

# MICRO-MATE

## Embedded Test Controller



- AT89C51RE2 processor
- 64KB Flash Memory
- 8K RAM
- 30 Digital I/O lines
- RS-232C COM Port
- TCI-MATE Interface
- COM4-MATE Interface
- DUT-MATE Interface
- Circuit Breadboard Area
- Compact Size, 2.5"x4.5"
- Low cost

## DESCRIPTION

The Micro-MATE is the first embedded controller specifically designed to bring low-cost automation to custom-built test equipment. The Micro-MATE comes loaded with a high-performance Atmel processor, 8K of SRAM and 64K of Flash ROM (data and program memory), 30 Digital I/O lines and a high-speed serial RS232 communications port. A separate section of the board offers ample prototype area to house custom circuits and provide an interface for control our Test Instrument Modules (or TIM's). The Micro-MATE comes fully assembled and ready to use. Just connect to your PC's serial port, apply power and start developing.

Programming the Micro-MATE is easy when using BASCOM. BASCOM is a full-featured, Windows BASIC Compiler that is wrapped in a professional IDE (Integrated Development Environment). For 'C' programmers, the Micro-MATE is the ideal companion for SDCC (which is a free optimized ANSI C compiler). In addition we offer TES-MATE. TES-MATE (or *Test Executive Suite*) is a collection of support routines and instrument drivers that can be directly imported into your code and help accelerate the development process. TES-MATE is also "free" open source code and is provided in both BASIC or 'C' versions.

The Micro-MATE can be easily integrated into a stand-alone Mechanical Test Fixture, or used to create custom test instruments, or support larger ATE test equipment. Use it to automate a wide-array of test functions including power control, signal routing, acquire measurements, monitor alarms, supervise User I/O, process Pass/Fail results, upload configuration data and much, much more.

## APPLICATIONS

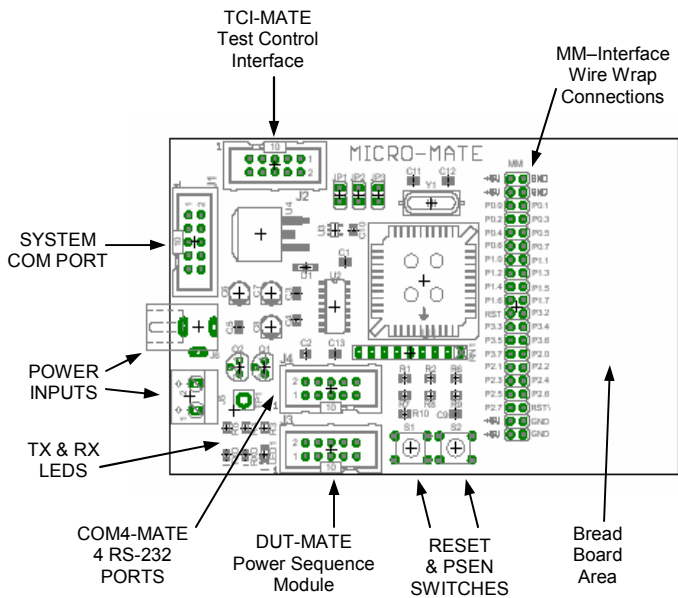
- ✓ Automated Test Equipment
- ✓ Data Acquisition & Control
- ✓ Custom Instrumentation
- ✓ Device Programming
- ✓ Data Translation
- ✓ Semiconductors & Hybrid Circuits
- ✓ Printed Circuit Boards & Systems
- ✓ ESS & Burn-In
- ✓ Sub-Assembly Screening
- ✓ Cable & Wire Harness Testing

## SPECIFICATIONS

| Micro-MATE     |                    |
|----------------|--------------------|
| Processor:     | AT89C51RE2         |
| Clock Speed    | 22.1184 MHz        |
| Memory         | 8K SRAM, 64K Flash |
| Digital I/O    | 30 Bits            |
| Serial Ports   | 1 RS-232           |
| Boot Control   | Atmel FLIP         |
| Prototype Area | Ample              |
| Software Dev.  | BASCOM or SDCC 'C' |
| Power Supply   | +12VDC±10%@50mA    |
| Operating Temp | 0-50°C             |
| Dimensions     | 2.5" x 4.5"        |

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## Embedded Test Controller



## ETS SERIES

Oi has created a new-breed of test instruments called the **ETS Series - EMBEDDED TEST SOLUTIONS**. The ETS Series was born out of a determined effort to reduce the high-cost of test. In addition, we built-in many features that enhance the development of custom "automated" test equipment. Like the name implies, the ETS Series' instruments are designed for "embedded" operation. Applications include Mechanical Test Fixtures, Burn-In Test Equipment, custom Desktop Test Instruments and conventional ATE Systems. In each case, the ETS series delivers a whole new level of control performance and cost-efficiency.



## ORDER INFORMATION

| Part No.    | Description                       |
|-------------|-----------------------------------|
| ETS-0100-00 | Micro-MATE, Embedded Test Control |

## OTHER INSTRUMENTS

| Analog Conversion                 |   |
|-----------------------------------|---|
| <b>DVM-MATE</b><br>ETS-0400-00    | The DVM-MATE is a complete 4.5 digit, DC Voltmeter that is used to make precise voltage measurements over an extended range. The DVM-MATE has 4 software selectable ranges ( $\pm 500\text{mV}$ , $\pm 5\text{V}$ , $\pm 50\text{V}$ , and $\pm 500\text{V}$ ), and a full scale accuracy of 0.01%. |
| <b>DAQ-MATE</b><br>ETS-0800-00    | The DAQ-MATE is a high speed 32-channel analog acquisition module. On each channel, the DAQ-MATE can be programmed to acquire either unipolar or bipolar measurements: 0 - 5Vdc, 0 - $\pm 5\text{Vdc}$ , 0 - 10Vdc & 0 - $\pm 10\text{Vdc}$ .   |
| <b>Check-MATE</b><br>ETS-1800-00  | The Check-MATE is complete Data-Acquisition module. The Check-MATE includes a 8-ch 12-bit ADC, a 12-bit DAC and 8-bits of Digital I/O.  |
| Switching Solutions               |   |
| <b>Relay-MATE</b><br>ETS-1300-00  | The Relay-MATE offers eight independent channels, FORM-C, 1Amp general purpose relays.  |
| <b>Switch-MATE</b><br>ETS-1400-00 | The Switch-MATE offers eight independent channels, Form-A, 10 Amp general purpose relays.   |
| <b>MUX-MATE</b><br>ETS-1500-00    | The MUX-MATE is a signal switching module. Multiple MUX-MATE's can be "stacked" together and used with the DVM-MATE to form a precision voltage scanning solution.  |
| Digital I/O Modules               |   |
| <b>DIO-MATE</b><br>ETS-0900-00    | The DIO-MATE is a basic Digital I/O module that can provide up to 48-bits. All of the 48-bits are fully programmable.   |
| Communications Interface          |   |
| <b>COM4-MATE</b><br>ETS-1100-00   | The COM4-MATE (232), is a serial communications expansion module. The COM4-MATE (232), provides up to four, RS-232 com ports to support testing multiple serial devices.  |
| Special Function                  |   |
| <b>DUT-MATE</b><br>ETS-0700-00    | The DUT-MATE is unique 5-function module that is designed to deliver safe power to the device-under-test.   |
| Signal Counters & Generators      |   |
| <b>FC-MATE</b><br>ETS-0600-00     | The FC-MATE is a programmable frequency counter capable of measuring frequencies from 1hz to 100Mhz, with 9-digits of resolution.   |

## FOR MORE INFORMATION

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# MICRO-MATE

## Embedded Test Controller

In the diagram below, the **Micro-MATE** is used to automate a complete Functional Test sequence. The DUT (device-under-test), is a PCB which contains both analog and digital circuits. A Mechanical Test Fixture (MTF), is used to support the DUT on a bed-of-nails test platform, and to also house the Micro-MATE and the Test Instrument Modules (which includes the DUT-MATE, Check-MATE, COM4-MATE and the TCI-MATE). Power to the DUT is controlled by the DUT-MATE module. The Check-MATE is used to stimulate and measure the DUT circuits, while the COM4-MATE provides a communications link (and other system functions). The Operator Interface is provided by the Universal Test Control Panel (which is mounted to the front panel of the MTF), and driven by the TCI-MATE. Finally, program development is greatly accelerated through the use of TES-MATE, Test Executive Suite. TES-MATE is a standard software library that is designed to manage and support all facets of a typical "Go/No-Go" test process.

