Technology Advances in In-System Programming

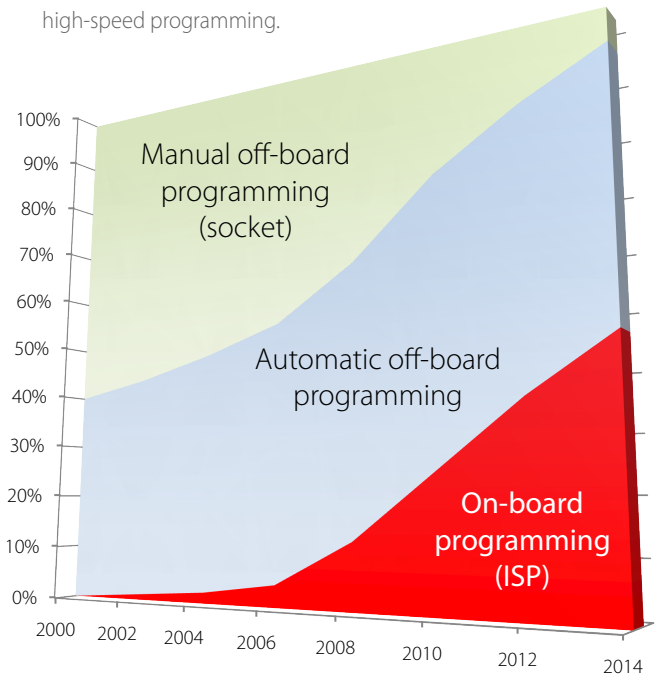
The manufacturing industry requires fast programming and high quality standards. A parallel approach to In-System Programming is the answer to the demand for high volumes and low-production costs, especially for PCB panels.

Introduction

In-System Programming (ISP) is the capability of modern microcontrollers, memories and other programmable devices to be programmed while already installed in a system, rather than requiring the chip to be programmed prior to mounting it into the board.

ISP is a rapidly growing approach in the manufacturing of electronic boards. Thanks to ISP, in fact, board manufacturers can integrate programming and testing into a single production phase, rather than requiring a separate programming stage. Moreover, code or design changes in the middle of a production run are easily made possible by the flexibility of ISP. The figure below shows how ISP, early adopted by the Automotive industry, will grow in the next few years.

The global electronics manufacturing market requires high volumes and low-production costs, and programming time is a key factor. That's why ISP solutions must achieve high-speed programming.



The Need for Fast, Parallel Programming

It's a common need, nowadays, to program microcontrollers with over 1MB of Flash or serial memories with over 64MB. The faster the programming, the lower the production costs. Moreover, frequently PCBs are grouped into PCB panels. To program all of the devices in a panel, a traditional approach consists of using either multiple programming tools (with added costs and complexity) or a demultiplexing solution (with slow overall programming time).

To address the combined need for both fast and parallel programming, Algocraft has designed the innovative WriteNow! ISP technology, which allows to reach the theoretical programming speed for any given device on up to 8 devices at once- drastically reducing programming times, costs, and system complexity.

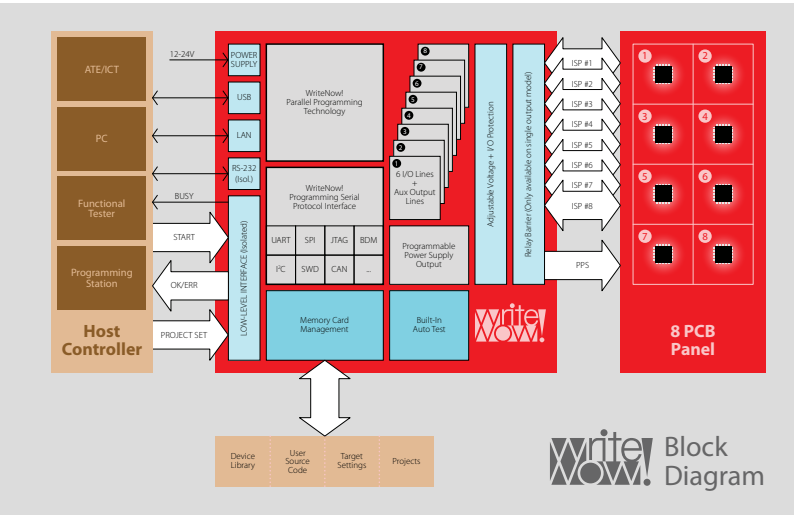
The WriteNow! technology has been created with speed and reliability as key features, and employs state-of-the art components and techniques to give birth to the WriteNow! Series of In-System Programmers.

One Tool, Many Devices

The WriteNow! technology allows for universal device support, since the vast majority of ISP protocols (such as UART, SPI, JTAG, I^2C, BDM, SWD, SWIM, etc.) are implemented by the same hardware platform. Standard and custom programming algorithms are "just" software components that are transferred to the instrument and run natively at the programmer's full speed.

The Perfect ATE Companion

The compact size and versatile interfacing possibilities of the WriteNow! programmers allow them to be conveniently and easily integrated in an Automatic Test Equipment (ATE) or programming/test fixture. Since binary codes, board parameters, programming flow (and, above all, programming intelligence) reside inside the WriteNow! programmer, the programmer can



work without a connection to a PC (standalone mode). When in standalone, a simple "start" command string can be sent by an ATE or PC (through serial, USB or LAN interface) to initiate the programming flow. After the programming flow is started, the ATE or PC can switch to other tasks (e.g. starting the test of other boards)—no external resources are needed to carry out the programming flow. In the simplest connection scenario, an ATE can control a WriteNow! programmer via low-level I/O lines (START, BUSY, ERR/OK).

Feature Rich

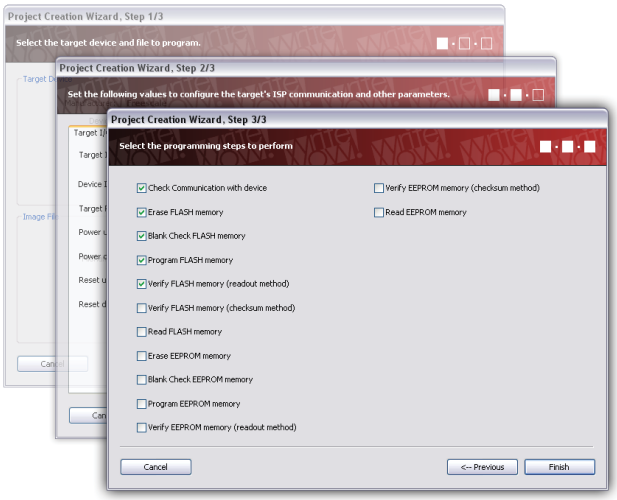
WriteNow! programmers easily allows to custom program each single device with variable data, such as serial numbers, product vendor IDs, batch numbers, barcode data, and any other variable data. The data encryption feature, coupled with LAN connectivity, allows manufacturing companies to securely synchronize local data with distant production facilities. A built-in relay barrier allows ISP lines to be disconnected from the target system, thus allowing other operations (i.e., functional tests) to be performed by other equipment. These and many other features make the WriteNow! programmers the most complete, powerful and cost-effective solution for every in-system programming need.

In-System Programming Made Easy

The WriteNow! Series of In-System Programmers can be controlled by a host PC through simple, ASCII strings through a standard terminal interface. On top of that, a powerful user interface is provided which allows setup and controlling the instruments through easy, graphical procedures.

The WriteNow! Project Generator guides the user through the creation and debugging of a programming project in a few guided steps: device selection, source file creation, board parameter settings, programming flow options, upload and run of the project.

And for total customization, tailor-made PC software that interfaces to the instrument can be coded based on the provided WriteNow! Application Programming Interface (API).



The WriteNow! Family

The WriteNow! series includes four versions, to accommodate different parallelism needs: a single-output model, a two-output model, a four-output model, and an eight-output model. All models share a common WriteNow! programming core.

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Solutions for the Programming Industry

Rev. 1.1 - AR00010101EN

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