Semiconductor Equipment Testing

SEMI® E84 PI/O Communications

E84 Emulator

INT08001 | INT08001-USB

Figure 5 - E84 Emulator Controller With Laptop Host

GCI's E84 Emulator provides automated procedures for verifying E84 compliancy of the Enhanced Carrier Handoff Parallel I/O Interface required on 300mm wafer production equipment and automated material handling systems (AMHS). Connected to a PC, the GCI E84 Emulator is an indispensable tool for testing the functional and electrical requirements of communications associated with 300mm material handoff operations. It may also be used for maintenance purposes to troubleshoot and identify interface faults.

The Emulator is available with either a parallel port or USB interface.

APPLICATION SOFTWARE

GCI's Windows-based test suite provides an intuitive and easy-to-use graphical user interface consisting of automated and manual test modes. Developed with the leaders in deployment of 300mm fabrication facilities, automated test mode provides a comprehensive set of test plans for single handoff sequences between active and passive entities. These consist of 20 active entity and 18 passive entity tests. Each test may be individually enabled or disabled by the user. Manual test mode allows the user to individually toggle the state of the parallel output signals while continuously monitoring the state of the parallel input signals. The GCI Emulator has supported CCSTests© test plans since 2000.

TEST MODES

Automated test mode provides static and functional tests. Static tests allow the user to verify that labeled DB-25 plugs exist and that they are mounted in the correct location. Figures specifying the labeling and location of the connectors may be optionally displayed. Functional tests include verification of single handoff load, single handoff unload, handoff available, emergency stop, timeouts, passive equipment port sensors, and the +24V supply voltage. Timing diagrams of the control signals for various tests may be optionally displayed. Data is entered for user name, test date, and equipment information. Tests plans and results can be saved to disk formatted in ASCII text for printing. Saved files contain all of the information entered by the user, along with the information about each test provided by the E84 Emulator application. Test details include test title, results, failure messages, and any comments entered by the user during testing. Saved test plans may be recalled to resume testing.

OPTOISOLATED INTERFACE

The E84 Emulator controller provides active and passive optoisolated interfaces. It connects to a PC via a standard bi-directional parallel printer port. Two DB-25 connectors are wired as active and passive entities to provide interfaces to AMHS and process equipment. Supported electrical implementations include optoisolated hardwired connections and connections via an optical transmission device.

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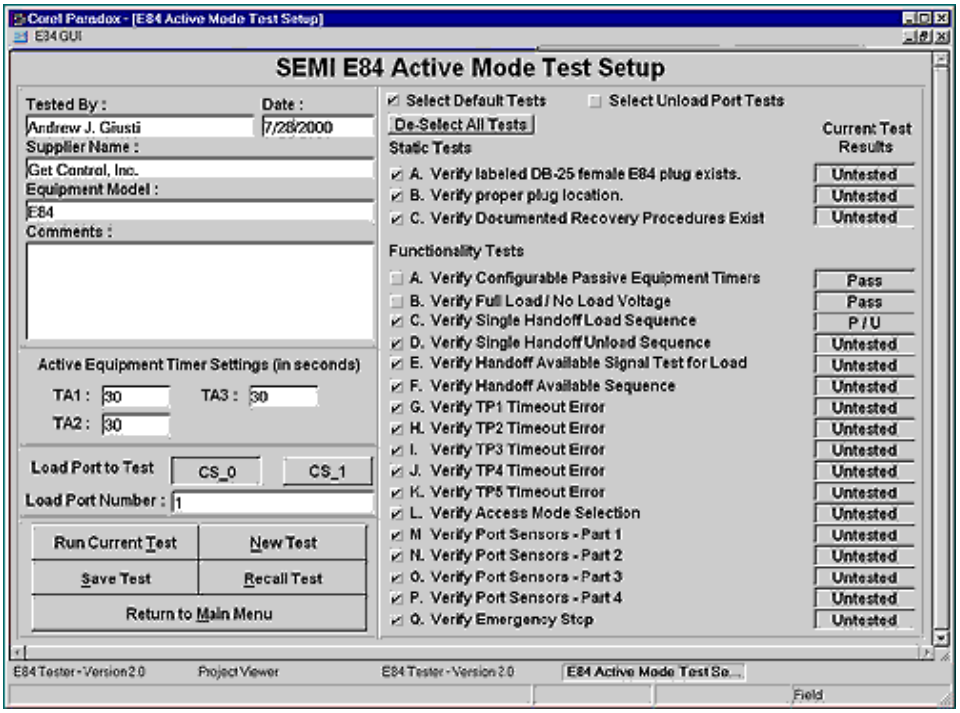

Figure 9 - E84 Emulator SEMI E84 Active Mode Test Setup Menu

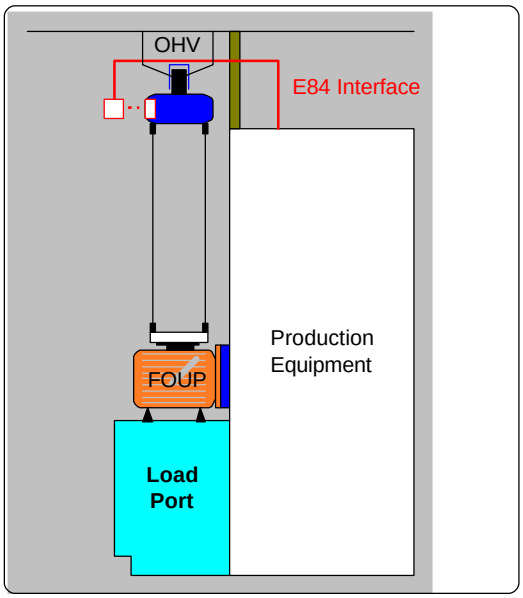

Figure 11 - Example of E84 Material Handoff

CONTROLLER SPECIFICATIONS

- 110 or 220VAC, 60 or 50Hz, 0.3A
- USB interface (INT08001-USB)
- ECP PC parallel port interface
  Female DB-25 (INT08001)
- Active entity interface
  DB-25 Male
- Passive entity interface
  DB-25 Female
- E84 Inputs
  On - 10mA, 1.8VDC Max
  Off - 200uA, 30VDC Max
- E84 Outputs
  On - 25mA Min Sink, 1.8VDC Max
  Off - 100uA Max Src, 30 VDC Max
- +24VDC Power Supply Voltage Test
  Load: 100mA +/- 5%
  No Load: <2mA +/-5%
  Measurement: 18 - 30VDC +/- 5%
- W 159 mm (6.25")
- D 203 mm (8.0")
- H 45mm (1.75")

AUTOMATED ACTIVE TESTS

Static Tests
- Labeled DB-25 female E84 plug
- Proper plug location
- Documented recovery procedures

Functionality Tests
- Configurable passive equipment Timers
- Full load/no load +24V
- Single handoff load sequence
- Single handoff unload sequence
- Handoff available signal test for load
- Handoff available sequence
- TP1-5 timeout errors
- Access mode selection
- Port sensors
- Emergency stop

AUTOMATED PASSIVE TESTS

Static Tests
- Labeled DB-25 male E84 plug
- Proper plug location
- Documented recovery procedures

Functionality Tests
- Configurable active equipment Timers
- Full load/no load +24V
- Single handoff load sequence
- Single handoff unload sequence
- Handoff available sequences 1-3
- TA1-3 timeout errors
- WIPS jeopardy tests
- Emergency stop

SYSTEM REQUIREMENTS

- Laptop or Desktop PC
- Windows 95, 98, NT 4.0 or 2000
- ECP parallel printer port
- 40 MB hard disk space

PACKAGE CONTENTS

- E84 application CD ROM
- E84 interface controller
- 6' male-male DB-25 cable
- 15' male-female DB-25 cable
- 6' power cable (North American)
- User's guide