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# ***CCI 1000 Series ATE Platform***

## ***Technology Overview***

# CCI 1000 Series ATE Platform

The Circuit Check Inc. (CCI) 1000 Series ATE Platform solves the uncertainty of repeatable results with accurate, reliable tooling, and with repeatable built-in professional fixturing. With the CCI 1000 Series ATE, test procedures become automatic, with test steps and go/no-go limits easily programmable.

## Overview

- Fully automated functional test and programming
- Topside, bottom, dual or multistage pin probe support
- Through-connector test
- Capability to test or program multiple products using quick change drop-in's
- Interchangeable fixturing for scalable tooling
- Automated handling to reduce operator intervention and increase throughput
- Multi-up or single DUT fixturing
- Concurrent or single unit test
- Supports >1000 probes
- Scalable footprint in single, double and triple width systems
- Dedicated cable paths to support PXI or traditional instruments
- Integral UPS
- Color touchscreen, integrated bar code scanner
- Keyboard, mouse in lockable drawer

## Configurable Fixturing and Drop-in Product Adapters

A key to achieving the maximum value from automated test equipment is using the same test equipment and fixture mechanics to test multiple products. Circuit Check's 1000 Series ATE achieves this by using interchangeable fixturing, as well as interchangeable fixture drop-in's. These interchangeable components enable the same test system to be quickly reconfigured with new tooling for different products. This maximizes equipment re-use while minimizing the cost for each new test. The CCI 1000 supports probes on the topside, bottom-side, bi-level or dual stage, as well as through-connector test and line-automation. The CCI 1000 Series is configured to customer specific test needs in order to maximize performance at a lower investment, supporting both traditional instrumentation and modular PXI.



## Scalable Instrumentation for Flexible Measurements

The CCI 1000 Series ATE is configured to customer specific test needs in order to maximize performance at a lower investment, supporting USB, Ethernet and LXI instrumentation.



## Application Specific Test Software for Reduced Development Time

Circuit Check's modular test executive sequencing software options include CCITest, CIMTest, NI TestStand™ allowing for rapid program development and lower costs, while enabling a single program to test multiple product part numbers concurrently and asynchronously.

## Modular Chassis Architectures for Lower Lifecycle Costs

The CCI 1000 Series ATE is built upon a modular test rack architecture for ease of maintenance and redeployment as test system needs change. Each CCI 1000 Series includes:

- Twenty-four (24) inch racks to allow for easier component access, such as fuses, communication hubs, discrete power supplies, power relays and terminal blocks. A 19 inch wide rack is optional.
- Removable side panels for ease of maintenance and expansion when adding additional hardware.
- Interposer boards to lower costs and improve reliability instead of discrete wiring to mass interconnect.
- Solid one-half inch hard coated aluminum top plate to allow for larger fixtures, rigid mounting of brackets and bar code readers/printers.
- Delrin slide plates to ease change-out of fixtures and aligning to mass interconnect.

Example Single-wide Rack



Example Double-wide Rack



Side and rear entry for easier maintenance



## Manual, Pneumatic, Automated and In-line Test Fixturing

Circuit Check is an industry leader in all forms of test fixturing with over 35 years' experience. The CCI 1000 ATE is customer configurable with support for manual, pneumatic, automated and in-line test fixturing. The aluminum top plate of the CCI 1000 Series ATE allows for RF shielded enclosures without the need for modifications.

# CCI 1000 Series Application Models

## CCI 1010 Smart Meter Test Station

### Measurements and Control

- Clock and Pulse
- Magnetic switch actuation
- Supercap charge/discharge
- Power supply voltage and current
- Firmware load and verification
- Fast voltage and current
- Digital I/O
- Single or Multiple DC input
- Single or three AC input



## CCI 1020 Infotainment Test Station

### Measurements and Control

- GPS, Weather Radio
- Bluetooth, BLE, WiFi
- Cellular (3G/4G/LTE)
- AM/FM, HD, SiriusXM
- High speed digital and analog
- USB, CAN
- Documentation set to support maintenance, repair and upgrades
- Modular instrumentation



## CCI 1050 Medical Device Test Station

### Measurements and Control

- Automated board handling to reduce operator touch points
- Voltage, current, digital I/O, pressure, humidity
- Rapid switching to isolate IPG/ICD signals
- Inductive Coupling Devices
- Medical Device Radio Communication Services
- 802.11 WiFi, Bluetooth, 802.15.4 Zigbee, WiMAX
- Documentation to support internal quality standards and guidelines of 21 CFR part 820





# Specifications and Configuration

Each CCI 1000 Series ATE is assembled to a customer's test application needs, comprising of device-under-test (DUT) measurement instrumentation interconnects, signal types and counts, power sources, and management software.

## Measurement Capabilities

### Functional Test

- Analog inputs and outputs - static and waveform I/O
  - Digital I/O
  - >6.5 digit DMM
  - Oscilloscopes
  - Waveform generators
  - Switching
  - CAN, SPI, I2C, MOST, custom
- Specific interfaces and communication protocols

### RF Test

- PXI and traditional instrumentation to RF frequencies

### In-System Programming

- Device-under-test (DUT) site flashing
- Multi-site flashing

### Board Handling Automation

- Support for hands-off automated product interfacing

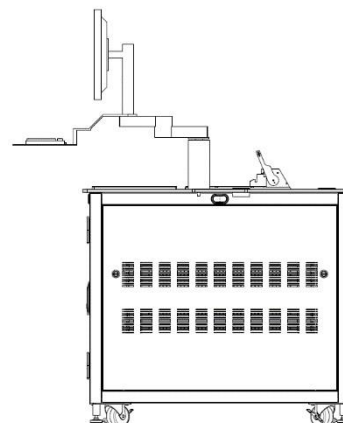
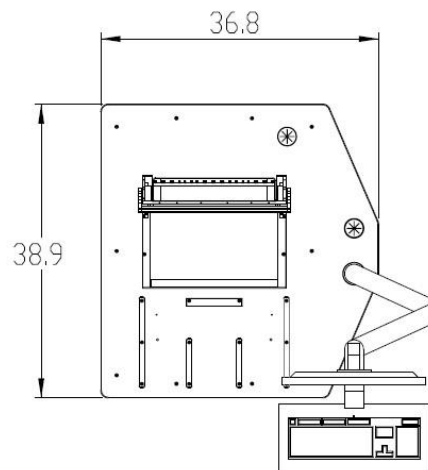
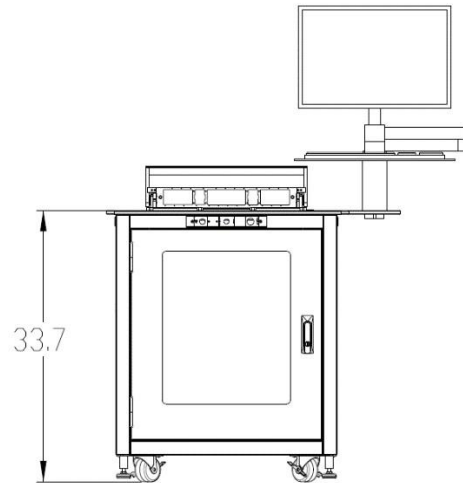
### Power Conditioning

- Supply of all necessary voltages
- Emergency shutdown

### Test and Programming Environments

- NI TestStand®, CCITest, CIMTest, NI LabVIEW®, NI LabWindows/CVI®
- C/C++/C#

## Mechanical Specifications



# Flexible Solutions Specific to Verification and Production

Circuit Check test systems are based upon modular technologies to accelerate deployment and enable capital equipment reuse. For over 35 years, Circuit Check is the partner of choice delivering more than 1000's of solutions and 100,000 fixtures worldwide.

## Engineering Expertise

### Certified Project Management

- Dedicated project managers
- Corporate-wide MRP
- Time, cost and risk management

### Factory Line Automation

- Indexed, rotary tables
- Palletized systems
- Lean cell manufacturing

### Industry Standards

- CE, UL and ISO compliant, CSA certified,
- ITAR, IEC, IEEE
- IPC-A-610 (cable assembly standard)
- IPC-A-620 (PCB assembly standard)
- Broadband, RF

### Test Systems

- Model and design – CAD, documentation
- Electrical – wiring, labeling
- Mechanical – pneumatics, shielding

### Test Fixturing

- SolidWorks® modeling
- Complete machining centers on-site
- Quick-change fixtures and adapters

### Test Software

- LabVIEW®, LabWindows/CVI, TestStand®
- C/C++, .NET, C#

Circuit Check understands the needs for test platforms that must operate in production test environments, while at the same time, Circuit Check test systems preserve measurement correlation to design and validation. Table 1 lists common test components and compares their use in design and production environments.

		Design and Verification	Production	
<b>Hardware</b>	Architecture	PCI, PXI, 1U PC	PCI, PXI, 1U PC	
	Fixture Interconnect	Cables Low-cost Mass Interconnect	Direct Fixture to Test Resource Connection High-performance Mass Interconnect	
	Fixture Type	Manual, Simple Hold-Down	Automated Open/Close, Vacuum	
	Test System Footprint	Benchtop 1U Station Half-Height Rack	Half-Height Rack/modular expansion Full-Height Rack	
<b>Software</b>	User Interface	Monitor, Keyboard, Mouse Touch Screen	Touch Screen with/without mouse Headless Interface	
	Testing Plan	Complete, 100's of Test Cases	10-100 Test Cases to Identify Process/Component Flaws	
	Testing Sequence	Test over Temperature or other conditions, Dynamic list of Tests	Defined limited Parameter Input	
	Data Size	Large Data Sets for Future Analysis	Quality and Product Genealogy Data	
	Enterprise Connectivity	Yes, Local	Yes, Global	
	User Interaction	Many Screens, Analysis Plug-in Libraries, Reporting Tools	No GUI is some Test-Lines Static/Simple User Interface for Operator	
	<b>Quantity of Product</b>	Total Volume	Small to Medium Data Unit with variety of Features	Large Unit Count with Defined Measurement Requirements
		Unit Per Test	1-10 in many cases, Serial Testing	Multi-Headed Fixture, Multi-Tester, Batch, Parallel Test Execution of Resources
		Time of Test	Hours/Days	Seconds/Minutes
	<b>Diagnostics</b>	Support	Phone/Web, Regional, On-site Support, Calibration Services	Global Support with Escalation Process, Life-Cycle Management of Test Resources

Table 1. List of test components and application use.

## Total System Support

Circuit Check supports all aspects of the system development process including electrical and mechanical design, software development, fabrication, system integration, deployment and support. With a modular functional test system from Circuit Check based upon commercial off the shelf instrumentation, our customers accelerate deployment of production test strategies at reduced investment costs.

# Appendix A: Terms and Conditions

## Notices:

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