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# ***CCI 6000 Series Rotary Handler***

## ***Technology Overview***

# CCI 6000 Series Rotary Handler

Rotary table handlers are an excellent choice for PCBA or product-level test and inspection, satisfying manufacturing applications that require high yield throughput. Rotary table based systems used in production can also help minimize load and unload times for the operator, because the device-under-test (DUT) automatically moves to the next cell within the station as each DUT is loaded. CCI 6000 series handlers are modular, scalable and flexible, supporting high-mix and high-volume product production needs. A common application example is to configure a CCI 6000 series as a rotary station to perform simultaneous PCBA bar code scanning, testing, programming and marking, all in order to pipe-line a process and reduce test time. CCI 6000 series handlers leverage CCI's unique quick-change fixture drop-in technologies to allow for station modularity and scalability. Production line flexibility is achieved because the CCI 6000 series handler is software and hardware agnostic, enabling adaptability to a variety of applications, and limited only by the number of stations or "pie slices".

## Overview

- Configurable for product test, programming, inspection and/or marking.
- Supports many open measurement hardware standards.
- Integrated rack and cabinet
- Fully controllable station indexing beat-rate.
- Interchangeable dial plate fixturing.
- Specially designed fixture alignment tooling pins.
- Operator safe operation with light curtains and fail-safe fixturing.
- Number of stations is configurable for complete test station implementation.
- Ideal for high-volume production where cycle times are short and operator load/unload tasks need to be minimized.

## Modular Fixturing for Maximum Equipment Reuse

A key to achieving the maximum value from automated test equipment is using the same test equipment and mechanics to test multiple products. Circuit Check's 6000 Series Rotary Handler achieves this by using interchangeable fixturing plates. These unique quick-change fixture drop-in's (Figure 1) maximize equipment re-use while minimizing the cost for each new test. Drop-in fixtures can perform a variety of functions, such as functional test, flash programming, vision inspection, through-connector test and/or marking. In addition, see Figure 5.

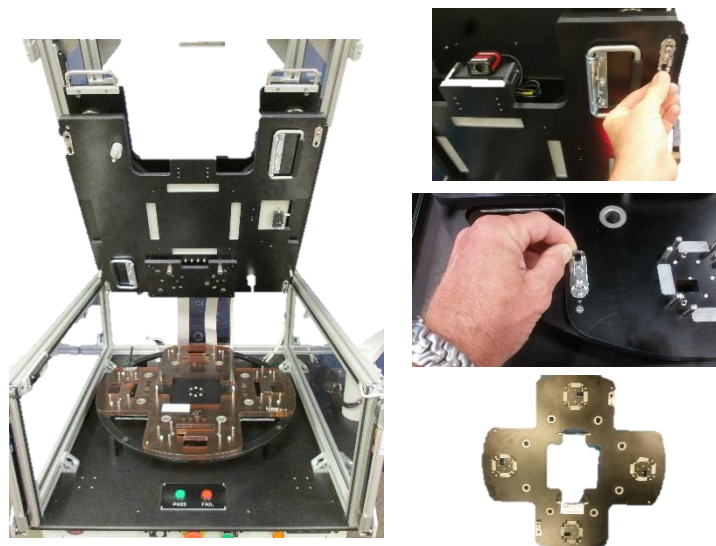


Figure 1. Quick-change fixture drop-in's

## Integrated Rack and Cabinet for Flexible Station Configuration

Each CCI 6000 Series Handler is configured to customer specific needs in order to maximize performance at a lower investment, supporting many suppliers of functional measurement equipment, marking tools, label inspection and flash programming technologies (Figure 2). In addition, the CCI 6000 series base can be configured with semi-automatic or fully automatic indexing, along with pneumatic, servo or cam-controlled fixturing.

Semi-automatic indexing stations are suited for high volume and enable takt times (beat-rate) to be reduced by minimizing the operator load and unload times. A semi-automatic CCI 6000 series can also be designed as a base machine for a fully automated test strategy where product volume is expected to rise in the future.

CCI rotary systems use direct-drive rotary indexing and operate without mechanics or gearboxes. The servomotor is connected directly to the load. With one bearing under load, backlash is virtually eliminated, while also requiring minimal or no maintenance because the units are prefilled with synthetic lubricant.

Figure 3 shows an example compact CCI 6000 series rotary handler configured with four (4) station indexing. Common applications for this configuration include, flash, test, vision inspection, and marking pass/fail. Figure 4 shows the easily removable side, back and front panel doors for instrumentation access, maintenance or reconfigure.

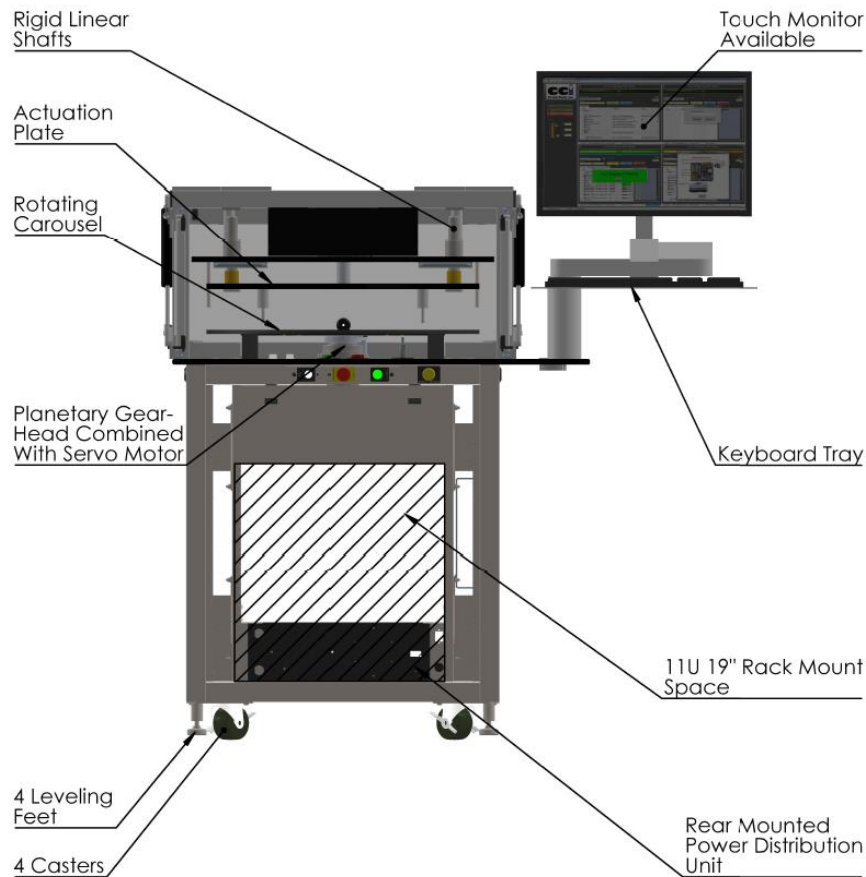


Figure 2. Base configuration CCI 6000 Rotary Handler



Figure 3. Example four (4) station configuration



Figure 4. Easy access side panels

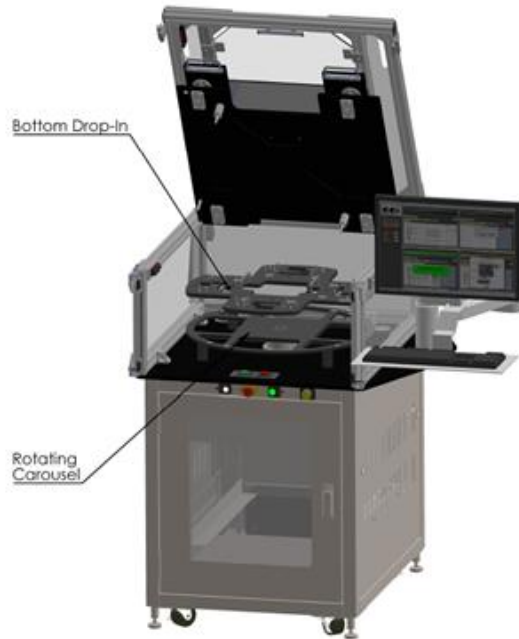
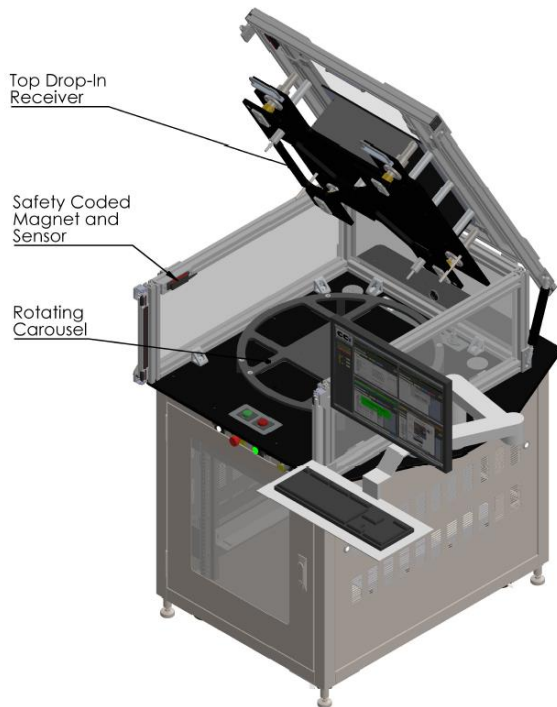


Figure 5. Quick-charge fixture drop-in's

## Integrated Control of Fixture Actuation and Indexer Speed for Optimized Beat-rate

The CCI 6000 Series Rotary Handler includes a dedicated industry-standard PC with a long life motherboard executing a sequenced based indexing control software tool (Figure 6). Using a simple text editor, indexing speed and fixture actuation can be controlled in order to achieve an optimum production beat-rate.

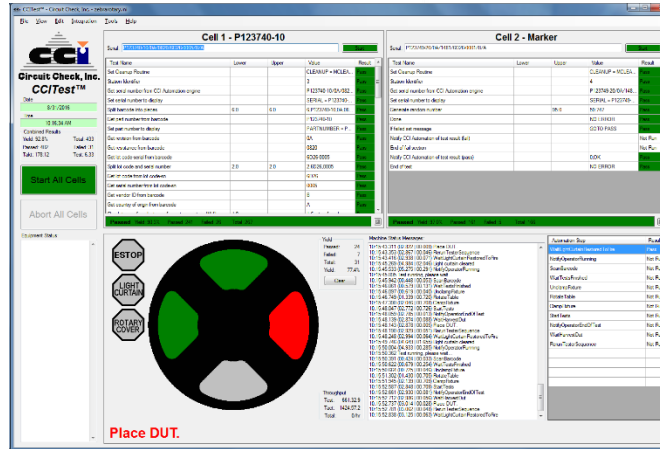


Figure 6. CCI 6000 Series Rotary Handler user interface

## Operator Interfacing

The CCI 6000 Series Rotary Handler operator interfacing is configurable to existing in-house operating procedures. The CCI 6000 series rotary can operate completely autonomously, be controlled by way of touch-panel display, or directed through traditional keyboard function keys. Emergency stop on/off button/switch for safety (Figure 7), as well as system keypad control locks to secure operation. Configured with light-bar (curtain) sensors, contact switching and magnet door sensors help ensure operator safety.

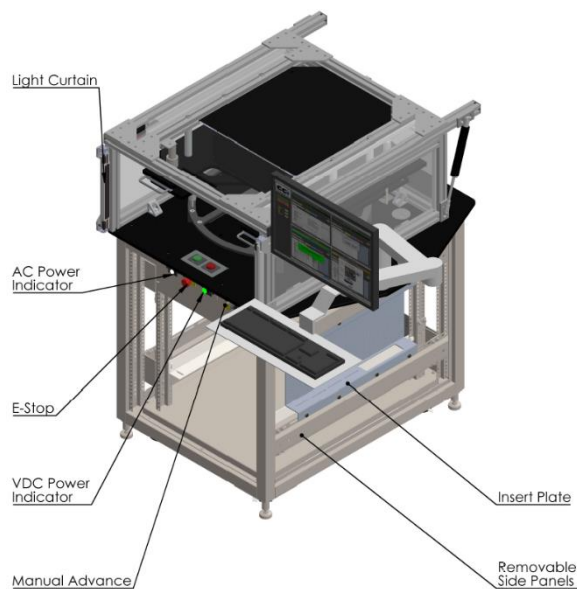
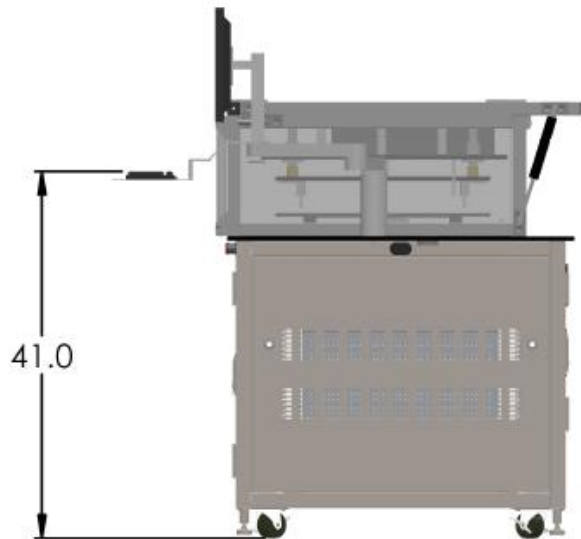
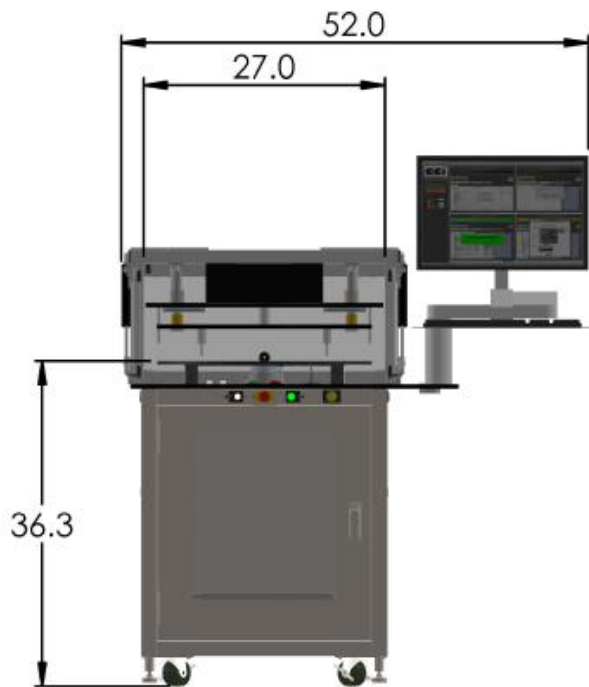
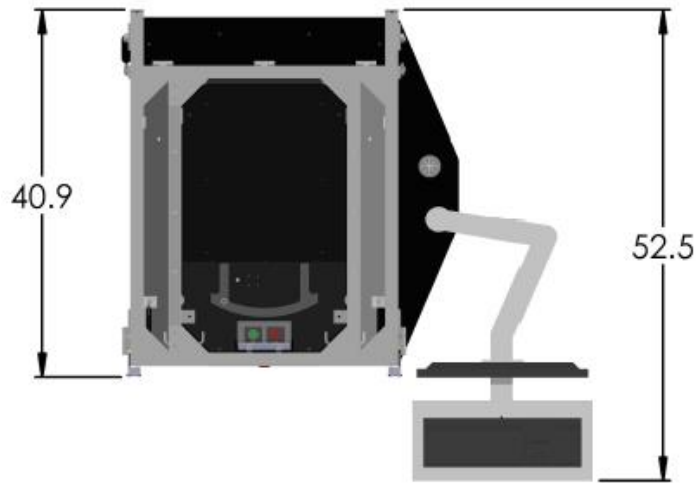


Figure 7. Ensured operator safety

# Specifications

## Typical Mechanical Specifications Chassis



## Benefits of Rotary Based Automation

Due to increased productivity demands, personnel limitations and quality, integration of test and automation within a rotary based architecture not only increases product throughput, but can deliver many other benefits:

- More easily align quality with efficiency- Automation integrated with test allows for faster more efficient design of throughput algorithms. Functional tests performed can be evaluated on the basis of detectable faults compromised by line beat-rate.
- Eliminate possibility of product accidentally forwarded to the next process step, while assuring that the correct failure data is available for Quality and Repair departments- Automation with test allows failure analysis to be logged automatically, while also enabling product to be removed from process flow.
- Support concurrency by allowing multiple products to be processed at the same time- Automation using a rotary based architecture can save valuable floor space.
- Address mission critical industries- Automation linked to test can reduce operator intervention allowing for simplified validation to Quality standards.
- Replace some or all manual labor allowing production operating costs to be reduced.

## Flexible Solutions Specific to Verification and Production

Circuit Check solutions 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 1000's of solutions and over 100,000 fixtures worldwide. Circuit Check understands the needs for Test and Automation platforms that must operate in production test environments. While at the same time, Circuit Check systems preserve measurement correlation to design and validation. 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 solution from Circuit Check, customers accelerate deployment of product at reduced investment costs.

### Circuit Check 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®,  
Python, C/C++, .NET, C#

# Appendix A: Terms and Conditions

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