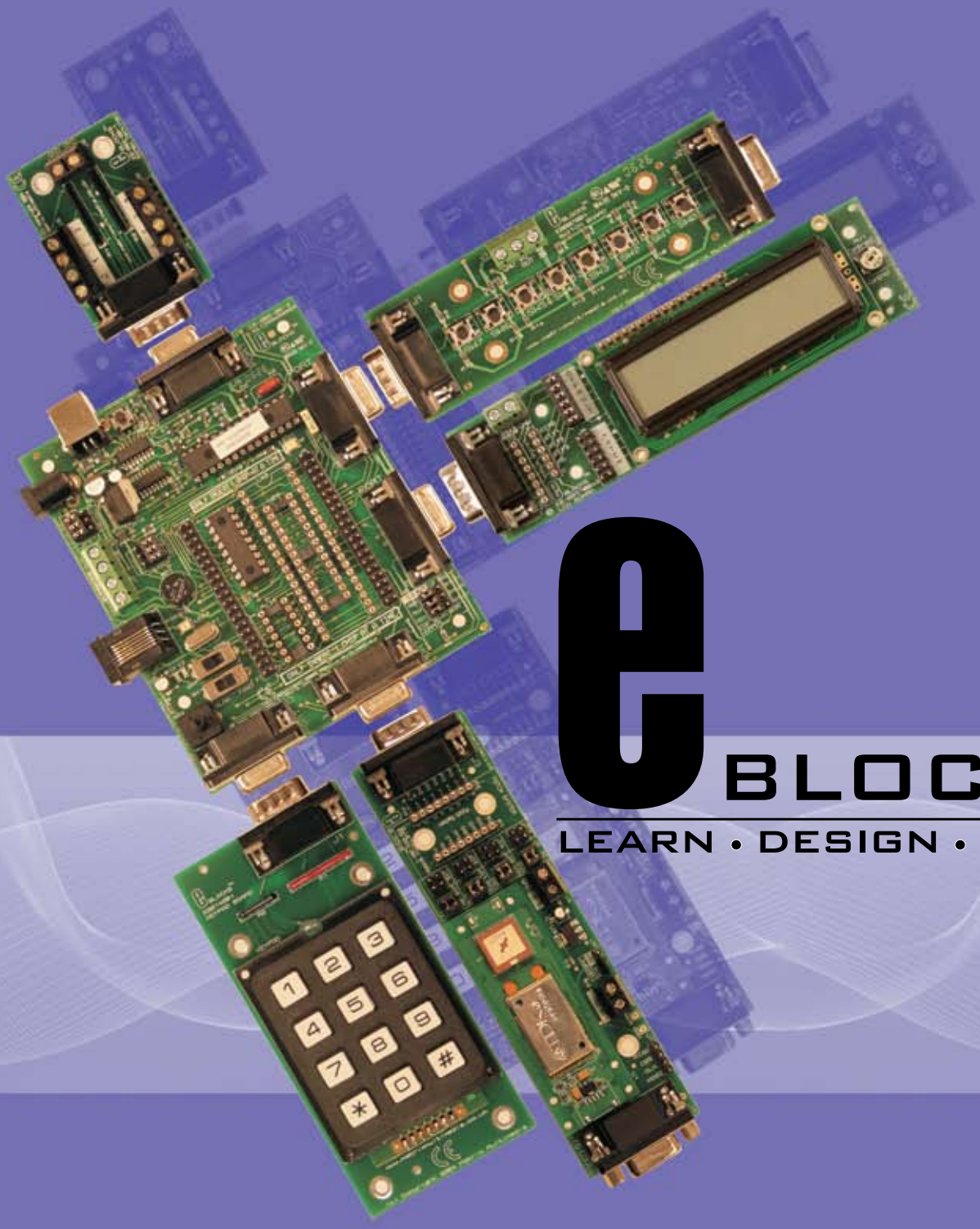


eBLOCKS™

LEARN • DESIGN • BUILD

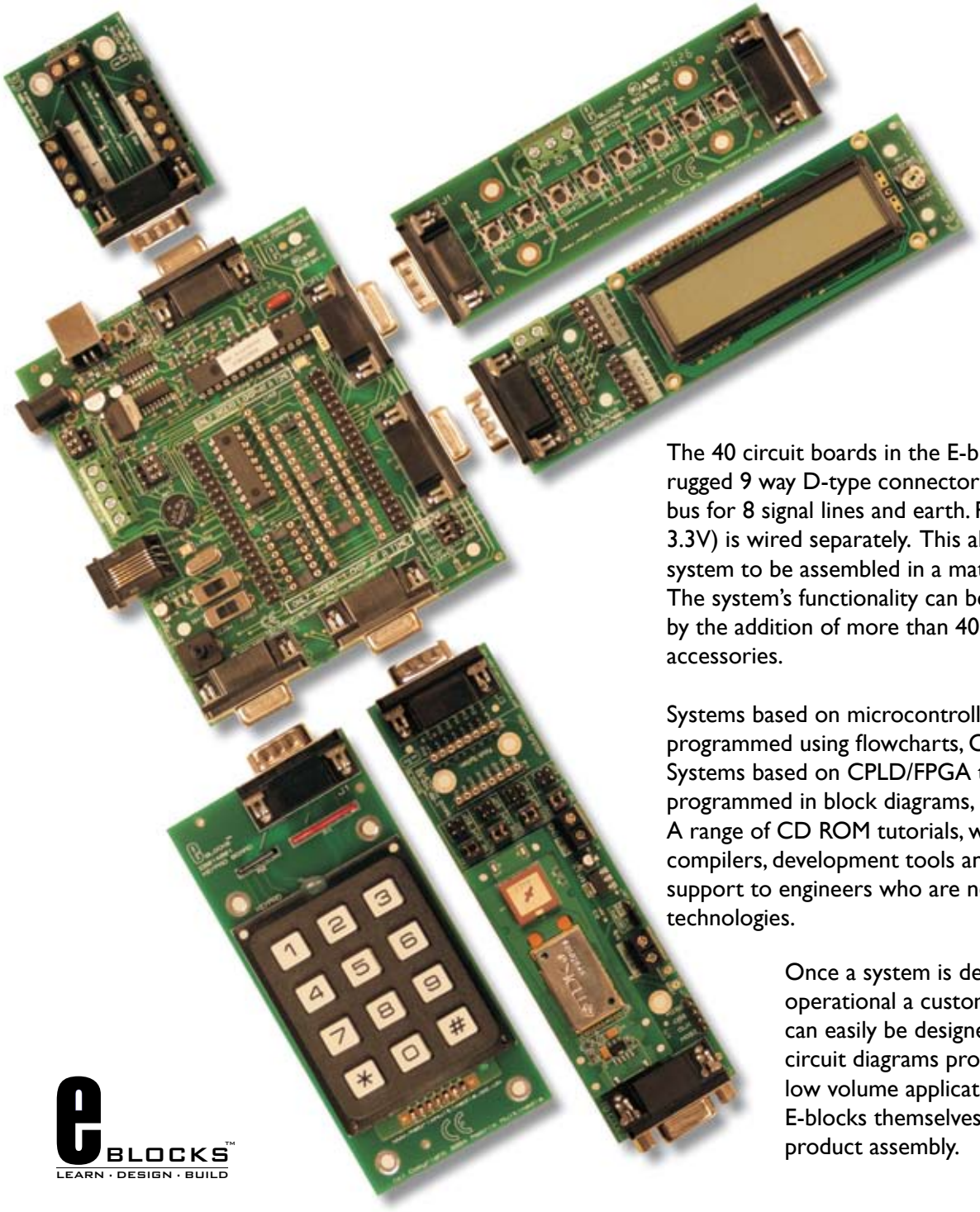
HARDWARE • SOFTWARE • SUPPORT

RAPID DEVELOPMENT TOOLS FOR ELECTRONIC SYSTEMS

2008

MATRIX

E-blocks™ hardware



E-blocks™ are small circuit boards each of which contains a block of electronics that you would typically find in an electronic system.

The 40 circuit boards in the E-blocks range use rugged 9 way D-type connectors as a connection bus for 8 signal lines and earth. Power (5V or 3.3V) is wired separately. This allows a complete system to be assembled in a matter of minutes. The system's functionality can be enhanced further by the addition of more than 40 sensors and accessories.

Systems based on microcontrollers can be programmed using flowcharts, C, or Assembly. Systems based on CPLD/FPGA technologies can be programmed in block diagrams, VHDL or Verilog. A range of CD ROM tutorials, which includes compilers, development tools and manuals, provides support to engineers who are new to any of these technologies.

Once a system is developed and operational a custom circuit board can easily be designed from the circuit diagrams provided. For very low volume applications, like test jigs, E-blocks themselves are used for final product assembly.

eBLOCKS™
LEARN · DESIGN · BUILD

Benefits

- Reduces development time and cost
- Well supported and documented
- Flexible and expandable

Programmer boards

PICmicro® microcontroller

ARM® microcontroller

Atmel AVR® microcontroller

Altera CPLD and FPGA

Comms. compatibility

CAN, LIN, Bluetooth, Mobile telephony, X10, RS232, IrDA, PS2, USB, TCP/IP, MIDI, SPI, I^2C, 802.11b, Zigbee, RFID, VGA

E-blocks™ Software

English Spanish Greek Portuguese German
Romanian Dutch French Danish Hungarian
Finish Italian Slovak Mandarin

Flowcode 3 is one of the world's most advanced graphical programming languages for microcontrollers. The great advantage of Flowcode is that it allows those with little experience to create complex electronic systems.

Flowcode's drag and drop interface allows you to construct an electronic system on-screen and then produce hex code for PICmicro® microcontrollers, Atmel AVR microcontrollers and ARM microcontrollers.

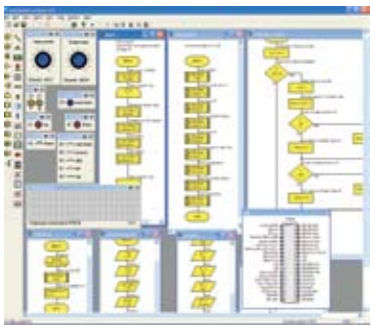
Flowcode includes drivers for a wide range of E-blocks hardware modules - from simple switches and LEDs through to more complex sub-systems like CAN bus, and TCP/IP web modules.

Flowcode is well supported with a range of courses and applications, and is tightly integrated with the E-blocks range to minimise development time.

Flowcode is an intuitive system design tool for novices and experts. Flowcode allows you to shorten the design cycle, increase product functionality, and take control of your projects.

Flowcode for PICmicro microcontrollers Professional version TEFLCSI3
Flowcode for AVR microcontrollers Professional version TEVRSI3
Flowcode for ARM microcontrollers Professional version TERMSI3

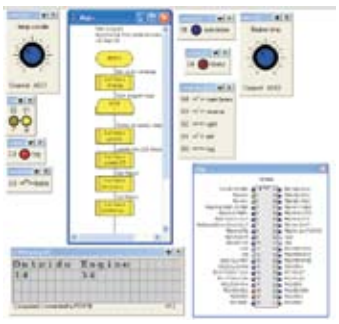
Design



Flowcode contains standard flowchart icons and electronic components that allow you to create a virtual electronic system on screen. Drag icons and components onto the screen to create a program, then click on them to set properties and actions.

- Easy to use interface
- Allows complex systems to be developed and managed quickly

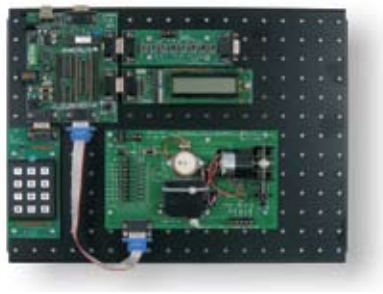
Simulate



Once your system is designed you can use Flowcode to simulate it in action. Test the system's functionality by clicking on switches or altering sensor values, and see how your program reacts to the changes in the electronic system.

- Simulation aids understanding
- Debug before download
- Shorten the design cycle

Download



When you are happy with your design click one button to send the program to your microcontroller device. Flowcode produces standard Hex code for microcontroller and is compatible with most programmers and hardware development platforms.

- Compiles to C then HEX
- Link in your own C or ASM files

Support and applications

The range of support resources is designed to develop the skills of electronic system designers at all levels.

For those new to microcontroller design there are several CD ROMs which help beginners learn programming using flowcharts, assembly and C. These include on-screen tutorials, simulations, exercises and tests. These CD ROMs also include all the necessary compilers and development tools.

For those new to CPLD and FPGA technology the Programmable logic techniques CD ROM includes a step-by-step guide to product development using VHDL and Verilog.

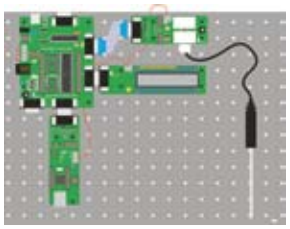
A range of manuals on communication technologies with example files, and example systems that can be built using E-blocks, is provided for the more advanced user.

To support developers we provide online forums and FAQs which are monitored by our support engineers on a daily basis.

ELCVRSI	C for AVR microcontrollers CD ROM
EL543SI4	C for 16 series PICmicro microcontrollers V3 CD ROM
ELRMSI	C for ARM microcontrollers V3 CD ROM
ELFCSSI3	Flowcourse - an introduction to microcontrollers CD ROM
ELPICSI3	Assembly for PICmicro microcontrollers V3 CD ROM
ELPLDSI	Programmable logic techniques CD ROM

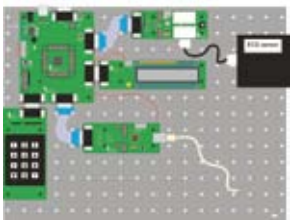
Sample projects

Web based temperature logger



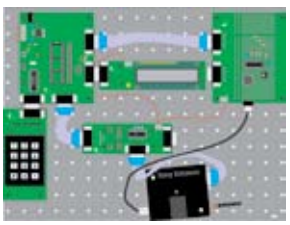
This system is a simple internet based temperature logger. The PICmicro microcontroller gathers data from a temperature probe via the sensor interface and then publishes a simple web page with a 10 bit temperature reading. A further program - written in Java - gathers temperature data from the web page and produces a graph of temperature against time.

ECG data logging system



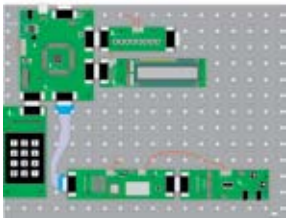
This is an electro cardiogram(ECG) data logging system. ECG data is gathered using a sensors board and a PICmicro microcontroller which connects to a PC using an USB interface board. PC software written in Visual Basic uses the virtual COM port driver provided to interface with the system and gather ECG data. A Keypad and LCD display provide control of the system.

Mobile phone bug



This is an electronic bug using mobile phone technology. A small patch board contains a microphone and amplifier that feeds into a GSM module with SIM card. An AVR microcontroller is used to detect an incoming call and then channel local sound to the incoming caller who can hear what is going on in the room. A keypad and LCD allow various set ups with dial out at pre-determined times.

Bluetooth audio system



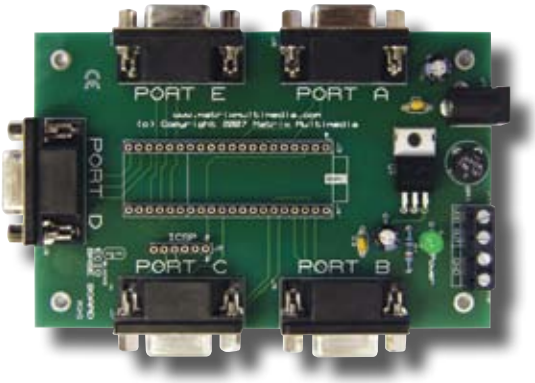
This project uses an ARM microcontroller to communicate to a mobile phone using Bluetooth. The Bluetooth board interfaces to the ARM serial port to allow users to set up the communication system and transfer data between Bluetooth hosts. The Bluetooth audio CODEC board allows two way transfer of audio between Bluetooth systems.

ECIO

The ECIO family of USB programmable microcontrollers provides an incredibly simple way of adopting microcontroller technology into your projects. The device behaves just like a normal microcontroller - but when you plug the USB lead in and press the reset switch you can send a new program to the device. This makes the ECIO one of the lowest cost USB programmers in the World.

Currently there are two products in the range: ECIO-28P and ECIO- 40P. These devices are based on PICmicro 18 series devices - the 18F2455 and the 18F4455 respectively.

This technology can be licensed from us to make your own products USB reprogrammable.



ECIO28P	PICmicro MCU ECIO 28 pin
EC378	PICmicro MCU ECIO 28 pin - 4 pack
ECIO40P	PICmicro MCU ECIO 40 pin
EC927	PICmicro MCU ECIO 40 pin - 4 pack
EB061	E-Block Application board

The application board allows ECIO devices to easily be connected to all E-blocks downstream boards.

Accessories and sensors

There are over 150 products in the E-blocks range. In addition to the hardware modules, software compilers and CD ROM courses, we also provide a large range of accessories that can be used to help you get your project up and running as fast as possible. This includes metal backplanes for mounting E-blocks boards, communications modules and more than 40 rugged sensors for prototyping and investigation.

Current sensor

Accelerometer

Force plate

Ion sensitive electrodes

Drop counter

Instrumentation sensor

Thermocouple

Sensors	
HPEKG	ECG sensor
HPELEC	ECG electrodes
HS3D	3-Axis Accelerometer
HSACC	Low-g accelerometer
HSBAR	Barometer
HSBPS	Blood pressure sensor
HSCA	Calcium ion-selective sensor
HSCL	Chloride ion-selective sensor
HSCO2	CO2 Gas sensor
HSCOL	Colourimeter
HSCON	Conductivity probe
HSDCP	Current probe
HSDFS	Dual-range force sensor
HSDO	Dissolved oxygen probe
HSDVP	Differential voltage probe
HSEHR	Heart rate monitor
HSFLO	Flow rate sensor
HSFP	Force plate
HSGPS	Gas pressure sensor

HSHD	Hand dynamometer
HSHGH	Heart rate monitor - hand grip version
HSINA	Instrumentation amplifier
HSLGA	Low-g accelerometer
HSLS	Three range light sensor
HSMCA	Microphone
HSMD	Motion detector
HSMG	Magnetic field sensor
HSN03	Nitrate ion-selective sensor
HSNH4	Ammonium ion-selective sensor
HSO2	O2 gas sensor
HSPH	pH sensor and amplifier
HSRH	Relative humidity sensor
HSRM	Radiation monitor
HSRMB	Respiration monitor belt (requires gas pressure sensor)
HSRMS	Rotary motion sensor
HSSAL	Salinity sensor
HSSPA	Smart pulley attachment
HSSPR	Spirometer
HSTAPE	Bar tape

HSTCA	Thermocouple
HSTMP	Wide range stainless steel temperature probe
HSTPL	Extra long temperature probe
HSTRB	Turbidity sensor
HSVDC	Drop counter
HSVPG	Fast response photogate

Accessories	
EB251	Male to Male E-blocks IDC cable
BP232	Metal backplane - 270 by 350mm
EB634	E-blocks IDC cable
EB635	E-blocks Dual IDC Cable Hardware
EB839	Microchip ICD2
FLLPCK	Prototype board lead pack
HP16F628	PIC16F628
HP16F877	PIC16F877A
HP16F88	PIC16F88
HPACT	Actuators training panel
EB182	GSM mobile phone module

‘Upstream’ device programmer boards

PICmicro® microcontroller Multiprogrammer

- USB programmed and powered
- 5 E-blocks ports
- Removable crystal
- Programs a wide range of PICmicro devices.
- Programming software provided

The PICmicro multiprogrammer connects to your PC via USB to provide you with a high speed, low cost PICmicro MCU programmer for development and programming use. This board can be used with Assembly, C or Flowcode and most third party compilers. The board programs a range of 8, 14, 18, 28 and 40 pin PICmicro® microcontroller devices from the 12, 16, and 18 series and presents all 5 ports on separate D-type sockets. As soon as the on-board chip is programmed the program inside the chip is reset and executed. The board takes power from an external power supply or from the USB port. CD ROM courses and compilers for this board are available.

EB006

AVR® microcontroller Multiprogrammer

- A complete AVR development solution
- 4 E-blocks ports
- Removable crystal
- Programs a range of AVR devices.
- Full IDE provided

The AVR Multiprogrammer includes everything you need to both program an AVR microcontroller as well as to develop AVR projects. This product includes: a CD ROM containing development tools, an in-system programmer (ISP) and an E-blocks AVR board. The ISP programmer connects to your USB port and to the board which is compatible with 20 and 40 pin AVR devices. The board supplies 4 full E-blocks ports. The CD ROM includes a range of development tools including an Integrated Development Environment (IDE) for code writing in assembly and debugging, and the ISP programming software. CD ROM courses and compilers for this board are available. Compatible with the GNU C compiler.

EB194

CPLD and FPGA programmer board

- 7 E-blocks ports
- CPLD or FPGA programmer
- Removable crystal
- USB programmable

The CPLD board contains a 128 macrocell 7000 series CPLD from Altera which can be programmed using the USB on your PC. The board has 7 E-blocks ports which can be used to interface to other E-blocks components. A 6000 Logic Element FPGA daughter board plugs onto the top of the CPLD board (not shown in the photograph) to provide a development platform for FPGA projects. CD ROM courses and compilers for this board are available.

CPLD board: EB020
FPGA add-on: EB049

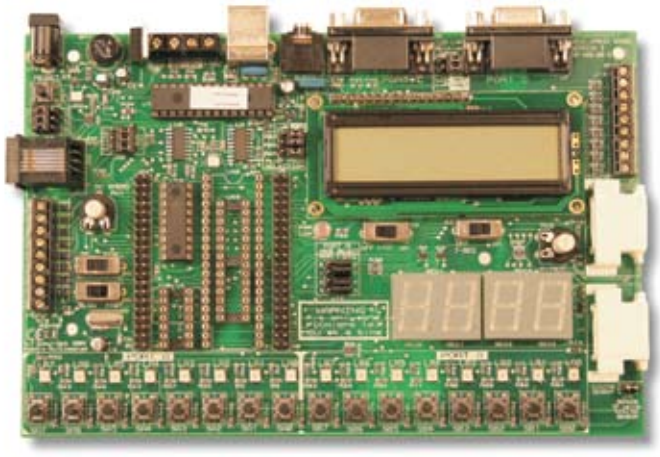
ARM® microcontroller programmer

- 32 bit ARM processor with 128K ROM and 32K SRAM
- USB programmable with boot loader
- 5 E-blocks ports, 32 I/O lines
- Native USB and SPI buses
- Compatible with most downstream boards

This E-blocks board is a development tool for the powerful AT91 SAM 7 microcontroller from Atmel. The SAM 7 is a 32 bit RISC device running at an internal frequency of 80MHz, and having 128k ROM and 32K static RAM as well as 2 USARTs, 4x 10 bit A/D converters and a native USB bus. This incredibly powerful microcontroller can be used for a range of advanced E-blocks projects. The board has 5 full E-blocks ports and the processor itself is housed on a removable daughter board (Atmel ARM processors are only available in SMD technology) so that the ARM can be incorporated into custom PCBs. A full course (C for ARM Microcontrollers) is also available. This board uses a 3.3V power supply - please check the downstream boards you need are 3.3V compatible.

EB185

Version 3 PICmicro® microcontroller development board



- Programmed and powered from USB
- Low cost and small footprint
- Two E-blocks ports (ports C and D)
- Removable crystal
- Programs a wide range of PICmicro devices.
- Programming software provided

This flexible development board is an ideal platform for learning and project development. The board will program a range of 8, 14, 18, 28 and 40 pin PICmicro® microcontroller devices from the 12, 16 and 18 series PICmicro microcontroller range. The board is programmed using the USB port and is supplied with a comprehensive programming utility - PPP. The board can program Low Voltage Programmable PICmicro MCUs and deliver a limited amount of power from the USB supply. An external power supply (product code HPPSU2) can be used to take maximum advantage of the board’s features. The board is compatible with the range of E-blocks modules and two E-blocks ports are provided. The board is also compatible with Microchip’s In Circuit Debugging (ICD2) system.

HP488

‘Downstream’ application boards

Graphical LCD display

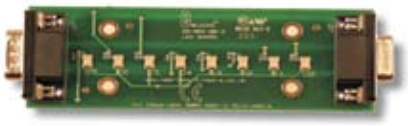
Keypad

Bluetooth CODEC

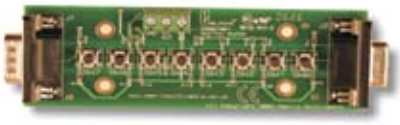
Sensor board

RS232 interface

LED board



Switch board



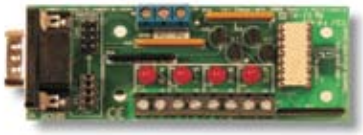
CAN bus interface

Internet board

LCD board

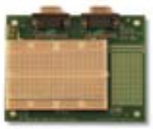
Power board

Opto-isolator board



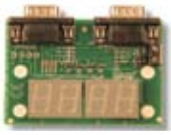
IrDA board

Prototype board



Bluetooth interface

Quad 7-segment display



Relay board

Motors board

MMC card reader board

SPI D/A and memory board

USB232 interface board

EB002	Screw terminal board
EB003	Sensor interface
EB004	LED board
EB005	LCD board
EB007	Switch board
EB008	Quad 7-segment display
EB011*	Power board
EB012	IR/IRDA transmitter receiver
EB013	SPI memory and D/A board
EB014	Keypad board
EB015	RS232 board

EB016	Prototype board
EB017	Patch board
EB018*	CAN bus board
EB021	MIDI board
EB023	Internet board
EB024	Bluetooth board
EB027	LIN bus board
EB028*	X-10 home automation board
EB032	E-blocks Bluetooth CODEC board
EB033*	PS2 and VGA interface board
EB035	Opto-isolator board

EB037	MMC card reader board
EB038	E-blocks relay board
EB039	USB232 interface board
EB043	Enhanced LCD display board
EB051	Sensor area network board (Zigbee)
EB052	RFID
EB053	802.11 wireless LAN board

*All boards are 3.3V and 5V compatible except those marked with an asterisk which are 5V compatible only.

Bundles and starter packs

Flowcode and PICmicro® MCU multiprogrammer

This entry level kit allows you to develop programs for PICmicro microcontrollers in flow charts and also provides a powerful programmer for most PICmicro MCU flash devices. The bundle includes a copy of Flowcode 3 Professional, a fast USB PICmicro Multiprogrammer, and a USB lead.

EB429SI3

Flowcode V3 and E-blocks pack

This entry level E-blocks starter kit includes a copy of Flowcode 3 Professional, a programmer board, LCD board, LED board, switch board, USB cable, PSU and a spare 16F877A device.

Available for PICmicro, AVR and ARM

PICmicro - EB674SI3
AVR - EB675SI3
ARM - EB677SI3

Flowcode and PICmicro® MCU development board

If you prefer a single board approach to development hardware then this value for money bundle includes a copy of Flowcode 3 Professional, a fast PICmicro microcontroller development board, a power supply, a spare 16F877A device and a USB lead.

HP343SI3

AVR C programming pack

This bundle includes everything you need to both learn C programming for AVR devices as well as to start developing your project. The bundle includes a copy of C for AVR microcontrollers CD ROM - with full course and development tools - as well as an AVR in circuit programmer, AVR board, LCD board, LED board, switch board, PSU and USB cable.

EB671SI

Easy internet pack

This bundle includes everything you need to develop internet systems linked to your hardware. The bundle includes Flowcode V3 Professional, an E-blocks PICmicro microcontroller multiprogrammer, LCD board, LED board, switch board, internet board, PSU and spare 16F877A device. Flowcode internet macros for rapid development are included.

EB566SI

ARM C programming pack

This bundle includes everything you need to both learn C programming for ARM devices as well as to start developing your project. The bundle includes a copy of C for ARM microcontrollers CD ROM - with full course, C compiler, and development tools - an ARM board (bootloader included), LCD board, LED board, switch board, PSU and USB cable.

EB869SI

Easy CAN bus pack

This bundle includes everything you need to develop CAN bus systems: Flowcode V3 Professional, two E-blocks PICmicro microcontroller multiprogrammers, LCD board, LED board, switch board, two CAN bus boards, PSU and two 16F877A devices. Flowcode CAN bus macros for rapid development are included.

EB628SI

PICmicro MCU C programming pack

This bundle includes everything you need to both learn C programming for PICmicro devices as well as to start developing your project. The bundle includes a copy of C for PICmicro MCUs CD ROM - with full course, C compiler, and development tools a PICmicro microcontrollers Multiprogrammer, LCD board, LED board, switch board, PSU, USB cable, and a spare 16F877A chip.

EB627SI3

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