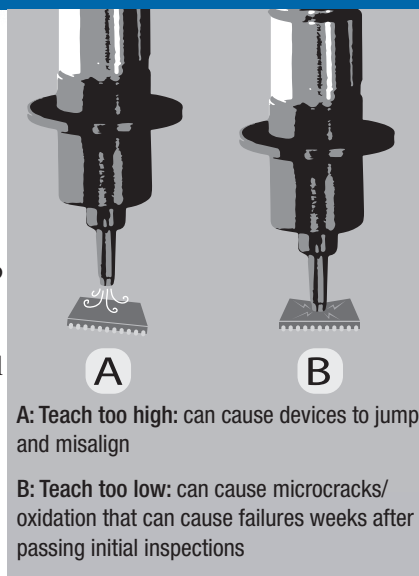


majority of quality issues when programming semiconductor devices. The vacuum systems can easily blow these delicate devices out of place, or cause them to jump up to the nozzle. This can result in poor job yield and the potential for inaccurate alignment. With devices getting smaller and smaller, operators need automated solutions to quickly and accurately teach jobs, and WhisperTeach™ provides that solution.



A: Teach too high: can cause devices to jump and misalign

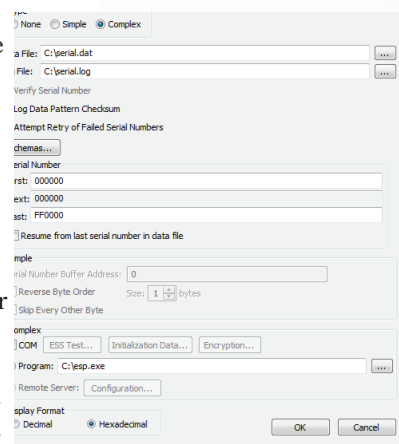
B: Teach too low: can cause microcracks/oxidation that can cause failures weeks after passing initial inspections

WhisperTeach™ uses artificial intelligence and an enhanced pneumatic system to learn and determine the accurate z-height between the nozzle and device. BPM invented WhisperTeach™ (patent pending), to help programming centers and manufacturers reduce setup time per job, improve cycle time, reduce changeover time, and improve job accuracy.

The annual NPI Awards recognize companies that introduce innovative new products for electronics assembly equipment, materials, software, and PCB fabrication. Award recipients are chosen by an independent panel of industry experts.

JobMaster™

BPWin's JobMaster is a powerful tool for manual and automated device programming production. It allows you to **prepare programming jobs to precise specifications, test the results, and protect your routine** so that you get the same quality results every time. JobMaster is designed for maximum simplicity and consistency in device programming. It takes the "guesswork" out of many of the steps needed to program devices, such as choosing a device, selecting a data pattern, setting special configuration needs, etc. JobMaster allows you to **create and save a job file on one programmer and share it with other programmers.**



Jobmaster is the solution for **efficient, repeatable production programming.**

Serialization

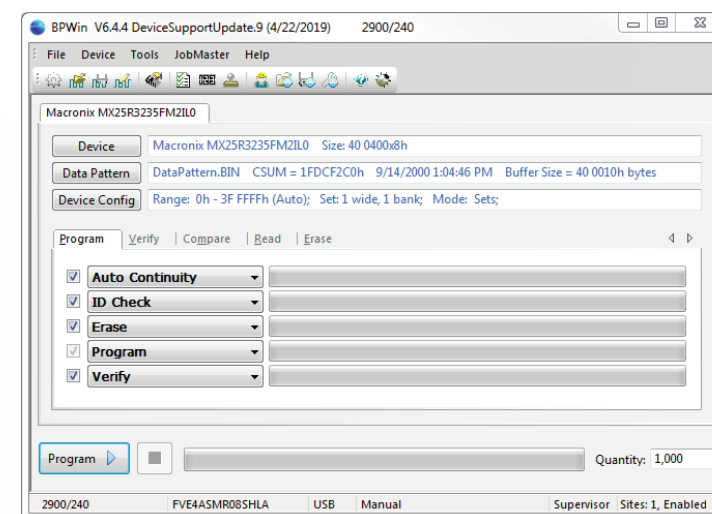
Serialization is all about **unique identification and intellectual property protection.** BPWin's Serialization feature encompasses both simple-to-program basic serial numbers, and complex-to-program unique data items such as MAC addresses, encryption keys, GUIDs, randomization seeds and more.

- Simple Serialization is easily and fully configured via the BPWin GUI
- Complex Serialization gives you the flexibility to generate serialization data in most any form and number of addresses required on the device
- Device-Driven Serialization allows for bi-directional communication between the device and the External Serialization Server for a custom process flow
- The External Serialization Server allows you to securely obtain unique serialization data, from a secure location you specify

Application Programming Interface (API)

The key to unlocking the full potential of your device programming operation lies in your ability to gain a timely understanding of what is actually happening on your production floor. **C-Job Monitor allows the programmer site status to be exported in real-time for monitoring through verification, auditing and logging of data from within BPWin.** C-Job Control allows an external program to control job related functions like automating the configuration, initiation, and termination of a job. BPWin API allows users to **solve complex process problems** during the programming cycle. Designed specifically for BPM customers, the API automation object model gives you the ability to utilize any programming language for interface to BPWin software. BPWin API is a **breakthrough in programming connectivity**, that digitizes the information generated throughout your device programming process, and makes it available where, when and how you need it.

- Interface with any networked enterprise specific database (SAP, oracle, Excel, SQL, etc.)
- Utilize any programming language for interface to BPWin software
- Supports statistical process control and quality process improvement
- Integrate device programming with the shop floor process control



Automated Machine Interface

Use our **Workflow Configuration dialog to easily set up and save your next automated programming job.** Designate your desired media station and then drag and drop your selection into the media category of the workflow file. Media categories are used to help organize the workflow and illustrate the progression of devices from start to finish.

- Valid input/output media stations include tape, tray, tube, laser and label
- Categorize reject media stations to identify failures and take corrective action
- Media categories include Sources, Programmers, Markers, Destinations and Rejects

E-mail Notifications

When your automated system sits idle, valuable production time is lost. That's why we included a feature that allows BPWin to send you an e-mail when an important system event takes place. You can configure BPWin so that it **sends an email if there is a pick or place error, when your job is complete, and if an unexpected device is detected in a socket.** BPWin can be configured to send e-mail notifications to report system events to multiple users. With this feature, you'll be able to **take action immediately and maximize your automated programming system's up-time.**

Data Logging

Track the performance of your programmer and pinpoint the root cause of an unexpected event with BPWin's **BlackBox Logging and Log Visualization tools.** With BlackBox Logging, BPWin automatically creates a file at the start of each job and records the actions of the programming process. Each recorded action is time-stamped so that you can view the data chronologically. With the Log Visualization feature, the contents of the BlackBox log file are displayed graphically allowing you to quickly and easily view your programming system's events.

- File is saved and archived to your hard drive
- Monitors system performance to maximize utilization

Job Summary

Get a snapshot of your job session with BPWin's **Job Summary tool**. Confirming the results of each programming job is critically important to your quality process. When the programming job ends, the Job Summary report will display the **job information, data pattern, DPH** and more. The report can be printed or saved as an HTML file. Here's what else you'll see in the report:

- Device Specific Configurations
- Serialization Information
- Achieved Devices/Hour
- Total Devices Processed
- Yield by System, Site and Socket
- Socket Module Insertion Count

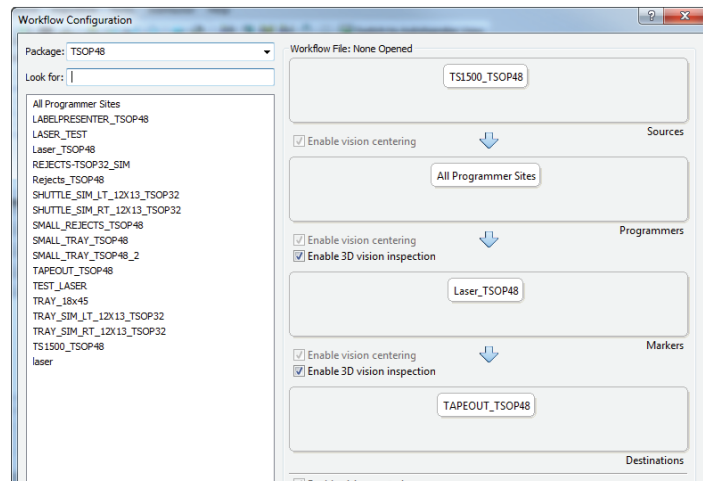


BPWin Device Search

Our device “smart-search” feature makes it easy for you to **find and select your device or view a list of supported devices by programmer model**. Use the “Look For” field in BPWin as a search engine and simply type a portion or all of your device part number or the semiconductor manufacturer to see the results.

You can also configure device search by programmer model, request support for a device, view device information and see a list of supported socket solutions.

To find out more, please schedule a free demonstration of this powerful process software at bpmMicro.com/contact



Software Specifications

| System Recommendations | |
|---------------------------|---|
| Operating Systems: | Windows 10 Windows 10, Windows 7; 32bit and 64bit Dual-core or higher processor |
| Available Memory: | 2GB |
| USB Port: | 2.0 |
| Monitor: | SVGA 256-color and 800x600 or higher resolution |
| Input: | Mouse or compatible pointing device |
| Interface | |
| Menus: | File-manager type menu lets you quickly locate and select devices and files. |
| Environment: | Easy-to-use Windows™ environment and BPWin Help feature assists you to easily navigate BPWin's powerful features. |
| Features: | Standard Windows™ help features, print drivers and toolbars |

- Advanced Features**
- ID Check, Blank Check, Continuity, Auto start, Compare, Read, Sum, Erase, Program, Verify, Multi-pass verify
 - Standard and Advanced Features
 - Load data from a local file, network file or master device
 - Support for all popular data formats, including binary, Motorola®, and Intel®
 - ASCII/HEX editor
 - Configurable checksum
 - Multi-user passwords
 - Process automation via BPWin API
 - Simple, complex and device-driven Serialization
 - Integrated serialization and date code with laser marking
 - Job statistics data logging
 - JobMaster to create, save, protect and share jobs
 - Efficient device selection algorithm
 - Operator and Supervisor Mode
 - Device and Package information
 - Socket solution lookup
 - Request a quote
 - Integrated Help and product manual
 - Track and reset socket maintenance counters

See the video at bpmMicro.com/software



BPWin™

Award-Winning, Easy-to-Use Programming Software



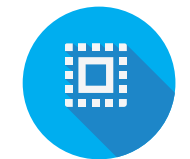
Make Device Programming Easy

Saving time in set-ups without requiring advanced technicians



9th Generation Site Technology

Future-proof investment with true universal site technology



WhisperTeach™

Automated Teach—reduces setup time per job and improves accuracy and quality

Device Programming Software that's easier to use

Programming the Future

BPM Microsystems was built on the idea that device programming can be easy, effective and intuitive. With that in mind, we created BPWin™ a powerful software tool that complements our industry-leading device programming hardware.

BPWin is more than just a programming interface. It's a growing collection of certified algorithms and features that give you the functionality, quality and control you need from design to production.

Device Programming Software That's Easier to Use

With our user-friendly interface, you can setup, run and save your programming jobs with ease. When new device support is released on one platform, it is simultaneously supported on other programmer models so you can effortlessly transfer your job from your desktop to other manufacturing locations around the globe. Select from a range of features like JobMaster, API and more to add to the performance of your programming job.

Flexible, Reliable and Continuously Improved

Our focus is to provide the best device programming experience possible by enhancing the software with new features, adding support for new devices and applying code revisions to comply with IC manufacturers' specifications. We anticipate market needs and listen to customers to continuously improve the product with eight to 12 major software releases annually and daily algo updates. BPWin delivers the flexibility and reliability customers expect from the best programming software solution in the industry.

WhisperTeach™

WhisperTeach™ won the 2018 New Product Introduction Award in the category of Production Software for its solution on the BPWin™ platform. Pick and place errors account for the

