

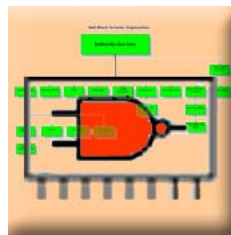
# Application Software Catalog



page 3

## Data Mapper

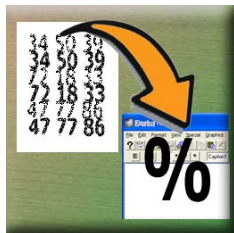
A standalone utility for merging multiple data files into a single programming image.



page 4

## NAND Flash Bad Block Schemes

A library of utilities for managing Bad Blocks in NAND memory devices.



page 5-6

## Enhanced Statistical Process Control

Adds customer-selectable syntax specifications to job logs for export to external statistical software tools.



page 7-8

## Serial Number Server

A SW utility that manages unique serial numbers for devices during manual or automated programming via a network connection to a server.



page 9-10

## Enhanced Yield Programming Controls

Customer-selected controls and limits for programming operation retries to improve first-pass programming yields.



page 11-12

## Remote Monitoring

Provides monitoring of RoadRunner™ and PST™ Programming systems anywhere in the world on the same network—view statistics and system utilization.



page 13-14

## Version Control

A configuration with FlashCORE programmers (currently for PS Systems) that ensures programming repeatability by managing firmware versions and software (TL) versions.



page 15-16

## Tape Label Generator

Uses TaskLink™ (TL) to create text and graphic labels for programmed devices output to reels.

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# DataMapper

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## Features

- Merge multiple files into one image
- Use with any device programmer
- Handle any combination of multiple file formats
- Overlapping address spaces
- Automatic address adjustment or manually specify locations
- Re-map pre-existing data files into new layouts
- Supports multiple chip package usage
- Save layouts as projects
- Specify target file size and fill byte value
- Add and delete files
- Error checking
- Automatic file type detection
- Configurable byte swap
- Specify output file name
- Runs on Win95 through WinXP
- Intuitive MS Windows graphical user interface
- Drag and Drop

## Supported File Formats

Formatted Binary	Absolute Binary
Hex Space STX	Hex Percent STX
Hex Apostrophe	Hex Comma STX
Hex Space SOH	Hex Percent SOH
Hex SMS	Hex Comma SOH
Motorola EXORciser	Intel INTELLEC
Motorola EXORMAX	Intel MCS 86
Motorola 32 bit	Intel Hex 32

## Outstanding Value

With Data I/O we understand the challenges inherent in moving new products from design into NPI and production. DataMapper is one of several software tools that enhance the performance, efficiency, and control over device programming processes across the supply chain.

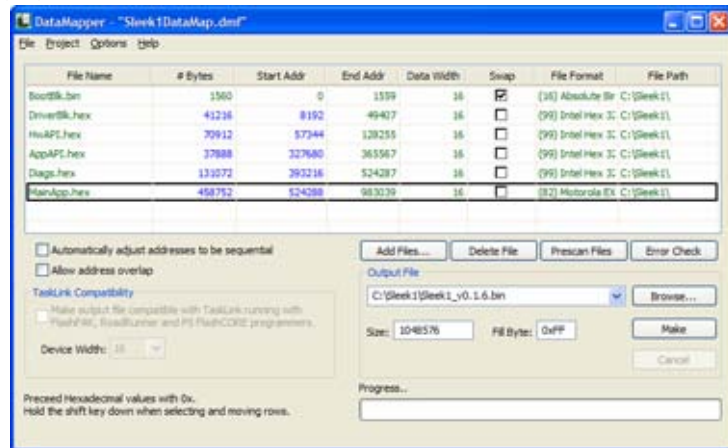
## Powerful Solution for Advanced Semiconductor Applications

Today's advanced semiconductor applications are typically created by teams of engineers and/or require data from multiple sources. An application may have boot code, system software, application programs, and multiple data files. Each of these may be developed and maintained separately, and file formats may vary.

As the product moves into prototype production, these inputs must be merged into a single data file to create a programming image for the target device. DataMapper is a convenient time-saving tool that converts of different file formats and maps content into address space layouts.

## Easily Accessible from TaskLink for Windows™

TaskLink users will find DataMapper is accessible from the TL-Win drop-down menus, enhancing the convenience. DataMapper makes it possible to spend more time on development and production activities and less time merging files.



## Ordering Information

To purchase the Data I/O DataMapper, please contact your Data I/O Sales representative.

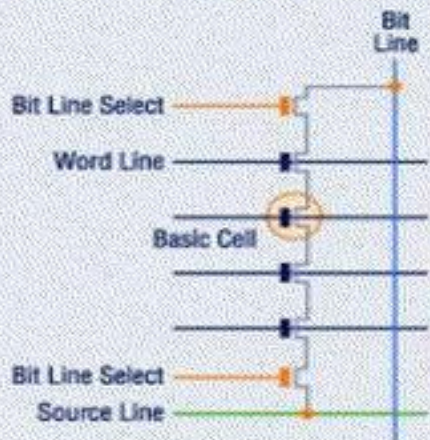
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## NAND Flash Array Architecture



# NAND Flash Bad-Block Schemes

## Software Option

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### Bad-Block Schemes Included

1000 Logical Block Skip	4 Block Skip
File System Map	GSL Skip
MODE2	MODE3
None	Pantech BBM
Qualcomm MSM6100	MSM6100 EFS
Reserved Block Area	Samsung GBBM
SAM GBBM DWSwap	Samsung WinCE
Skip Bad-Blocks	Thales Navigation
Unistore V1.0	Unistore V1.8

### Requirements

- TaskLink 5.40 or newer
- Algorithms release 2004C or newer
- Data I/O FlashCORE™ family programmers (PS Series, FlashPAK RoadRunner)

### Information

See Data I/O's extensive NAND Flash device information, research articles, application notes, vendor links, and more:

<http://www.dataio.com/NAND/>

### NAND Flash Bad-Block Schemes

Data I/O's NAND Flash Bad-Block Schemes software option is for engineers and systems designers implementing NAND Flash memories into their electronic products. New products increasingly use NAND Flash memories instead of NOR Flash memories due to the large cost advantage. While NOR memories are error-free, NAND memories require bad-blocks to be detected and managed while writing to the device. About two dozen methods are commonly used to manage bad-blocks today. The "Skip Bad-Blocks" scheme is included with TaskLink™. The NAND Flash Bad-Block Schemes software option package contains numerous new sophisticated schemes. Data I/O offers this software option to help designers more quickly implement products on NAND Flash memories with proven bad-block handling methods.

### Outstanding Value

With Data I/O, you benefit from thirty plus years' experience designing and manufacturing programming solutions. Only Data I/O provides the complete solution for your device programming needs.

### Ordering Information

To purchase the NAND Flash Bad-Block Schemes software option, contact your Data I/O Sales representative.

Data I/O can develop a new Bad-Block scheme for you. For more information, contact your Data I/O Sales representative.

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## Application Software

# Enhanced Statistical Process Control Logging Software

### Benefits

- Full traceability records
- All relevant data recorded (see next page for list of fields)
- Automated job log file is created as devices are programmed on the automated handler system
- Handles serial number data
- Semi-colon delimited fields are readable by popular SPC tools
- Also readable with Microsoft's Excel and Access to build your own solution

### Order Information Enhanced SPC SW

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**Enhanced SPC Software** is for applications involving programming ICs for use with Data I/O automated handling systems.

Enhanced SPC assumes an interrupt-driven process that adds information to selected "fields" in the automated job log.

Enhanced SPC provides job log extensions and simple creation of SPC databases; the supplied fields allow precise tracking of machine behaviors (e.g., uptime, downtime, yields, and throughput).

This software is not subject to Data I/O's standard product warranty. Technical support is provided on a limited basis.

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# Application Software

Examples shown are in Microsoft Access format

Available Fields
TimeStamp
JobName
Device
Package
VisionPRJ
RecordID
SystemStatus
SystemMSG
FromArealD
FromPosID
DeviceStatus
SNused
ToArealD
ToPosID
DevicesInspected
InspectionPassed
InspectionQuality
DevicesInsertedSocket
SocketYield
ProgrammerYield
ProgSysYield
DevicesProcessedMarker
DevicesMarked
DevicesInputSystem
SystemYield
SystemThroughputExcWait
SystemTotalThroughputIncWait
DevicesOutputSystem
MachineID

# Enhanced Statistical Process Control Logging Software

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RecordID	Meaning
0	Not running
1	Messagebox opened
2	Messagebox closed (acknowledged by User)
3	Production Mode

Status System	Meaning
1	System started
2	Entered Setup-Screen
3	Entered System-Screen
4	Entered Run-Screen
5	Clicked on ,Run'
6	Clicked on ,Finish'
7	Shutdown System

System MSG	Meaning
101	Initialize Run Message
102	Load Devices Message
103	Job Done Message
104	Warning Message
201	Door Open Message
202	No Programmers available
203	Initialization Error
204	Timeout Message
301	No Air supply
302	Motion Error
303	Error Severity 4
304	Error Severity 3
305	Error Severity 2
306	Error Severity 1

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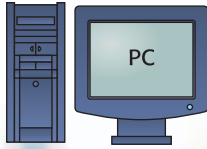
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FlashCORE Networked Communications



# Serial Number Server

FlashCORE™ Systems

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Data I/O

## VOLUME PROGRAMMING OF MAC ADDRESSES, PRODUCT IDENTIFICATION CODES, SERIAL NUMBERS

Consumer electronics, automotive applications, and industrial products are increasingly configured with one or more internal identification numbers to enhance product communications, upgrading, and maintenance over the life of the product. These might be serial numbers, product ID, Vendor ID, configuration ID or other manufacturer's information that is unique to a particular item.

The Serial Number Server was designed for Set-top box (STB) manufacturers, volume producers of Cell phones, PDAs, Network peripherals, or any electronic products requiring device serialization and tracking of ID or serial numbers.

## AUTOMATED SERIALIZATION OF PROGRAMMABLE DEVICES

The Data I/O Serial Number Server, when combined with existing FlashCORE programming systems, provides a complete solution that manages automatic programming of unique numbers or other dynamic data from your external source file during the production programming process. Serial Number Server is integrated with FlashCORE programming firmware, assuring that numbers are assigned only to successfully programmed devices, and that each number in the source file is assigned only once. In addition, the server tracks both served and unused serial numbers, so you always know precise status of device serialization.

## FLEXIBLE CONFIGURATION

A low volume FlashPAK user may run the Server on the local PC along with TaskLink for Windows. The Server may also be installed on a network host to serve one or more production programming systems, or installed directly on the AH400/AH500 SW on the PS Series offline production systems. Site licensing allows multiple installations of the server within one plant, for even greater flexibility.

At time of programming task creation in TaskLink for Windows, a serialization flag is set to indicate that serialization is required. During the programming process the FlashCORE system makes a request to the server for a serial number. The server responds by providing one or more unique serial numbers to each device programmed on that programmer, based on your preset parameters.

Up to 8 serial numbers or other identification numbers of varied lengths may be programmed into each device, with a maximum length of 1800 bytes for all serial number data per device.

Byte Swap programming option is available for either 16bit or 32bit byte swap.

Access to the Byte Swap feature in the configuration interface for Serial Number Server may be controlled via passwords using the Administrator Mode.

## FILE FORMATTING TOOL

Virtually any binary file of serial or ID numbers may be converted to a .csv file format for use in programming. The Serial Number File Formatter, provided with the server, translates your binary serial number source file to the .csv file format, ready for production use.

### At a Glance:

- A dedicated server for managing dynamic data programming into NOR Flash memory or microcontroller devices
- Automates production of serialized components during the manufacturing process
- Programming systems supported:
  - ProLine Roadrunner
  - PS Series FlashCORE Systems
  - FlashPAK
- Up to 12 FlashCORE client programmers can be served from one Serial Number Server installation
- Formatter tool converts any binary file to .csv format for serving
- Byte Swap Support (16- or 32-bit)
- Serialization job setup within **TaskLink™ for Windows**
- Password protection on configuration setup
- Used serial numbers can be captured for validation and reporting purposes

More



## Specifications

- Compatible for use with your own serial number range or use a 3rd party provider file
- Compatible with **Nagravision (Echostar)** .DN3 file specifications
- Supports programming of paired key serial numbers in accordance with major CA (Conditional Access) technology providers and **Set Top Box** manufacturers
- All user inputs on the screens are stored for capture purposes: **source file name, destination file name, number of SNs per device, byte offset, and serial number length** of each serial number.
- View the total number of devices in a source file and how many remaining before the server starts.
- Displays a running count of available serial numbers when the Server is running
- Supports **Device Labeling** (PS588 System)
- Operating Systems: Windows 98, Windows 2000, XP, Windows NT

# Serial Number Server

FlashCORE™ Systems

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**Data I/O**

Serial Number File Formatter verifies that the binary source file is an integer multiple of the SN Length (Decimal, in Bytes) that you specify. Then, beginning with the Starting SN index (Decimal) and going to the Ending SN index(Decimal) that you specify, it creates a CSV file with incrementing indices, serial numbers equal to the specified SN Length (Decimal, in Bytes) offset by the specified Byte Offset (Hexadecimal).

## FLEXIBLE LICENSING

A combination of server site license plus client licenses for each FlashCORE system allows you to install unlimited instances of the server at the licensed site. FlashCORE systems across your network can be licensed clients of that central server. As an alternative, you may license multiple geographical sites to run the server for local management and control.

For design or low volume production use with FlashPAK, a dedicated FlashPAK server and client license provide an economical way to serialize devices using one FlashPAK system.

The screenshot shows the 'Data I/O - Serial Number Formatter' application window. It has a blue title bar and a standard Windows interface. The window contains the following fields and buttons:

- Source File to Translate:** C:\Dataio\SNFormatter\TTPK0000.DN3 (with a 'Browse...' button)
- Destination File:** C:\Dataio\SNFormatter\TTPK0000.csv (with a 'Browse...' button)
- Starting SN Index (Decimal):** 1
- Ending SN Index (Decimal):** 99999999
- Serial Number Layout:**
  - Quantity of SNs per device:** 1
  - Byte Offset (Hexadecimal):** (empty field)
  - SN Length (Decimal, in Bytes):** 2
- Buttons:** Translate, Abort Translation, Exit Application

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## Application Software

### User Benefits

- Full traceability records available to the user when Traceability software is also installed
- Number of programming retries is user definable
- Minimizes failed devices
- Improves yields
- Avoids unnecessary rejects

### Order Information PS-Failed Program SW

This software is not subject to Data I/O's standard product warranty. Technical support is provided on a limited basis.

## Enhanced Yield Programming Controls

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### Devices Failing Continuity are Retried

Standard PS System logic extracts devices from the input media (tray, tape, or tube) and precises them into the programmer sockets to transfer the data pattern into the device. With Enhanced Yield Programming Software, if the initial continuity check fails, the device is retried once in another socket.

### System Learns to Avoid Bad Sockets

Enhanced Yield Software also tracks which sockets on which programmer sites are reporting failures and "learns" to avoid those sockets until changed or serviced.

### Enhanced Reprogramming Software

provides PS Systems customers with the capability to extend the default PS System logic to maximize device programming yields. Users can select the number of programming attempts.

### Allows definition of four limits

Customers can define retry limits, for example, minimum number of passed devices, and maximum allowed rejects.

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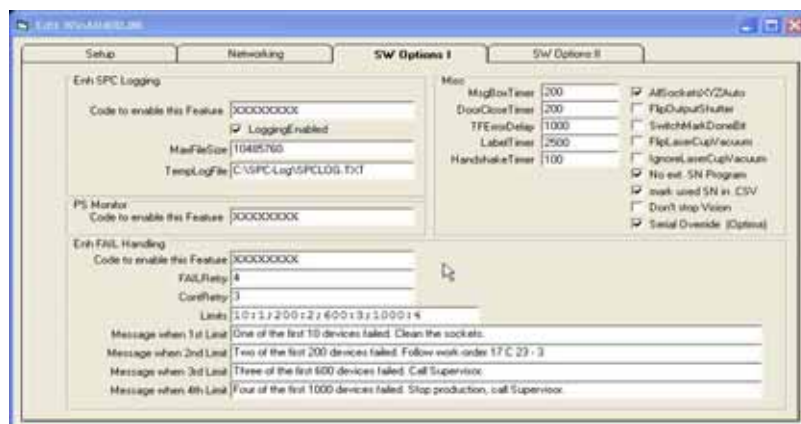
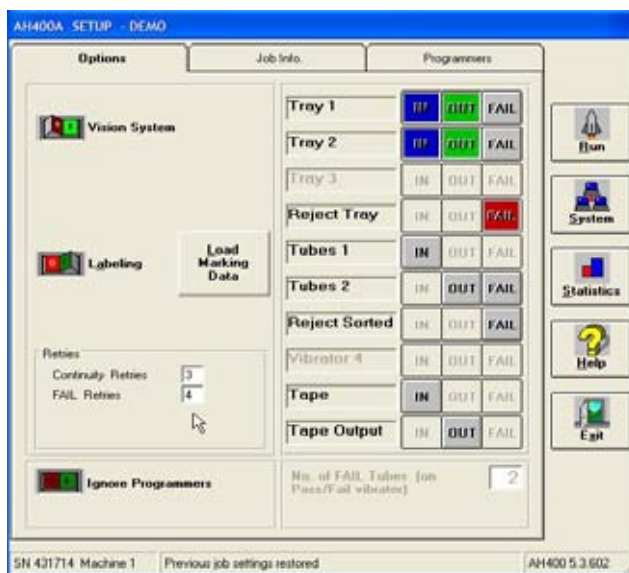
## Application Software

### Operating Characteristics

- Security key enabled
- Options fields are visible on setup page
- Allows definition of four consecutive limits
- When a limit is reached, PS System stops production and displays an individual predefined message.
- Message must be confirmed by operator before production may continue.

# Enhanced Yield Programming Controls

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## FlashCORE Family



# Remote Monitoring Software

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## Benefits

- Monitor system utilization
- Production statistics
- Supported on RoadRunner and PS automated systems
- Production Programming
- Simple installation
- View from your PC screen

### Order Information

PS – Remote Monitoring SW  
RR – Remote Monitoring SW

## Remote Monitoring Software

Whether across the shop floor or across another geography, today's electronics manufacturers require the ability to continually monitor their automated processes to maximize system efficiencies.

Data I/O's Remote Monitoring software is an important part of the quality management process. Data I/O's FlashCore family of programming solutions are network attachable for simplified data sharing. The FlashCore family of solutions includes the FlashPAK desktop programmer, the inline RoadRunner (attaching directly to the SMT feeder), and the flexible offline PS family of handler / programming systems.

When programming tasks are initiated on RoadRunner and PS Automated Systems, the system memory is sampled periodically and generates a statistics folder, viewable on your remote PC. Managers can know about system utilization and programming yields in near real time.

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# FlashCORE Family



# Remote Monitoring Software

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Sample window >>

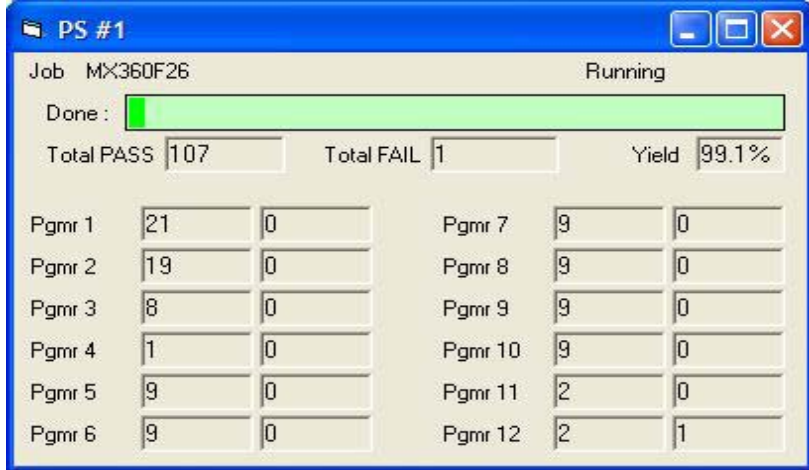
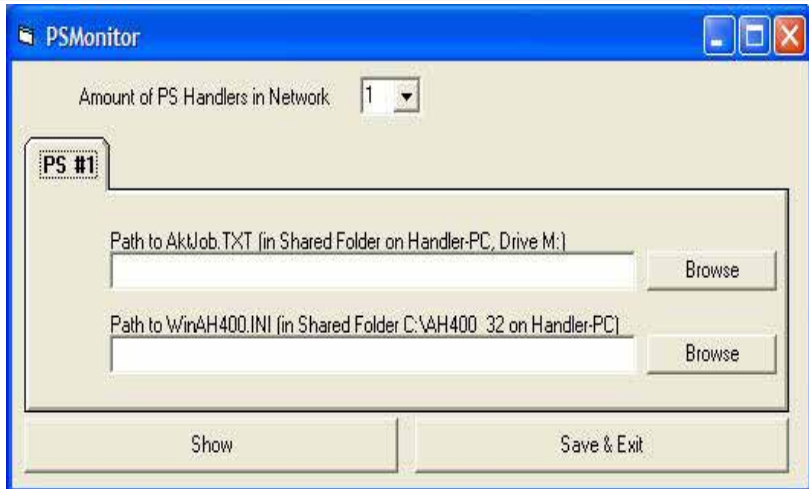
Installing the Remote Monitoring Software is a simple procedure that follows installation of other server or PC based applications

Note: Up to ten RoadRunners and PS systems can be monitored on the same user network.

Sample window >>

Up to 12 programming sites can be utilized in each PS automated handler, each site containing four sockets. The reporting window shows the Pass Fail statistics and yield for the total task. Observing the monitor during operation provides immediate user feedback on machine utilization.

This software is not subject to Data I/O's standard product warranty. Technical support is provided on a limited basis.



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## Application Software

Assists in your product *configuration management*

*Traceability* for your audit trail

For PS288/PS588  
FlashCORE Programming  
Systems

Archived jobs easily made  
while running a Task

# Version Control Software

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## Benefits

- Programming jobs are protected from operator error
- Supervisor controls when an archived job is ready for use by the operator
- Archived jobs can be created, tested, and saved
- Mismatches are identified for system hardware, firmware, adapter module
- Produces repeatable programming results regardless of current version of installed software

## Version Control

The Version Control (VC) Software was developed in response to customer needs for both configuration management and traceability requirements. VC enables customers to run a job on PS Series FlashCore Systems with repeatable results regardless of which versions of TLWin and programmer firmware are currently installed.

This application software allows creation of programming jobs that can be archived (stored in a separate subdirectory) and rerun at a later date. Programmer firmware can be automatically restored to the version used when the job was originally archived to produce the same programming results.

System supervisors can create jobs that include the saved condition, therefore decreasing operator error. Archived jobs can *not* be edited. Mismatch identification and corrective actions can be user defined.

Extensive HELP files available.

## Order Information

Model number = PS-VERSION CONTROL FC

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More

# Application Software

## System Requirements:

- TLWin<sup>1</sup> Ver 7.0 or higher

<sup>1</sup> Executes as an option to TLWin

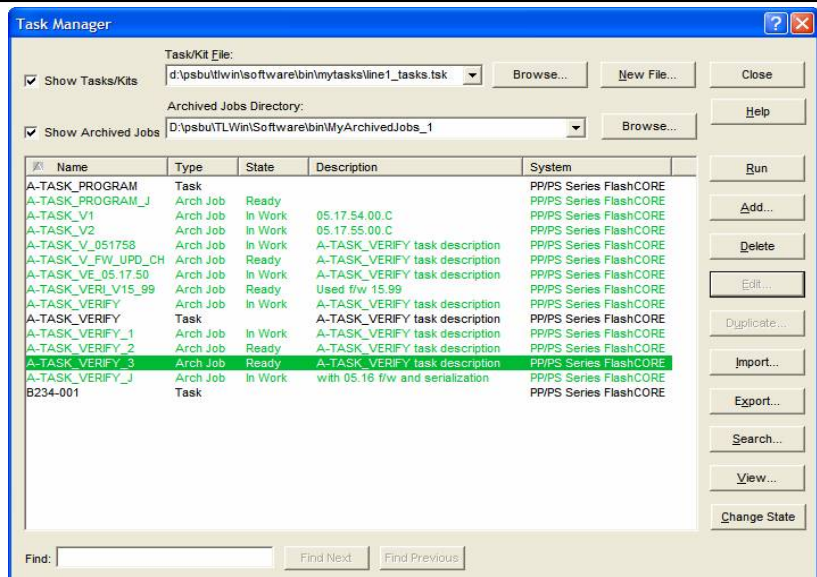
# Version Control Software

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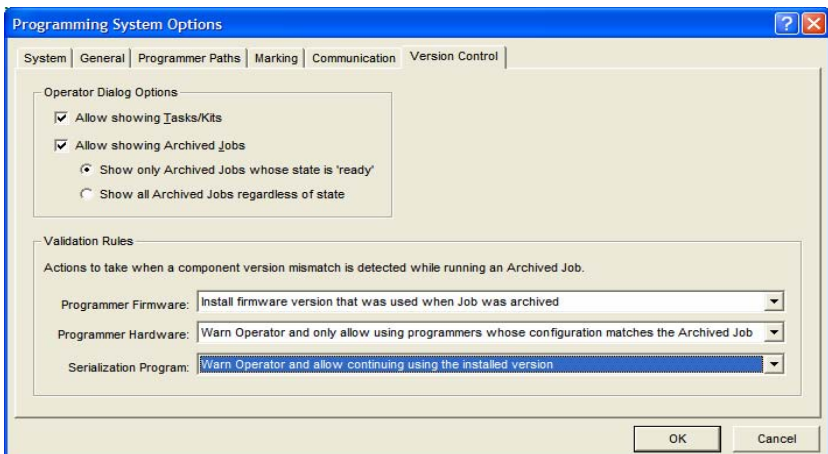
Sample window >>>>

This sample Task Manager window shows the sortable list of archived jobs (in green). Users can run, view, or delete archived jobs.



Sample window >>>>

The Version Control option allows supervisors to control the system behavior when an archived job is run. Note that hardware, firmware, and serialization mismatches are identified for supervisor action.



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## Application Software

### Example Label Printers:

- Lasermark
- Synrad
- Synrad\_Digital
- Rofin\_Sinar
- M&R
- M&R + Tape
- Brady\_Apollo

# Tape Label Generator Software

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## Minimum Printer Requirement

Windows drivers that print graphics.

## Benefits

- Design and print labels in:
  - up to 8 different fields
  - up to 4 field pre-defined
  - up to 4 fields at run time
- Six variables including
  - Checksum
  - Job name
  - Date
  - Time
  - Device name
  - Counter
- Simple label setup screens
- Label dimensioning
- Font and size selection
- Bar code support

## Tape Label Generator

For use with Data I/O's TaskLink for Windows (TLWin), this application software allows customers to design and print labels for devices output to tape media.

The common medium for delivery of programmed devices to the SMT assembly line is tape (reel). In order to simplify coordination of offline programming processes with manufacturing requirements, the Tape Label Generator facilitates the identification of programmed devices including the Task information used to program the blank devices.

The Tape Label Generator provides an important part of the audit trail of programmed devices since the labeled reel contents are easily known and can be bar code scanned.

## Order Information

PS – Tape Label Gen SW

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## Application Software

### System Requirements:

- Windows driver for Label printer (installed on the PS systems)
- Label printed set as default printer
- Bar code fonts installed on PS the system
- Tape label software must be installed on PS system (AHX00 folder)

# Tape Label Generator Software


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Sample window >>>>

Sample of a custom label designed and generated for printing.

The screenshot shows the 'TapeLabel v1.2.1' application window. It features a 'Product-ID' field with the value 'My Product' and a 'Device-ID' field with the value '\*MYDEVICE\*'. Below these fields is a table representing a label design:

Product-ID	My Product		
DEV-ID		Amount	950
Cksm	*MYDEVICE*		Signature
	3AB5		
Position	U123		
Date	11-11-2002		

At the bottom of the window, there are fields for 'Reel-Size' (1000) and 'actual Count' (950), along with a 'Reset Counter' button. The main window has buttons for 'Setup Label', 'Preview', 'Print', and 'Exit'.

Sample window >>>>

This window shows a label setup and fields for four print lines on the label.

The screenshot shows the 'Layout' window for setting up the label. It includes a 'Label-Setup' section with 'Dimensions in: mm', 'Width' (110), 'Height' (70), and 'Fields' (14). Below this, there are settings for 'Field 1', including 'Width' (50), 'Position X' (58.20), 'Y' (41.53), 'select Font' (Arial), 'Size' (8), 'Height' (5), 'Orientation' (Left), and 'Add Space' (checked). The 'Content' is set to 'ReelLine 1'. A preview area at the bottom shows four horizontal lines labeled 'ReelLine1' through 'ReelLine4'.

This software is not subject to Data I/O's standard product warranty. Technical support is provided on a limited basis.

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