Digital communications training solution

What does it do?

The internet / digital communications 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.

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.

Features

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

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 variable.s.—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.

Learning time

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

40 hours.

Prerequisites

- Some understanding of electronics
- Windows skills

Manual

An 80 page manual is supplied with this product with a range of suggested student activities and sample files on CD ROM.

System requirements

PC with CD ROM drive and Windows 98 or greater.

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.

Order code

The order code for this product is EB643.

Also consider

Bluetooth communications solution.

Digital communications training solution

Learning objectives

Technician level:

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

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.

Tasks included in the manual are:

1. ARP scanner
2. Ping
3. Time and date using UDP
4. Sending HTML using HTTP
5. Receiving HTML
6. Sending an email using SMTP

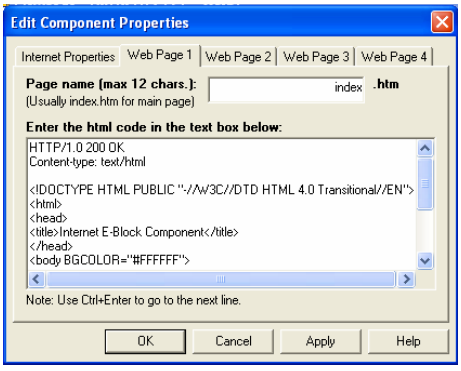
Advanced tasks

1. Custom messaging using UDP
2. A firewall application

Pack contents

The table below gives a list of the pack contents. Datasheets on any individual item are available on request.

Tray	Qty	Code	Description
1	1	EB01400	E-blocks Keypad
1	1	EB229	Internet solution CD ROM
1	1	EB634	E-blocks IDC cable
1	1	EB635	Dual E-blocks IDC cable
1	1	EB714	E-blocks Keypad cover
1	1	EB921	Internet solution teacher's notes
1	1	EBPUB	E-blocks publicity sheet
1	1	ELSAM	ELSAM mini CD ROM
1	1	HP2045	Shallow plastic tray
1	1	HP233	Hardware Warranty card
1	1	HP338	Ethernet crossover cable
1	1	HP3844	Foam insert for trays
1	1	HP4039	Lid for plastic trays
1	1	HP9734	Cardboard box for trays
1	1	HP999	USB Driver setup instructions
1	1	HPPSU2	Adjustable power supply
1	1	HPUSB	USB lead
1	1	HSTMP	Wide range stainless steel temperature probe
1	1	TEFLCSI2	Flowcode for PICmicro MCUs v2
2	1	BP232	E-blocks backplane - tray compatible
2	1	EB00300	E-blocks sensor interface
2	1	EB00400	E-Blocks LED board
2	1	EB00500	E-Blocks LCD board
2	1	EB00600	E-blocks USB Multiprogrammer
2	1	EB00700	E-Blocks Switch board
2	2	EB02300	E-blocks internet board
2	2	EB634	E-blocks IDC cable
2	1	EB704	E-blocks LED board cover
2	1	EB705	E-blocks LCD board cover
2	1	EB706	E-blocks PICmicro multiprogrammer cover
2	1	EB707	E-blocks switch board cover
2	1	HP16F877	PIC16F877A
2	1	HP2045	Shallow plastic tray
2	1	HP3844	Foam insert for trays
2	1	HP4039	Lid for plastic trays
2	1	HP9734	Cardboard box for trays



High level web page server used for technicians.

The internet module is the heart of the system.