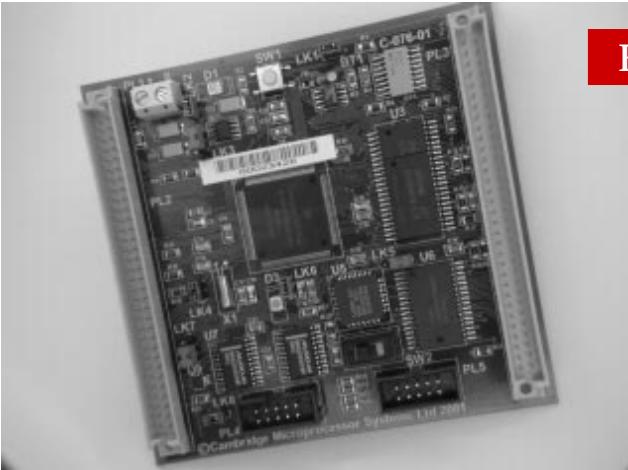


LOW COST HIGH PERFORMANCE EMBEDDED CONTROLLERS
FOR USE IN INDUSTRIAL, COMMERCIAL AND SCIENTIFIC
APPLICATIONS



QF-200 *Embedded* CONTROLLER



The picture shows the QuickFIRE QF-200 controller

DESCRIPTION

The QuickFIRE QF-200 is a member of our QuickFIRE range of controllers. In common with all controllers in the range it has a powerful 16-bit 68000 based controller, 1 M-bytes of Flash EEPROM and 512 K-bytes of battery backed static RAM. Code that is written for this controller can also be used on any other controllers in this range, allowing the user to choose the controller most suitable for a particular application without having to rewrite the code each time.

The serial ports can be configured to operate over a wide range of formats. By default the terminal serial port is configured to operate at 38400 baud with a data format of 8 bits, 1 stop bit and no parity. Baud rates can be configured from an application program in the range 600 to 115200 baud. The second serial port defaults to 9600 baud. Hardware handshaking using RTS/CTS is used as standard on all serial ports communicating over RS232. If the serial port is set up to operate over RS485, then it uses half duplex communication with automatic driver enable when data is ready to be sent.

The 512 K-bytes of on board RAM can be expanded up to 8.5 M-bytes using static RAM on an expansion card. When the QuickFire is used with our RAM expansion cards the operating system detects how much RAM is available and configures the memory manager accordingly at power up. Up to 32 M-bytes of DRAM can be controlled directly from the on board DRAM controller.

The 1 M-byte of Flash EEPROM on the QuickFIRE can be user programmed using the utility programs provided with the Development Pack. The Flash memory can be programmed using the single 5 Volt supply removing any requirements for high voltage supplies. The Flash memory is divided up into nineteen blocks, fifteen of which are 64 K-bytes, one is 32 k-bytes, one is 16 k-bytes and two are 8 k-bytes. Before data can be programmed into one of these blocks the whole block must be erased. When using the Minos operating system the first three blocks of the Flash memory are protected for system use and cannot easily be erased or written to. The remaining blocks are designated user sectors and can be

FEATURES

- Powerful 68000 Compatible Micro controller
- 33 MHz operating speed
- 5 times faster than a standard 68000
- 1 M-bytes of Flash EEPROM
- 512 K-bytes of Static RAM
- 1 RS232 Serial Port
- 1 RS232/485 Serial Port
- 2 Serial Peripheral Interface (SPI)
- 2 Pulse Width Modulation (PWM)
- Real Time Calendar Clock
- Software Watch dog
- Compact size, only 100 x 110 mm
- 2.7 - 3.3 Volt or 5 Volt
- Up to 76 general-purpose I/O channels
- 2 16-bit timer/counters
- Power Management
- On board graphic LCD interface
- Minos Real Time Multitasking Operating System
- Program in , 'C' or Assembler

read or written as required. The utilities provided allow data to span block boundaries and a sector will only be erased if an area to be programmed contains data. Turnkey programs can be loaded into the Flash memory and run from power on. To allow these programs to be modified a switch is provided which gives access to the development environment. The on board Flash memory can be expanded up to 2 M-byte using an expansion card. As with the static RAM expansion, when the CMS expansion cards are used the operating system will detect how much Flash or EPROM memory is available and configures the memory manager accordingly. The whole on-board Flash memory can be erased and reprogrammed using the processor bootstrap mode. To enable new programs or data to be uploaded the user is provided with a range of software tools.

1.5 M Memory
2 Serial
Fast Processor
upto 76 Digital

The Module Bus expansion connector is a 68000 bus that allows extra memory and peripherals to be added to the QuickFIRE controller. The bus supports A0:23, D0:15 and all the address and data strobes, control lines and four interrupt lines

Depending on how the card is used the QF-200 has up to 76 digital I/O channels. When used as digital channels each channel can be configured as an input or an output. If they are configured as outputs, when read, they will return the last value that was written to them. Some of the general purpose channels can be configured to give two channels of pulse width modulation, useful for driving motors etc. Other digital channels allow peripheral devices to be connected to the controller using the industry standard serial peripheral interface (SPI).

The board has a monochrome graphics LCD controller that is capable of interfacing to a wide range of graphic LCD modules. As part of a user interface an analogue touch screen input can be implemented. This will allow graphics LCD panels with integrated touch screens to be driven from the controller card making a simple user interface very easily. The graphics display memory is claimed from system memory and so can be modified directly.

There are two 16-bit timer/counters on the controller. Under normal operation, one of these is used by the operating system to generate interrupts for the task switching. The second timer is available sole use by the application program. External connections allow the timer inputs to be from 'off board' sources and the timer output can also be monitored off board if required.

QF-200 *Embedded* CONTROLLER



SOFTWARE DEVELOPMENT

All development tools for the QuickFIRE product range make use of Cambridge Microprocessor Systems Ltd own real time multi tasking operating system. The operating system has been developed specifically for use in embedded control environments and makes I/O devices very easy to use. It removes all the device specific code from the user and provides a uniform interface, this allows the user to use a range of devices including serial ports, liquid crystal displays, keypads etc. without having to understand the device or write any code. The task scheduler is based on a round robin method giving a time slice to each running process in turn. Also provided is the ability to signal between processes. The operating system is licensed on a royalty free unlimited copy basis. This allows the operating system to be used FREE of charge on all QuickFIRE controllers. The software support provided in the Development Pack is compatible with all QuickFIRE products. You simply purchase the development pack and then choose which controller is required for the particular application. For new applications you can simply purchase the relevant controller. Any future updates to libraries for extra features and new controllers can be obtained free of charge.

The QuickFIRE can be programmed in 'C' or assembler. The 'C' Development Pack includes everything that you will need to develop your application. This includes a 'C' Cross Compiler, 68000 Assembler, Linker, Make utility, Editor, Library manager, full documentation, power supply, interface cable, your chosen QuickFIRE controller, royalty FREE Minos, utility programs and, extensive example programs.

SPECIFICATION

CPU. Motorola M68VZ328 controller, 33 MHz Main clock speed.

Memory. 1 M-bytes of on board programmable Flash EEPROM, 512 K-bytes of Static RAM, No wait states, battery backed.

Serial Port 1 RS-232 user selectable baud rates - 600 to 115200, user selectable data size - 7 to 8 bits, user selectable stop characters - 1 or 2, user selectable parity odd, even or none, hardware handshaking RTS/CTS

Serial Port 2 RS232/RS485 as above for RS232. RS485 half duplex network port, auto tristate receiver, transmitter,

Digital. Up to 76 Digital I/O, User configurable.

Module Bus Expansion. A0:23, D0:15, 4 Interrupt inputs, 1 nonmaskable interrupt input

Environmental. Operating Temperature Range 0 - 70 degC, Relative Humidity 0 to 90% (non condensing).

Power Supply. Single 2.7 - 3.3 Volt or 5 Volt operation, Many low power modes, < 50mA typical current consumption. Many low power modes available including sleep mode with wake up on interrupt or timer.

ORDER CODES

Order Code	Product Name
QF-200	QuickFIRE 200
QFD-200	C Development Pack

The information contained in this leaflet is provisional only and could be changed at any time.

Watch our web site for details of other products in the QuickFIRE range.



CAMBRIDGE
MICROPROCESSOR
SYSTEMS LIMITED

Units 17 - 18 Zone 'D', Chelmsford Road Industrial Estate,
Great Dunmow, Essex UK CM6 1XG

Telephone +44 (0) 1371 875 644

Fax +44 (0) 1371 876 077

Email sales@cms.uk.com

Web Site <http://www.cms.uk.com>

