# A manufacturer wanted In-System programming automated and fast

## INTRODUCTION

In-System Programming (ISP) is becoming an increasingly standardized part of electronics manufacturing. This practice allows for manufacturers to easily adjust to changes in firmware by programming microcontrollers after they have been soldered onto the circuit board.

One of our customers wanted to use in-system programming, but only if it could meet their demands.
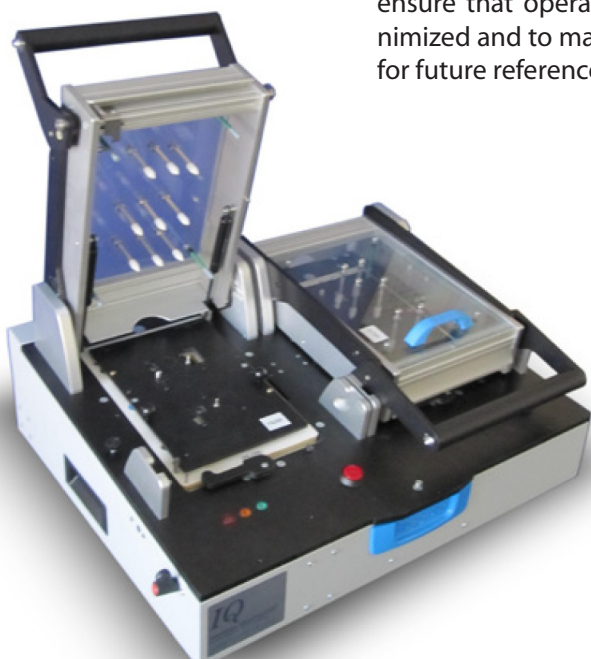
## OBJECTIVES

Our customer, a manufacturer producing circuit boards for car radios, was looking for a solution that could keep pace with the rest of their production line. This required the programming of multiple devices with different firmware, on different circuit board assemblies. They were also looking for a programming solution that would be reusable for future projects.
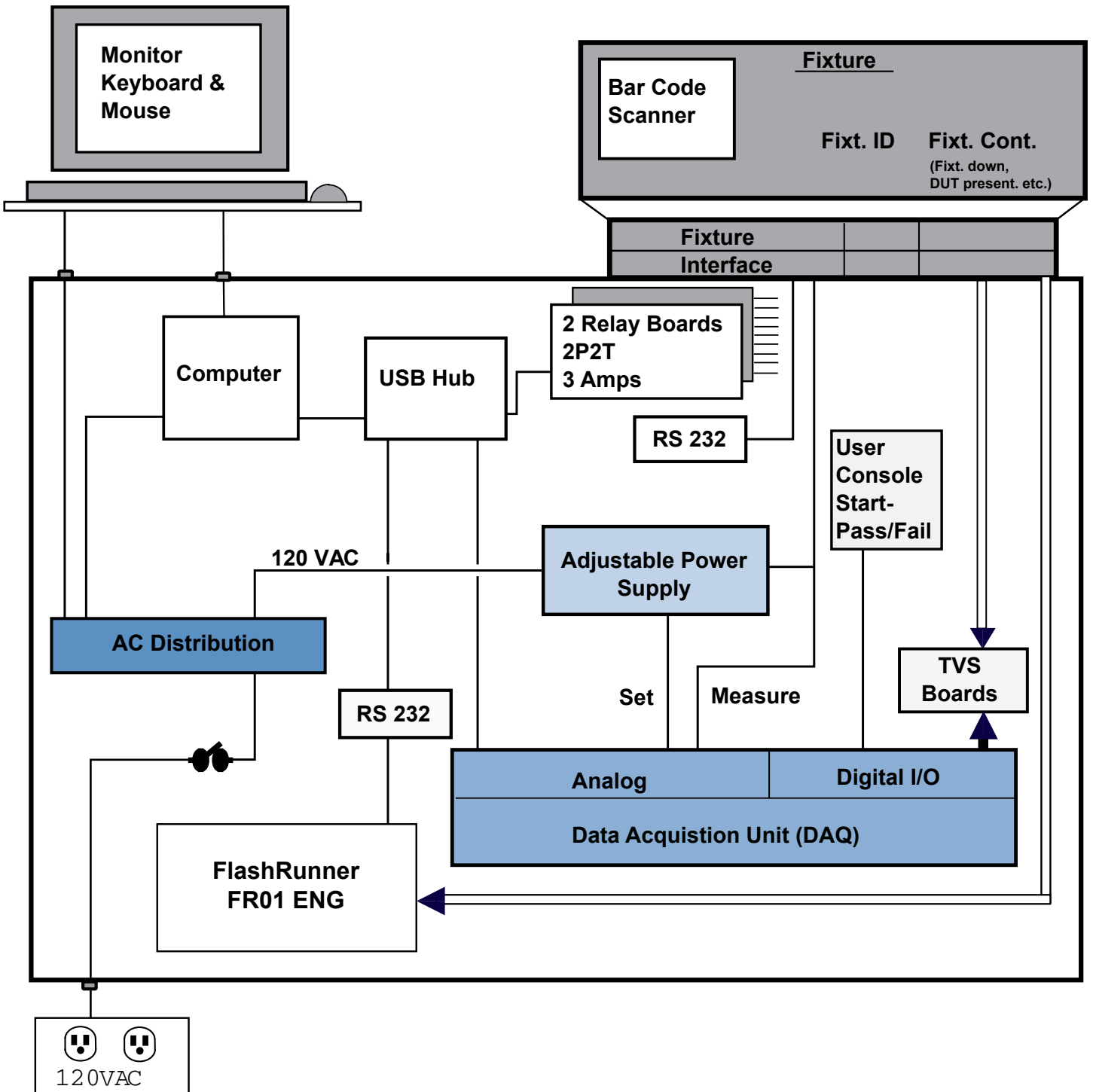
The goal was to keep the programming and handling time within 20-30 seconds per device. They wanted to ensure that operator errors were minimized and to maintain data logging for future reference.

## FEATURES NEEDED

• Universal In-System Programming technology, with the ability to program all devices currently in production and those that will be used in the future.

• An architecture that can perform FCT (functional circuit test) of the assemblies - including digital testing, testing for shorts, continuities, voltage and provide variable voltage sources.

• A fail acknowledge feature that prevents the operator from removing a defective board without first pressing an acknowledgement button.

• Custom software to integrate the programming engine, barcode scanner, and firmware with a user- riendly interface.

• Fixtures with ergonomic manual actuation.

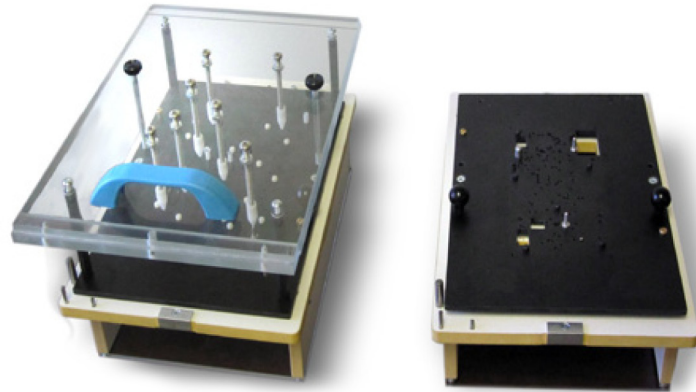• A single or dual well design that is able to handle different circuit boards and firmware.

## IQ PROGRAMMING STATION ARCHITECTURE

## THE SOLUTION

A dual well Ingun fixture was chosen for the housing. A FlashRunner FR01 programming engine along with a Window's PC powered the station, while a precisely mounted barcode scanner was used to gather data on the circuit boards. Userfriendly software was developed to display additional information, allow for changes in firmware, and to enable data logging.

During production, an operator loads the circuit boards into the fixture's wells, and then actuates the fixture. The station then automatically scans the board's barcode, the programming station selects the appropriate firmware, and programs the board's devices.

Upon completion of programming, the IQ programming station displays pass/fail lights to alert the operator. To ensure quality, the programming station requires the operator to press a fail acknowledge button if the circuit board doesn't pass programming.

The IQ Programming Station is to be implemented in an electronics manufacturing facility producing hundreds of thousands of circuit assemblies annually.

## FLASHRUNNER PROGRAMMING ENGINES

**FlashRunner** programming engines provide universal programming at the memory speed limit of the device they are programming.

Due to special agreements with devices manufacturers, **FlashRunner** supports +3,000 devices, with additional algorithms in continuous development.

- **Robust and reliable design ensures data integrity and uninterrupted production flow.**

- **Different models available with gang programming abilities.**

- **US sales and tech support available through Intrinsic Quality LLC.**

- **Easily integrates with a variety of systems.**

## ABOUT INTRINSIC QUALITY LLC

*IQ* Intrinsic Quality LLC
Electronics Manufacturing Test Engineering

**Intrinsic Quality LLC.** (www.IntrinsicQuality.com) is an electronics engineering company specializing in testsolution development. In addition to being one of the FlashRunner's United States tech and sales support center, they also provide functional testers and Genrad-Teradyne In-Circuit Test (ICT) development.

Conveniently located near Chicago Illinois, Intrinsic Quality LLC specializes in automatic test equipment for printed circuit board assemblies, flexible circuit cards, and electrical cabinet assemblies, wired chassis, electromechanical assemblies and backplanes. Intrinsic Quality is committed to providing innovation while fulfilling customer commitments.

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