

Digital Data & Control Tester (DiDaCT)

Introduction

Cycle time – its reduction benefits so many dimensions of a semiconductor and solar manufacturing operation!

Cycle time controls many critical items of importance in manufacturing – the transformation of orders into cash, the transition to new technologies shortening the time to market, the transition to different product mix, the finding of manufacturing process excursions and the mitigation of their impact, the mitigation of forecast error, and the mitigation of ASP (Average Selling Price) declines. Elimination of cycle time waste in product moves, waiting and inventory is the key.

A fundamental element in achieving improvement in cycle time is the elimination of variability in the fab's manufacturing automation process. The foundation for this is first the establishment of and adherence to industry standards pertaining to equipment-to-host communication, and equipment-to-equipment communication. Next, ensuring continuous conformance to industry manufacturing automation standards will maintain maximum throughput in a fab's transport system by eliminating detractors to communication between equipment and the factory's automated material handling system (AMHS).

Testing of equipment for conformance to each individual standard, and also testing for conformance to each standard for their interaction with one another in the context of a fab's unique set of operational scenarios will maximize fab transport logistics efficiency. DiDaCT is a flexible testing tool that accommodates a fab's custom operational scenarios.

DiDaCT can be used by the fab internally, and can also be used at an equipment OEM prior to the delivery of equipment to the fab, resulting in quicker resolution of non-conforming items, thus accelerating a fab's ramp to production.

Product benefits

- Efficient manufacturing automation deployment
- Reduction in manufacturing variability
- Improved cycle time
- Shortened fab ramp-up time
- Stronger collaboration between fab and equipment OEMs



Capabilities

- Graphical User Interface (GUI) to develop and execute automated/manual test scenarios
- Predefined test scenarios are available
- Dynamic visualization of test results per user-defined criteria
- Comprehensive test report generation
- Flexible import and export of data setup
- Import and export of test scenarios
- Flexible testing
- Customizable scenarios
- Standard message templates
- Custom messages support
- Multi-interface support
- Built-in analysis features
- Future ready – prepared for emerging standards

System requirements

Minimum hardware requirements necessary to utilize the DiDaCT application:

- Single Core CPU \geq 2 GHz
- Ram \geq 1 GB
- Ethernet network adapter
- Serial Port for Secs-I or
- MRV Box (Lx-Series) for a remote serial connection via Telnet protocol
- USB 2.0 port (optional for E84 Service Box Connection)
- Recommended free hard disk space \geq 500 MB (program files: 20 MB)
- DiDaCT software can run on following operation systems:
 - Microsoft Windows 7 (or higher) and requires
 - Microsoft .NET Framework 4.5
 - Microsoft Excel 2007 (or higher) (only for Create Excel Report feature)

System overview

- DiDaCT is a Windows-based application.
- Test separately or simultaneously multiple communication protocols in flexible test scenarios.
- SECS/GEM communication (HSMS or SECS-I) and E84 signals can be combined in test scenarios.
- Hardware needed for testing E84 signals available as E84 Service Box connected to test PC via USB.
- With DiDaCT, the E84 Service Box is fully capable of simulating an active E84 OHT/AGV device.
- All active E84 signals and associated timings are determined by the user during test case design.
- The E84 Service Box senses E84 signal transitions with a resolution of 1 ms.
- E84 signal sequences can be visualized and exported for future review in the form of a csv-file.

Two DiDaCT modes

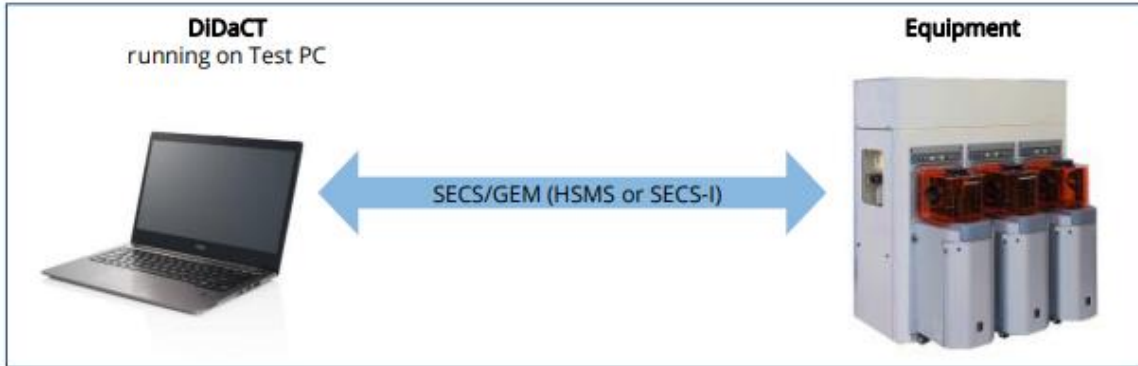
- **User mode:** Execution on predefined, reusable tests
- **Edit mode:** Creation of flexible test plans, modification of unlocked test plans, execution of test plans



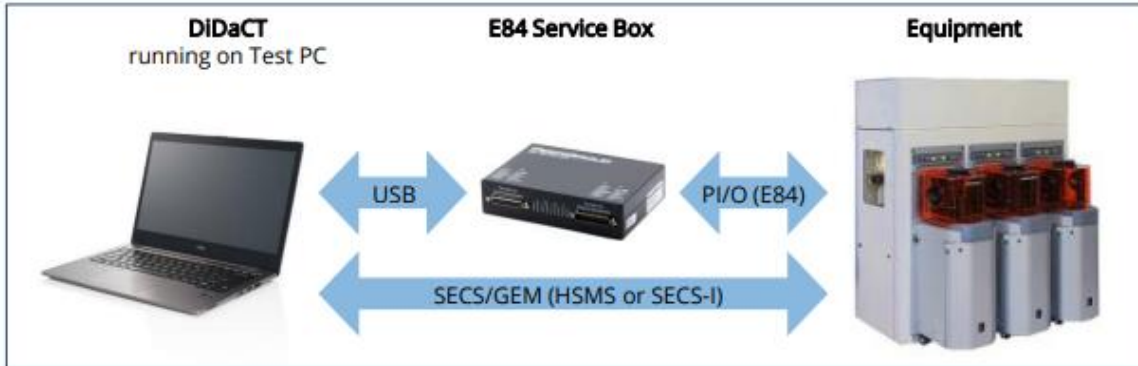
Use cases for DiDaCT testing

DiDaCT is a flexible testing tool, which through various combinations of test plan definition and configuration, can separately or simultaneously test multiple communication protocols.

Testing of SECS/GEM (HSMS or SECS-I)



Simultaneous testing of SECS/GEM (HSMS or SECS-I) and SEMI E84



Testing of SEMI E84





About PEER Group

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Global sales contact

Ronald Bardoux

Phone: +49 351 21390-00

Facsimile: +49 351 21390-66

Email: sales.didact@peergroup.com