

EBLOCKS[®]

Embedded internet training solution



General information

The Embedded internet training solution allows students to construct embedded systems that send emails and serve web pages, and teaches students the fundamentals of modern digital communications within an OSI model context.

1. Features

- Includes two web server boards
- Allows students to explore MAC, IP, ARP, UDP and TCP protocols
- Allows students to set up a firewall

2. Benefits

- Extremely economical solution to learning internet protocol and digital communications.
- Teaches many aspects of OSI model technology in an electronics context.
- Highly motivating resource that allows surprisingly functional systems to be created.

Solution description

This extraordinary training solution allows students to carry out a wide variety of investigations into digital communications technology in an internet technology context. The solution can be used at two levels: at technician level, very high level Flowcode macros allow students to easily incorporate email and web page construction technology—integrated with Flowcode variables—which provides a highly motivating platform for a wide variety of programming tasks.

At a higher academic level, when used in conjunction with a PC and a web browser, this equipment allows students to conduct a range of experiments that builds understanding of modern digital communications protocols including Ethernet, DLC, MAC, ARP, TCP, IP, UDP, ICMP, HTTP and POP3 protocols and their relative position in the OSI model.

The solution consists of a pack of E-blocks that form an embedded internet solution—including two web servers. Students use the hardware and four sets of Flowcode macros that allow students to access at the MAC, UDP, TCP and IP layers. Students progress through a number of exercises to build their understanding: starting with byte-by-byte packet construction at the

MAC layer, and building up to constructing advanced systems including an email server, web page server, and firewall using Flowcode macros at the TCP layer.

All E-blocks boards are fitted with clear acrylic covers which prevent links and chips from being removed. The solution is assembled and tested in the Factory, and is shipped in rugged plastic trays for storage and transport.

A Professional Academic PIC single user licence of Flowcode V6 graphical programming software is provided. Flowcode allows students to understand communications programs and strategies without getting bogged down in the complexity of C or Assembly code. The system can also be used with C and Assembly code (software not provided).

A 50+ page printed and bound manual with student exercises is included. This is also available in electronic form (Word and PDF) along with fully worked examples on CD ROM.

Learning objectives

1. Technician level:

- Fundamentals of flow chart programming in an internet context.
- Construction of embedded internet systems providing with web page server and email functions

2. Undergraduate / BTEC level:

- Understanding of packet structure, and construction, at MAC and all higher protocol layers
- Understanding of communication strategy and information flow at MAC and higher protocol layers.

3. Tasks included in the manual are:

- ARP scanner
- Ping
- Time and date using UDP
- Sending HTML using HTTP
- Receiving HTML
- Sending an email using SMTP

4. Advanced tasks

- Custom messaging using UDP
- A firewall application

Further information

1. Learning time

Dependant on course structure and options chosen from the teacher's manual. Approximate figures: 40 hours.

2. Prerequisites

- Some understanding of electronics
- Windows skills

3. System requirements

PC with CD ROM drive and Windows XP or greater.

4. Further information

A separate datasheet is available for each of the E-blocks boards included in the pack. Please see our web site for details.

5. Order code

The order code for this product is EB643.

6. Also consider

Mobile phone training solution
CAN bus training solution
Zigbee training solution
USB training solution
Bluetooth training solution

Solution Contents

The table gives a list of the major items of the pack contents.

Datasheets on any individual item are available from the resource section of the Matrix TSL website www.matrixtsl.com



Qty	Description
1	Internet solution CD ROM
1	Internet solution teachers notes
1	Flowcode V6 Professional Academic PIC single user licence
1	Ethernet crossover cable
1	Adjustable power supply
1	USB lead
1	E- blocks Sensor interface board
1	E- blocks LED board
1	E-blocks LCD board
1	E- blocks USB Multiprogrammer board
1	E-blocks Switch board
2	E-blocks internet board



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