

# **E**BLOCKS<sup>®</sup>

Mobile phone solution



# General information

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Provides a motivating solution for learning about communications technology, system construction, and project development.

## 1. Features

- Fully working mobile phone constructed from E-blocks
- Includes Flowcode Professional software
- Full curriculum support
- A great introduction to communications practice

## 2. Benefits

- Provides understanding of digital communications strategy, practice, and implementation

# Solution description

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This solution can be used to provide a complete 20 hour course in developing communication systems. This will give students who are familiar with microcontrollers an understanding of the programming techniques involved in developing communication systems, as well as an understanding of how electronic systems are developed from scratch. The solution can also be used as a motivating platform for learning general microcontroller programming and project work.

The solution includes a fully working GSM mobile phone based on E-blocks™. 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.

This solution is made available at a discount to the sum of the individual parts.

# Learning objectives

The mobile phone can be used for teaching microcontroller programming in a highly motivating context. It is also useful for teaching the specifics of communication system development and has many outcomes which include:

## 1. Programming outcomes:

- General programming of systems including LCD, Keypad etc
- RS232 protocol and programming
- String construction and deconstruction
- in communications
- The use of state machines in controlling electronic systems

## 2. Communications outcomes:

- RS232 communications and handshaking protocols
- ASCII representation of characters in messages
- AT command structure and command protocols used in telecommunications
- Sending and receiving text messages in mobile phone systems

## 3. Modem control and messaging

- Project management and development outcomes
- The use of flowcharts and state diagrams in planning systems
- How electronic systems are developed from scratch
- The modular approach to building electronic systems

# Further information

## 1. Learning time

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

Electronics: up to 20 hours

## 2. Prerequisites

- Some understanding of electronics
- Windows skills
- Some microcontroller programming in C, Assembly or Flowcharts

## 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 EB118.

## 6. Also consider

CAN bus training solution  
Zigbee training solution  
USB training solution  
Embedded internet training solution  
RFID training solution  
Bluetooth training solution  
FPGA 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](http://www.matrixtsl.com)



Qty	Description
1	Mobile phone solution CD
1	Mobile phone teachers notes
1	Flowcode V6 Professional Academic PIC single user licence
1	Adjustable power supply
1	USB lead
1	E-blocks sensor interface motherboard
1	Digital temperature sensor module
1	E-blocks LCD board
1	E-blocks USB Multiprogrammer board
1	E-blocks Keypad
1	E-blocks GSM board
1	Headset (with mic and headphones)



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