

## The Mosaic Handheld

### High-Performance, Real-Time Controller

#### Processor and Graphic User Interface

68HC11 microcontroller with watchdog timer & clock monitor  
 16 MHz clock, 21 interrupts, SPI, 1 MByte addressable memory  
 128 x 128 pixel, 3.4" diagonal LCD display with LED backlight  
 Software controlled contrast and backlight intensity  
 32 key keypad (as 8x4) with audible and tactile feedback

On-Board Memory		
	Operating System	Application Program
FLASH	160 KB	352 or 864 KB
RAM *	4 KB	125 or 509 KB
EEPROM	192 bytes	320 bytes

\* 128K RAM optionally battery-backed  
 Optional Battery-Backed RT Clock

Serial Communications	
Serial 1:	RS232 or RS485 to 19.2 KBaud
Serial 2:	RS232 to 4800 Baud
SPI: 2 MBaud Fast Serial Peripheral Interface	

Digital I/O	Analog I/O
8 Timer-Controlled I/O Lines including: 3 or 4 Input-Captures for event timing; 4 or 5 Output-Compares for PWM; and, 1 Pulse Accumulator. (2 lines optionally used for Serial 2)	8 Channel 8-bit A/D at up to 100 Ksps, 0-5 V input. Hosts WildCards for 12-bit DAC, 16-bit A/D, and 24-bit resolution data acquisition subsystem.

### Extensive, Customizable I/O

Configuration Area	I/O Expansion								
Prototyping area for custom analog or digital circuitry, sensors, or actuators. Signal selection and routing of 24 I/O signals to a DB-25 mounted on the bottom of the handheld. Room for mounting custom hardware. User-configurable I/O protection or filtering. Connection for an external probe	(Mix & Match Up to 4 WildCards) <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border: 1px solid black; padding: 2px;">WildCard Port 0 64 or 128 MByte Compact Flash Mass Memory</td> <td style="width: 50%; border: 1px solid black; padding: 2px;">WildCard Port 1 Fast, Buffered RS232/485 UART</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">Isolated AC/DC Solid State Relays</td> <td style="border: 1px solid black; padding: 2px;">Logic-Level Digital I/O</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">24-bit Resolution Analog Data Acquisition SubSystem</td> <td style="border: 1px solid black; padding: 2px;">12-bit DAC 16-bit A/D</td> </tr> <tr> <td></td> <td style="border: 1px solid black; padding: 2px;">High-Voltage, High-Current DC I/O</td> </tr> </table>	WildCard Port 0 64 or 128 MByte Compact Flash Mass Memory	WildCard Port 1 Fast, Buffered RS232/485 UART	Isolated AC/DC Solid State Relays	Logic-Level Digital I/O	24-bit Resolution Analog Data Acquisition SubSystem	12-bit DAC 16-bit A/D		High-Voltage, High-Current DC I/O
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### Flexible Power Options

External Power	Battery Power Management
15-26 volt power adapter. High efficiency switching supplies. EMI/RFI filter and surge protection. Auto-ON/OFF and keypad power control.	6 AA cell NiMH battery pack uses off-the-shelf batteries. Built-in battery charger with voltage and temperature protection. 10 hour operating time on battery power.

**Figure 1-1** The Handheld comprises a graphics/text display, keypad, processor board (or motherboard) with native I/O and communications, personality board for customization and I/O expansion, and power board with built-in battery charger.

The Processor Board hosts a 16 MHz Motorola 68HC11F1 microprocessor, 512K Flash and 128K RAM (expandable to 1 MB Flash and 512K RAM), and 320 bytes of EEPROM. On-board I/O includes 8 digital I/O lines with counter/timer capabilities, 8 analog inputs, a fast synchronous SPI