

CAN bus training solution

What does it do?

Provides a solution for teaching and learning about CAN bus technology for all levels of student - Automotive and beyond.

Benefits

- Allows students to investigate CAN at a high level without getting bogged down in programming detail
- Flowchart software allows students to concentrate on CAN strategy and protocol

Features

- Allows rapid development of CAN systems
- Suitable for investigation of the CAN protocol
- Includes full CAN diagnostic and message generation tools
- Complete suite of hardware modules and sensors
- CAN Flowcode macros available
- Includes Flowcode

Description

This training solution is designed to facilitate the development and investigation of systems that use the CAN bus protocol for communications. The solution is comprised of four fully programmable CAN nodes which mimic Electronic Control Units (ECUs) in an automotive application. These are mounted on rugged backplanes and are fitted with ancillary circuit boards which mimic the functions of indicator lamps, switches and sensors. The software supplied allows students to program each of the four nodes in flow charts to form a fully functioning CAN system. The solution is suitable for automotive students who simply need to understand how CAN works, and for electronic students who want to understand more details of the CAN protocol. The software supplied operates at several levels so that different types of student are exposed to the only relevant details of the CAN system. A CAN bus analyzer and message generator is supplied with the solution.

The product is shipped in rugged plastic trays for storage and transport. A teacher's manual is included in the system with a number of suggested exercises that can be carried out in the classroom.



Learning time

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

Automotive: 3 hours
Electronics: up to 14 hours

Prerequisites

- Some understanding of electronics
- Windows skills

Manual

A 50+ 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

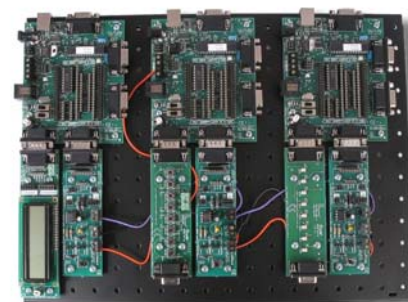
A separate datasheet is available for each of the E-blocks boards included in the pack. Please see our web site for details.

Order code

The order code for this product is EB237.

Also consider

LIN bus add-on: available Summer 2006.



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Learning objectives

This equipment and associated curriculum is designed for two levels of student:

Firstly the equipment can be used for automotive technicians to gain an appreciation of CAN technology and the equipment used in fault finding CAN systems, and how that fault finding takes place. These technicians are expected to download and review programs made in flow charts, but are not expected to carry out any programming tasks. Level 1 learning outcomes are: To understand what a microcontroller is and that it can be programmed with software to perform different tasks, To understand the nature of an ECU and the main component parts of an ECU. To understand that software can change the way an ECU operates. To understand the nature of CAN and the basic CAN protocol, and the basic structure of a CAN network.

Secondly the equipment can be used by more advanced students to gain an understanding of CAN technology and to allow them to construct networks which communicate in CAN and higher level protocols. These students are expected to develop their own CAN networks using flowcharts with CAN macros provided. The use of flow charts here will allow the students to understand CAN protocols and communication without the need for the students to get bogged down in the processes of lower level CAN bus software construction. Level 2 CAN learning outcomes are all those in Level 1 and:

To understand CAN transmit and receive messages and the top level CAN protocols. To understand CAN message structure. To understand and construct a fully operational CAN system with four nodes working at once. To gain an insight into higher level protocols like DeviceNET and CANOPEN.

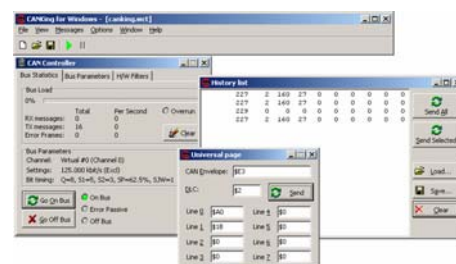
Pack contents

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 EB744	CAN bus teachers notes
	1	1 EB880	Can bus solution CD ROM
	1	1 EBPUB	E-blocks publicity sheet
	1	1 EL239	USB CAN sniffer
	1	1 ELSAM	ELSAM mini CD ROM
	1	1 HP2045	Shallow plastic tray
	1	1 HP233	Hardware Warranty card
	1	1 HP3844	Foam insert for trays
	1	1 HP4039	Lid for plastic trays
	1	1 HP9734	Cardboard box for trays
	1	2 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 EB00400	E-Blocks LED board
	2	1 EB00500	E-Blocks LCD board
	2	2 EB00600	E-blocks USB Multiprogrammer
	2	2 EB00700	E-Blocks Switch board
	2	2 EB01800	E-blocks CAN board
	2	1 EB634	E-blocks IDC cable
	2	1 EB704	E-blocks LED board cover
	2	1 EB705	E-blocks LCD board cover
	2	2 EB706	E-blocks PICmicro multiprogrammer cover
	2	2 EB707	E-blocks switch board cover
	2	2 EB718	E-blocks CAN board cover
	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
	3	1 BP232	E-blocks backplane - tray compatible
	3	1 EB00300	E-blocks sensor interface
	3	1 EB00400	E-Blocks LED board
	3	2 EB00600	E-blocks USB Multiprogrammer
	3	2 EB01800	E-blocks CAN board
	3	1 EB029	E-blocks Kvaser analyser interface board
	3	1 EB704	E-blocks LED board cover
	3	2 EB706	E-blocks PICmicro multiprogrammer cover
	3	2 EB718	E-blocks CAN board cover
	3	1 HP2045	Shallow plastic tray
	3	1 HP3844	Foam insert for trays
	3	1 HP4039	Lid for plastic trays
	3	1 HP9734	Cardboard box for trays



Flowcode is used to construct the CAN programs.



The CAN analyzer shows the history of