software version of the handbook - SW-D-Z12/EV - interfaced to the module via Control Unit SIS3-U/EV, is used. This software inserts circuit variations and faults automatically enabling the development of lessons even without teacher's assistance.

Z12/EV

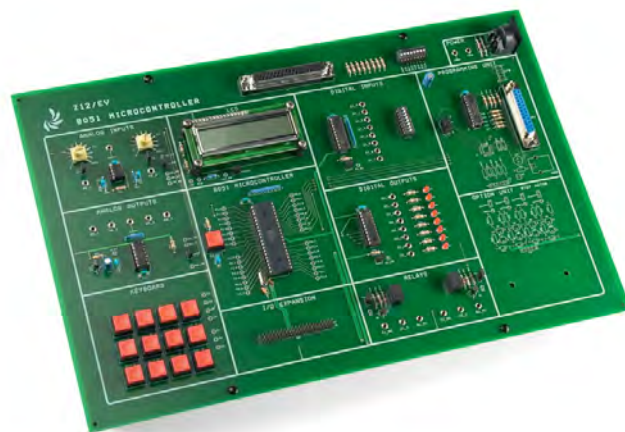
The Z12/EV microcontroller board studies one of the most used microcontrollers in industry and integrates a FLASH memory. Thanks to the flash memory the in-system' (ISP) programming and debugging is allowed, really simplifying the programming and development process.

The chosen microcontroller is one of the most used in the industry 8051 and integrates a FLASH memory. Thanks to the flash memory the in-system' (ISP) programming and debugging is allowed, really simplifying the programming and development process.

Board using such kind of microcontroller allows to learn programming and interfacing techniques with the use of typical components: display, keyboards, sensors and actuators.

For developing the applications related to the board circuitual fields it is necessary to proceed as follows:

- Program PC insertion in assembler language, using an editing text;
- Program compilation and linking for the transformation of the machine code with the microcontroller;
- Transfer via USB parallel interface of the program on FLASH memory, included in the microcontroller;
- Program debug directly on microcontroller board with the same hardware sources.



TRAINING PROGRAM:

- System programming with microcontrollers;
- 8051 microcontrollers: block scheme;
- Software development: edit, assembler, linker;
- 8051 Internal architecture;
- A and B ports: input/output functioning, i/o hardware structure;
- Counter and timers;
- Interrupt: event type and enable, interrupt vector, handler and flag;
- Power-off ad watchdog time: sleep function, prescaler use;
- LCD display interface: Enable and Register Select lines;
- Analogue signal acquisition;
- Analogue signal generator.

TECHNICAL SPECIFICATIONS:

- Microcontroller 8051, 80C51 compatible, instruction set and pinout;
- Clock: 24 MHz;
- Programmable memory In-System Programmable (ISP), Flash: 4KB;
- Memory: 128x8-bit SRAM;
- N.4 ports I/O 8-bit;
- Expansion connector of the system ports I/O;
- Alphanumeric LCD Display;
- Keyboard - 12 keys;
- 8 bit A/D Converter with N.2 channels;
- 8 bit D/A Converter with N.2 channels;
- N.8 LED;
- N.8 DIP switches;
- N.2 Relays;
- PC interface through Parallel/USB ports;
- N.8 faults to be inserted in the system;
- Software for Windows PC with Edit, Assembler and programs Downloading;
- Fault simulation;
- Test and interconnection points, Ø 2 mm;
- Jumpers for rapid circuit modification;
- 37-pin connector to the control unit;
- 8-wire connector to the power supply unit.

Dimensions: 386 x 248 x 40 mm

It's possible to connect and to experience the following mod. F04/EV application modules:

F04-0/EV
F04-1/EV
F04-2/EV
F04-3/EV
F04-4/EV
F04-5/EV
F04-6/EV
F04-7/EV

(see details from pag. EB53)

GENERAL FEATURES:

- Printed circuit with protective treatment and silk screen mimic diagram
- Additional modules (optional boards) are available for other applications

DEVELOPMENT SOFTWARE

Program for editing, compiling, linking and parallel transmission from Personal Computer to board mod. Z12/EV.

REQUIRED



**PSLC/EV
POWER SUPPLY UNIT
- NOT INCLUDED -**

**POWER SUPPLY
+5 Vdc – 2A**

SUPPLIED WITH

**STUDENT HANDBOOK: THEORY AND EXERCISES
TEACHER HANDBOOK: WIRING DIAGRAMS
AND SOLUTIONS OF EXERCISES**



OPTIONAL

PERSONAL COMPUTER



**FAULT INSERTION UNIT SIS3-U/EV AND
MULTIMEDIA SOFTWARE SW-D-Z12/EV**