# FUNCTIONAL TEST SOLUTIONS

## *Scorpion*™ FAULT-FINDER

overton INSTRUMENTS

**Reduce cost by 60%**

*Powered by:*
Overton Instruments

Made in USA

## BENEFITS

- *Fully automated Go/No-Go test solution*
- *Performs both ICT and Functional Test*
- *Fast execution, with greater test coverage*
- *All in one, "bed-of-nails" platform that is easy to program, configure, operate and maintain*
- *Low cost alternative to traditional PC-based test equipment*
- *Occupies minimal desk space*
- *Instrumentation 100% reusable*

## APPLICATIONS

- *Test Digital, Analog, RF, Microwave & High Voltage circuits*
- *Include semiconductors, hybrid modules, PCB's, panels or box-level units*
- *Functional Test Stations*
- *Incoming QA/QC inspection*

## FEATURES

- *Highly integrated package of hardware, all designed to satisfy the broadest range of Functional Test applications*
- *A well-organized front panel with a intuitive set of controls and indicators*
- *A wide array of standard interfaces (SPI & $I^2C$, USB, RS232 and Ethernet)*
- *A powerful set of Embedded Test Controllers - the Pico-MATE and Micro-MATE*
- *A unique collection of Embedded Test Instruments such as the DUT-MATE (DUT Power Sequence Module), Switch-MATE (8-Ch SPST Relay Module), DIO-MATE (16-Bit Digital I/O Module) and a host of others*

The **Scorpion Fault-Finder** test system combines both ICT and Functional Test capability into a single "bed-of-nails" test platform. The system is designed to be the low-cost alternative to traditional PC-based test equipment. The Operator simply installs the DUT (device-under-test), press the START button and quickly receive Go/No-Go test results.

### Instrumentation & Customization

The Scorpion employs (Oi) Embedded Test Controllers to manage all aspects of the test process (including Operator input/output, controlling test instruments, acquiring test measurements, data logging and processing Pass/Fail results). To accommodate most test functions (such as signal stimulus, measurement, switching, interfacing and control), (Oi) offers a wide range of general purpose instrument modules. These instruments are board-level products that include Analog I/O, Digital I/O, Signal Switching and Special Function modules. In addition, there is ample space available within the Scorpion to include custom circuits, power supplies and other support components. The basic configuration includes the Pico-MATE (Embedded Test Controller), TCI-MATE (Test Control Interface) and the MUX-MATE (16-CH Signal Multiplexer).

### Software Development

Programming the Scorpion is both simple and fast. Low-cost compilers are available in 'C' and BASIC, and both are supported by TES-MATE™ (Test Executive Suite™). TES-MATE is a comprehensive library of software routines, support utilities and (Oi) instrument drivers that allow the programmer to take full control over all of the hardware resources the Scorpion Fault-Finder has to offer.

### Technical Support

Save time and cost, by letting (Oi) build a complete "turn-key" Functional Test solution based on the Scorpion Fault-Finder test platform.

For immediate service & support contact,

**Oliver Davis**
Sales Engineer
(408) 657-8495
oi.oliver2012@gmail.com

# Scorpion™ FAULT-FINDER

## SPECIFICATION

### Mechanical Test Fixture

The Scorpion product line includes four standard models and each are available in kit form or (Oi) can provide the finishing.

| Model | Size (in) | Pinning Area (in) | Max Probes |
|-------|-----------|-------------------|------------|
| MTF-10 | 12x15x4 | 10.5 x 10 | 200 |
| MTF-20 | 16x15x4 | 14.5 x 10 | 400 |
| MTF-30 | 20x15x4 | 18.5 x 10 | 600 |
| MTF-40 | 24x15x4 | 22.5 x 10 | 800 |

### Instrumentation Package

The basic system includes three (Oi) instrument modules. The Pico-MATE, Embedded Test Controller. The TCI-MATE, Test Control Interface, and the MUX-MATE, 16-CH Signal Multiplexer. Detailed technical data sheets for each module can be obtained on the (Oi) website. A host of other Test Instrument Modules are available as well.

### Front Panel

The front panel is based on the (Oi) UTCP, Universal Test Control Panel, and is driven by the TCI-MATE.

LED's -
  System Power (green), Pass (green),
  Fail (red) & Run (yellow)
Switches -
  Start (green) & Stop (red) pushbuttons,
  Dual Thumbwheel (0-9, BCD)
LCD Module -
  4 lines by 16 characters

### Rear Panel

The rear panel supports the external AC power and general I/O functions.

  AC Power Entry Module (On/Off switch, standard 110AC input and 3Amp fuse).
  40mm, 12Vdc Fan
  System Reset, pushbutton switch
  USB Interface, program development
  DMM Interface, BNC measurement port
  System Com Port, DB-9 RS-232 interface

### System Power

For powering internal circuits, the system includes a small switching power supply, 20W 85-264VAC 12VDC 1800mA.

## EMBEDDED TEST CONTROLLER

The heart of the Scorpion test system is the Pico-MATE, Embedded Test Controller. To automate a typical printed circuit board test procedure, the Pico-MATE uses a powerful ATMEL microcontroller to eliminate the need for an external desktop PC. The photo on the right shows the Pico-MATE mounted to the side panel (which is hinged to provide easy access for development and debugging).

The complete Scorpion test system is highlighted in the block diagram below. The external DMM is controlled by the Pico-MATE and is used to acquire measurements that support both ICT and Functional Test.
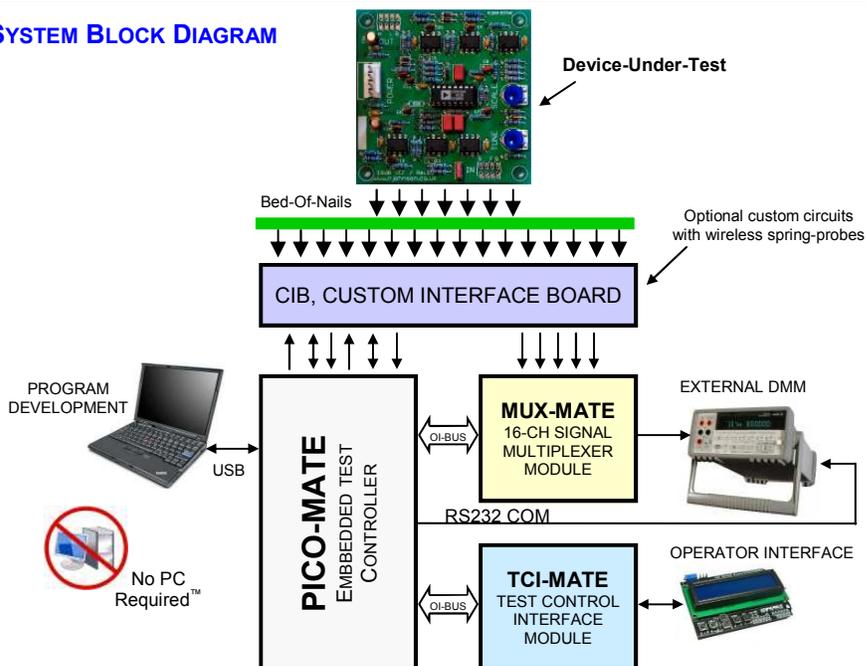
## INTEGRATED MECHANICAL TEST FIXTURE

The Scorpion test system includes an extremely versatile "bed-of-nails" platform that supports virtually any DUT (device-under-test). As shown in the photo on the left, the DUT is supported by a series of spring-probes and tooling pins that are mechanically inserted in the probe-plate (plastic G10 material). An over-clamp mechanism is used to apply "even" downward pressure, which forces the DUT to make contact with the spring-probes below. Internally, the spring-probes are supported by a Custom Interface Board (CIB), which facilitates connection to various (Oi) test instruments and/or other custom circuits.

## UTCP, UNIVERSAL TEST CONTROL PANEL

To provide users with the most flexibility and ease-of-use when operating the Scorpion test system, (Oi) invented the UTCP, Universal Test Control Panel. The UTCP is a simple collection of Operator I/O components, which are shown in the photo on the right. Starting with the **START** and **STOP** buttons, these switches are used to initiate or abort the test sequence. The three LED's indicate test status, either **PASS, FAIL** or **RUN** (test in progress). The LCD module is a 4 line by 20 character display that is used to present operator prompts and test status. The dual thumb-wheel switch is used to provide the operator the option to select and execute different test sequences.

## SYSTEM BLOCK DIAGRAM



Device-Under-Test

Bed-Of-Nails

Optional custom circuits with wireless spring-probes

CIB, CUSTOM INTERFACE BOARD

PROGRAM DEVELOPMENT

USB

No PC Required™

PICO-MATE
EMBEDDED TEST CONTROLLER

OI-BUS

MUX-MATE
16-CH SIGNAL MULTIPLEXER MODULE

EXTERNAL DMM

RS232 COM

OI-BUS

TCI-MATE
TEST CONTROL INTERFACE MODULE

OPERATOR INTERFACE

# The ETS Series,
# EMBEDDED TEST SOLUTIONS

**overton INSTRUMENTS**

*"The Future of Electronics Test"*

## Functional Test 2.0 - No PC Required™

The ETS Series from (Oi), is a low-cost family of general purpose test & measurement instruments (that include Analog I/O, Digital I/O, Relay Signal Switching, Embedded Test Controllers and Special Function modules).  Like the name implies, the ETS Series is designed for embedded operation which includes mounting inside Mechanical Test Fixtures, custom Instrument Enclosures, or to support larger ATE test systems.
The application possibilities are enormous.  Use the ETS Series to support any level of test (from Semiconductors to Systems), within any department (Engineering, Manufacturing & QA), and across a wide variety of industries (including Computers, Communications, Military, Medical and many others).

Mechanical Test Fixture

ATE Systems

Custom Instrumentation
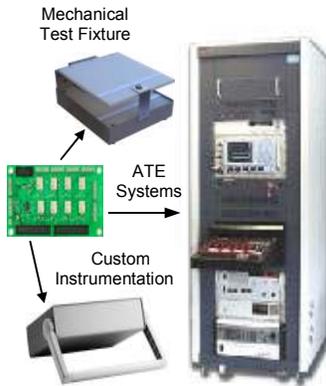
## Typical Applications

- *Digital, Analog, RF, Microwave & High Voltage*
- *Components*
- *Semiconductors*
- *Multi Chip Modules*
- *Flex Circuits*
- *Printed Circuit Boards*
- *Panelized PCB's*
- *Power Supplies*
- *Sub-Assemblies*
- *Cable/Wire Harness*
- *Box & System Test*
- *In-Circuit Test, Functional Test, ESS & Burn-In*
- *R&D, Engineering, Manufacturing, Depot Repair & QA/QC*
- *Consumer Electronics*
- *Medical & Military*
- *Computers & Networks*
- *Communications*
- *Automotive & Aerospace*
- *Green Energy & Security*

## Product Features

- *Modular Design*
- *Wide Selection*
- *Versatile & Flexible*
- *Scalable & Adaptable*
- *Programmable*
- *Affordable*

## Customer Benefits

- *Reduced Cost*
- *Fast Execution*
- *Expanded Test Coverage*
- *Simple To Implement*
- *Easy To Program*
- *Reusable Modules*
- *Well Documented*

## (Oi) Test & Measurement Instruments

### Embedded Test Controllers

Pico-MATE
Micro-MATE

### Analog Conversion

CHECK-MATE
Multifunction DAQ Module

DAQ-MATE
16/32-CH Data Acquisition Modules

DVM-MATE
5.5 Digit, Digital Volt Meter Module

### Digital I/O Modules

DIO-MATE
24/48-Bit Digital I/O Modules

OPTO-MATE
16-Bit Isolated Digital I/O Modules

### Signal Switching Solutions

RELAY-MATE
8/16-DPDT Relay Modules

RELAY-MATE/HF
8-DPDT High Frequency Relay Module

SWITCH-MATE
8/32-SPST Relay Modules

SWITCH-MATE/HC
4-SPST, High Current Relay Module

SWITCH-MATE/HV
4-SPST, High Voltage Relay Module

MUX-MATE
16/32 Signal Multiplexer Module

MATRIX-MATE
4x4, 8x4 Relay Matrix Modules

4WIRE-MATE
8-CH Signal Multiplexer Module

### Special Function

DUT-MATE
Device-Under-Test
Power Sequence Module

TCI-MATE
Test Control Interface Module

CIA-MATE
Control Interface Adaptor Module

SEM-MATE
Switching Expansion Module

PLM-MATE
Programmable Load Module

COM-MATE
4-Port RS-232 Module

Made in USA

MARCOM20120421-Oi