Datacard®

Datacard® Maxsys® and MX Series Card Issuance Systems

Administrator's Guide

Software Version 5.6 SP2
July 2011

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Revision Log

Maxsys and MX Series Card Issuance Systems Administrator's Guide

Revision	Date	Description of Changes
A	April 2011	First release of this document with software version 5.6.
B	July 2011	Updated for feature changes at version 5.6 SP2

Chapter 1: About the Software

1

This chapter provides an overview of the Datacard® Maxsys®, and MX Series (MX6000™, MX2000™, and MX1000™) card issuance system software interface.

Introduction

The Controller software program is the production interface for the Maxsys and MX Series card issuance systems.

The MX6000, MX2000 and MX1000 systems will be referred to as MX Series systems in this manual.

This system software program is designed for administrators and operators who run production jobs, work with setups, and/or manage system components.

Multiple applications make up the system software including applications that handle interface customization, production, configuration, and administration. The menu and tools are listed below.

Application	Description
Tools	The Tools menu contains the Production Preferences tool, which allows the customization of display elements in the production interface.
Production	The Production Station contains status bars and four tabs.
	• Ready Jobs Tab • Production Tab • All Jobs Tab • Job Details Tab
Event Log	The Event Log contains a tool bar and a tools menu with the following commands:
	• Query Event Log • Export Event • Purge Events • Event Log Preferences

Application	Description
Setups	The Setups menu contains the following setups:
	• Job Setup • Data Setup • Card Setup • Form Setup • Production Options Setup • Audit Setup
Global Setups	Global Setups are often used across multiple modules or applications within the software. Global setups include the following:
	• Barcode Setup • Emboss Font Setup • Emboss Mapping Setup • Magstripe Setup • Image Placement Setup • Camera Setup • Mask Setup • OCR Font Setup • Card Stock Lookup Setup • Vision Filter Setup
Stocks	The Stocks menu contains the Stock Management tool and setup tools for cards, forms, labels, ribbons, and other stocks.
	• Stock Management • Card Stock Setup • Cleaning Tape Stock Setup • Color Ribbon Stock Setup • Form Stock Setup • Indent Ribbon Stock Setup • Label Stock Setup • Monochrome Ribbon Stock Setup • Retransfer Stock Setup • Retransfer Stock Set Setup • Roller Stock Setup • Topcoat Stock Setup • Topping Foil Stock Setup

Application	Description
Smart Card Management	The Smart Card Management menu contains the tools used in smart card operations.
	• Crypto Device Management • Key Card Management • Key Reader Management • Local Master Key Management
Utilities	The Utilities menu contains tools for working with data files, diagnostics for Controller and modules, security configurations, exporting setups, localization tools, and vision utilities.
	• Hex Dump • Diagnostics • Security Configuration • Export Setups • Keyboard Entry • Change Locale • Vision Utilities
Help	The Help menu contains error messages, software patch information, and context-sensitive help.
	• Help • Error Messages • About the Software (Patch Information)

Diagnostics are generally not documented in this manual. Trained personnel can access Diagnostics information in the module service manuals.

Simulator Setup will appear on the Utilities menu when Machine Simulator software is installed. For information on this utility refer to the *Datacard Maxsys/MX Series/PB6500 Machine Simulator Installation and Configuration Guide (Part No. 539789-xxx)*.

Production

The Production Station is the heart of the Datacard high-speed production environment. The following sections describe the production interface. For information on using Production to perform tasks, refer to Chapter 2: "Production" on page 27.

Production Station Interface

The components of the Production interface include upper and lower status bars and tabs that display information on Job screens.

The upper and lower status bars can be viewed regardless of the tab displayed. The components differ slightly depending on whether the workstation is integrated with the Syntera program (refer to "Enabling the Syntera Interface" on page 5).

Elements of the Production interface can be customized using Production Preferences (refer to "Production Preferences" on page 19). Fonts and font sizes for tool bars, tables, and other elements can be customized for each operator. FIR data views and tooltips can be activated to appear at the bottom of Job screens.

Upper Status Bar

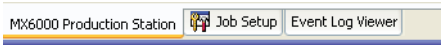
The upper status bar on a Maxsys/MX Series Production application contains the following:

Indicator	Description	
Load (and **Cancel**) buttons and the load status bar	The Load button loads a job into the database. One job can be loaded at a time. The Load status bar gives a visual percentage of the job loaded. A Cancel button stops the job loading process.	
Production status bar	The Production status bar gives a visual percentage of job completion as well as the speed (in cards-per-hour) of the job.	
Machine state status	The Machine state monitor provides the current state of the system. The machine states are as follows:	
	Idle	There is no activity in the system.
	Pausing	Production is in the process of pausing.
	Paused	Production has paused.
	Stopping	Production is in the process of being stopped.
	Busy	The system is in the production process.
	Offline	The system has been taken offline or production is initializing.

Indicator	Description
Open Hood status	Indicates whether it is OK to open the hood.
Audit status information	Indicates whether audit data is being collected.

Lower Status Bar

The lower status bar has program tabs on the left side that display all open applications. In the example shown below, the Production interface, Event Log Viewer, and Job Setup applications are currently open. Clicking on a Tab will bring that application window to the top.



Enabling the Syntera Interface

For sites that use both Maxsys/MX Series and the Datacard® Syntera® Manufacturing Efficiency System, the Syntera system is integrated into the Maxsys/MX Series Production application. This allows Syntera jobs to be run on a Maxsys/MX Series machine if needed.

To enable or disable the Syntera interface, follow these steps:

1. Select **Applications | Utilities | Diagnostics**.
2. Select **Controller** in the left pane.
3. Under the **Controller Configuration Editor** tab, double-click **System** in the list to expand it, and then expand **Syntera Interface**.
4. Under **Syntera Interface**, select **Syntera Interface Enabled** and then set the value to *true* on the top bar by double-clicking the *false* value and selecting the option button in the pop-up box. (To disable the Syntera interface, reset the value to *false*.)

Close and restart the program for the changes to take effect.

When Syntera is enabled, toggle between the two programs by clicking the button on the toolbar.

Syntera-Integrated Upper Status Bar

If the Production application is integrated with Syntera, the upper status bar contains the following information:

Load status bar and **Cancel load** button and the load status bar	The Load button is used to load a job into the database. One job can be loaded at a time. When a job is being loaded, the Load status bar gives a visual percentage of the job loaded. A Cancel Load button allows the job loading process to be stopped.	
Production status bar	The Production status bar gives a visual percentage of job completion as well as the speed (in cards-per-hour) of the job.	
Open Hood status	The Open Hood status monitor simply indicates whether opening the hood is allowed (**OK to Open Hood** or **Do Not Open Hood**).	
Audit status information	Indicates whether audit data is being collected (**On** and green) or not (**Off**).	
Syntera button	This button can be used to view the Syntera management screens.	
Machine state status	The Machine state monitor provides the current state of the system. The machine states are as follows:	
	Idle	There is no activity in the system.
	Pausing	Production is in the process of pausing.
	Paused	Production has paused.
	Stopping	Production is in the process of being stopped.
	Busy	The system is in the production process.
	Offline	The system has been taken offline or production is initializing.
User Logged in	Name of user currently logged in to the application.	
Start/Pause/Stop/Stop (No Pick)/Abort/Display Fields	Use the Start button to initiate the process. Use the Pause/Stop/ Stop (No Pick)/Abort buttons to pause, stop, or abort the production run. Use the Display Fields button to display fields from the job.	
Machine Job Setup	Indicates the Job Setup.	
Mode	Use Mode to select the type of records to run (Cards, Forms, Cards and Forms, etc.).	

Syntera Toolbar Shortcut Icons

The Syntera interface also contains a group of icons under the upper status bar. These icons provide a quick shortcut for many functions, such as splitting jobs, loading jobs, and viewing job details. Icons that are grayed-out on the screen are not currently applicable.

	**Split** - Starts splitting the selected job
	**Allocate** - Displays list of allocated materials
	**Refresh** - Refreshes the screen
	**Release** - Releases a selected job
	**Admin** - Administrator logon
	**Job Notes** - Adds job notes
	**Accept** - Accepts a selected job
	**Decline** - Declines a selected job
	**View Details** - Displays job details
	**Load** - Starts loading jobs
	**Station Notes** - Adds station notes
	**Materials** - Displays the bill of materials

Ready Jobs Tab

The Ready Jobs tab is not available on the Syntera interface.

The Ready Jobs tab displays the Ready Jobs screen in the Production interface, which contains a table of all loaded jobs that have not been run or that have at least one rejected card.

Right-clicking on a job brings up a menu with options for opening the corresponding Job Setup, Card Setup, Data Setup, or Audit Setup (if applicable) or access to the Export Setups utility or View Data for that field. For more

information on displaying jobs, refer to "Choose Columns to Be Displayed" on page 17 and “Job Grouping by Input File” on page 18.

Depending on the fields defined in Data Setup and the columns selected, the following information may be available for each job:

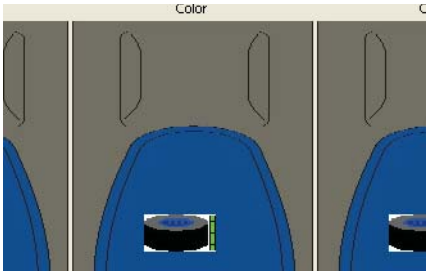
Column	Description
Name	The name of the job
Split Number	If the job has been split, the resulting jobs are sequentially numbered.
First/Last Record	Displays the first/last record in the job or if the job is split, the first/last record of the split job.
Total Cards	The total number of cards in the job
Good Cards	The number of good cards in the job (supplied only if the job has been run and had rejects)
Reject Cards	The number of rejected cards (supplied only if the job has been run)
Held Cards	Number of held cards (cards that will not be processed)
Status	The status of the item: None, Good, or Rejected
Input FIle	The Input file used for this job
Job Setup	The Job Setup file used for this job
Total Forms	The total number of forms in the job
Good Forms	The number of good forms in the job (supplied only if the job has been run and had rejects)
Reject Forms	The number of rejected forms (supplied only if the job has been run)
Held Forms	Number of held forms (forms that will not be processed)
Group Name	The name of the group
Card Setup	The Card Setup file used for this job
Form Setup	The Form Setup being used for this job
Data Setup	The Data Setup file used for this job
Audit Setup	The Audit Setup file used for this job
Created	The date the job was created
Last Worked On	The date on which the job was last used or modified
Syntera ID	The Syntera ID number, if any, assigned to the record

Production Tab

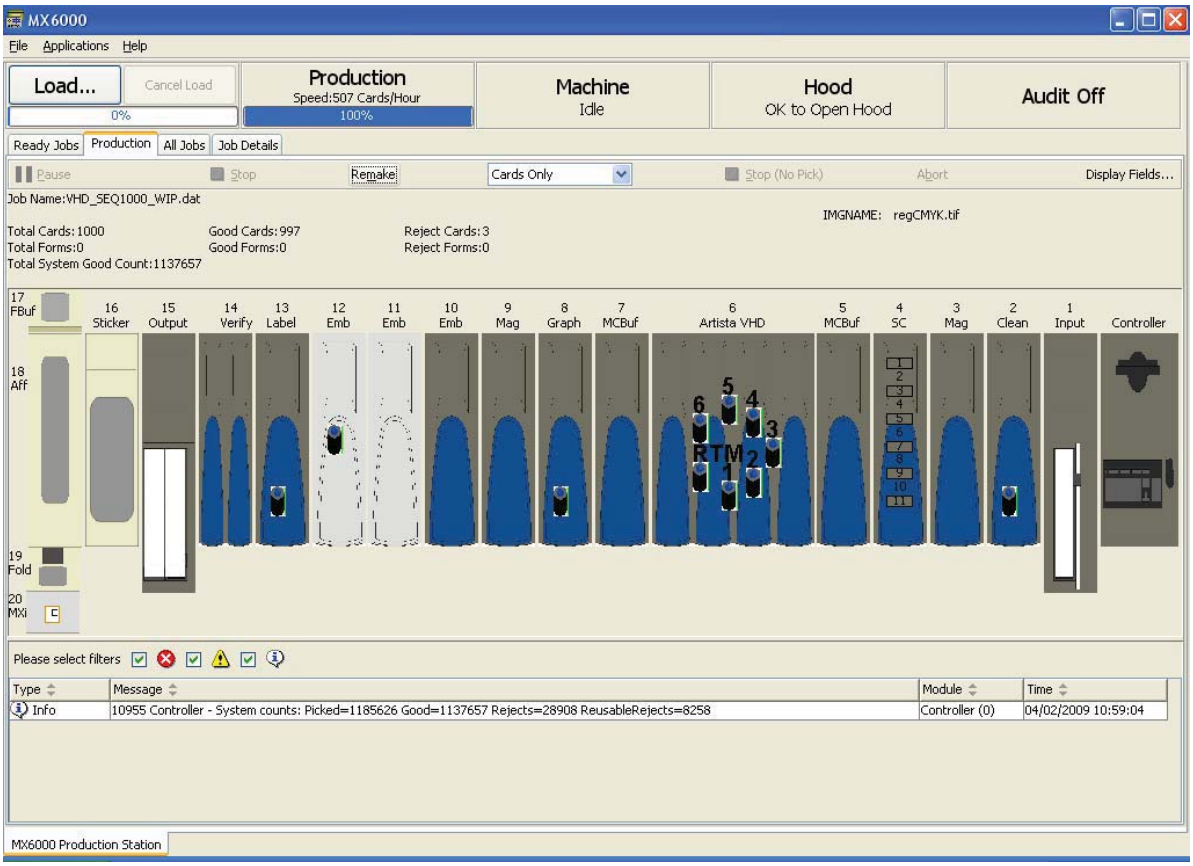
The Production tab provides a visual representation of the entire system and system status messages. Elements of the production interface can be customized using Production Preferences from the Tools menu (refer to "Production Preferences" on page 19).

Clicking on a cell in the table will bring up extended help. Right-clicking on a cell in the table brings up a menu with the View Data command.

This production screen is the main interface for viewing (in real-time) the system's status while jobs are running. The system supply status is indicated by a scale on the right side of the virtual supply.



On a standalone Maxsys/MX Series Production interface (without Syntera integrated), the Production screen has buttons to start, stop or pause production, or remake jobs. (With Syntera integrated, these buttons are on the upper status bar of any job screen.)

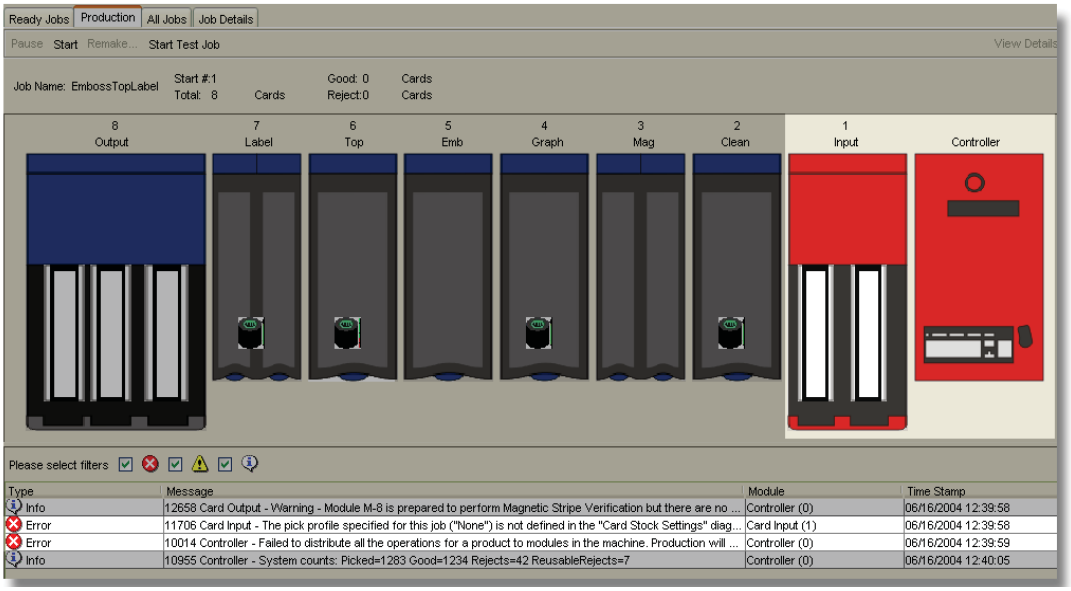


A Visual Representation of the System

Each module in the system is represented in graphic form. A color coding system displays the status of each module.

- Blue indicates normal operating status. Any informational messages concerning normal operation appears in the lower message pane.
- Yellow indicates that a cautionary condition exists (low supplies, input card tray approaching empty, etc). A corresponding caution message appears in the message pane.

- Red indicates that an error condition exists. A corresponding error message appears in the message pane. (In the example below, the Controller and the Card Input module are red in the virtual view, which indicates an error. A corresponding error message appears in the lower pane.)



System Supply Status

In addition to the other functions, the Production screen displays the status of system supplies.

Card trays change color depending on their fill state (white, yellow, red). An Input tray that is running low on cards turns from white to yellow as the supply gets low, and to red when the tray is empty. Conversely, an Output tray is shown as red when full and white when empty.

Graphics ribbon, cleaning tape, and topper foil each have an icon with a gauge at the right that displays the state of the supply quantity. When the supplies are exhausted, the icon in the message pane changes and an error message is displayed.

Roll-Over Functionality

Use the mouse to roll over selected components and view details and messages about that component.

- Roll over modules to view the most recent message related to that module. (This duplicates the information seen in the message pane.)
- Roll over supply icons to see the type and status of the supplies.

All Jobs Tab

The All Jobs tab displays the Production All Jobs screen, which contains a list of all loaded jobs, of any status.

Depending on the fields defined in Data Setup and the columns selected, the specific information that may be available for each job is listed below. (To change the columns displayed, refer to "Choose Columns to Be Displayed" on page 17 and to use the Job Grouping feature, refer to “Job Grouping by Input File” on page 18.)

The job information will vary slightly with a Syntera integrated interface.

Maxsys/MX Series Interface

Under the All Jobs tab, the columns available for a Maxsys/MX Series Production interface are as follows:

Column	Description
Job Group	The name of the job group
Name	The name of the job
Split Number	If the job has been split, the resulting jobs are sequentially numbered.
First/Last Record	The first/last record in the job. If the job is split, the first/last record of the split job is displayed.
Total Cards	The total number of cards in the job
Good Cards	The number of good cards in the job (supplied only if the job has been run and contained rejects)
Reject Cards	The number of rejected cards (supplied only if the job has been run)
Held Cards	Number of held cards (cards that will not be processed)
Status	Job status
Input FIle	The Input file used for this job
Job Setup	The Job Setup file used for this job
Total Forms	The total number of forms in the job
Good Forms	The number of good forms in the job (supplied only if the job has been run and contained rejects)
Reject Forms	The number of rejected forms (supplied only if the job has been run)

Column	Description
Held Forms	Number of held forms (forms that will not be processed)
Card Setup	The Card Setup file used for this job
Form Setup	The Form Setup used for this job
Data Setup	The Data Setup file used for this job
Audit Setup	The Audit Setup file used for this job
Created	The date the job was created
Last Worked On	The date on which the job was last used or modified
Syntera ID	The Syntera ID number, if any, assigned to the record

Syntera Interface

On the Syntera-integrated Production interface, the All Jobs tab provides the following information:

- The **My Work** tab lists jobs that are accepted, loaded, or ready to be loaded.
- The **Pooled** tab lists jobs that are queued but not yet accepted or loaded.

To move jobs from the Pooled tab to the My Work tab:

1. Select the **Pooled** tab.
2. Select the job(s) to accept.
3. Click **Accept** on the toolbar. The jobs move to the My Work folder.

Under both the My Work and Pooled tabs, the following columns may be available for each job:

Column	Description
Job ID	The ID number of the job
Name	The name of the job
Due Date	The date by which the job must be completed
State	The current state of the job (Ready, Failed, Loading, etc.)
Cards	The total number of cards in the job
Good Cards	The number of good cards in the job (supplied only if the job has been run and contained rejects)
Reject Cards	The number of rejected cards (supplied only if the job has been run)

Column	Description
Forms	The total number of forms in the job
Good Forms	The number of good forms in the job (supplied only if the job has been run and contained rejects)
Reject Forms	The number of rejected forms (supplied only if the job has been run)
Priority Type	The priority of the job
ProcessStepName	The process name given to the job (for example, MaxsysProduction)
Created	The date the job was created

Filtering Tool

The All Jobs tab also includes a filtering tool for quickly locating jobs based on their parameters. Use the filtering tool to define specific criteria that will speed up the search.

To search for jobs:

1. In the left pane, select the check box next to any or all of the parameters to use in the search. The search filter parameters are listed below. The more parameters selected, the narrower the scope of the search. Enter the required information for each parameter selected.
2. Click **Search**. The top area of the left pane changes to reflect search parameters.

Click **Clear** to clear all parameters and display all jobs in the system.

Search Filter Parameter	Description
Name	Enter the name of the job in the text box.
Status	Select the status from the list. The program displays only those jobs with the selected status.
Total Cards	Total cards in the job. Enter a number in the text box and select a quantitative indicator (less than, more than, equal to, etc.) from the list. Example: For example, enter 500 and select >= from the list. Only jobs that have 500 or more cards are displayed.

Search Filter Parameter	Description
Due Date (Syntera only)	Enter the date range to search within.
Created (not available on Syntera)	Enter a number in the text box and then select Hours or Days from the list. For example, enter “5” in the text box and select “Days” from the list, the program displays only those jobs created in the past five days.
Last Worked On (not available on Syntera)	Enter a number in the text box and then select Hours or Days from the list. Example: Enter “8” in the text box and select “Hours” from the list, the program displays only those jobs worked on during the past eight hours.
Job Setup (not available on Syntera)	Select Browse, and then select a Job Setup from the dialog box. The program displays only those jobs that use the selected Job Setup.
Input File (not available on Syntera)	Enter the Input File name into the text box. The program displays only those jobs that use the listed Input File.
Has Rejected Products	If selected, the program displays only jobs that contain rejected products.
Has Held Products	If selected, the program displays only jobs that contain held products.
Machine Setup (Syntera interface)	Select a machine setup value from the list.

Job Details Tab

The Job Details tab in the Production area provides information to monitor (in real time) the status of individual cards within a job.

Depending on the fields defined in Data Setup and the columns selected, the following information may be available for the job. (To change the columns displayed, refer to "Choose Columns to Be Displayed" on page 17.)

Information that may be available under the Job Details tab is as follows:

Column	Description
Record Number	The number of the record within the job
Type	The type of record (card or form)

Column	Description
State	The current state (Unprocessed, etc.)
Status	Job status (Ready, Completed, etc.)
Held	Number of held cards (cards that will not be processed)
Number of Attempts	Number of attempts to process the job
Card Setup	The Card Setup file used for this job
Form Setup	The Form Setup file used for this job
Data Setup	The Data Setup file used for this job, as defined in the Job Setup
Audit Setup	The Audit Setup used for this job, if any
Created	The date the job was created
Last Worked On	The date on which the job was last used or modified
Syntera ID	The Syntera ID number, if any, for the record

Print Preview

Select one or more records displayed in the Job Details tab and select Print Preview option to preview the selected records (print preview is also available from the right-click menu). For more information, refer to Chapter 2: "Print Preview from Job Details" on page 39, and Chapter 6: "Using Print Preview from Card Setup" on page 123.

Job List Pane

Select a loaded job from the **Job List** to view records from that job. Use the following tools to limit the number of cards displayed.

Production Counts Folders

Use the list of Production Counts folders to select only those cards in the job that meet specific criteria such as Good, Reject, or Held.

For example, to view only the rejected cards from a specific job, select the **Reject** folder. (The number in parentheses to the right of the folders is the number of cards contained in that folder.) The rejected card from this job would then be displayed in the list.

Filter Tool

If the selected job contains a large number of cards, use the filter tool to limit the number of cards displayed. The tool consists of a list of record numbers and range parameters at the bottom of the Job List pane.

For example, to view records 2700 to 2800 of a job that contains 10,000 cards, select **Record No.** from the list, enter the range *(2700, 2800)* in the Single Value or Range boxes, and then click **Search**. Click **Clear** to clear the search results and display the full job details.

To search for a single record, select **Record No.** from the list and then enter the record number in the first of the two range fields and click **Search**. Click **Clear** to clear the search results and display the full job details.

Filtering categories (record number, state, status, etc.) are defined in the Data Setup.

Choose Columns to Be Displayed

Use Choose Columns to select the columns to be displayed on the Ready Jobs, All Jobs, or Job Details tabs of the Production station.

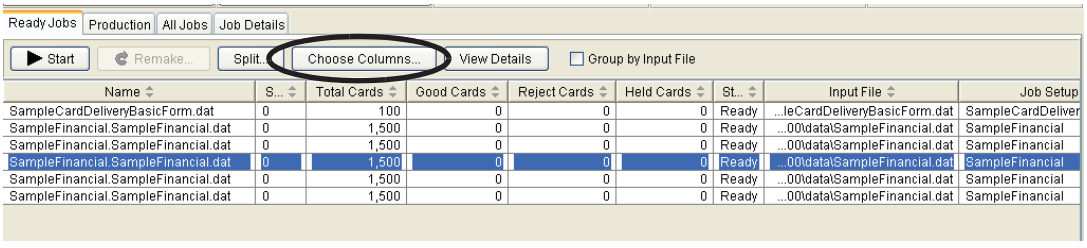
Privileges for this option may be defined when security is enabled; refer to Chapter 14: “Security Configuration” on page 203.

Perform the following steps to view or hide columns:

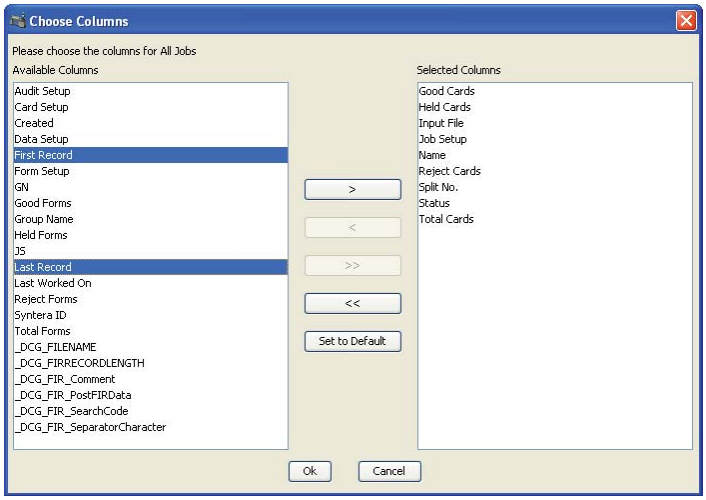
1. Select the **Ready Jobs**, **All Jobs**, or **Job Details** tab.

For Syntera-enabled workstations, select the **Job Details** tab.

2. Click **Choose Columns** (or **Columns** for Syntera-enabled workstations) on the bar above the job list.



3. In the Available Columns box, select the column(s) to display and click **Add >** or **Add All >>**.



4. In the Selected Columns box, select the column(s) not to display and click **< Remove** or **<< Remove All**.

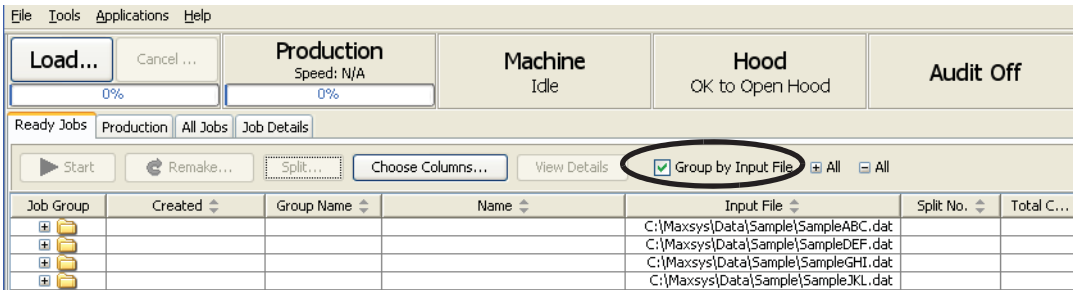
Select multiple column types using **Shift+Click** or **Alt+Click.**

5. Use **Set to Default** to return to the default setting.
6. Click **OK** when finished, or **Cancel** to exit without making changes.

Job Grouping by Input File

The Ready Jobs and All Jobs tabs have a feature that groups jobs that have been loaded from the same input file into a single display item. The job group appears as a separate row in the table. The job group can be expanded and collapsed to show or hide the jobs contained in the group.

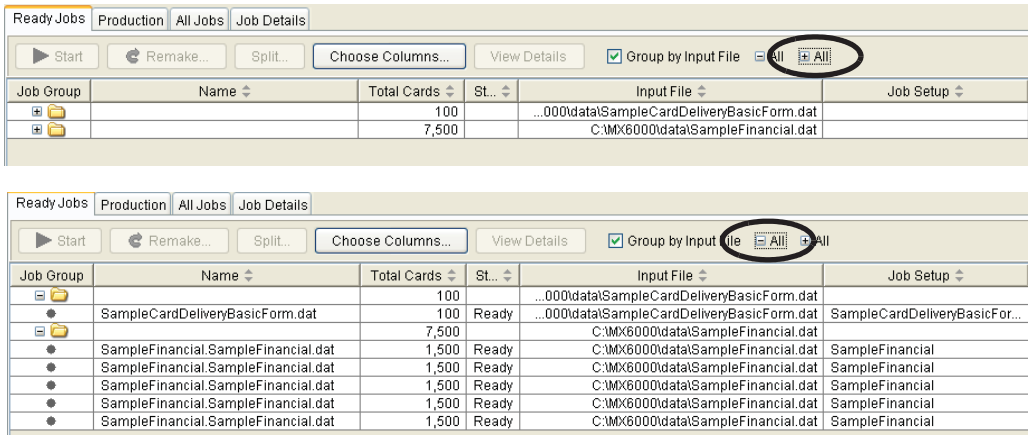
To use this feature, select **Group by Input File** from the options above the list of jobs to the right of the view details button. The list changes to list groups of jobs that have the same input file.



If an input file is loaded multiple times, all jobs that use this file will be grouped together, whether they are related or not.

Job groups are displayed in sorted order (alphabetical by input file name). The sort indicator control in the Input File column can be used to reverse the order of the groups. Within each job group, the jobs are initially sorted by create time but may also be sorted by other fields.

Click on a folder in the list to expand or collapse that folder. Click on the toolbar to expand or collapse all job groups.



Production Preferences

Production Preferences contains tools to customize the appearance of elements in the Production station interface for easier viewing. Customization can include the text in tables, tabs, buttons, toolbars, and extended help. There is also a setting for viewing FIR record data in the interface with customized sizing and tooltip option.

Production preferences are set and stored for each operator. To use the Production Preferences Tool, select **Tools | Preferences** from the menu bar.

Each tab in the tool has options for customizing Production interface elements (font, font size, FIR data, and tooltip views). Each tab has the following buttons:

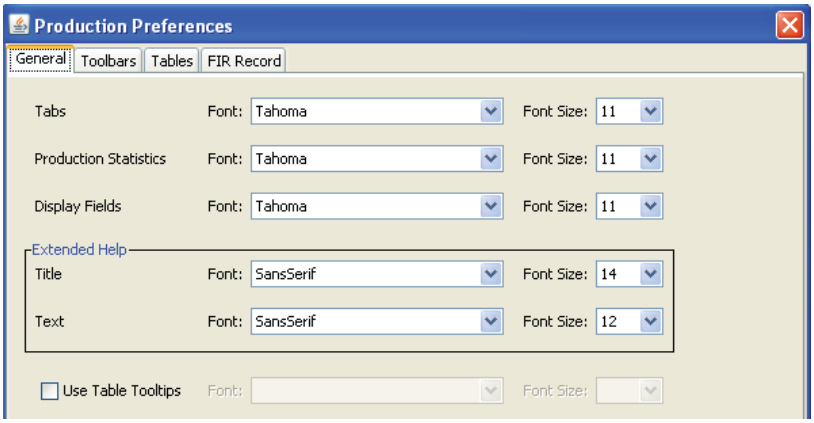
OK - Saves and applies the changes and closes the dialog.

Cancel - Closes the dialog.

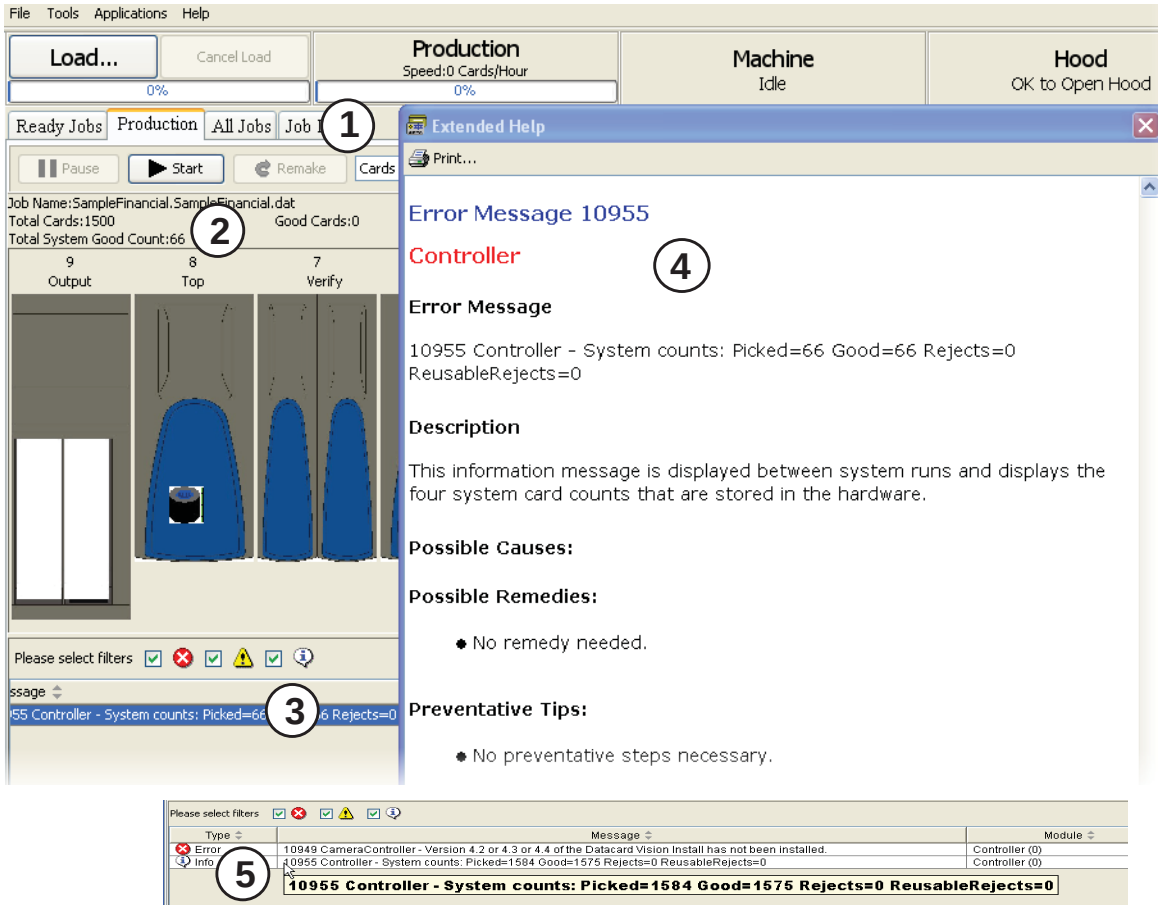
Apply - Saves and applies the changes and leaves the dialog open for additional changes.

Use Defaults - Resets all settings to the default.

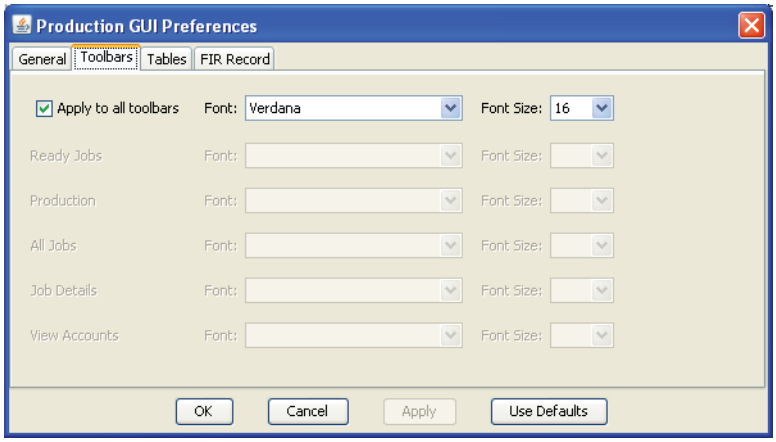
General Tab



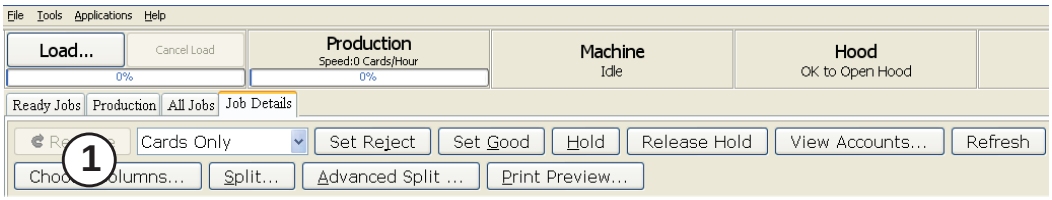
Use the General tab to set the font and font size for the elements in the Production Station interface tabs (1 in the following figure), Production Statistics (2), Display Fields (3), Extended help titles and text (4), optionally enable and customize Table Tooltips (5) that appear when the pointer hovers over a cell in a table.



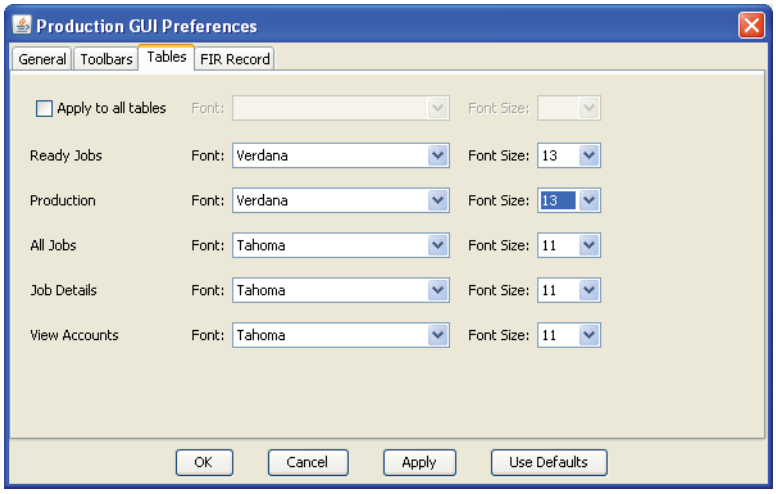
Toolbars Tab



Use the toolbar tab to set the font and font size for the toolbar buttons (1 in the following figure) on the Production interface tabs and View Accounts dialog. Toolbars can be set individually or with common settings for all toolbars.

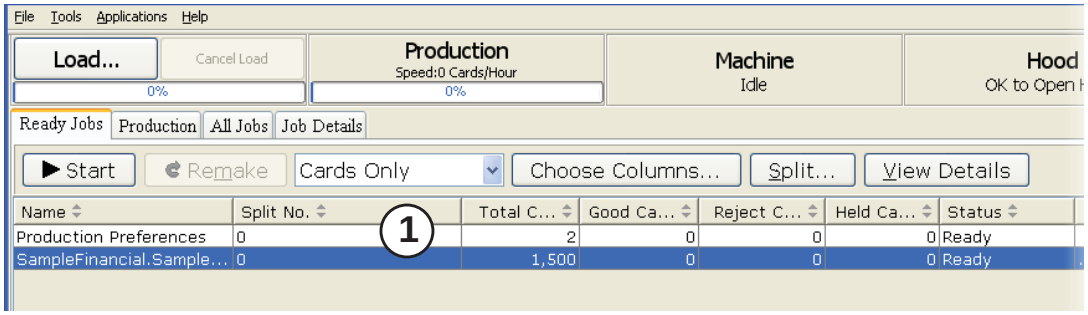


Tables Tab

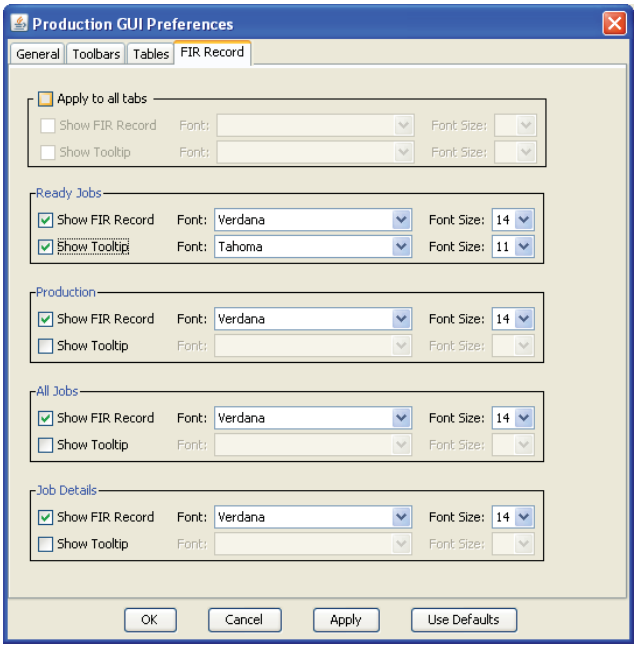


Use the Tables tab to set the font and font size for the tables on the Production interface tabs and View Accounts dialog.

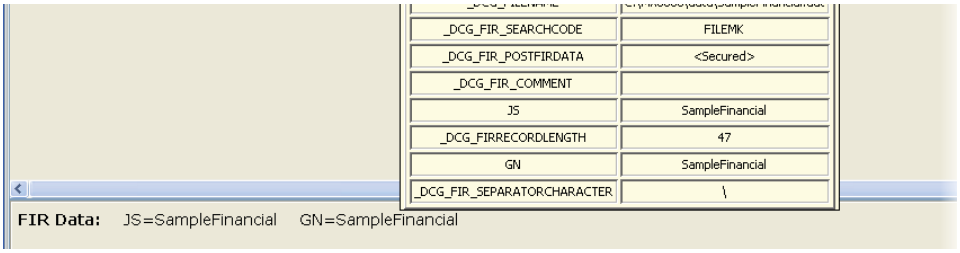
The font and font size changes apply to the table column headings and table values (1 in the following figure). Tables can be set individually or with common settings for all tables.



FIR Record Tab



Use the FIR Record tab to enable FIR data to display at the bottom of the Production interface tabs with customized sizing and tooltip option. The font and font size can be set for the FIR data view as well as the tooltip. Preferences can be set for each tab individually or with common settings for all tabs.



Event Log

Use the Event Log tools to query and view system events. System events are logged automatically as the system and software program operates. These events can be viewed and analyzed for system administration and troubleshooting purposes. Events returned by the query display in tabbed lists that can be saved for later viewing or archiving. For more information, refer to Chapter 3: "The Event Log" on page 53.

Setups

The Setups component includes several applications to create, edit, and delete various types of setups used in jobs processed on the system.

Application	Description
Job Setup	Create or edit Job Setups used to process cards with the Job Setup application. Select the various required and optional setups to form a job that can be loaded and run on the Maxsys or MX Series System. For more information, refer to Chapter 4: "Job Setup" on page 61.
Data Setup	Data Setups tell the system how to interpret the input data. The Data Setup provides information such as the order of the input data fields and the code or position that identifies the beginning and end of each data field. The system uses this information to parse the data stream into the format used for production. For more information, refer to Chapter 5: "Data Setup" on page 65.
Card Setup	The Card Setup application is used to define and modify card parameters. A Card Setup defines an individual card that has certain properties and contains certain element sets (label, image, overlay, etc.). For more information, refer to Chapter 6: "Card Setup" on page 79.
Form Setup	The Form Setup application is used to create and modify card delivery forms. Control the layout of the form by selecting pre-configured form templates and then positioning the cards on the form. In addition, select and format the fields that will appear on the forms and associate the form with a Data Setup. For more information, refer to Chapter 7: "Form Setup" on page 129.

Application	Description
Production Options Setup	Use the Production Options Setup to define various operational parameters for a job. For more information, refer to "Production Options Setup" on page 145.
Audit Setup	The Audit Setup prepares the system to run audit reports primarily for use with Smart Card applications. Audit Setups define a format for the audit output file. The file contains production statistics for each card. For more information, refer to Chapter 9: "Audit Setup" on page 153.

Global Setups

Global setups are used across multiple applications within the software. For more information, refer to Chapter 10: "Global Setups" on page 157.

Stocks

Stock Management is used to store stock descriptions for cards, forms, labels, and ribbons. The stock information is used during production to identify the bill of materials for a particular product. For more information, refer to Chapter 11: "Stocks" on page 169.

Smart Card Management

Smart Card Management provides tools for configuring the applications, crypto devices, key cards, key readers, and local master keys used in the smart card personalization process. For more information, refer to Chapter 12: "Smart Card Management" on page 185.

Utilities

The Utilities menu includes tools to work with data, setups, security, and settings specific to modules.

Hex Dump

The Hex Dump tool is used to display the raw text code in a data file. This data can be searched to troubleshoot problems that may cause errors during Production. For more information, refer to Chapter 13: "Hex Dump" on page 199.

Diagnostics

Diagnostics is a tool on the Utilities menu within applications that allows an authorized administrator to perform tasks and adjust settings for the Controller

and modules in a central issuance system. Trained personnel can access Diagnostics information in the service manuals for each module. This menu is not documented in this manual.

Security Configuration

The Security Configuration application allows an administrator to limit access to certain applications or areas of the system. Privileges are assigned to users based on their Windows group membership created in the Windows group configuration utility. For more information, refer to Chapter 14: "Security Configuration" on page 203.

Export Setups

The Export Setups utility allows bundling Setups and other related files for use in transferring between systems, facilities, and for use by Datacard service personnel in debugging problems. The exported Setups are saved in a compressed zip file. For more information, refer to Chapter 15: "Export Setups" on page 207.

Keyboard Entry

The Keyboard Entry utility allows job creation without an input data file. Sample data can be entered manually using the keyboard or by file reference in order to create a job. Manually created jobs may be reviewed prior to production. For more information, refer to Chapter 16: "Keyboard Entry" on page 211.

Change Locale

The Locale Configuration tool (opened from the **Applications | Utilities** menu) allows temporary configuration of the applications to display in a selected language. Within this dialog you select the language, country, and variant (if any). These changes are applied only to the current session. When the interface is restarted, it will revert back to the default language settings. To permanently change the language settings, use the Windows Regional settings.

Any open applications must be closed and then re-opened for the locale change to take effect.

Vision Utilities

These utilities are tools specific to Vision Verification. The Image Capture tab contains the Card Stock Setup Based Image Capture and the Card Setup Based Image Capture options.

Software Information

Error Messages

A list of error messages is available by selecting **Help | Error Messages**. Error messages are categorized by module and have unique message numbers. A printable list of all error messages is published on the Administrator's library.

Software Version and Patch Information

Software version, copyright, and patch information is available by selecting **Help | About**. To display an overview of any patches installed to the software, select **Patch Information** on the bottom of the About screen.

The patch overview displays the number of patches applied and patch descriptions with information about the problems that were fixed by the patch.

Fonts

Datacard recommends TrueType fonts for graphics printing, which are loaded through Windows via the Control Panel. Type 1 fonts (PFB and PFM) can also be used, but they must be copied into the C:\MX6000\lib\jre\lib\fonts directory.

Maxsys/MX Series systems do not support Windows Bit Mapped Fonts (e.g. FON files) or OpenType® Fonts.

Security

Maxsys/MX Series administrators are able to remove write access to the C:\Maxsys (or MX6000, MX2000, or MX1000) path for most operators. However, some situations still exist where operators must have write access to certain parts of the path. For more information, refer to Chapter 14: "Security Configuration" on page 203.

Chapter 2: Production

2

This chapter provides procedures for working with jobs in the Production application, including loading job files, viewing and running jobs.

The Production station is the heart of the Datacard high-speed production environment. This application allows you to perform the following tasks.

- Monitoring production
- Loading jobs
- Running jobs
- Viewing jobs
- Viewing cards/forms
- Remaking jobs
- Stopping jobs
- Retrieving audit reports for jobs
- Splitting jobs
- Filtering and searching for jobs
- Holding/removing products from jobs
- Deleting jobs

Monitoring Production

Production can be monitored from various areas in the Production interface:

- The upper status bar on the main interface has load status, production status, and machine state monitors that give visual indicators of job and machine states. (For more information, refer to "Production Station Interface" on page 4.)
- The Production tab provides a visual representation of the entire system, as well as the capability to monitor the supply status. (For more information, refer to "Production Tab" on page 9.)
- You can also monitor the status of individual cards within a job from the Job Details tab. The Job Details tab displays a table with information about each product in the currently-selected job. To reduce the number of products displayed, select a filter in the left pane. (For more information, refer to "" on page 14.)

Loading Jobs

After the Load command is started, the Load dialog box opens. From this dialog box, you can load jobs into the database for the Maxsys/MX Series modules. You can also load Syntera jobs and CardSystem Manager (CSM) jobs. These procedures are provided below.

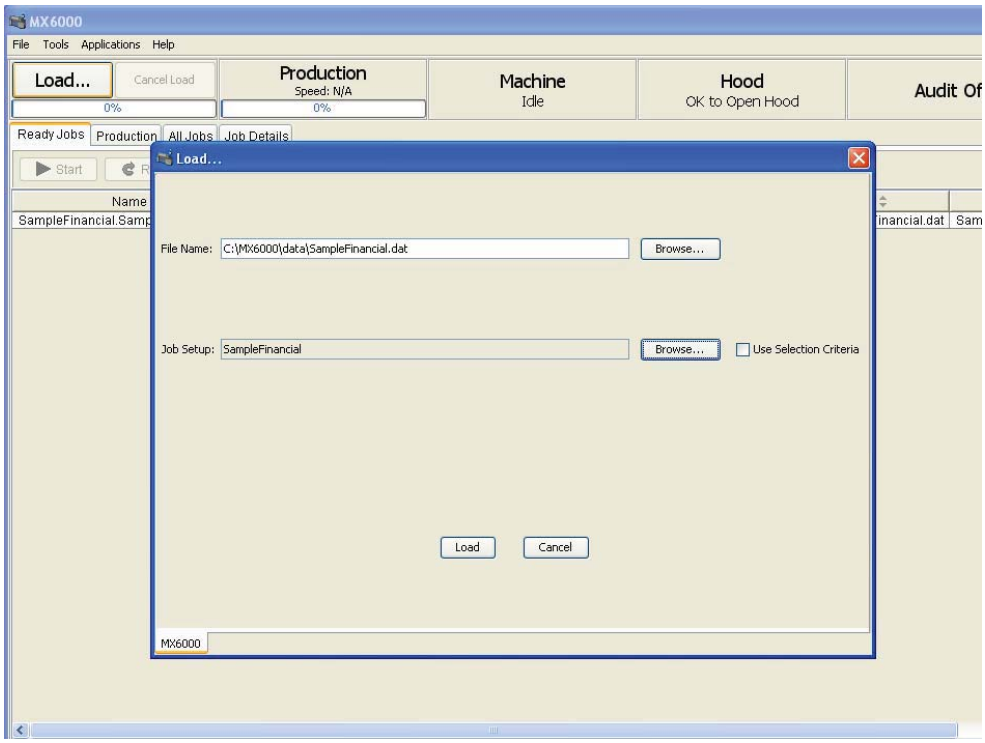
Loading Maxsys/MX Series Jobs

Perform the following procedure to load job files into the database.

1. In the Production window (**Applications | Production**), click the **Load** button on the upper status bar. The **Maxsys/MX6000** tab is displayed on the dialog box by default.

   The program allows you to pool jobs. You can select multiple job files that are loaded contiguously. When this is done, the load status identifies the job that is loading and its percentage complete. For example, if you load three jobs you will see the job load progress bar go from 0% to 100% three times. If you want to know the job that's currently loading, hover the cursor over the progress bar and you will see the job name in the tooltip. (This feature is not supported for Syntera jobs.)

All selected input files must be able to use the same Job Setup.



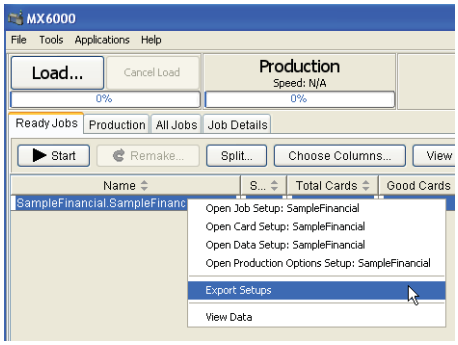
2. Select the job file by clicking **Browse,** navigating to the file location, and clicking **Open**. The file path appears in the File Name text box.
3. Perform one of the following steps.
   - Select the Job Setup file by clicking **Browse**, navigating to the file location, and clicking **Open**.

     or

   - Select the **Use Selection Criteria** check box to let the program search through existing Job Setups (that contain the selection criteria) to find a name that matches the job file.

Job Setups specify which Data Setups, Production Options Setups, Audit Setups, and Card Setups the job will use.

Jobs that appear in the Ready Jobs and All Jobs tab have, depending on security privileges of the user, a right click menu with options to open the setups used, view the data and to export the job setups.



4. Click **Load** to load the job into the database. The job appears in the Ready Jobs and All Jobs lists. You can view the load status monitor on the upper status bar to see the load completion percentage.

   To run a loaded job, refer to "Running Maxsys/MX Series Jobs" on page 36.

Loading Syntera Jobs

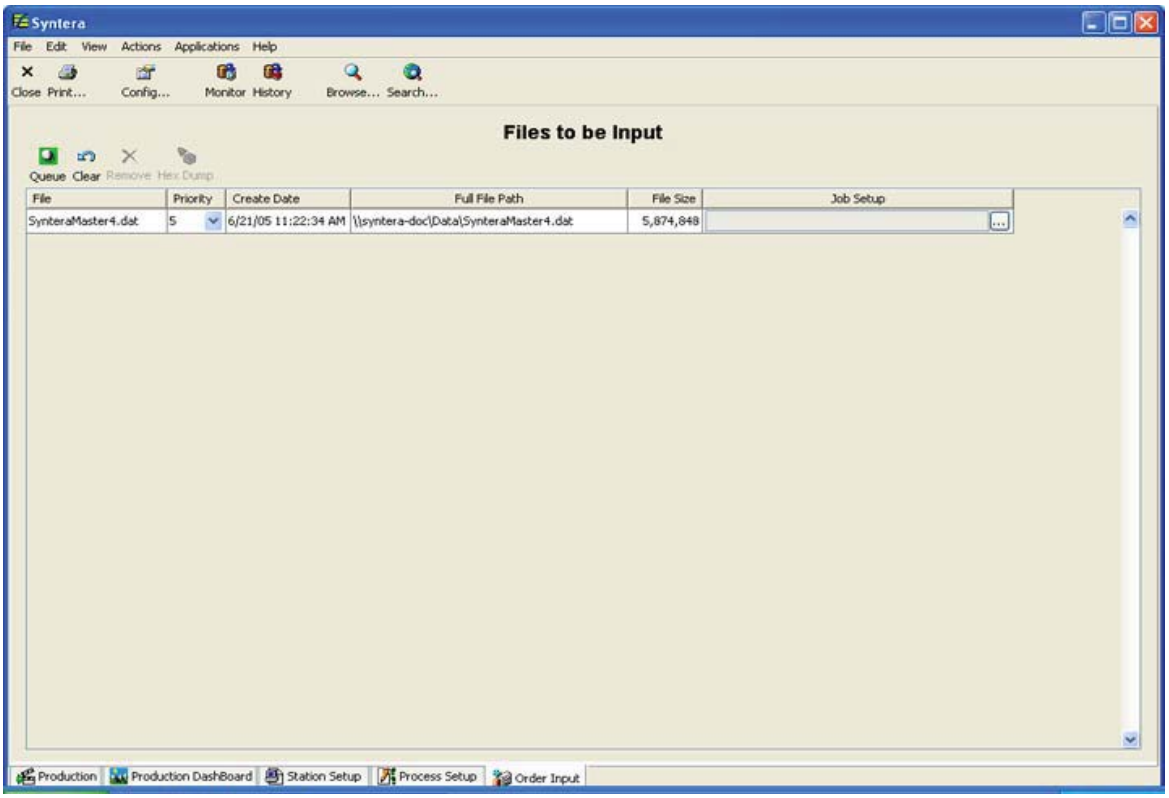
Syntera jobs can be loaded only if the Syntera software is installed and enabled on the workstation. (Refer to "Enabling the Syntera Interface" on page 5.)

To load Syntera jobs, follow these steps:

1. In the Production window (**Applications | Production**), click the **Syntera** button on the upper status bar. If you do not see a Syntera button, verify that the Syntera interface is enabled. If necessary, log in to the Syntera program.

2. From the Syntera menu bar, select **Applications | Order Processing | Order Input**.

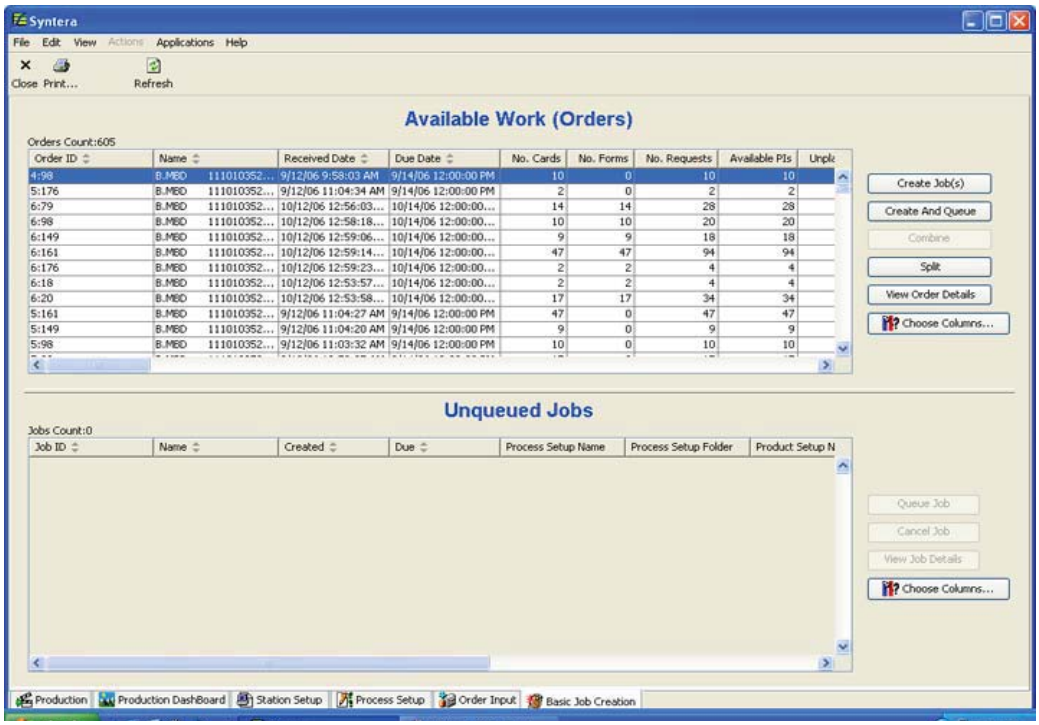
3. Click **Browse** in the toolbar, navigate to the order file, and then click **Add**. The order is listed under Files to be Input.



4. If necessary, specify the Job Setup for the order.

5. Click **Queue**. The file is loaded into the Syntera database.

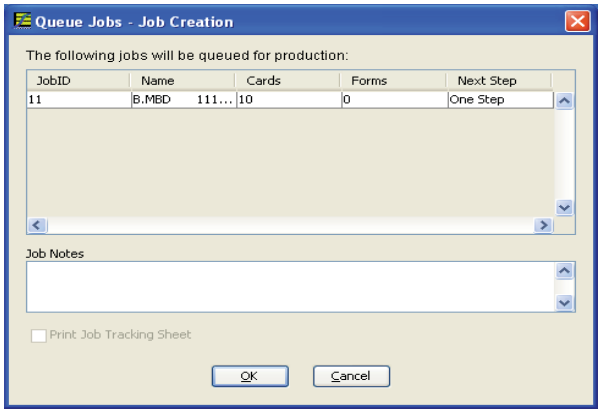
6. From the Syntera menu bar, select **Applications | Production Planning | Basic Job Creation**. The job order you queued is listed under Available Work (Orders).



7. Select the job order from the list and complete one of the following:

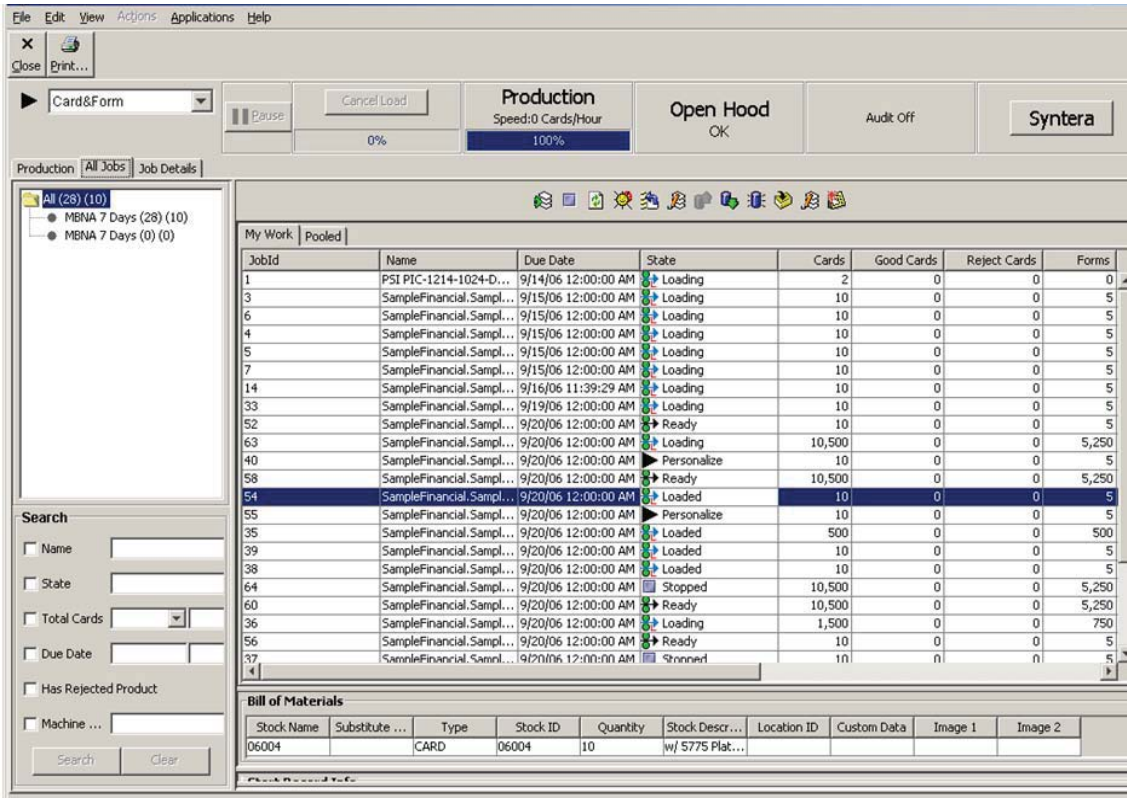
   - Click **Create And Queue**.
   - Click **Create Job(s)**. Once the order is displayed in the Unqueued Jobs list, select the order from that list and click **Queue Job**.

     In the dialog, add notes if necessary and click **OK**.



The workstations that are capable of running the job are identified (as defined in setups). The job is created and made available to the Maxsys/MX Series Production application.

8. Exit Syntera.
9. In Maxsys/MX Series Production, select the **All Jobs** tab. The job is listed under the **Pooled** tab.



10. To move the job from the Pooled tab to the My Work tab:
    A. Select the **Pooled** tab.
    B. Select the job you want to accept.
    C. Click **Accept** on the toolbar. The job moves to the My Work folder.
11. To complete the loading process, select the job under **My Work** and click the **Load** icon on the toolbar. Alternately, you can click **Start** on the upper status bar, which will load the job as it begins to run it.

You can load only one Syntera job at a time. If you select more than one job, the Load button is disabled.

As the job(s) finishes loading, the job status changes from Ready to Loading to Loaded.

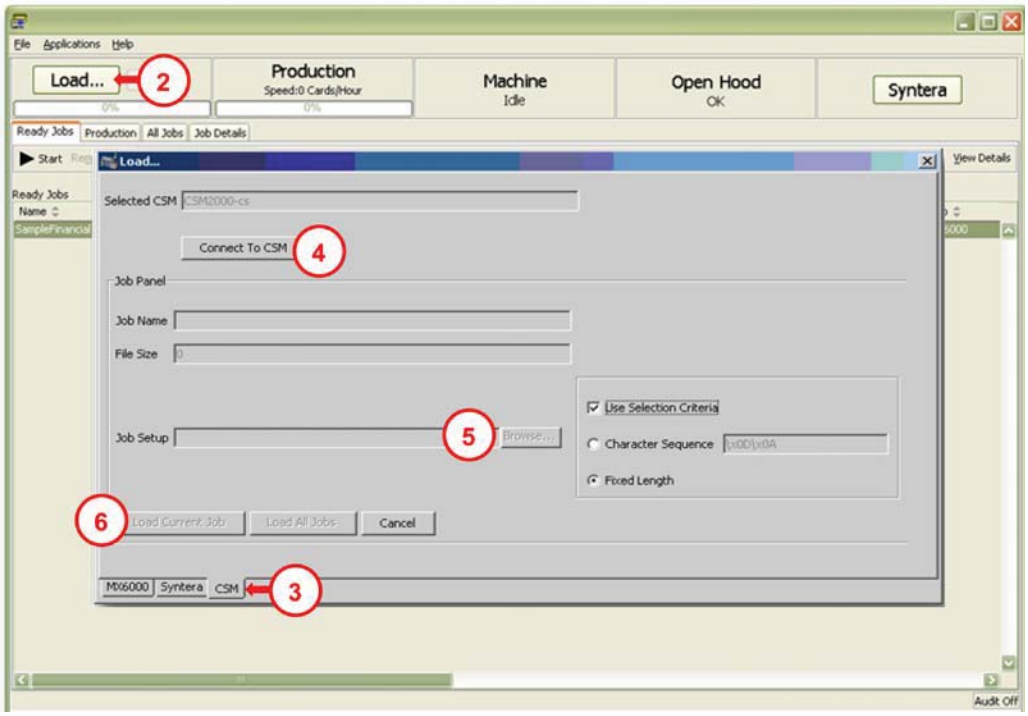
Refer to "Running Syntera Jobs" on page 36 for information about running loaded jobs.

Loading CardSystem Manager (CSM) Jobs

Perform one of the following procedures to load CardSystem Manager (CSM) job files into the system from the CSM tab on the Load dialog box. You can use the standard method or QuickConnect.

Using the Standard Method

1. If necessary, define the CSM that will be used.
   A. In Diagnostics (**Applications | Utilities | Diagnostics**), select **Controller** from the module list.
   B. Under the **Controller Configuration Editor** tab, double-click **System** from the list to expand it and then expand **CSM Client**.
   C. Under CSM Client, select **Enable** and then set the value to "true" on the top bar by double-clicking the "false" value and selecting the option button in the pop-up box.
   D. Under CSM Client, select **Server Name** and then set the value to the server name that you will be using.
   E. Similarly set the values for **Server User Name** and **Server User Password**, if necessary.
   F. Click **Commit** to save the changes.
2. In the Production window (**Applications | Production**), click the **Load** button on the upper status bar.



3. Select the **CSM** tab at the bottom of the dialog box.
4. Click **Connect to CSM**. The program connects to the CSM defined previously and displays the first available job in the Selected CSM text box. The size of the job appears in the File Size text box.
5. For Job Setup, click **Browse** to display the Job Setup Selection dialog box. Select the setup you want to use, and then click **Open**.
6. Click **Load Current Job** to load the job displayed in the Job Name text box. To load all jobs contained in the CSM, click **Load All Jobs**. The loaded job(s) appears in the Ready Jobs/All Jobs lists.

   If you are loading a large file, the program allows you to run CSM jobs while the job is still loading.

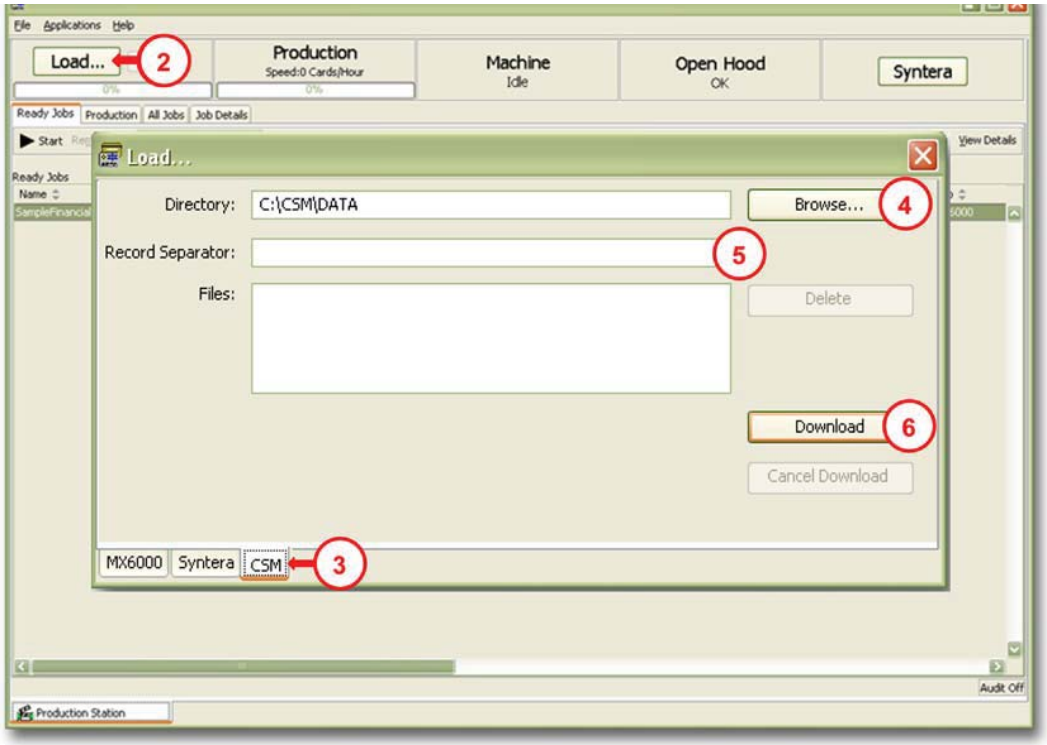
   You can also select the **Use Selection Criteria** check box to let the program search through existing Job Setups (that contain selection criteria) to find a name that matches the job file.

   Refer to "Running Maxsys/MX Series Jobs" on page 36 to run loaded jobs.

Using QuickConnect

You can also use the QuickConnect method for loading CSM jobs.

1. Reconfigure the CSM option.
   A. In Diagnostics (**Applications | Utilities | Diagnostics**), select **Controller** from the module list.
   B. Under the **Controller Configuration Editor** tab, double-click **System** from the list to expand it and then expand **CSM Client**.
   C. Under CSM Client, select **Enable** and then set the value to "false" on the top bar by double-clicking the "true" value and selecting the option button in the pop-up box.
   D. Click **Commit** to save the changes.
2. In the Production window (**Applications | Production**), click the **Load** button on the upper status bar.



3. Select the **CSM** tab at the bottom of the dialog box.
4. Click **Browse** and then select the directory into which the downloaded production files will be saved.
5. In the **Record Separator** field, specify a separator sequence to be used for separating records. This option is only for fixed record lengths. Use the \x escape character to enter hexadecimal numbers.

6. Click **Download** to load a job file to the directory specified in step 4.

The Files field contains a list of previously downloaded files that reside in the directory. You can select and delete files from the list.

7. To load the job into the database:

   A. Browse to the downloaded job and select a Job ID.

   B. Select the **Maxsys/MX6000** tab at the bottom of the dialog and then click **Load**. The job appears in the Ready Jobs and All Jobs lists.

   Refer to "Running Maxsys/MX Series Jobs" on page 36 to run loaded jobs.

Running Jobs

After loading one or more jobs from Maxsys/MX Series, Syntera, or CSM, use one of the following procedures to run the job(s).

Running Maxsys/MX Series Jobs

1. In the Maxsys/MX Series Production window (**Applications | Production**) under the **Ready Jobs** tab, select a job from the Ready Jobs list. You can select multiple files that run contiguously.

2. Select the job type (**Cards Only**, **Forms Only**, **Cards and Forms**) from the list.
3. Click **Start**.

If a job has any rejected cards or has cards that were previously held and are now not held, select that job and then click **Remake** to re-run the job.

Running Syntera Jobs

1. Select **Applications | Production**.

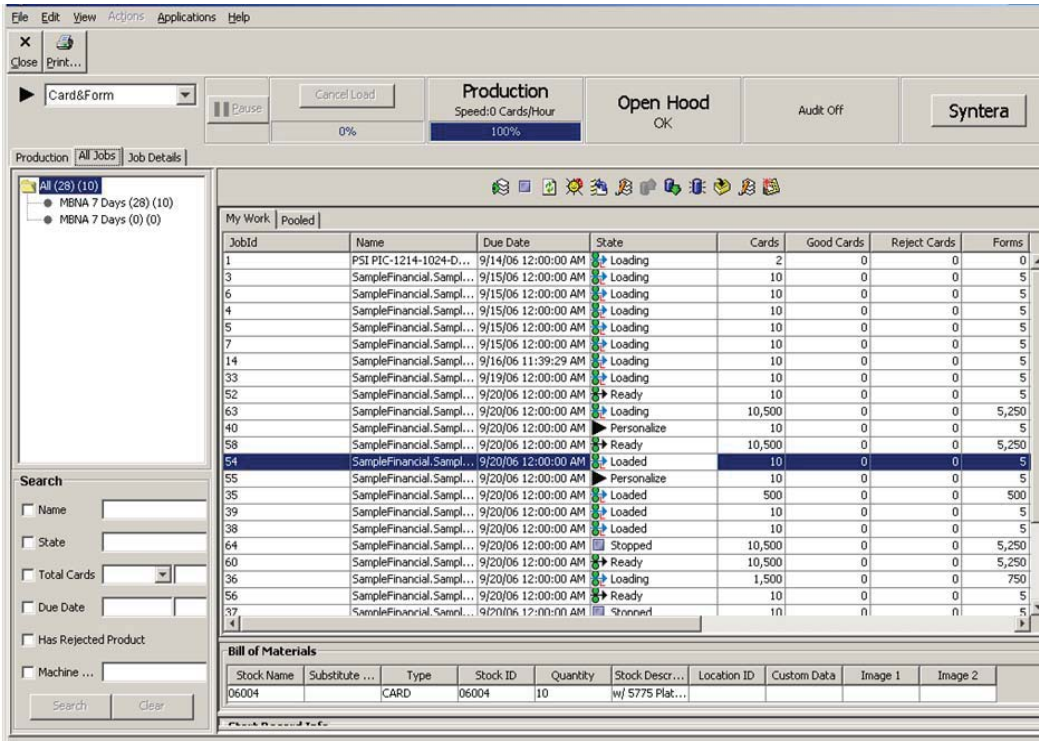
2. Select the **All Jobs** tab in the left pane of the screen.

Use the Search facility at the bottom of the left pane to find jobs of particular interest.

3. Select the **Pooled** tab in the right pane and then select a job.

When a job is selected, you can click the **View Details** icon to see the specific products in the job.

4. Click the **Accept** icon to move the job into your **My Work** folder.
5. Select the **My Work** tab and then select the job.



6. Review the Operator Instructions and Notes near the bottom of the right pane.
7. If necessary, select a different Job Setup from the list.
8. If the **Allocate** icon is available, click it to allocate materials for the job.
9. From the list above the left pane, select whether you want to print the **Card&Form**, **Form Only**, **Card Only**, or **UltraForm** for this job. This field overrides the information defined in the job specification.
10. Click **Start** (arrow icon) on the left side of the upper status bar.
11. While cards are being personalized, you can monitor progress of the job by selecting the **Production** tab.

12. When the job is complete, click **Release** on the toolbar.

    A. *(Optional)* Click in the bottom of the dialog box and type instructions to the next operator in the process.

    B. Click **Release**.

13. Click **Refresh** to remove the job from your **My Work** tab.

"User Input Needed" Message

After starting a job, one or more "User Input Needed" dialog boxes may appear that prompt you to take some action to ensure that the job completes successfully.

Until the action is done, the dialog box continues to appear.

- The messages state the problem and the module in which the problem is occurring. Once you have completed the necessary tasks, click **OK**.
- Some of these messages may be overridden. For example, a job may call for a blue ribbon, but the system detects that a black ribbon is loaded. If you wish to use the black ribbon for this production run only, select the **Override** check box.

Viewing Jobs

When a job is running, perform the following steps in the Production Station to view information about that job.

1. In the Production Station (**Applications | Production**), select the **All Jobs** tab. (On the Syntera interface, also select the **My Work** tab.)
2. Select the running job.
3. Do one of the following:
    - Click **View Details** on the bar above the list.
    - Select the **Job Details** tab.
4. From the Production Tab, select the check box next to the message types (Error, Caution, Information) that you want to view in the message pane.
5. Double-click a status message to view details about that message.

There may be a delay between the time you select a function button and the time when the system is ready for another input.

Viewing Cards/Forms

Perform the following steps to view cards or forms within a job on a Maxsys/MX Series Production interface.

1. In the Production window (**Applications | Production**), select the **Job Details** tab. The Job Details screen contains a list of all cards in a selected job.
2. Select a card/form from the list.
3. Click **View Accounts** on the bar above the list to display information related to the card/form that you selected.

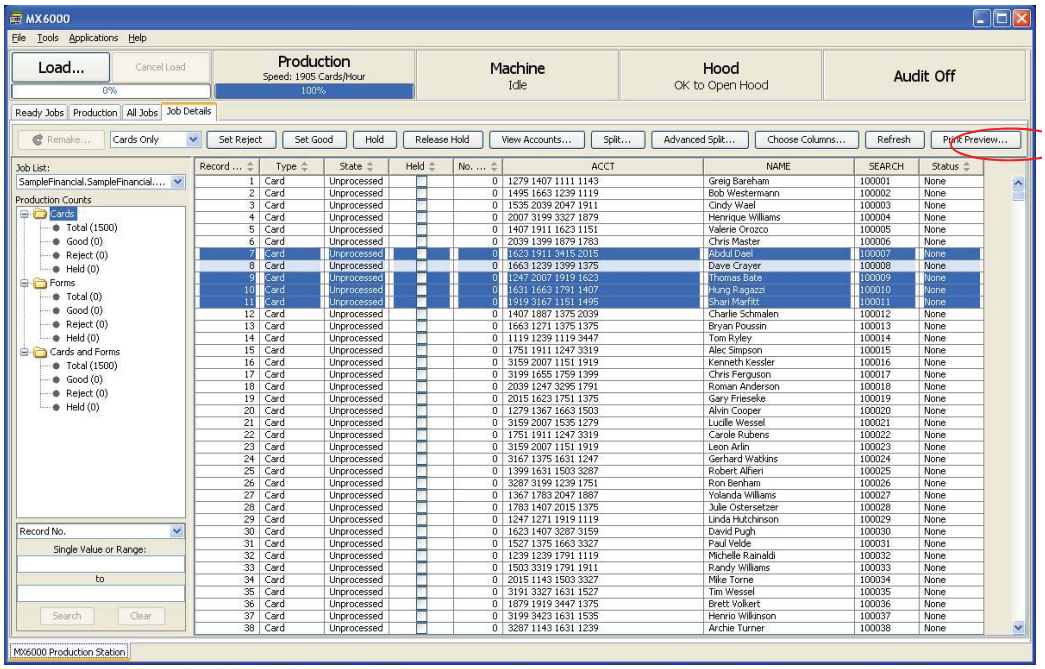
   The record must contain card/form data to display. Multiple cards/forms can be selected and results are listed in color-coded groups.

Print Preview from Job Details

Print preview from the Job Details tab allows you to proof a card after it has been produced. The preview shows printable graphics information such as image, text, and barcode elements. You can view non-printable information such as magstripe and smart card data in the Job Details table. For more information, refer to Chapter 6: “Using Print Preview from Card Setup” on page 123.

Perform the following procedure to access Print Preview from Job Details.

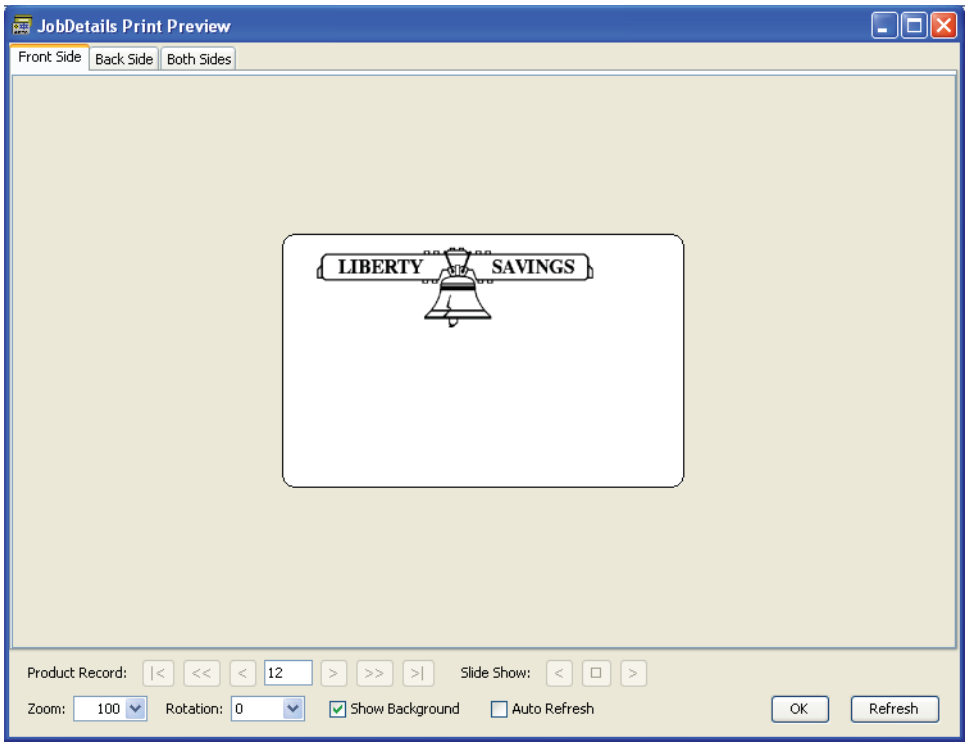
1. In the Job Details table, select a single row or multiple rows. If multiple rows are selected, the cards will be displayed in the order of their record number.



2. Open the print preview dialog.
    - Right-click on the selected records and then click **Print Preview.**

      or

    - Click the **Print Preview** button.



If more than one record was selected in the table to preview, the row will be highlighted in light blue to correspond with the record currently being previewed in the Print Preview dialog.

If the Card Setup is changed after loading the job or running the job, the preview will not necessarily match the printed card.

The following table describes the dialog properties on the Front, Back, and Both Sides tabs.

Front/Back/Both Sides Tabs Properties	
The "Virtual Card"	The representation of the card as designed using Card Setup. Only Image, Text, and Barcode elements will display.
Zoom	Select the zoom level to view greater or less detail
Rotation	Rotates the card clockwise in increments of 90 degrees
Show Background	Select the check box to display the background image (if any). The background image is associated with the selected card stock as defined in Stock Management.
Auto Refresh	Select the checkbox to allow the preview image to refresh automatically when any change occurs to the Image, Text, or Barcode elements. A decrease in performance may occur if many changes are being made.
Refresh	Click to refresh the preview image
Product Record	Use the navigation buttons to scroll through product records. The single arrow button (>) will increment or decrement by one, the double arrow button (>>) will increment or decrement by 10, and the final button (>|)will jump to the beginning or end of the record list. Product records are used only when the **Product Record** option button has been selected in the Preview Data tab. The record will then be taken from the selected job.
Slide Show	Click the forward or reverse buttons to scroll through the product records. Click the stop button to stop the slide show.

- Click **OK** when finished.

Remaking Jobs

If a job requires a remake, perform one of the following procedures.

Remaking a Maxsys/MX Series Job

Use the following procedure to remake cards that were rejected.

1. In the Production window (**Applications | Production**) under the **All Jobs** tab, select the job from the list.
2. Select the **Job Details** tab. The Job Details screen contains a list of all cards in a selected job.
3. If any cards have been rejected, click **Remake** in the upper bar to remake those cards.

You can click and drag using your mouse and use **Alt+Click** or **Shift+Click** to select multiple cards.

4. Click **Refresh** to update the screen manually.

Remaking a Syntera Job

Perform the following steps when a job requires a quick or advanced remake.

1. In the Production window (**Applications | Production**), select the **All Jobs** tab. Under the **My Work** tab, select the job that requires remakes.
2. Click **View Details**. The Job Details list is displayed.
3. In the left pane, select the filter for the type of product you want to remake. For example, to remake cards, expand the **Cards** folder and click **Reject**.
4. Select the products you want to remake (or click **Select All**) and then click one of the following buttons in the toolbar:
   - Quick

     In the **Quick Remake Wizard** dialog box, click **Start** and then click **OK**. The remake job displays under your **My Work** tab as **OriginalJobName.R1**.
   - Advanced

     Follow the prompts in the **Advanced Remake Wizard** dialog box. The remake job displays under your **My Work** tab as **OriginalJobName.R1**.

Stopping/Pausing/Cancelling Jobs

When a job is running, perform the following steps on the Production screen to stop or pause the job.

1. In the Production window (**Applications | Production**), select the **Production** tab. (On the Syntera interface, select any tab.)
2. Click **Stop** to stop the job. (To stop the job only temporarily, click **Pause**.)

   The system attempts to finish any cards that are already in the track.

   - If the auto-remake function is enabled and an error is encountered, click **Stop (No Pick)** to stop the job and prevent the system from initiating a remake on the card that caused the error.
   - Click **Remake** to remake the rejected cards from the last job.
3. Once you are ready for the job to resume, click **Resume/Start**.

Clicking the **Abort** button will cancel the job and sweep the cards out of the machine (clear the track). No remake or error recovery will occur.

Splitting Jobs

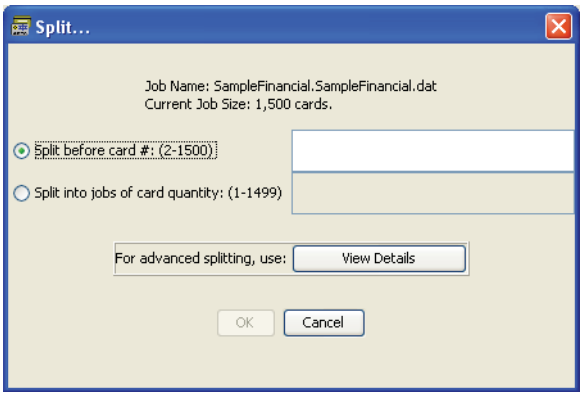
Splitting is the act of creating multiple jobs from the cards or forms contained within a single job.

For example, if Job A contains 1000 cards, and you would like to split it into more manageable-sized jobs, Production allows you to split the job in two at a specific point (card/form) in the job, or into multiple jobs.

Splitting Maxsys/MX Series Jobs

1. In the Production window (**Applications | Production**) under the **Ready Jobs**, **All Jobs**, or **Job Details** tab, click **Split** on the bar above the job list. The Split dialog box displays the Job name and Job size.
2. To split one job into two jobs:

   A. Select the **Split before card/form #** option button.



B. Enter the card/form number that you want to be the first card/form in the new job. Using the example of Job A, which contains 1000 cards: If you enter the number 301, the single job is then split into two jobs—one with 300 cards and one with 700 cards.

If necessary, click **View Details** to open the Advanced Splitting dialog box (refer to "Advanced Splitting" on page 44 for details).

C. Click **OK**. The new job is created and is visible in the various job lists. The new job has the same name as the current job, but with "[001]" appended.

3. To split a job into multiple jobs:

A. Select the **Split into jobs of card/form quantity** option button.

B. Enter the number of jobs into which you would like the single job split. Using the previous example of Job A, which contains 1000 cards: If you enter the number 10, the job is split into ten jobs, each containing 100 cards.

If the number entered is not evenly divisible by the total number of cards in the job, all resulting jobs contain an equal number, except for the final job, which contains the remaining cards.

If necessary, click **View Details** to open the Advanced Splitting dialog box (refer to the next section for details).

C. Click **OK**. The new jobs are created and are visible in the various job lists. The new jobs have the same name as the current job, but with "[001], [002], etc." appended.

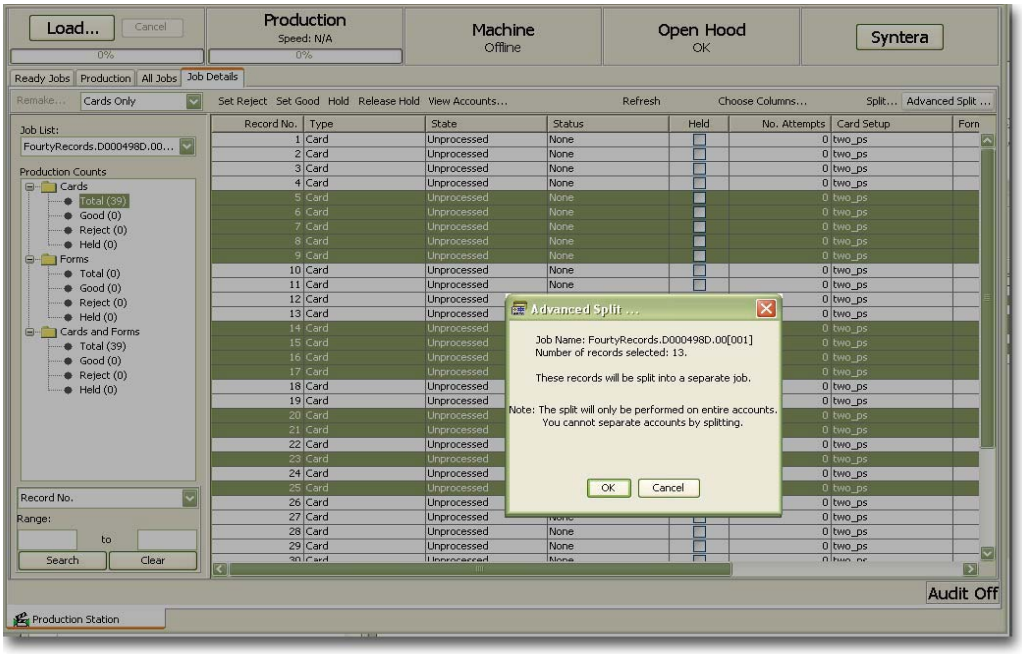
Advanced Splitting

Advanced splitting allows you to specify individual cards within a job and split these cards off into a separate job.

1. In the Production window (**Applications | Production**), select the **Job Details** tab.
2. On the Job Details screen, select the cards you would like to split off from the job.

You can click and drag using your mouse and use **Alt+Click** or **Shift+Click** to select multiple cards.

3. Click **Advanced Split** on the right side of the toolbar.
4. In the confirmation dialog box, verify that the cards you have selected are to be split, and then click **OK**. The new job is created and is visible in the various job lists.



Splitting Syntera Jobs

1. In the Production window (**Applications | Production**) under the **All Jobs** tab, select a job from the **My Work** folder.
2. Click **Split** in the toolbar.
3. Enter the record number at which to split the job in the **Split at card #** field.
4. In the **Account Split Option** box, select whether you want the job to split before or after the card number you entered.

5. Click **OK**. The Split Job dialog box opens, confirming at what record index number the job split. The split job appears in the **My Work** folder as **<Job Name.S1>**

Remake jobs cannot be split.

If a job is partially complete (that is, some of the products have a status other than "none"), you can split only the unattempted cards into the new job.

If any unattempted cards are related to cards that have already been attempted (that is, multi-card accounts), the related unattempted cards will stay with the original job.

Searching for Jobs

Perform the following steps to search for jobs within the database:

1. In the Production window (**Applications | Production**), select the **All Jobs** tab. (On the Syntera interface, also select the **My Work** tab.)
2. In the left pane, select the check box next to any or all of the parameters on the jobs list that you would like to use in your search. The more you select, the narrower the scope of the search.
   - **Name** - Enter the name of the job in the text box.
   - **Status** - Select the status from the list. The program displays only those jobs with the selected status.
   - **Total Cards** - Total cards in the job. Enter a number in the text box and then select a quantitative indicator (less than, more than, equal to, etc.) from the list. For example, if you enter 500 in the text box and select the greater-than-or-equal-to (>=) sign from the list, the program displays only those jobs that have 500 or more cards.
   - **Due Date** (*Syntera only*) - Enter the date range to search within.
   - **Created** (*not available on Syntera*) - Enter a number in the text box and then select Hours or Days from the list. For example, if you enter "5" in the text box and select "Days" from the list, the program displays only those jobs created in the past five days.
   - **Last Worked On** (*not available on Syntera*) - Enter a number in the text box and then select Hours or Days from the list. For example, if you enter "8" in the text box and select "Hours" from the list, the program displays only those jobs worked on during the past eight hours.
   - **Job Setup** (*not available on Syntera*) - Select Browse, and then select a Job Setup from the dialog box. The program displays only those jobs that use the selected Job Setup.

- **Input File** (*not available on Syntera*) - Enter the Input File name into the text box. The program displays only those jobs that use the listed Input File.
- **Has Rejected Products** - If selected, the program displays only jobs that contain rejected products.
- **Has Held Products** - If selected, the program displays only jobs that contain held products.
- **Machine Setup** (*Syntera only*) - Select a machine setup value from the list.

3. Click **Search** to initiate the process. The top area of the left pane changes to reflect your search.

Click **Clear** to clear all parameters and display all jobs in the list.

Holding/Removing Products from a Job

Perform one of the following procedures to hold, reject, or remove a product from a job.

Holding/Rejecting Cards from a Maxsys/MX Series Job

1. In the Production window (**Applications | Production**) under the **All Jobs** tab, select a job from the list.
2. Select the **Job Details** tab. The Job Details screen contains a list of all cards in the selected job.
3. To reject a card or cards from the job:
   A. Select a card or cards from the list.
   B. Click **Set Reject** on the upper bar to reject the card manually. (The card must first have been processed successfully in order to be rejected manually.)
   C. To override the "Reject" status, select any rejected cards from the list, and then click **Set Good**.
4. To hold a card or cards from being processed when the job runs:
   A. Select a card or cards from the list.
   B. Click **Hold** on the upper bar.

   To release the hold, select any cards with a "Hold" status from the list, and then click **Release Hold**.

Holding/Removing Products from a Syntera Job

1. In the Production window (**Applications | Production**), select the **All Jobs** tab.
2. Under the **My Work** tab, select the original job that contains the product of interest.
3. Under the **Job Details** tab, select the products you want to process and click **Special**.
4. If you are not already logged in as an administrator, the Login window displays. Enter your **Admin User Name** and **Password** in the fields provided and click **OK**.
5. Select the appropriate special processing request option(s):
   - **Pull** - Removes the selected product(s) from the current job, but not from the Syntera system. Products in the "Pulled" state cannot be added to a job. You must first restore the product and reset the state to "Available" before jobbing.
   - **Remove** - Removes the selected product(s) from the current job and makes it available for jobbing. If you want to hold the products in your My Work folder (making them unavailable for jobbing), select **Hold**. Clear the Hold check box to return the items to the pool.
   - **Expedite** - Splits off records from a job as a new job. If you select this option, select the appropriate Process and starting Process Step from the lists and, if necessary, change the Due Date to accelerate the priority of the job.
6. Click **OK**.

Deleting Jobs

For Maxsys/MX Series production jobs, perform the following steps to delete a job permanently from the database.

1. In the Production window (**Applications | Production**), select the **All Jobs** tab.
2. Select a job or jobs from the list, and then click **Delete Job** on the upper bar to remove the job(s) permanently from the database.

You cannot select non-consecutive multiple jobs (using **Ctrl+Click**). When a job is deleted, so is the Audit Report backup.

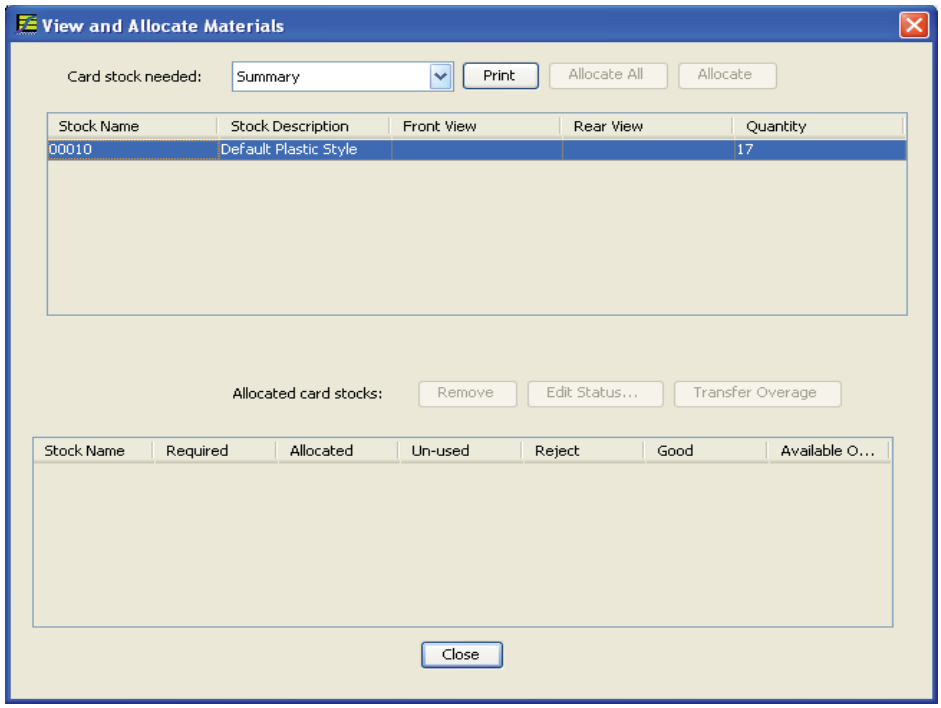
Deleting a job cannot be undone.

3. Click **Restore Audit** on the upper bar to restore an audit file from the database in the event it has been deleted or corrupted.

Allocating Materials in Syntera Production

On a Syntera-enabled station, use the following procedure to assign allocated materials from the vault to a job.

1. In the Production window (**Applications | Production**), select the **All Jobs** tab.
2. Click the **My Work** tab in the right pane and then select a job.
3. Click the **Allocate** icon on the toolbar.
4. From the list, select the appropriate **Card stock needed**.



5. Select one or more items from the list at the top of the window and do one of the following:
   - Click **Allocate All** to allocate the exact quantity of the selected card stock for the item(s) selected.
   - Click **Allocate** to enter an overage of stock. Enter the overage quantity in the Input field and click **OK**.
6. The **Allocated card stocks** list displays information about what materials have been allocated. Select an item from this list and do one of the following:

- Click **Remove** to free the allocated materials.
- Click **Edit Status** to change information about the material. (Enter the required information in the administrator login dialog box.) To change the number of unused materials manually, enter a number in the **Un-used** field. To manually change the number of rejected materials, enter a number in the **Reject** field. Click **OK**.
- Click **Transfer Overage** to transfer unused stock to a job that requires it. Select a job from the job list, type the quantity to be transferred, and click **OK**.

7. Click **Close**.

Performing Syntera Administrative Functions

To perform Syntera administrative functions for a job, complete the following steps:

1. In the Production window (**Applications | Production**), select the **All Jobs** tab.
2. Click the **My Work** tab in the right pane and then select the job for which you want to perform administrative functions.
3. Click **Admin** on the toolbar. If you are not logged in as an administrator, a login window opens. Enter your **Admin User Name** and **Password** in the fields provided and click **OK**.
4. If you clicked **Start** and the file does not transfer from Syntera, select **Re-generate** to have Syntera re-transmit the file.
5. To remove all products from the job and delete the job, click **Cancel**.
6. In **Manual Reconciliation Mode**, you can override the current job state. To enter the mode, click **Manual Reconciliation Mode** and then, in the **Start Index** field, enter the card index number where the machine should begin tracking (the record number of the last good card plus 1).

The **Start Index** function is used in situations such as when the machine is accidentally powered off during production, resulting in the system incorrectly reporting the number of cards complete, in process, etc.

7. Click **OK**.
   - If you selected **Re-generate**, the system displays a confirmation message.
   - If you selected **Cancel**, the system returns the job to Available Work so it can be rescheduled through Basic Job Creation or Advanced Job Creation.

- If you selected **Manual Reconciliation Mode**, the **Set Good** and **Set None** buttons in the **Job Details** section of the Production window are available. Select a product and click **Set Good** to change the status to Good. Select a product and click **Set None** to change the status to None.

When you are finished using the Manual Reconciliation Mode functions, turn it off by clicking **Admin** again and clearing the **Manual Reconciliation Mode** check box.

Adding Notes in Syntera Production

Syntera allows you to add notes that convey special instructions or messages to operators or other personnel about production.

Adding Operator Instructions or Job Notes

To add operator instructions or job notes for a job, complete these steps:

1. In the Production window (**Applications | Production**) on one of the Job screens, select a job from the list and then click the **Job Notes** icon.
2. Click **Add Note**.
3. (*Optional*) Select a reason code from the list.
4. In the **New Notes** text box, enter the note text.
5. (*Optional*) To have the job note copied to the station, click **Apply New Notes to Station Notes**.
6. Click **Apply**.

The date/time the note was created, as well as the user name of the person who entered it, are inserted before the note text.

Notes are listed in chronological order with the newest note at the bottom.

Adding Station Notes

To add station notes that are unrelated to jobs, complete these steps:

1. In the Production window (**Applications | Production**) on one of the Job screens, select a job from the list and then click **Station Notes**.
2. Click **Add Note**.
3. (*Optional*) Select a reason code from the list.
4. In the **New Notes** text box, enter the note text.
5. (*Optional*) To have the station note copied to the currently-selected job, click **Apply New Notes to Job Notes**.

6. Click **Apply**.

The date/time the note was created, as well as the user name of the person who entered it, are inserted before the note text.

Notes are listed in reverse chronological order with the newest note at the top.

Chapter 3: The Event Log

3

This chapter provides information on querying and viewing system events using the Event Log.

The Event Log allows you to query and view system events. System events are logged automatically as the system and software program operate. These events can be viewed and analyzed for system administration and troubleshooting purposes. Events returned by the query are displayed in tabbed lists that can be saved for later viewing or for archiving.

Privileges for this utility may be defined when security is enabled; refer to Chapter 14: "Security Configuration" on page 203.

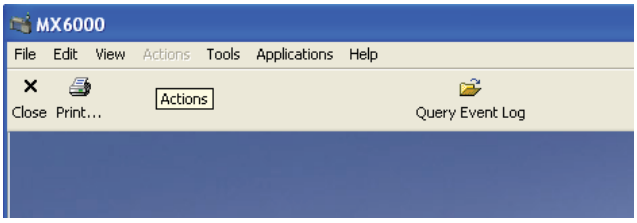
Events and activities captured in the event log include but are not limited to:

- Starting Administrator or production operator user interface tools
- Opening, creating, saving, deleting, or closing a setup
- Production data file loading, creating production job(s) in the DB2 database
- Production job run attempts and all events that are generated in the context of the production run
- Production job deletes

Querying the Event Log

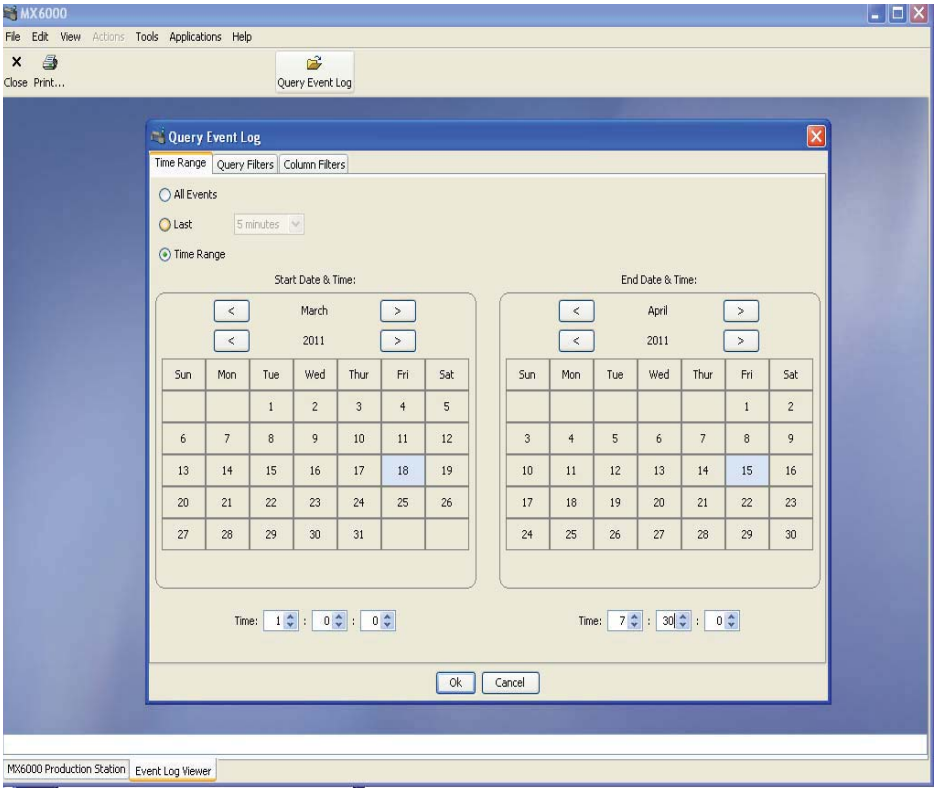
Perform the following procedure to query the Event Log.

1. Select **Applications | Event Log**.
2. In the Event Log tool bar, click **Query Event Log**.

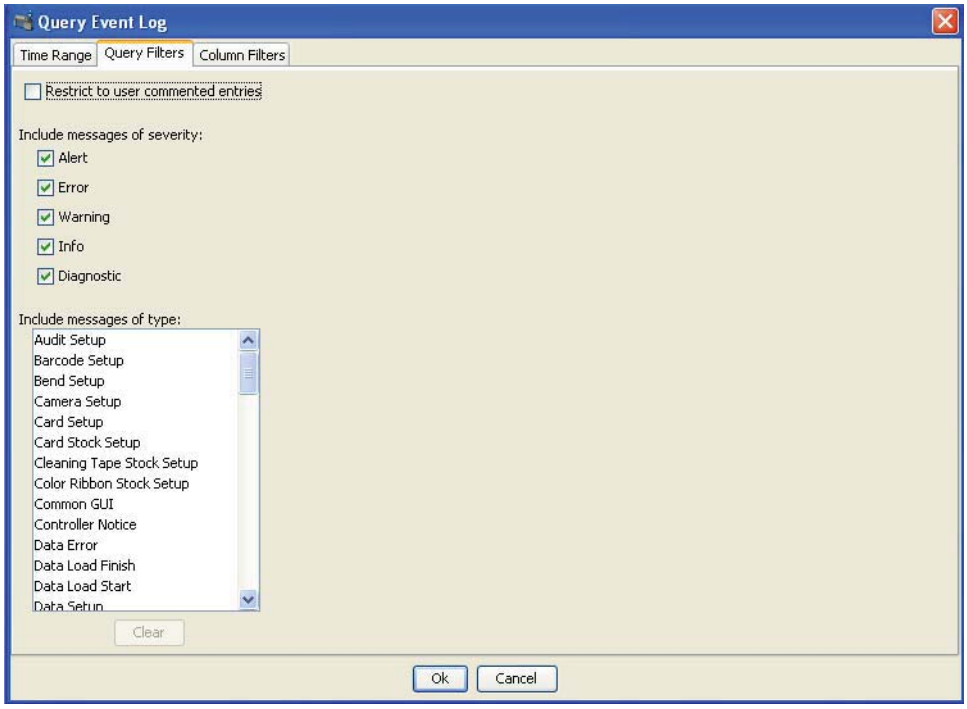


3. On the **Time Range** tab (displayed by default), select the time range for your query.

   - Select **All Events** to include all system events since the inception of the system (time will not be considered).
   - Select **Last** and then make a selection from the list (i.e., **30 days**) to include only those events in the selected period of time.
   - Select **Time Range** to enable the calendar. Using the calendar, you can specify the date and time range (down to the second). Use the arrow buttons to navigate through the month and year, click a date in the calendar, and then use the spin controls to designate the time of day.



4. On the Query Filters tab, select the type of events you want the query to return.

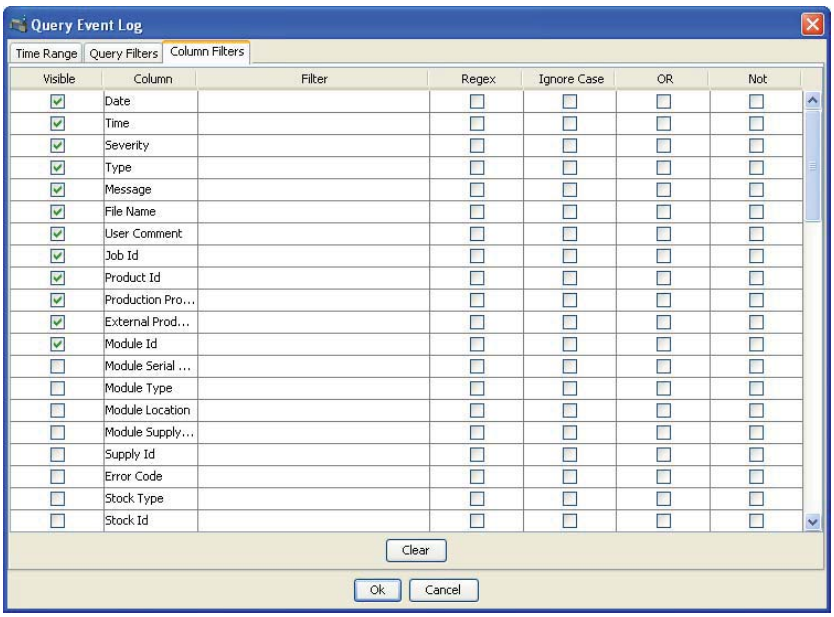


- Select **Restrict to user commented entries** to return only events that have user comments included.
- From the **Include messages of severity** list, select from the following list:
  - **Alert** - A event that may have required user intervention or that may have lead to an error
  - **Error** - An event that may have caused the system to cease normal operation
  - **Warning** - An event that, if not addressed, may have impacted the functionality of the system
  - **Info** - System events that required no action (information only)
  - **Diagnostic** - Information returned by a diagnostic test or function
- From the **Include messages of type** list, select those event message types that correspond to your informational needs. You can select multiple message types using **Ctrl+Click** or **Shift+Click**.

When query filtering is performed a notification appears in the lower-left corner of the window.

5. On the Column Filters tab, select the Columns of query data to include in the query. The events can be filtered as follows:

Visible	Indicates whether the selected column is visible
Column	Column name
Filter	Enter text to filter the column. For example, if you want to display only events with a severity of Error, you would type *Error* into the field. You can use wildcard characters to further define the filter. For example, if you are filtering the Message parameter, entering **event** will return all results that contain the word *event* in the message.
Regex	Select this option to filter using Regular Expressions
Ignore Case	If selected, word case is ignored
OR	Takes the filter values (space separated) and will display any value that matches. For example, if you are filtering the Message parameter and enter **query* *application**, then all messages that contain the words *query* or *application* will display.
NOT	Takes the filter value(s) (space separated) and will display any value that does not match. For example, if you are filtering the Message parameter and enter **query* *application**, then all messages that do not contain the words *query* or *application* will display.



6. When the time, filters and column parameters have been selected for your query click **OK** to perform the query. The results are displayed on a tab in the event log viewer window.

7. Multiple queries may be performed and are displayed (by query date range) as individual tabs in the program window. To start a new query click Query Event Log from the tool bar.

Event Viewing Options

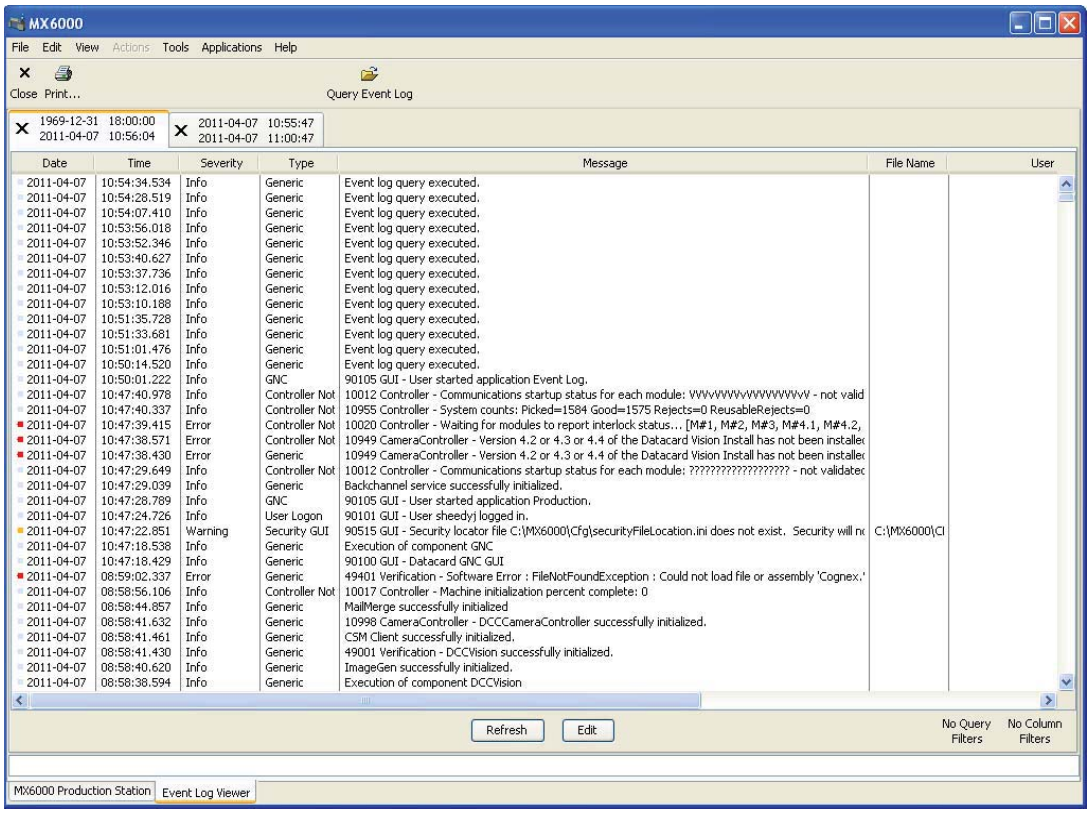
Filters can be applied to an open query so that specific events can be located quickly.

1. With the Event log Viewer active, select the query to filter by clicking on the tab.

2. Click **Edit** to open the Query Event Log dialog.

3. Use the time range, query filters and column filters to modify the query parameters.

4. Click **Ok** to view modified query results.



Viewing Message Details

To view the details of an event message, double-click the event in the list. You can browse through the messages by clicking the arrow buttons at the bottom of the Message Details window. The single arrow buttons will take you to the previous or next message in the list. The double arrow buttons will open either the first or last message in the list.

The Extended Help tab contains error message information and the Details tab gives detailed information about the event.

Click **OK** to close the window.

Adding Comments to Messages

You can add user comments to message details by clicking **Comments** and then entering the comments into the Update User Comments dialog.

Searching the Event List

The Event Log allows you to perform a search for keywords in the returned event list. Perform the following procedure to perform a search.

1. From the Event Log **Edit** menu, select **Find** or press **Ctrl+F** on the keyboard.
2. Type a keyword into the **Find** text box.
3. For Find Options:
    - **Regex** - Select this option to search using Regular Expressions. If you select this option, the following two options are not available.
    - **Ignore Case** - The search will not consider whether upper or lowercase letters in the found word match the word you entered.
    - **Whole Words** - The search will consider only the entire word you entered. For example, if you entered "no" and you do not select this option, the search will locate the letters "no" within other words (such as "not").
4. Click **Next** to begin the search. Any matching words will be highlighted. Continue clicking **Next** to find each subsequent instance of the word. Click **Previous** to go back to the previously highlighted instance.

Sorting Returned Events

The Event Log allows you to sort the returned events in the list by date/time. Perform the following procedure to sort the events.

1. From the Event Log **Tools** menu, select **Event Log Preferences**.

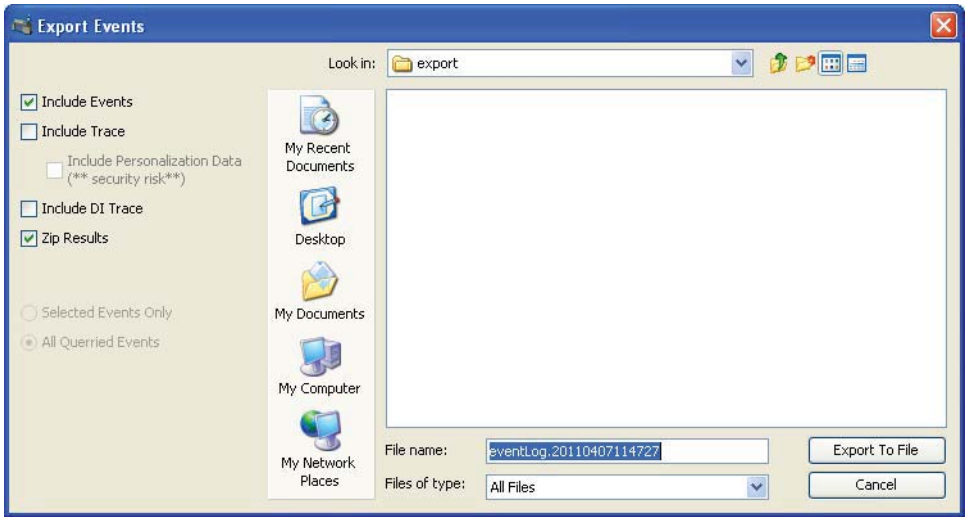
2. From the Sort Order tab, select either **Ascending** or **Descending** and then click **Apply**. The list is sorted chronologically by date/time in the manner selected.

To update the events list, click **Refresh**.

Exporting Events

You can export events for use in archiving or troubleshooting. Perform the following procedure to delete the event log from the system.

1. Select **Applications | Event Log**.
2. From the menu select **Tools | Export Events**. The Export dialog opens.



3. Select the appropriate options.
   - Select **Include Events** to include all displayed or highlighted events in the export file. If you want to export selected events in the list, you can run the display filter or select individual events using **Ctrl/Alt+Click**.
   - Select **Include Trace** to export a trace file. Trace files are used by Datacard for diagnostic purposes.

     When the Include Trace file is selected, the **Include Personalization Data** option is enabled. This option is a potential data security risk and should be used with caution as it would enable data from the production run including account numbers, card holder names, addresses, etc. to be included in the extracted trace file.
   - Select **Zip Results** to compress the file(s) into one ".zip" file.
4. Select the destination directory. Datacard recommends using the default directory.

5. Click **Export to File**. The file(s) will be exported to the defined location.

Purging the Event Log

Perform the following procedure to delete the event log from the system.

All event tabs must be closed before a deletion is allowed. If the Event Log is open, close it before beginning the following procedure.

1. Select **Applications | Event Log**.
2. From the menu select **Tools | Purge Events**.
3. The Purge Events window will open. You can purge either all events from the log or events that occurred before a particular date.

   A. To purge all events select the **All Events** option button.

   B. To purge by date select the **Events Before this Date** option button. Use the arrow buttons to select the month and year, and then click on the calendar to select the date. Use the spin controls or enter values in the text boxes to define the time.

4. Click **OK.**

Chapter 4: Job Setup

4

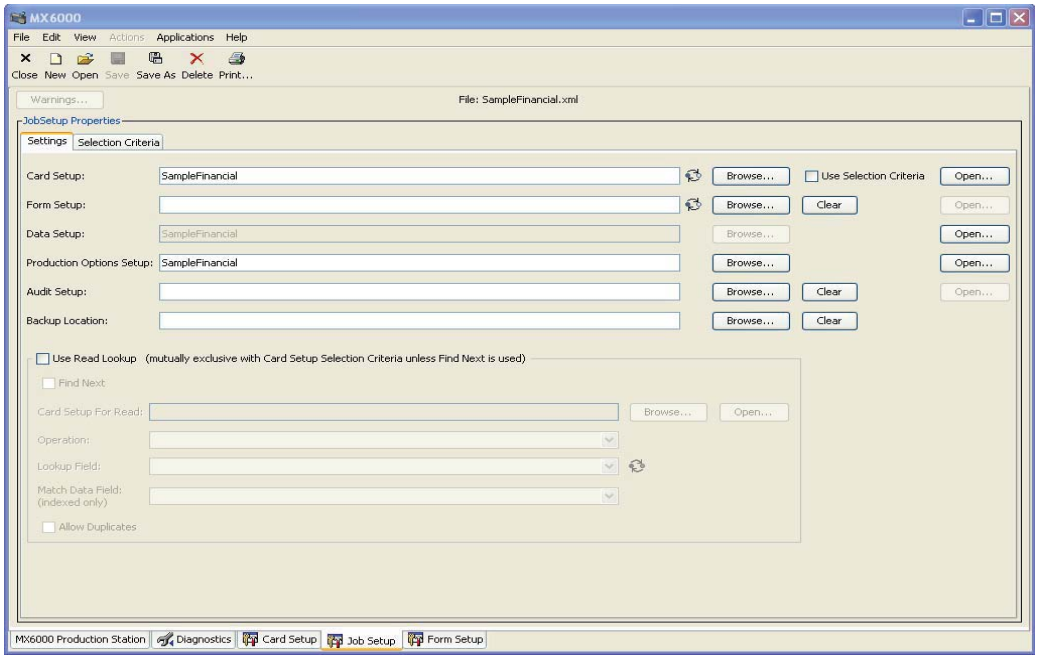
This chapter provides information on creating and modifying Job Setups.

Creating a New Job Setup

Job Setups combine the various required and optional setups to form a job that can be loaded and run on the card issuance system. Job Setups require a Data Setup, Card Setup, and Production Options Setup and are generally created after all other setups have been defined. Depending upon your job, the Audit Setup, Backup Location and Form Setup are optional setups that may be used. Complete the following steps to create a new Job Setup.

There can be only one Job Setup open at a time. Make sure that you save the new setup before opening another.

1. Select **Applications | Setups | Job Setup**.
2. In the Job Setup window, click **New** on the toolbar.



The Settings Tab

The Settings tab allows you to select and define settings for the Job Setup.

1. Under the Settings tab, use one of the following methods to select a Card Setup to use for this job.
   - Click **Browse** and then navigate to the file's location.
   - Click the icon to select Data Field information for this operation.
   - Select the **Use Selection Criteria** check box to let the program search through existing Job Setups to find the file name that matches this Job Setup. Click **Open** to view the selected Setup.
2. Choose a Form Setup (if required) by clicking **Browse** and then navigating to the file's location or click the icon to select Data Field information for this operation. Click **Open** to view the selected Setup. Click **Clear** to clear the selection.
3. Choose a Data Setup by clicking **Browse** and then navigating to the file's location. The Data Setup list is available only if Use Selection Criteria is selected in the Card Setup section above. If Selection Criteria are not used, then the Data Setup is defined by the selected Card Setup. Click Open to view the selected Data Setup.
4. Choose a Production Options Setup by clicking **Browse** and then navigating to the file's location. Click **Open** to view the selected Setup.
5. (Optional) Choose an Audit Setup by clicking **Browse** and then navigating to the file's location. Click **Open** to view the selected Setup. Click **Clear** to clear the selection.
6. Click **Browse** next to the Backup Location text box. The Open dialog box is displayed. Browse to the location where you want to store data, and then click **Open**. Click **Clear** to clear the selection.

You must choose a backup location or the data will not be archived.

7. If required, select the **Use Read Lookup** check box to enable read lookup functionality. You must have a Magnetic Stripe Read or Smart Card operation in the Card Setup before Read Lookup can be configured. Read Lookup is used to verify pre-programmed smart card chips at runtime. A lookup field (i.e. account number, name, etc.) must exactly match an indexed data field for the personalization process to continue. The **Allow Duplicates** check box can be selected if this option is desired.

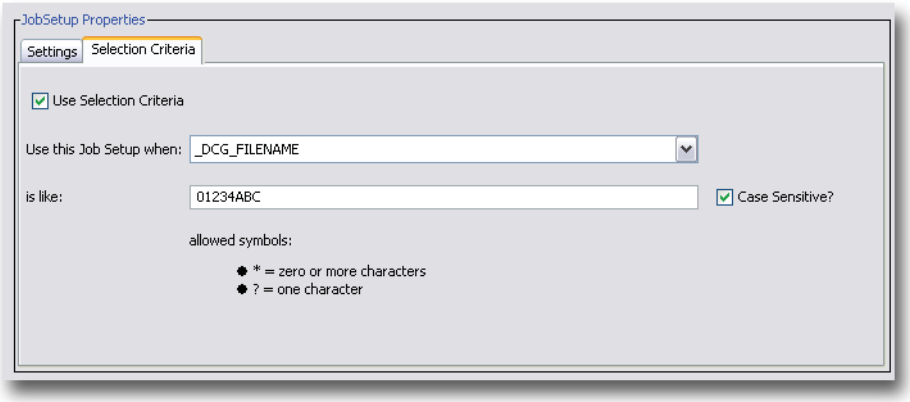
Read lookup is mutually exclusive with Card Setup selection criteria.

8. Select a Smart Card **Operation**, **Lookup Field**, and **Match Data Field** from their respective lists.

9. Click the **Save** icon on the toolbar to save the new Job Setup.

The Selection Criteria Tab

The Selection Criteria tab allows you to select whether selection criteria are used. The new Job Setup will be used when specific criteria are met.



To enable the system to automatically select a Job Setup based on selection criteria when the data loads, the criteria defined must be unique to the Job Setup. If the criteria are not unique, the system will not automatically select the Job Setup and the system will not successfully load the Job.

To use Selection Criteria perform the following steps.

1. Select the **Use Selection Criteria** check box.

2. Select a field from the **Use this Job Setup When** list.

3. Enter a user-defined value in the **is like** text box. If the value is case sensitive, select the **Case Sensitive** check box.

   For example, if you select the field '*_DCG_FILENAME*' and enter the value '*123ABC*' in the text box, when the system encounters the DCG file named '*123ABC*', then the Job Setup will be used.

   Note: You can use wildcard values when entering text. Use "*" to include multiple characters in the search, or use "?" to include one character (for example *_Name).

   Note: No Selection Criteria associated with the new Job Setup are saved when you use the **Save As** function.

4. Click the **Save** icon on the toolbar.

Chapter 5: Data Setup

5

This chapter provides information on creating and modifying Data Setups.

Creating a New Data Setup

Data Setups tell the system how to interpret the input data. Specifically, the Data Setup provides the order of the input data fields and the code or position that identifies the beginning and end of each data field. The system uses this information to parse the Data Setup into the format used for production.

There can be only one Data Setup open at a time. Make sure to save the new setup before opening another.

The Keyboard Entry utility allows job creation without an input data file. Sample data can be entered manually using the keyboard or by file reference in order to create a job. Manually created jobs may be reviewed prior to production. For more information, refer to page 211.

Perform the following steps to create a new Data Setup:

1. In the Data Setup window (**Applications | Setups | Data Setup**), click the **New** icon on the toolbar.
2. Complete the fields under the **General** tab to define the input file. (For detailed information, refer to "Defining Data Input Files" on page 66.)

   The elements on the General tab define for the system what the input data stream consists of and how it behaves. This determines how the system will interpret the input data stream it receives.
3. Complete the fields under the **Data Fields** tab to add data fields. (For detailed information, refer to "Adding Fields" on page 67.)

   The Data Fields tab defines the format of the individual data fields. This information determines how the system will process individual fields within the input data stream.

When adding fields, remember that by default the fields in the Data Setup are set up in the same order of occurrence as in the actual input file, unless you clear the **Fields in Order** check box under the **Data Fields** tab.

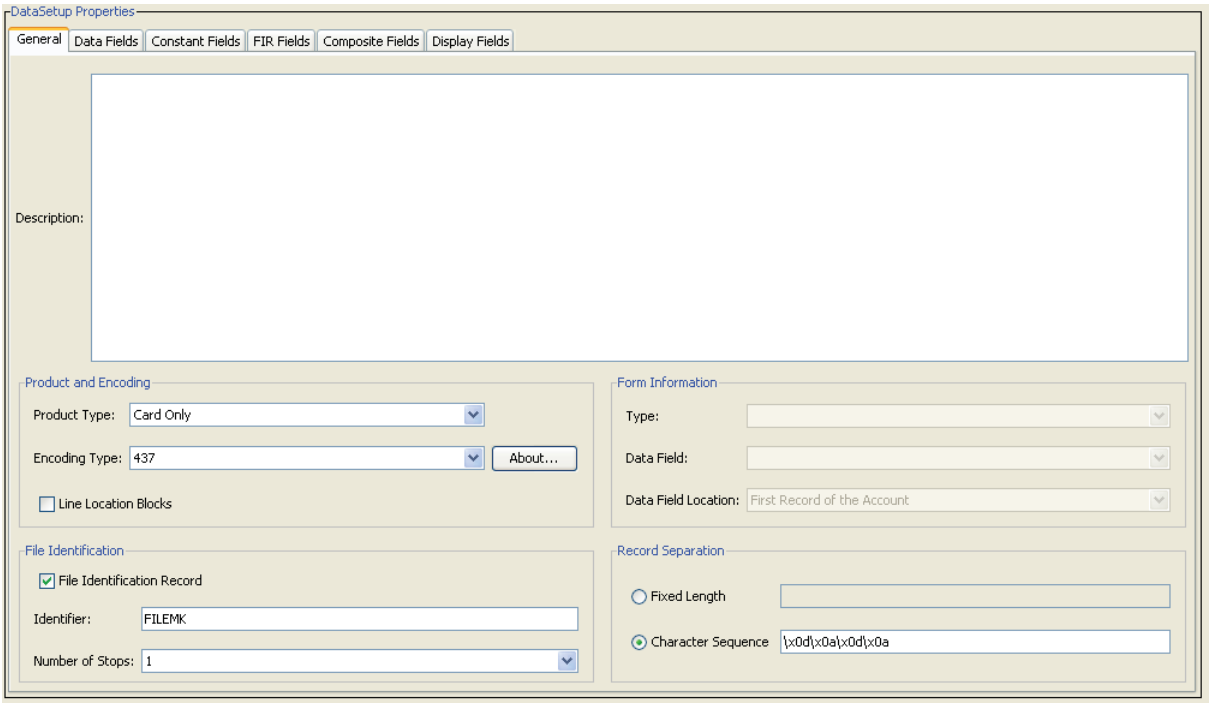
4. Click the **Save** icon on the toolbar to name and save the new Data Setup.

Defining Data Input Files

The system must be told how to interpret the input data it receives. The elements on the General tab of the Data Setup component define the input data and its behavior.

To define the input data for a Data Setup, complete the following steps:

1. In the Data Setup window (**Applications | Setups | Data Setup**), create or open a Data Setup and then under the **General** tab, type a description of the data stream in the Description box (for example, "ABC Company Data").



2. Under Product and Encoding, select your product type from the **Product Type** list and then your data encoding type from the **Encoding Type** list.

   - Select **Card Only** if data contains only card data. Select **Card and Form** if data contains card and form data.
   - Click **About** for information on selecting the encoding type.

   If there are line location blocks in the data stream, select the **Line Location Blocks** check box.

3. If you selected the Card and Form product type in step 2, define the form information.

   Before adding form information, you must first create a data field specifically for forms.

   Type - The number of cards that the form will contain is contained in the Data Field information as created on the Data Fields tab (see below). The fields can be one of the following types:

   - Cards Per Form Field
   - Basic Forms Data Field

   Data Field - Based on the type selected, the available data fields will populate the list.

   Data Field Location - Select the form data field location (first or last record of the account) from the list to specify the location of the form data field within the data stream.

4. If the data stream uses FIRs, select the **File Identification Record** check box. FIRs identify the start of a new logical file in the data stream and provide job processing information to the system operator. If you use FIRs, a data stream with two logical files (jobs) would look like this:

   FIR Bank A Job *FIR* Bank B Job *Stop FIRs*

   A. Enter the FIR identifier into the Identifier text box.

   B. Select the number of Stop FIRs used from the list. This number must correspond to the actual number of stop FIRs in the data.

5. Choose the Record Separation method.

   - Fixed Length - The number of bytes per record
   - Character Sequence - The actual unique characters that separate each record, such as \x0D\x0A

6. Click the **Save** icon in the toolbar.

Adding Fields

A data field definition can be one of these types:

- **Data fields** - Fields that tell the system how to process individual fields within the input file
- **Constant fields** - Static data fields

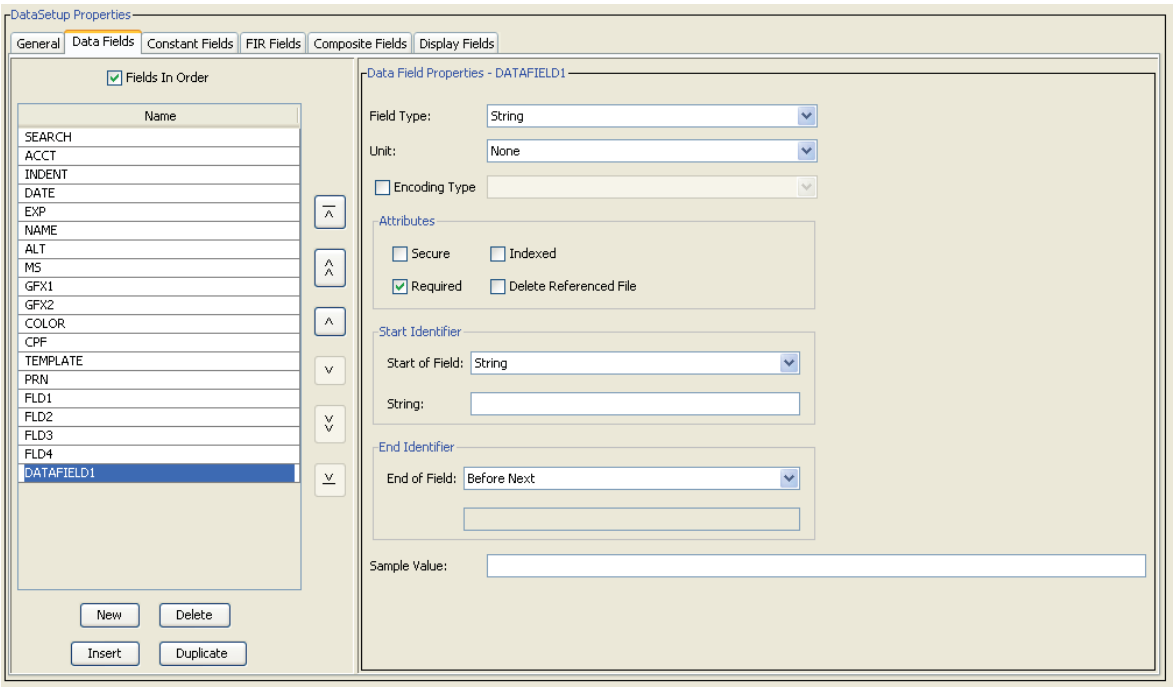
- **FIR fields** - File Identification Records (FIR) identify the start of a new logical file in the data stream and provide job processing information to the system operator.
- **Composite fields** - Fields that are comprised of two or more existing fields or that combine parts of existing fields to make a new field.

When adding fields to the Data Setup, remember that by default the fields are set up in their order of occurrence in the actual input file unless you clear the **Fields in Order** check box under the **Data Fields** tab.

Adding Data Fields

To add a Data field, complete the following steps.

1. Create a new Data Setup or double-click an existing Data Setup to open it, and then select the **Data Fields** tab.



2. Click **New** in the Data Field area. The new field is added to the field list as DATAFIELD1, etc.

- To insert a new field, select an existing field from the list and then click **Insert**. The new field will be added above the one you selected.
- To duplicate a field, select a field from the list and then click **Duplicate**. The field will be duplicated and will appear below the original field in the list.

3. Double-click on the new field name and then change the name if needed. Do not use spaces in the field name.
4. Specify a Field Type.
    - String - Data presented as alphanumeric characters (trailing space characters will be truncated, trailing null characters will remain)
    - Binary - Data formatted in binary (trailing space characters will be preserved)
    - **DCC Image** - Data formatted in Datacard color image format (also called DPCF)
    - **UGL Data** - This is data formatted in UltraGrafix Language (UGL) format
    - **BasicForm** - Data formatted for BasicForm Inserter
    - **File Reference** - Data retrieved from a referenced file
5. From the **Unit** list, select the data's unit of measurement. The system will optimize its performance based on the input unit.
6. Select and specify an Encoding Type in the Field Detail area, if needed.
7. If necessary, select one or more of the following Attribute options:
    - *Secure* indicates this field will be excluded from the Data Browser view of the data.
    - *Indexed* indicates this field will be indexed (this attribute option is required for read lookup production)
    - *Required* indicates this field must exist in each record for data to load correctly.
    - *Delete Referenced File* indicates that if, within the string type field, data is being pulled from a file, that file will be deleted upon completion of the job to save disk space.
8. Specify the Start Identifier parameters:
    - *String* indicates exact text denoting information that belongs in this field. From the **Start of Field** list, select **String**. In the String text box, type the exact text that indicates the start of data for this field.
    - *After Previous* indicates that the information for this field comes immediately after the information included in the previous field if the list is complete. From the **Start of Field** list, select **After Previous**.
    - *Record Position* indicates this field will use data from a specific and set location within the data stream. From the **Start of Field** list, select **Record**

Position. In the Record Position text box, type a number indicating the exact position of the start of the data for this field.

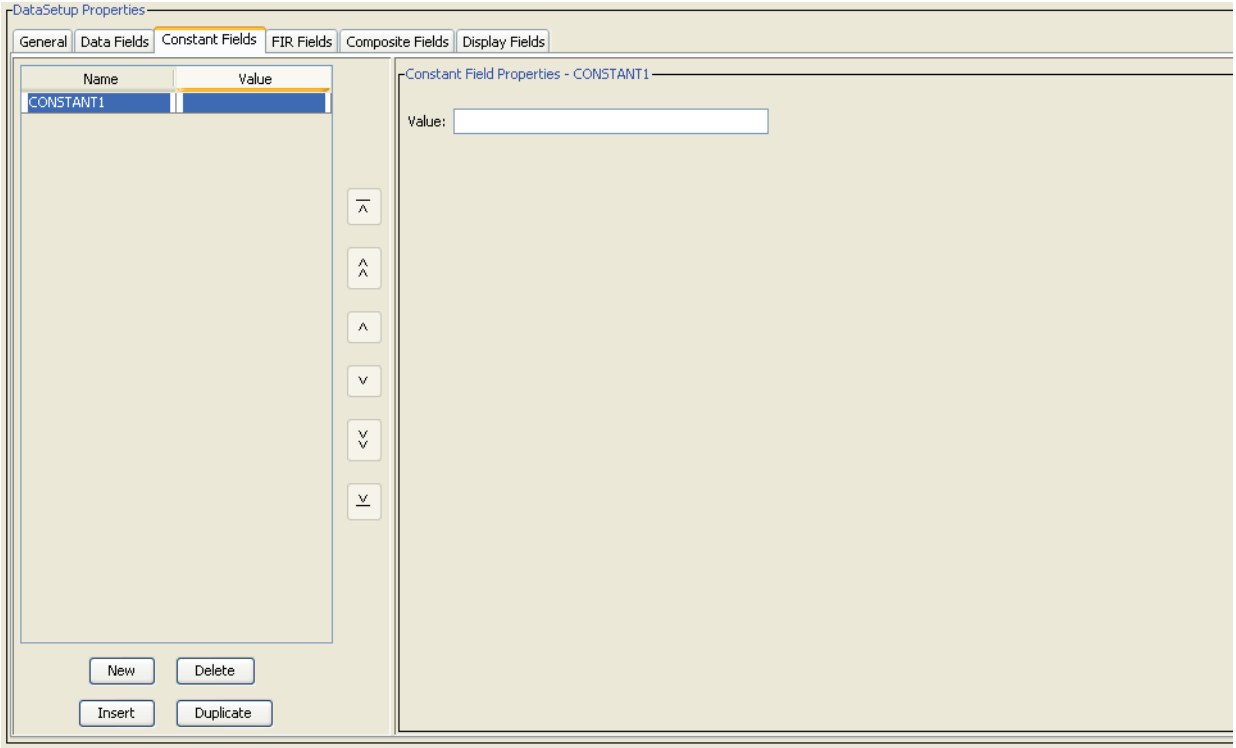
9. Specify the End Identifier parameters, including:
    - Before Next
    - String - indicates exact text denoting the end of information that belongs in this field. Type the exact text that indicates the end of data for this field.
    - Fixed Length
    - Embedded Length
    - UGL Data
10. *(Optional)* Enter a value in the **Sample Value** text box to display on the sample page. This is done to preview the data and ensure proper placement/ appearance.
11. Click the **Save** icon in the toolbar to save the new stream field.

Adding Constant Fields

Use the following procedure to add a constant field of static data.

Constant fields used to specify X/Y positions or size values will be interpreted by the program as being in thousandths of an inch.

1. Create a new, or double-click an existing Data Setup to open it, and then select the **Constant Fields** tab.



2. Click **New**. The new field is added to the field list as CONSTANT1, etc.

- To insert a new field, select an existing field from the list and then click **Insert**. The new field will be added above the one you selected.
- To duplicate a field, select a field from the list and then click **Duplicate**. The field will be duplicated and will appear below the original field in the list.

3. Double-click on the new field name and then change the name if needed. Do not use spaces in the field name.
4. Enter a **Field Value** in the text box.

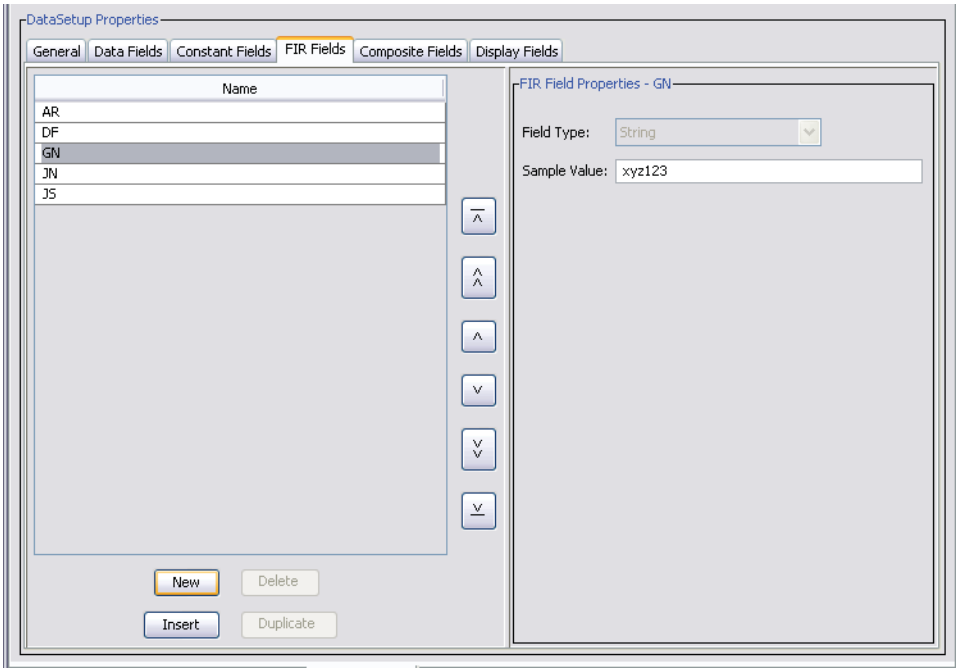
Adding FIR Fields

Use the following procedure to add FIR fields to the Data Setup.

FIR fields used to specify X/Y positions or size values will be interpreted by the program as being in thousandths of an inch.

On Maxsys/MX Series Systems, a File Identification Record (FIR) cannot exceed 1 megabyte (1MB).

1. Create a new, or double-click an existing Data Setup to open it and then select the **FIR Fields** tab.



2. Click **New**. The new field is added to the field list as FIR1, etc.

- To insert a new field, select an existing field from the list and then click **Insert**. The new field will be added above the one you selected.
- To duplicate a field, select a field from the list and then click **Duplicate**. The field will be duplicated and will appear below the original field in the list.

3. Double-click on the new field name and then change the name if needed. Do not use spaces in the field name.
4. Enter a **Sample Value** in the text box.

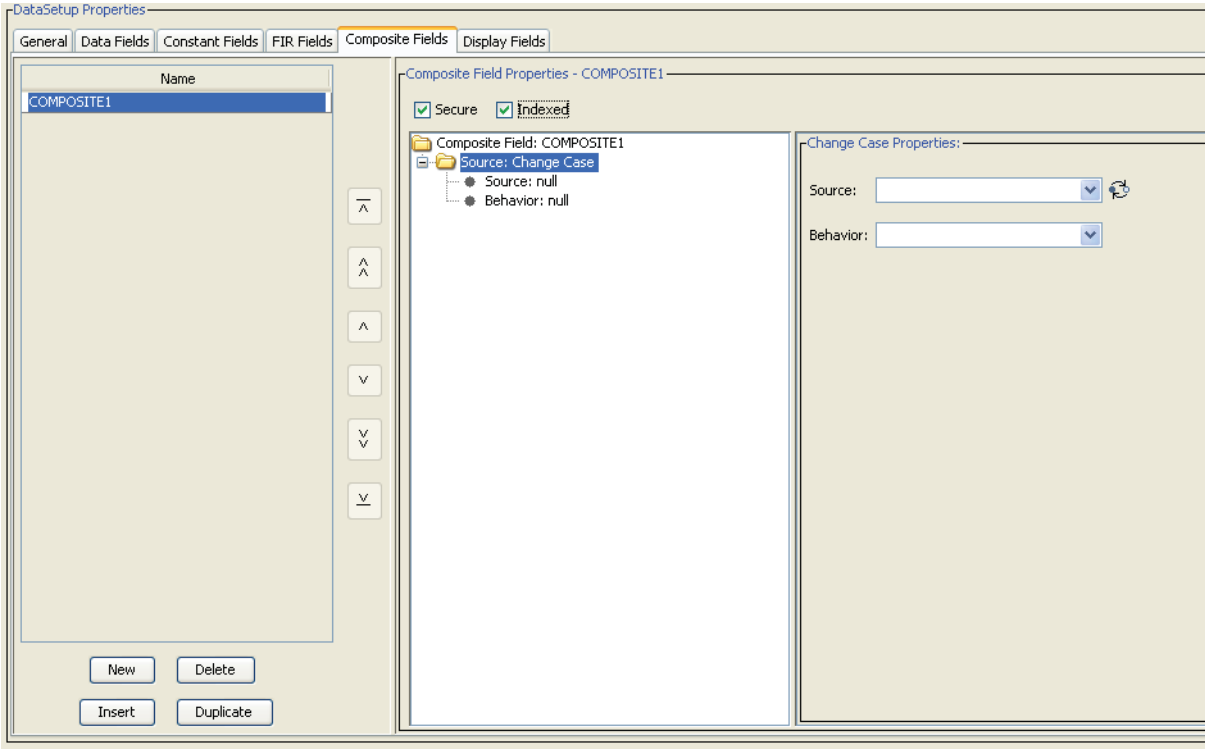
Adding Composite Fields

Composite fields modify the data contained in a record's data fields and operate on simple data fields or other composite fields to create new fields.

Constant fields used to specify X/Y positions or size values will be interpreted by the program as being in thousandths of an inch.

Use the following steps to add a composite field.

1. Create a new Data Setup, or double-click an existing Data Setup to open it, and then select the **Data Fields** tab.



2. Click **New**. The new field is added to the field list as COMPOSITE1, etc.

To insert a new field, select an existing field from the list and then click **Insert**. The new field will be added above the one you selected. To duplicate a field, select a field from the list and then click **Duplicate**. The field will be duplicated and will appear below the original field in the list.

3. Double-click on the new field name and then change the name if needed.

The field name cannot begin with a number or contain spaces.

4. Select **Secure** to have the field be visible only to those with the View Secure Data privilege.

   - Select **Indexed** to index the field for faster searching and to enable searching from the Production details view (this attribute option is required for read lookup production).

5. Select a **Composite Field Result Property** from the list and then specify the parameters for the newly-created field as described in the table below.

Field Type	Description
Change Case	Changes the alphabetic case of a field.
	Example: ThisIsATest is changed to THISISATEST.
	To do this select a source field and then for behavior, select either **to upper** or **to lower** (for upper or lowercase).
Change Field Type	Used to change the field type of a data field or composite field function. Used primarily to convert a String type field to a File Reference type field.
	Example: Two string data fields, **DIRECTORY** and **FILENAME** are concatenated, resulting in a composite field of field type string, which is then converted using Change Field Type composite to a File Reference that will specify an image location.
Concatenate	Appends a field with either a string of data or another field.
	To do this select the **Strings** to Concatenate to Source Field.
Default for Missing Field	Creates a new composite field whose value is that of a source data field (if present) or a default value if the source data field is missing. This allows a field to be defined which will always have a value, regardless of whether or not the original data field exists in the product record.
Extract BasicForm	Extracts BasicForm field (CPF or any of the other 99 lines) from the CARDSPERFORM Data Field.
	To do this select a source field and then for output, select either **cards per form** or **basic form line** (with number selection).
Extract Magstripe Track	Extracts magnetic stripe track field for type of track used.
	To do this select a source field and then a **Track Type**.
First Index Before	Returns a numeric count of the number of characters from the first specified characters to the beginning of the field.
	Example: THI**S**ISATESTCARD 1, with a value of S returns a value of 3.
	To do this select a source field and then either **Character** or **Field**.
First Index Of	Returns a numeric value of the position of the first character specified.
	Example: THI**S**ISATESTCARD 1, with a value of S returns a value of 4.
	To do this select a source field and then either **Character** or **Field**.

Field Type	Description
First Index After	Returns a numeric value of the character following the first occurrence of a specified character (from the beginning of the field).
	Example: THIS**I**SATESTCARD 1, with a value of S returns a value of 5.
	To do this select a source field and then either **Character** or **Field**.
Last Index Before	Returns a numeric value of a count of the number of characters from the last specified character to the beginning of the field.
	Example: THISISATE**S**TCARD 1, with a value of S returns a value of 9.
	To do this select a source field and then either **Character** or **Field**.
Last Index Of	Returns a numeric value of the position of the last character specified.
	Example: THISISATE**S**TCARD 1, with a value of S returns a value of 10.
	To do this select a source field and then either **Character** or **Field**.
Last Index After	Returns a numeric value of the next occurrence of a specified character from the beginning of the field.
	Example: THISISATES**T**CARD 1, with a value of S returns a value of 11.
	To do this select a source field and then either **Character** or **Field**.
Length Of	Returns the length of a particular field.
	Example: THISISATESTCARD 1 returns a value of 17.
	To do this select a source field.
Math	Create values which may be used in other functions, such as Substring start and end indices. Two data sources and an operation (either addition or subtraction) are selected. Each data source must supply data of type 'String', the data will be converted into an integer. The two resulting integers will be added or subtracted according to the selected operation. The output of the function is an integer value.
	To do this select a source field (**Data Field** or **Function**), an operation (**+** / **-**), and an operand.

Field Type	Description
Pad	Pads the field with a specified character to a specified length.
	Example: With a specified character 'S' and a specified length of 20 characters, THISISATESTCARD 1 (which contains 17 characters) becomes THISISATESTCARD 1**SSS** to bring the field length to 20 characters.
	To do this select a source field, select either **Character** or **Field**, and then select either **Integer** or **Field** for field length.
Post Net	Converts a five-digit zip code to a Postnet Barcode
	Example: 55343 becomes "**!**55343**x!"**
	To do this select a source field.
Remove Characters	Removes characters from a field. The removed characters can be defined or can be another field.
	To do this select a source field, select the characters to remove from either **String** or **Field**, and then for behavior select the characters you want removed (**leading**, **trailing**, **both**, or **all**).
Replace Characters	Replaces character(s) in a field with other specified character(s).
	Example: THISISATESTCARD **1**, with old characters as 1 and new characters as 2, returns a value of THISISATESTCARD **2.**
	To do this select a source field, select the old characters that you want to replace (oldChars), and then select the new characters that you want to use (newChars).
Substring	Used to further define a field by position (index).
	Example: THISISATESTCARD 1, with a start index of 5 and an end index of 11 returns a value of ISATEST.
	To do this select a source field, select either **Index Value** or **Index Field** for the Start Index, and then select either **Index Value** or **Index Field** for the End Index.

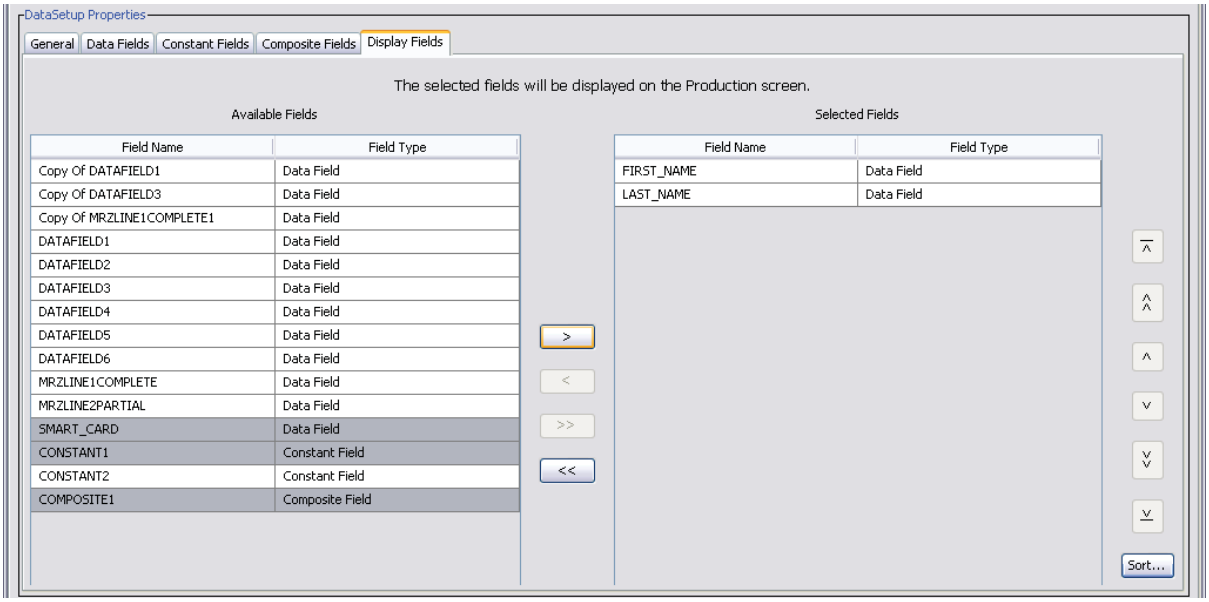
6. Click the **Save** icon in the toolbar to save the Data Setup.

Adding Display Fields

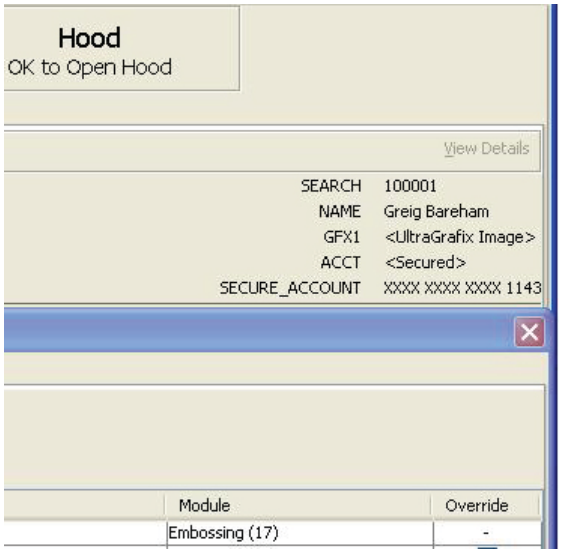
Display fields are up to five data fields (data fields, constant fields, or composite fields) that display on the Production interface during a production run. This enables the operator to see which record is being processed. Secure data fields are not displayed.

Perform the following procedure to define and order Display fields.

1. Create a new Data Setup or open an existing Data Setup and then select the **Display Fields** tab.
2. Select five fields from the list of available fields and then click the arrow button (**>**).



3. Click the arrow buttons in the Selected Fields list to change the order of the fields as they will appear on the production screen. Alternately, you can click **Sort** to sort the fields in ascending or descending order.
4. Click **Save**. During production, the selected fields will display in the production interface.



Changing the Order of Data Fields

It may be necessary to change the order of data fields if the fields in the Data Setup were set up in the wrong order.

By default, the fields in the Data Setup are set up in their order of occurrence in the actual input file, unless you cleared the **Fields in Order** check box in the **Data Fields** tab.

Complete the following steps to change the order of fields within the Data Field list.

1. Select the **Data Fields** tab.
2. Clear the **Fields in Order** check box.
3. Select a data field from the Data Field list.
4. Use the up and down arrows to move the selected data stream field up or down the list. Repeat this process until all data stream fields are in the correct order.

   The double arrow button moves the field in increments of ten.

5. Click the **Save** icon in the toolbar to save the changes.

Deleting Data Setups

Complete the following steps to delete data setups.

1. In the left pane of the Data Setup window, highlight the Data Setup you want to remove.
2. Click the **Delete** icon in the toolbar. A message box opens for confirming the deletion.
3. Click **Yes.** The Data Setup is removed from the system.

Chapter 6: Card Setup

This chapter provides information on creating and modifying Card Setups.

A Card Setup defines an individual card that has certain properties and contains certain element sets (label, image, overlay, etc.). Each Card Setup can be used to create multiple card products that each contain the defined properties and elements. This application allows you to perform the following tasks.

- Add elements (embossing, graphics, smart card encoding, etc.) to cards
- Configure elements
- Add fields already defined in one or more Data Setups
- Preview the card using the Print Preview command
- Define selection criteria to enable automatic selection of a Card Setup when the data loads
- Set up crosschecks
- Save an existing Card Setup as a new Card Setup

Opening Existing Card Setups

To open an existing Card Setup, complete the following steps:

1. In the Card Setup window (**Applications | Setups | Card Setup**), click the **Open** icon on the toolbar.
2. Select a Card Setup from the list.
3. Click **Open**.

There can be only one Card Setup open at a time.

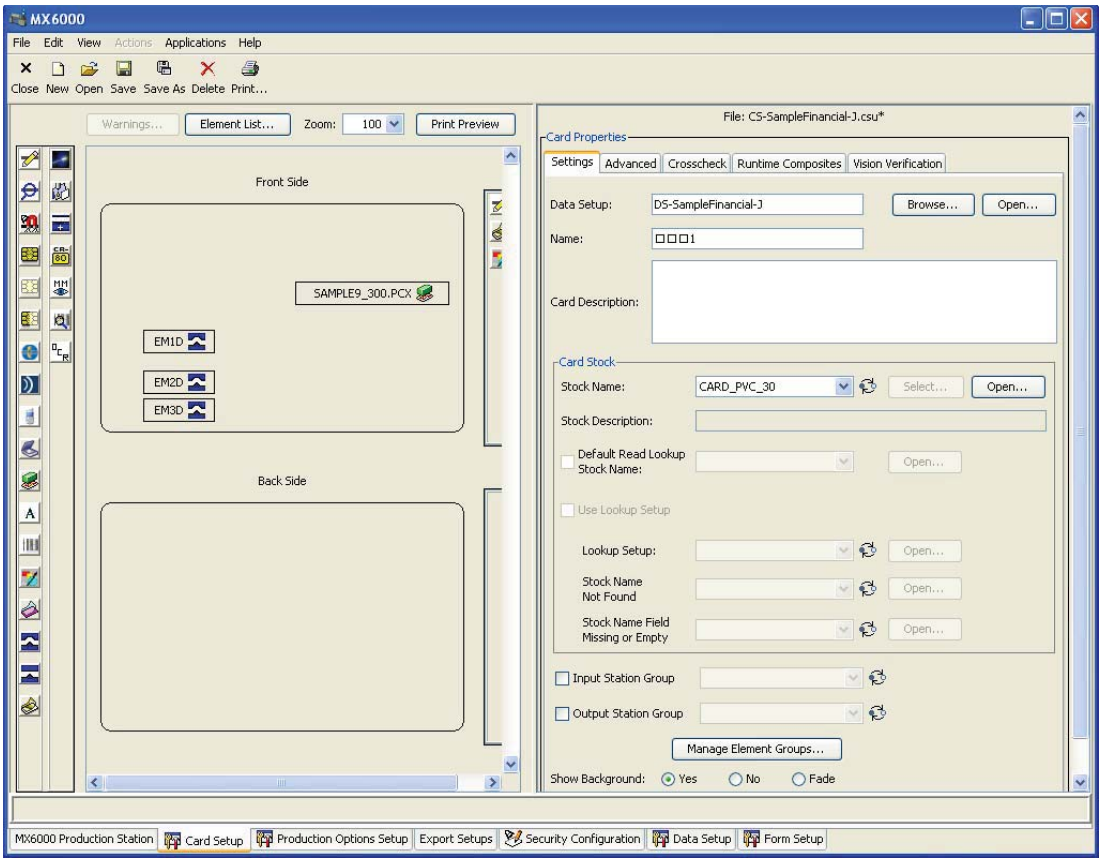
Creating a New Card Setup

If you are creating a Card Setup that is similar to an existing Card Setup, it is often faster and easier to save the existing Card Setup as a new setup and modify it to suit your needs. Refer to "Creating a New Card Setup from an Existing Card Setup" on page 82.

There can be only one Card Setup open at a time. Make sure that you save the new setup before opening another.

To create a new Card Setup, complete the following steps:

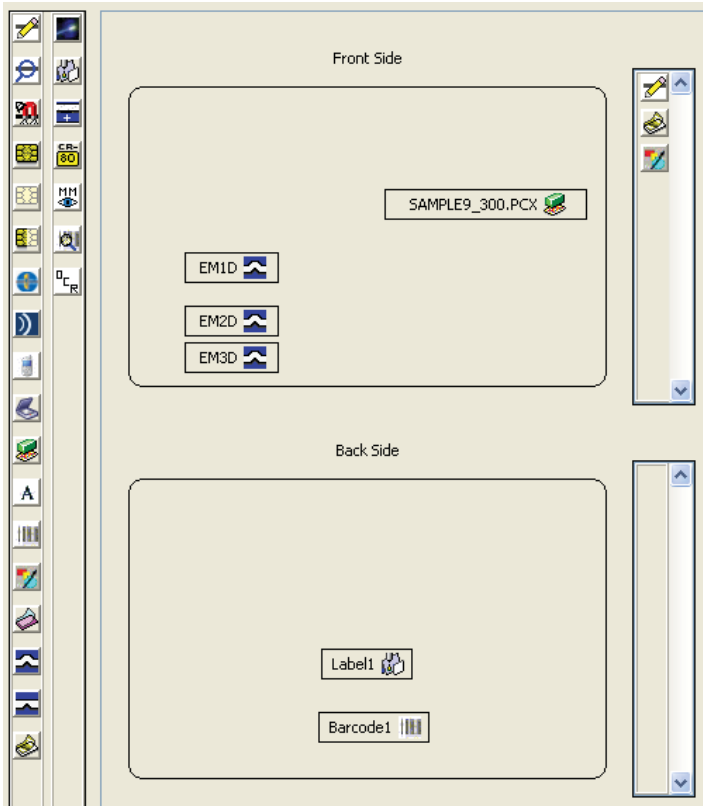
1. Select **Applications | Setups | Card Setup.**
2. In the Card Setup window, click **New** on the toolbar. A new Card Setup form opens that depicts a blank card setup with a virtual card on the left side and a Properties view on the right.



3. Add elements to the Front (top view) or Back (bottom view) of the virtual card. Drag an element from the element list (the columns of icons on the left side of the window) to the card. Some elements can be placed directly on the card, while others will go to the docking column on the right side of the card.

Those elements that are placed directly on the virtual card can be moved to the approximate location of the finished product; since this is not a true WYSIWYG interface, do not rely on the placement for card design. Rather, the element properties' Settings tab contains fields where the X and Y coordinates can be defined.

Your hardware configuration may not match all available elements. Ensure that the modules on your system match the elements that you will be using in the Card Setup.

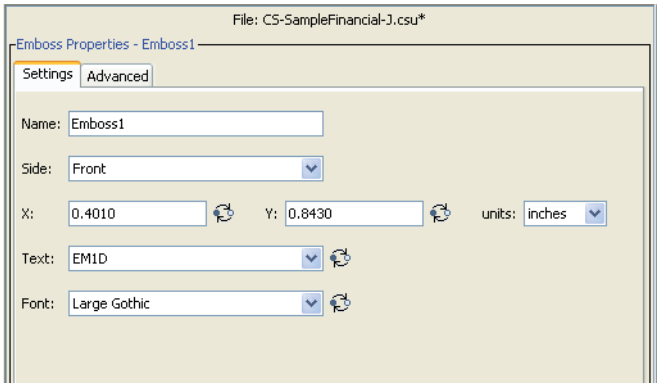


4. Define the Card Properties as required. (For more information, refer to "Defining Card Properties" on page 83.)

5. Set the properties for each element (if required).

   - Click the element icon on the virtual card, or click **Element List** and then select an element. The Properties view for that element appears on the right side of the window.

- Define the properties as required, based on the element type. (For more information, refer to "Defining Element Properties" on page 91.)
- Select the **Advanced** tab for access to advanced features.



6. Click the **Save** icon on the toolbar when finished to save the Card Setup.

If the setup you created does not conform to basic design requirements, a warning message appears and you are not allowed to save the setup. Click the **Warning** button to display a window that lists the warnings or errors that may prevent cards from being produced successfully.

Creating a New Card Setup from an Existing Card Setup

If you are creating a new Card Setup that is similar to an existing Card Setup, it is often faster and easier to save the existing Card Setup with a new name and then modify it to suit your needs.

To save an existing Card Setup as a new Card Setup, complete the following steps:

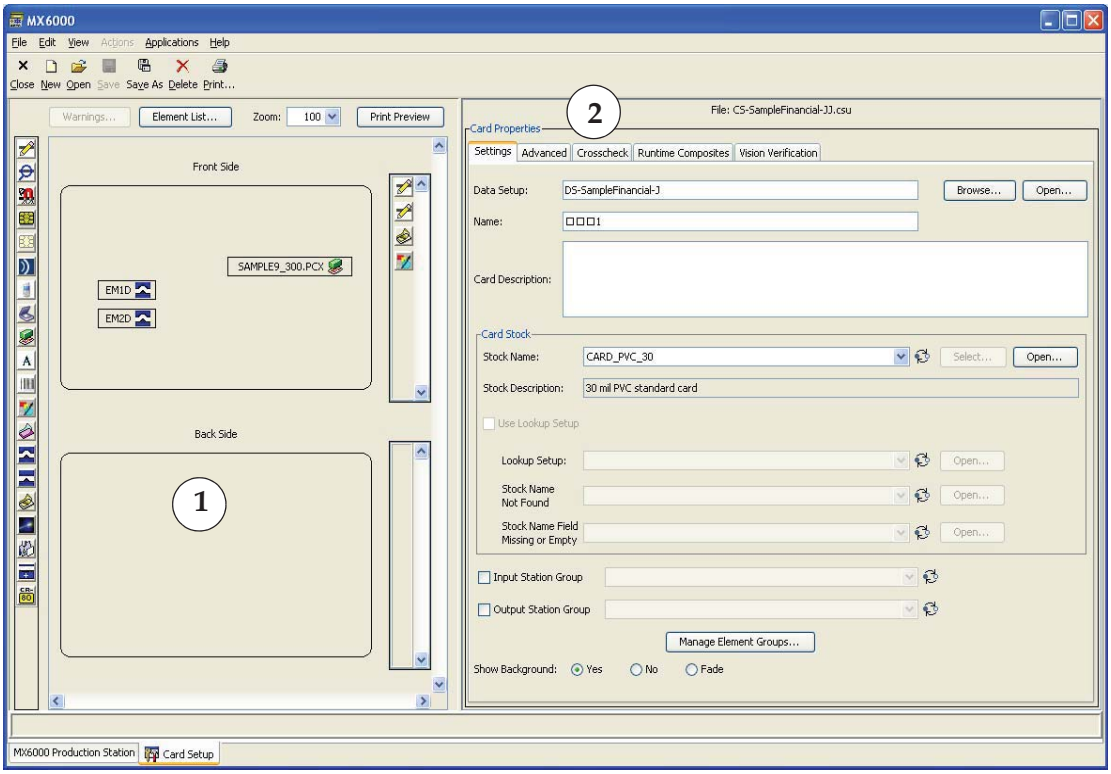
1. From the Card Setup window (**Applications | Setups | Card Setup**), open the Card Setup to copy.
2. Click the **Save As** icon on the toolbar.
3. Enter a new file name in the **File Name** field and modify properties as needed.
4. Click **Save** to save the Card Setup with the new name.

No Selection Criteria (associated with a Card Setup) is saved when you use the Save As function.

Defining Card Properties

The Card Properties view allows you to define the properties for the cards that will be used in a particular Card Setup.

To display the Card Properties view (2), click any unoccupied space on the virtual card (1).

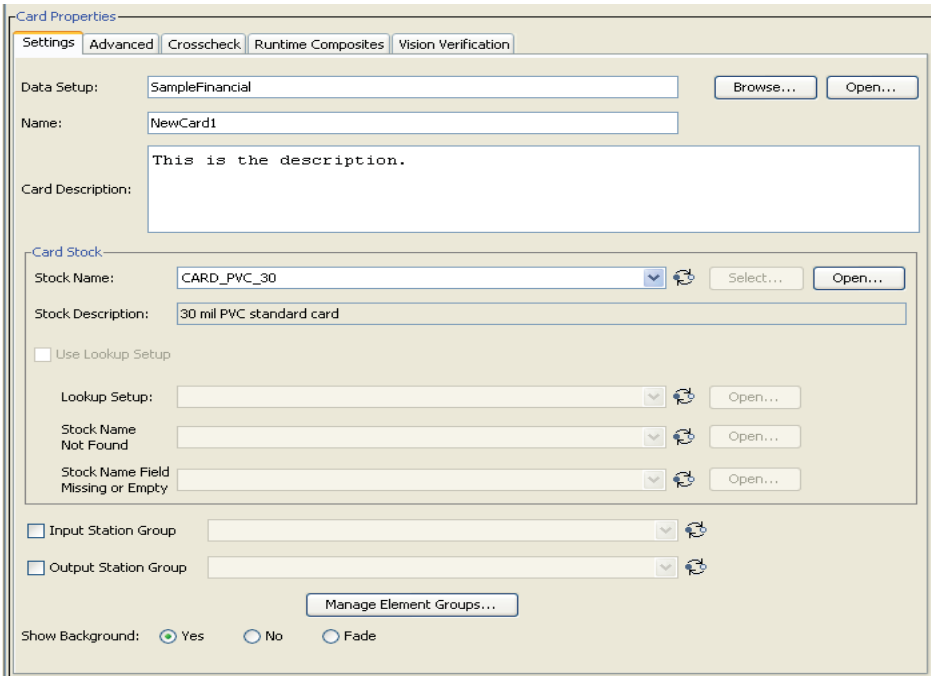


To define card properties, fill in the information under the following tabs:

The Settings Tab

The Settings tab allows you to define basic card settings.

1. Select a predefined Data Setup from the **Data Setup** list. The program allows you to assign data fields to Card Setups that have already been defined in one or more Data Setups.



2. Enter a unique name for the card in the **Name** text box.
3. *(Optional)* Enter a **Card Description** for the card.
4. From the Card Stock grouping select a **Stock Name** to use. Click the icon to the right of the list and then select one of the following:
   - **Value** - to select a pre-defined Stock Name from the list. Depending on the Stock Name selected, the **Stock Description** field may be populated with the description defined when the Stock Name was created.
   - **Data Field** - to select a data field from which to pull the Stock Name or to activate the Lookup Setup feature
5. Click **Use Lookup Setup** feature to look up the card stock information using the Stock Name provided in the data stream. To enable this feature the Data Field must be selected for the Stock Name above.
6. If required, select the **Input Station Group** from which the card will be picked and/or the **Output Station Group** where the card will be placed by selecting the appropriate check box. For each tray type, click the icons to the right of the lists and then select one of the following:
   - **Value** - to select a tray from the list
   - **Data Field** - to select a data field from which to pull the Tray ID

Station groups are defined in the Production Options Setup (refer to page 148).

7. Click **Manage Element Groups** to add or delete Element Groups. Element Groups allow you to split graphic/text/Barcode element operations between multiple devices. This is done to improve throughput.

   A. In the Manage Element Groups dialog, click **Add**, and then enter the new group name in the text box. Click **OK**. The new group appears in the list under the Default Group.

   B. To remove an Element Group, select the group and then click **Remove**.

8. Select a background image option.

   - Select **Yes/No** to show or hide the background image in the card preview.
   - Select **Fade** to show a faded background image in the card preview.

The Advanced Tab

Selection Criteria - When Card Setup selection criteria are defined, the system automatically selects the appropriate Card Setup for the job.

To enable the system to automatically select a Card Setup when the data loads based on selection criteria, the criteria defined must be unique to the Card Setup. If the criteria are not unique, the system does not automatically select a Card Setup and the **Attention Needed** check box in the Data Browser is selected.

1. Select the **Use Selection Criteria** check box.
2. Click **Selection Criteria**.

   A. Select a field from the **Use this Card Setup when** list.

3. Enter a user-defined value based on your requirements in the **is like** text box. If your selection criteria is case sensitive, select the **Case Sensitive** check box.

For example, if you defined a field PS_Name in your Data Setup, you could define selection criteria that choose your Card Setup based on this value.

You can use wildcard characters when entering text. Use "*" to include multiple characters in the search, or use "?" to include one character (for example *_Name).

No Selection Criteria associated with a Card Setup are saved with the new Card Setup when you use the **Save As** function.

Retransfer Front/Back Output Profiles

Color profiles allow the system to correct for differences in output devices.

To load pre-defined profiles:

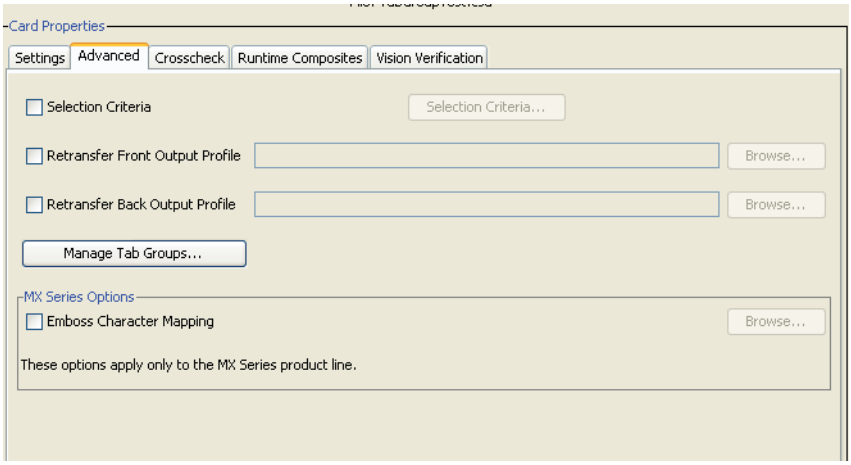
1. Select **Retransfer Front/Back Output Profile**.
2. Click **Browse**.
3. Navigate to the location of the Datacard-supplied Color Profile file.
4. Click **Choose**.

Manage Tab Groups

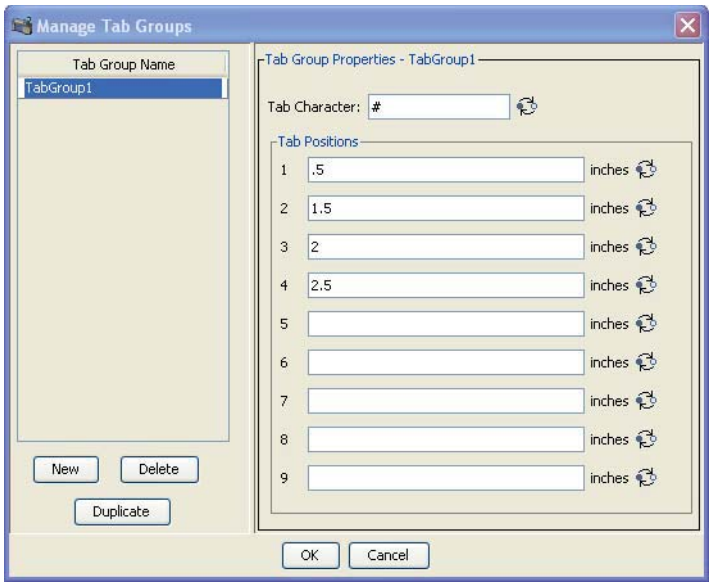
Click Manage Tab Groups to set up a group of tabs and the tab character to use on the card. The group is selected as a property of the text element in the card setup.

Each tab group can define up to nine tab stop positions and also the tab character (any ASCII character) to use. To set up a Tab Group:

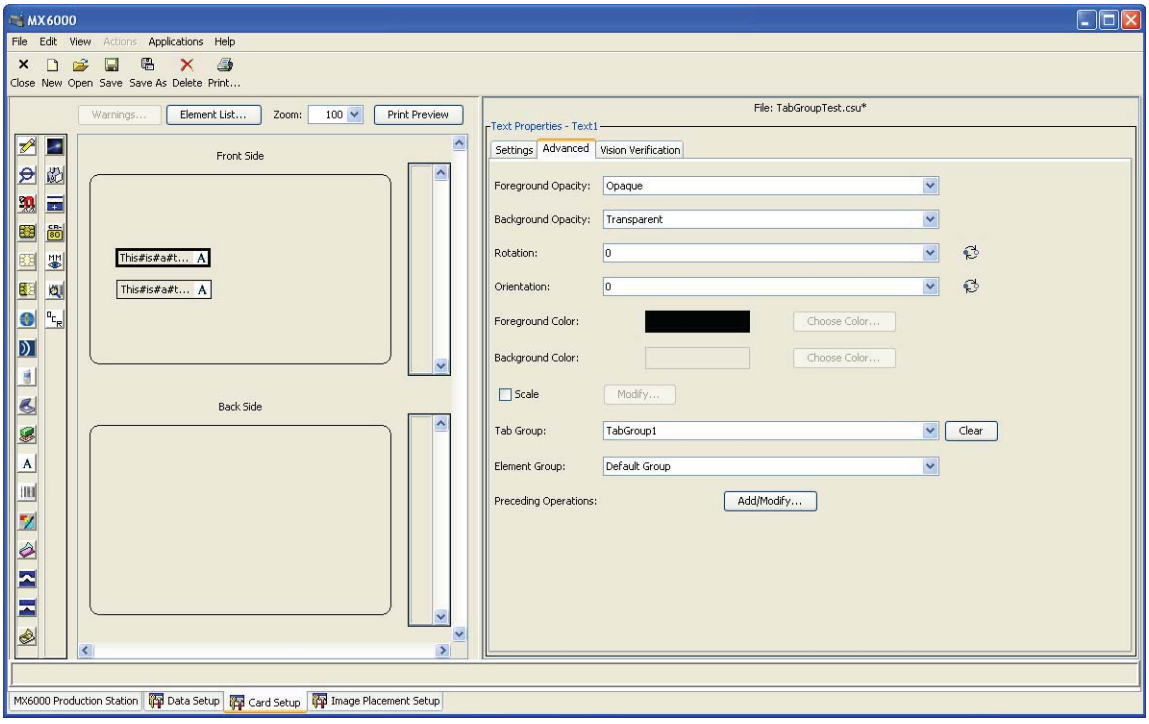
1. Click Manage Tab Groups on the advanced tab of the card properties.



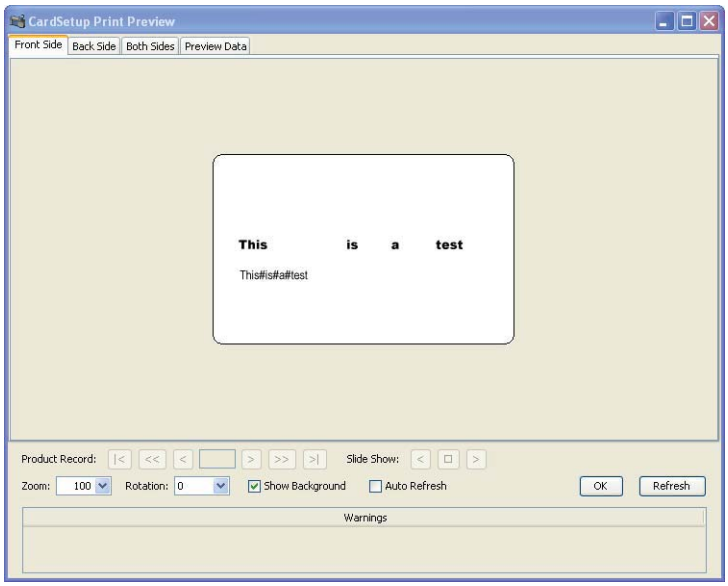
2. Click New, then enter up to 9 tab positions using either value in inches or click the icon to designate a data field. Tab positions are measured from the card's lower left corner. If a tab position is not valid then it will not be used. You may add as many Tab Groups as needed.



3. In the text element properties on the Advance Tab select the desired tab grouping.



4. In this example, two text element with the same data are placed on the card. The top text element is using Tabgroup1 and the other doesn't have a Tab Group assigned.



Emboss Character Mapping

To load pre-defined profiles:

1. Select **Emboss Character Mapping**.
2. Click **Browse**.
3. Navigate to the location of the Emboss Character Mapping Profile file. Click **Choose**.

The Crosscheck Tab

Crosschecks are used to verify that multiple card elements are referring to the same product. A crosscheck operation will verify that the personalization data of a source operation is contained within the personalization data of a target operation.

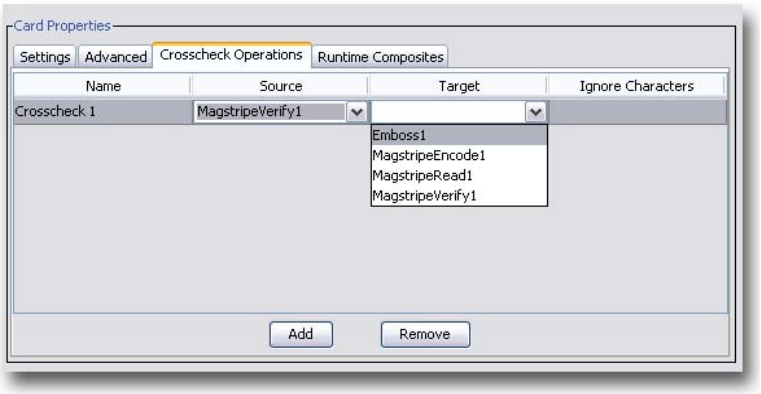
Since two operations may contain different amounts of data, it is not always true that the data in two operations will be the same; however, it may be true that the shorter piece of data is part of the longer piece of data. For example, an Emboss operation may contain only a name, while a Magnetic Stripe element may contain a name, an address, an account number, and an expiration date. In such a case,

you should verify that the emboss data (the source operation) is contained in the magnetic stripe data (the target operation).

Crosschecks can be used only with Emboss, Indent, and Magnetic Stripe Read/Encode/Verify elements.

Operations Tab

1. Under the Crosscheck | Operations tab, click **Add**. A new (blank) operation is added to the list with a generic name (e.g., operation1, operation2).
2. Select the operation in the **Name** text box and type in a unique name for the crosscheck.
3. Select the Source and Target fields from the lists (only elements that exist in the Card Setup will be available). For example, you could select Magstripe Verify as the *Source* and Emboss as the *Target*.



The **Source** and **Target** fields must be different.

4. Enter any characters you want the crosscheck to disregard in the **Ignore Characters** text box. For example, if the source field is an account number that contains spaces in the string, you would enter a space in this field.

A possible complication is that the source operation may contain characters not included in the target operation. Using the previous example, the Emboss operation may have spaces between first, middle, and last names, while the data in the Magnetic Stripe operation is encoded without spaces. Using the Ignore Characters text box, you can specify which characters to ignore in the source operation.

5. To remove a crosscheck, select one from the list, and then click **Remove**.

When a job is run using this Card Setup, the program ensures that the string of data in the Source field also exists in the Target field. If the data cannot be found, a problem exists. The system administrator should be consulted to determine the

type of problem. If there is a machine Controller software problem, it should be investigated by Datacard customer support.

If an internal crosscheck error occurs (error code 10370), contact Datacard customer service to receive a code that will prevent the error message from recurring.

Data Tab

From this tab you can define two fields whose data will be compared.

1. Under the Crosscheck | Data tab, click **Add**. A new (blank) operation is added to the list with a generic name.
2. Select the operation in the **Name** text box and then type in a unique name for the crosscheck.
3. Type in or select the fields you wish to use. Fields can be a literal value, a data field, or a feedback field.

Runtime Composites Tab

The Runtime Composites tab allows you to define composite data fields that execute at runtime.

1. Click **New**. The New Runtime Composite dialog opens.
2. Enter the name of the new composite and then click **OK**. The Composite Field Properties dialog opens. For more information, refer to "Adding Constant Fields" on page 70.
3. The new runtime composite will appear in the list. **Edit** and **Delete** fields as needed.

Vision Verification Tab

This tab allows you to define parameters related to Vision Verification.

1. Select **True** or **False** in the Verify Card Stock list to enable the Controller to verify pattern matches from a Card Stock Setup. Alternately, you can click the icon to the right of the list and then select **Data Field**. Doing so will pull the verification enablement information from the selected Data Field.
2. For color processing, enter the minimum and maximum RGB intensity values for both the front and rear. This allows for the adjustment of color intensity to enable easier reading of patterns or characters by the verification module. The ranges are only applied to quality assurance operations, not to card stock verification.

To override the default exposure value, select the **Override** check box and then enter a numeric value (in microseconds) into the text box. Alternately, you can click the icon to the right of the box and then select **Data Field**. Doing so will pull the variable exposure information from the selected Data Field.

You can use an image viewing/editing program to determine the RGB/ exposure values for the image(s) you will be using.

Defining Element Properties

Once elements have been placed on the virtual card in the Card Setup, you may set the parameters for each.

1. On an opened Card Setup, click the **Element** icon. The Properties page for that element appears on the right side of the window.
2. Define the properties as required (refer to the following subsections), based on the element type.
3. Click **Save** or **Save As** on the toolbar when finished.

Magnetic Stripe Encode Element

Use the following information to define properties of a Magnetic Stripe Encode Element.

Settings Tab Properties	
Name	The name of the Magnetic Stripe Encode Element
Side	The side of the card (**Front** or **Back**) on which the operation is to occur
Track Type	The track type
Write Level Standard (Coercivity)	The coercivity standard (**Lo**, **Hi**, **JIS**) (Alternately, you can select the specific write current (in mA) from the list.) Click the icon to select Data Field information for this operation.
Track Data	Manually enter the track data into the text field or click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.

Advanced Tab Properties	
Leading Encode Fill Type	The type of fill (**Clock**, **Erase**) to be used before the data is written

Trailing Encode Fill Type	The type of fill (**Clock**, **Erase**) to be used after the data is written
Track Data Repeat Count	The number of times that the data string is to be repeated
Track Data Repeat Fill Type	The type of fill (**Clock**, **Erase**) to be used between the repeated data strings (only editable if more than one repeat count is selected)
Track Data Repeat Separation	The distance between the repeated data strings (only editable if more than one repeat count is selected)
Preceding Operations	Click **Add/Modify** to open the dialog from which you can select the operation(s) to occur before this operation. Use the arrows to move the operations from one column to the other.

Magnetic Stripe Verify Element

Use the following information to define properties of a Magnetic Stripe Verify Element.

Settings Tab Properties	
Name	The name of the Magnetic Stripe Verify Element
Side	The side of the card (**Front** or **Back**) on which the operation is to occur
Track Type	The track type
Write Level Standard (Coercivity)	The coercivity standard (**Lo**, **Hi**, **JIS**) (Alternately, you can select the specific write current (in mA) from the list.) Click the icon to select Data Field information for this operation.
Track Data	Manually enter the track data into the text field or click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.

Advanced Tab Properties	
Leading Encode Fill Type	The type of fill (**Clock**, **Erase**) to be used before the data is written
Trailing Encode Fill Type	The type of fill (**Clock**, **Erase**) to be used after the data is written
Track Data Repeat Count	The number of times that the data string is to be repeated

Track Data Repeat Fill Type	The type of fill (**Clock**, **Erase**) to be used between the repeated data strings (only editable if more than one repeat count is selected)
Track Data Repeat Separation	The distance between the repeated data strings (only editable if more than one repeat count is selected)
Preceding Operations	Click **Add/Modify** to open the dialog from which you can select the operation(s) to occur before this operation. Use the arrows to move the operations from one column to the other.

Magnetic Stripe Read Element

Use the following information to define the properties of a Magnetic Stripe Read Element.

Settings Tab Properties	
Name	The name of the Magnetic Stripe Read Element
Side	The side of the card (**Front** or **Back**) on which the operation is to occur
Track Type	The track type

Advanced Tab Properties	
Leading Encode Fill Type	The type of fill (**Clock**, **Erase**) to be used before the data is written
Trailing Encode Fill Type	The type of fill (**Clock**, **Erase**) to be used after the data is written
Track Data Repeat Count	The number of times that the data string is to be repeated
Track Data Repeat Fill Type	The type of fill (**Clock**, **Erase**) to be used between the repeated data strings (only editable if more than one repeat count is selected)
Track Data Repeat Separation	The distance between the repeated data strings (only editable if more than one repeat count is selected)
Preceding Operations	Click **Add/Modify** to open the dialog from which you can select the operation(s) to occur before this operation. Use the arrows to move the operations from one column to the other.

Contact Smart Card Element

Use the following information to define the properties of a Contact Smart Card Element.

Settings Tab Properties	
Name	The name of the Contact Smart Card Element
Side	The side of the card (**Front** or **Back**) on which the operation is to occur
Format Identifier	Four-byte value that identifies the structure of the data
Personalization Data	Manually enter the data into the text field or click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.
Application	Select a Smart Card application to use for this operation.
Use Custom Module Capability	Allows you to split smart card module gang operations, which ensures that some operations go to a particular gang. The module capabilities are set in the module's VPD. At runtime, the program will attempt to assign the operation to only those modules with the capability. This feature must be set in Production Options Setup.

Advanced Tab Properties	
Feedback Fields Tab	
Source Feedback Fields	Pre-defined response fields declared by the Smart Card application. Feedback fields with "$" prefixes appear for hosted Smart Card Applications. The"$" indicates a built-in system variable.
Type	Field type.
Used	Select the check box to use.
Destination Feedback Fields	The fields into which the value generated by the source fields are copied
Crypto Devices Tab	
Source Crypto Devices	Logical names of the crypto devices declared by the Smart Card application
Used	Select the check box to use.

Local Master Key Alias	LMK name (alias) of the crypto resource to be used
Key Cards Tab	
Logical Key Reader	Logical names of the key readers declared by the Smart Card application
Used	Select the check box to use.
Key Card Group Names	Name of the Key Card Group resource to be used
Initialization Data Tab	
Initialization Data	Data that initializes the application. Select the **Required** check box if necessary and then enter the value in the text box, or click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.
Preceding Elements Tab	
Preceding Operations	Click **Add/Modify** to open the dialog from which you can select the operation(s) to occur before this operation. Use the arrows to move the operations from one column to the other.

Contactless Smart Card Element

Use the following information to define the properties of a Contactless Smart Card Element.

Settings Tab Properties	
Name	The name of the Contactless Smart Card Element
Side	The side of the card (**Front** or **Back**) on which the operation is to occur
Format Identifier	Four-byte value that identifies the structure of the data
Personalization Data	Manually enter the data into the text field or click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.

Application	Select a Smart Card application to use for this operation.
Use Custom Module Capability	Allows you to split contactless module gang operations, which ensures that some operations go to a particular gang. The module capabilities are set in the module's VPD. At runtime, the program will attempt to assign the operation to only those modules with the capability. This feature must be set in Production Options Setup.

Advanced Tab Properties	
Feedback Fields Tab	
Source Feedback Fields	Pre-defined response fields declared by the Smart Card application. Feedback fields with "$" prefixes appear for hosted Smart Card Applications. The "$" indicates a built-in system variable.
Type	Field type.
Used	Select the check box to use.
Destination Feedback Fields	The fields into which the value generated by the source fields are copied
Crypto Devices Tab	
Source Crypto Devices	Logical names of the crypto devices declared by the Smart Card application
Used	Select the check box to use.
Local Master Key Alias	LMK name (alias) of the crypto resource to be used
Key Cards Tab	
Logical Key Reader	Logical names of the key readers declared by the Smart Card application
Used	Select the check box to use.
Key Card Group Names	Name of the Key Card Group resource to be used
Initialization Data Tab	

Initialization Data	Data that initializes the application. Select the **Required** check box if necessary and then enter the value in the text box or click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.
Preceding Elements Tab	
Preceding Operations	Click **Add/Modify** to open the dialog from which you can select the operation(s) to occur before this operation. Use the arrows to move the operations from one column to the other.

Combi Smart Card Element

Use the following information to define the properties of a Combi Smart Card Element.

Settings Tab Properties	
Name	The name of the Combi Smart Card Element
Side	The side of the card (**Front** or **Back**) on which the operation is to occur
Format Identifier	Four-byte value that identifies the structure of the data
Personalization Data	Manually enter the data into the text field or click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.
Application	Select a Smart Card application to use for this operation.
Use Custom Module Capability	Allows you to split smart card module gang operations, which ensures that some operations go to a particular gang. The module capabilities are set in the module's VPD. At runtime, the program will attempt to assign the operation to only those modules with the capability. This feature must be set in Production Options Setup.

Advanced Tab Properties	
Feedback Fields Tab	
Source Feedback Fields	Pre-defined response fields declared by the Smart Card application. Feedback fields with "$" prefixes appear for hosted Smart Card Applications. The"$" indicates a built-in system variable.
Type	Field type.

Used	Select the check box to use.
Destination Feedback Fields	The fields into which the value generated by the source fields are copied
Crypto Devices Tab	
Source Crypto Devices	Logical names of the crypto devices declared by the Smart Card application
Used	Select the check box to use.
Local Master Key Alias	LMK name (alias) of the crypto resource to be used
Key Cards Tab	
Logical Key Reader	Logical names of the key readers declared by the Smart Card application
Used	Select the check box to use.
Key Card Group Names	Name of the Key Card Group resource to be used
Initialization Data Tab	
Initialization Data	Data that initializes the application. Select the **Required** check box if necessary and then enter the value in the text box, or click the icon to select Data Field, Feedback Field, or Runtime composite information for this operation.
Preceding Elements Tab	
Preceding Operations	Click **Add/Modify** to open the dialog from which you can select the operation(s) to occur before this operation. Use the arrows to move the operations from one column to the other.

RFID Write Element

Use the following information to define the properties of an RFID Write Element as used with a card scanner.

Settings Tab Properties	
Name	The name of the Magnetic Stripe Read Element
Side	The side of the card (**Front** or **Back**) on which the operation is to occur
RFID Data	Click the icon to select the source of the RFID data. The data can be a value, Data Field, Feedback Field, or Runtime Composite information.

Advanced Tab Properties	
Preceding Operations	Click **Add/Modify** to open the dialog from which you can select the operation(s) to occur before this operation. Use the arrows to move the operations from one column to the other.

RFID Read Element

Use the following information to define the properties of an RFID Read Element as used with a card scanner.

Settings Tab Properties	
Name	The name of the Magnetic Stripe Read Element
Side	The side of the card (**Front** or **Back**) on which the operation is to occur

Advanced Tab Properties	
Preceding Operations	Click **Add/Modify** to open the dialog from which you can select the operation(s) to occur before this operation. Use the arrows to move the operations from one column to the other.

Scanner Element

Use the following information to define the properties of a Scanner Element.

Settings Tab Properties	
Name	The name of the Element
Side	The side of the card (**Front** or **Back**) on which the operation is to occur
Scanner Verification Data	Allows you to define a field that the scanner will use to verify that the correct data has been written to the card. Click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.
Cognex Camera	

Advanced Tab Properties	
Preceding Operations	Click **Add/Modify** to open the dialog from which you can select the operation(s) to occur before this operation. Use the arrows to move the operations from one column to the other.

Custom Application Tab Properties	
Custom Application	Reserved for future use.

Image Element

Use the following information to define the properties of an Image Element.

Settings Tab Properties	
Name	The name of the Image Element
Side	The side of the card (**Front** or **Back**) on which the operation is to occur
X/Y	The horizontal and vertical coordinates (measured from the bottom-left corner of the card) at which the operation is to occur. Click the icon to use Data Field information for the X and Y coordinates or click the icon to select Data Field, or Image Position (for when the position will come from color A and B header data) information for this operation.
Image File	The graphic image file to be used in the operation. Click **Browse** to navigate to the file's location. Click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.
Print Technology	The technology type (**Monochrome Mass Transfer**, **Color D2T2**, **Retransfer**)
Graphics Ribbon/ Ribbon Set (Retransfer)	The ribbon stock to be used in the operation. This selection should correspond to the selected Print Technology When Monochrome Mass Transfer is used, then select a graphics ribbon from the list or click the icon to select Data Field, Feedback Field, or Runtime composite information for this operation. When Color D2T2 is used, then select the D2T2 color ribbon from the list. When Retransfer Print Technology is selected, this property changes to Ribbon set and the Print Process and **Settings** button will be enabled.
Print Process/ Settings	The process used in the printing operation for Retransfer print technology. The **Settings** button is also enabled. The Setting for CMYK process is **Use Color Table and/or preserve CMYK**. The Settings for CMYK Spot Color are: **600/1200 DPI**, **Y Offset**, and **Gray Scale Enabled**.
Z-Order	Sets the front to back order of elements on the Z axis. Zero (0) represents the farthest "back" an image can be. For example if you want image B to overlap image A, image A's Z-Order value would be 0 and image B's value would be 1.

Advanced Tab Properties	
Foreground Opacity	Use the slider to set the opacity value
Background Opacity	Select **Opaque** or **Transparent**
Rotation	The value (in degrees) that the Image Element should rotate counterclockwise. Click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.
Orientation	The value (in degrees) that the face of the image element appears on a vertical axis.
Negative	If set to True the output of the image will be a reverse image. The default is False.
Foreground/ Background Color	Click **Choose Color** to open the color chooser application that allows you to define the color(s).
Image Border	Sets the parameters for an image boarder. Click **Modify** then optionally select **Round, Square**, or **DCC Image Header**.
Hue/Saturation, Brightness	The values to fine-tune the appearance of color elements in the image. Click **Modify** then select the color to modify. Enter values for Hue, Saturation or Brightness. Range is -100 to 100 and default is 0.
Blur/Sharpening, Contrast	The values to fine-tune the appearance of the image. These values are based on personal preference and initial image quality. The values range from -100% to 100% and the default is 0.
White Threshold	This feature provides the ability to set a threshold where all near-white values within an image will be converted to pure white. The value ranges from 0 to 255 and the default is 255.
Dithering	Select a dithering method or none. The options are None, Ordered, Floyd_Steinberg, Jarvis, and Stucki. The default is None.
Whitespace Clipping	Select to allow the clipping of any whitespace around the image if the image is to exceed the edges of the card.

Scale	Select the check box, and then click **Modify** to scale the image. You can manually insert Height and Width values based on the physical size or percentage of the size of the image. Click the Proportional by Width/Height check boxes to have the image adjust proportionally based on the Height or Width value you enter. Click one of the shortcut buttons to fill in the percentage values for the width and height based on the dpi conversion. Click the icon to select Data Field information for this operation.
Element Group	Element Groups allow you to split graphic/text/Barcode element operations between multiple devices. This is done to improve throughput.
Preceding Operations	Click **Add/Modify** to open the dialog from which you can select the operation(s) to occur before this operation. Use the arrows to move the operations from one column to the other.

Vision Verification Tab Properties	
Use Printing Offset	Select the Card Stock Setup to use the printing offset defined there. This will ensure that images are centered within the area as defined in the pattern match.
Quality Check	Enter the Pass Threshold value for the Card Stock Setup used for the Printing Offset above. Choose the Element Filter value from the list or click the icon to use Data Field information. **Intensity** (default) the color image is converted to a grayscale image and vision verification is done with that image. When **Red/Green/Blue** are selected, the camera will filter for the selected color channel from the RGB color space and covert the filtered image to grayscale for use in vision verification.

Text Element

Use the following information to define the properties of a Text Element.

Settings Tab Properties	
Name	The name of the Text Element

Side	The side of the card (**Front** or **Back**) on which the operation is to occur
X/Y	The horizontal and vertical coordinates (measured from the bottom-left corner of the card) at which the operation is to occur. Click the icon to use Data Field information for the X and Y coordinates.
Text Data	The text data to be used in the operation. Enter the value in the text box or click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation
Font	The font to be used. Click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation. Datacard recommends TrueType fonts for Graphics printing, loaded through Windows via the Control Panel. Type 1 fonts (PFB and PFM) can also be used, but they must be copied into the C:\MX6000\lib\jre\lib\fonts directory. MX does NOT support Windows Bit Mapped Fonts (e.g. FON files). or OpenType Fonts.
Font Style	The style (**Regular**, **Bold**, **Italic**, **Bold Italic**) of the selected font. Click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.
Font Size	The font size (in points). Click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.
Justification	Changes the value of the text baseline as defined by the X/Y coordinates (**Bottom Left**, **Bottom Center**, **Bottom Right**). Note that the virtual card does not reflect the change. Click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.
Outline/Underline	Select the check box(es) to outline or underline the text.
Print Technology	The technology type (**Monochrome Mass Transfer**, **Color D2T2, Retransfer**)
Graphics Ribbon/ Ribbon Set (Retransfer)	The ribbon stock to be used in the operation. Enter the value in the text box or click the icon to use Data Field, Feedback Field, or Runtime composite information to select the ribbon stock. When the Retransfer Print Technology is selected, this property changes to Ribbon set.

Print Process	The process used in the printing operation. This selection should correspond to the selected Ribbon Set. When Retransfer Print Technology is selected, along with a ribbon set and print process, the **Settings** button will be enabled. The settings for Spot color print process are: dots-per-inch (600/1200), Y offset, and grayscale enabled. The setting for CMY and CMYK setting is Use Color Table.
Z-Order	Sets the front to back order of elements on the Z axis. Zero (0) represents the farthest "back" an image can be. For example if you want image B to overlap image A, image A's Z-Order value would be 0 and image B's value would be 1.

Advanced Tab Properties	
Foreground Opacity	**Opaque** or **Transparent.**
Background Opacity	**Opaque** or **Transparent.**
Rotation	The value (in degrees) that the Text Element should rotate counterclockwise. Click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.
Foreground/ Background Color	Click **Choose Color** to open the color picker with which you can select the foreground/background color(s).
Scale	Select the check box, and then click **Modify** to scale the image. You can manually insert Height and Width values based on the physical size or percentage of the size of the text. Click the Proportional by Width/Height check boxes to have the image adjust proportionally based on the Height or Width value you enter. Click the icon to select Data Field information for this operation.
Tab Group	Tab Groups allow you to define and manage tab groups. Each tab group can define up to nine tab stop positions and also the tab character (any ASCII character) to use. Tab positions are measured from the card's lower left corner. If a tab position is not valid they will not be used. For more information, refer to "Manage Tab Groups" on page 86.

Element Group	Element Groups allow you to split graphic/text/Barcode element operations between multiple devices. This is done to improve throughput.
Preceding Operations	Click **Add/Modify** to open the dialog from which you can select the operation(s) to occur before this operation. Use the arrows to move the operations from one column to the other.

Vision Verification Tab Properties	
Use Printing Offset	Select the Card Stock Setup to use the printing offset defined therein. This will ensure that images are centered within the area as defined in the pattern match.
Quality Check	Enter the Pass Threshold value for the Card Stock Setup used for the Printing Offset above. Choose the Element Filter value from the list or click the icon to use Data Field information. **Intensity** (default) the color image is converted to a grayscale image and vision verification is done with that image. When **Red/Green/Blue** are selected, the camera will filter for the selected color channel from the RGB color space and covert the filtered image to grayscale for use in vision verification. Select the contrast type between the characters and the background on which they are printed. Select **Dark on Light** if there is dark text on a light background. Select **Light on Dark** if there is light text on a dark background.

Barcode Element

Use the following information to define the properties of a Barcode Element.

Settings Tab Properties	
Name	The name of the Barcode Element
Side	The side of the card (**Front** or **Back**) on which the operation is to occur
X/Y	The horizontal and vertical coordinates at which the operation is to occur. Click the icon to use Data Field information for the X and Y coordinates.

Z-Order	Sets the front to back order of elements on the Z axis. Zero (0) represents the farthest "back" an image can be. For example if you want Barcode Element B to overlap Barcode Element A, then Barcode Element A's Z-Order value would be 0 and Barcode Element B's value would be 1.
Justification	Changes the value of the Barcode's baseline as defined by the X/Y coordinates (**Bottom Left**, **Bottom Center**, **Bottom Right**). Note that the virtual card does not reflect the change. Click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.
Barcode Type	The Barcode type. Enter the Value, click the icon to use Data Field information or select from the Barcode Setups directory. Refer to "Barcode Setup" on page 157 for more information.
Barcode Data	The Barcode data to be used in the operation. Enter the value in the text box or click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation
Print Technology	The technology type (**Monochrome Mass Transfer**, **Retransfer**)
Graphics Ribbon/ Ribbon Set (Retransfer)	The ribbon stock to be used in the operation. Enter the value in the text box or click the icon to use Data Field, Feedback Field, or Runtime Composite information to select the ribbon stock. When the Retransfer Print Technology is selected, this property changes to Ribbon set.
Print Process	The process used in the printing operation. This selection should correspond to the selected Ribbon Set. When Retransfer Print Technology is selected, along with a ribbon set and print process, the **Settings** button will be enabled. The settings for Spot color print process are: dots-per-inch (600/1200), Y offset, and grayscale enabled. The setting for CMY and CMYK setting is Use Color Table.

Advanced Tab Properties	
Rotation	The value (in degrees) counterclockwise that the Barcode should rotate. Click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.
Orientation	The value (in degrees) counterclockwise that the Barcode is oriented. Enter the value in the text box or click the icon to use Data Field, Feedback Field, or Runtime Composite information for this operation.
Foreground/ Background Color	Click **Choose Color** to open the color picker with which you can select the foreground/background color(s).

Scale	Select the check box, and then click **Modify** to scale the image. You can manually insert Height and Width values based on the physical size or percentage of the size of the barcode. Click the Proportional by Width/Height check boxes to have the image adjust proportionally based on the Height or Width value you enter. Click the icon to select Data Field information for this operation.
Element Group	Element Groups allow you to split graphic/text/Barcode element operations between multiple devices. This is done to improve throughput.
Preceding Operations	Click **Add/Modify** to open the dialog from which you can select the operation(s) to occur before this operation. Use the arrows to move the operations from one column to the other.

Vision Verification Tab Properties	
Use Printing Offset	Select the Card Stock Setup to use the printing offset defined therein. This will ensure that images are centered within the area as defined in the pattern match.

Overrides Tab Properties	
Check Digit	(Optional) A check digit that the reader can use to verify that the Barcode is valid
Bar Height	The height of the Barcode
Narrow Bar Width	The width of the narrow bars (in pixels)
Narrow To Wide Ratio	The size ratio of the narrow bars to the wide bars (between 2:1 to 3:1)
Quiet Zone	Allows whitespace to be added around the Barcode (generally on busy backgrounds) to help prevent read errors.
Human Readable Text	Check box to override. Adds a line of numerical characters beneath the Barcode. Click **Fonts** to select the font style to use.

UltraGrafix Language Element

Use the following information to define the properties of an UltraGrafix Language Element.

Settings Tab Properties	
Name	The name of the UltraGraphix Language Element
Side	The side of the card (**Front** or **Back**) on which the operation is to occur
Print Technology	The technology type (Monochrome Mass Transfer, Color D2T2, Retransfer)
Graphics Ribbon/ Ribbon Set (Retransfer)	The ribbon stock to be used in the operation. Enter the value in the text box or click the icon to use Data Field, Feedback Field, or Runtime Composite information to select the ribbon stock. When the Retransfer Print Technology is selected, this property changes to Ribbon set.
Print Process	The process used in the printing operation. This selection should correspond to the selected Ribbon Set. When Retransfer Print Technology is selected, along with a ribbon set and print process, the **Settings** button will be enabled. The settings for Spot color print process are: dots-per-inch (600/1200), Y offset, and grayscale enabled. The setting for CMY and CMYK setting is Use Color Table.
UGL Data Field	UGL Data Field defined in the Data Setup
Add New Override	Allows you to override parameters in a UGL Data Field (**Image**, **Text**, **Barcode**). Select the appropriate option button and then click **Add**. An Overrides tab and a Vision Verification tab are activated and allow you to modify parameters of the selected UGL. To define the parameters in the Image, Text, and Barcode elements, refer to their respective sections in this chapter.

Advanced Tab Properties	
Foreground/ Background Color	Click **Choose Color** to open the color picker with which you can select the foreground/background color(s).

Element Group	Element Groups allow you to split graphic/text/Barcode element operations between multiple devices. This is done to improve throughput.
Preceding Operations	Click **Add/Modify** to open the dialog from which you can select the operation(s) to occur before this operation. Use the arrows to move the operations from one column to the other.

Topcoat/Laminate Element

Use the following information to define the properties of a Topcoat/Laminate Element.

Settings Tab Properties	
Name	The name of the Topcoat/Laminate Element
Side	The side of the card (**Front** or **Back**) on which the operation is to occur
Type	The type (**DuraGard**, **CardGard,** or **Topcoat**) to be used
Topcoat/Laminate Foil	The foil stock to be used in the operation. Click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation select the foil stock. Note that the options available change based on the Type selected.
Topcoat/Laminate Roller	The roller type that will be used in the operation.
X	An "X" position that supports DuraGard partial patches. This value determines the starting position where the partial patch should be applied. (The "Y" position is determined by the physical characteristics of the DuraGard foil being used.) This field is enabled only when a user selects DuraGard as the Type, and when the selected foil has a partial width. Click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.

Advanced Tab Properties	
Perform Operation String	These three fields are related inasmuch as the program performs the defined operation string using the selected Data Field on the selected module. For example: If there are four modules and each module has a different foil type, and the operation string calls for the use of foil type A (which is loaded on module 3), you should select the options accordingly. Operation parameters are defined in the Data Setup.
Perform Operation Data Field	
Perform Operation on Module	
Clear Perform Operations Fields	Click **Clear** to remove all information from the Perform Operations fields.
Preceding Operations	Click **Add/Modify** to open the dialog from which you can select the operation(s) to occur before this operation. Use the arrows to move the operations from one column to the other.

Emboss Element Properties

Use the following information to define the properties of an Emboss Element.

Emboss throughput is dependent upon module assignment per emboss element. Emboss module throughput is dependant on the number, location, font, and make-up of characters to be embossed. Multiple modules may be used in a system to increase system throughput by dividing lines up among modules. The slowest module will determine system throughput.

Settings Tab Properties	
Name	The name of the Emboss Element
Side	The side of the card (**Front** or **Back**) on which the operation is to occur
X	The horizontal coordinate at which the operation is to occur. Click the icon to use Data Field information for the X coordinate. • For Maxsys – From 0.135 inch (3.43 mm) to 3.200 inches (81.28 mm), measured from the left edge of card to the center line of the character • For MX Series – From 0.10 inch (2.54 mm) to 3.275 inches (83.19 mm), measured from the left edge of card to the center line of the character Click the icon to select Data Field information for this operation.

Y	The vertical coordinate at which the operation is to occur. Click the icon to use Data Field information for the Y coordinate. • For Maxsys – From 0.15 inch (3.81 mm) to 1.42 inches (36.09 mm), measured from the bottom edge of the card to the center line of the character • For MX Series – From 0.16 inch (4.064 mm) to 1.46 inches (37.08 mm) for 10 CPI characters, and from 0.20 (5.205 mm) to 1.46 inches (37.08 mm) for 7 CPI characters, measured from the bottom edge of the card to the center line of the character Click the icon to select Data Field information for this operation.
Units	Select **Inches** or **Centimeters**
Text	The text to be embossed on the card. Click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.
Font	Select the emboss font from the list of available fonts. Click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.

Advanced Tab Properties	
Character Spacing (CPI)	Spacing (in characters-per-inch) of the emboss characters. You can use the font's **Default Value** or you can **Override** the default value and select a custom value using the dialog.
Direction	**Forward** or **Reverse**, the direction on the card the embossing is to occur
Secondary Font	Japanese users print with two different fonts on the same line of Emboss or Indent. With Japanese characters, there is a distinct meaning between characters of different sizes and one field of emboss data can contain characters that need different sizes. Without defining a secondary font, either the default spacing from the primary font is used or the card setup spacing override is used for both fonts. Select the **Secondary Font** check box to enable this option and then select the font from the list of available system fonts. Click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.
Preceding Operations	Click **Add/Modify** to open the dialog from which you can select the operation(s) to occur before this operation. Use the arrows to move the operations from one column to the other.

Ganging Priority **(Maxsys Only)**	To improve throughput, indent/emboss operations can be ganged. Select the priority for the ganging operation from the list. Number *1* is given the highest priority, *None* is given the lowest priority.
Assign Relative Module (MX Series Only)	If there are multiple Embossing modules in a system, each operation defined in Card Setup can be assigned a "relative module number" to indicate which Embossing module will carry out the operation. This allows the modules to work together to increase card throughput. The MX Series software determines which Embossing module is capable of performing each operation and assigns the modules to operations that are not given relative numbers. If an operation is assigned via relative module number to a module that is not capable of performing the operation, the software will attempt to reassign the operation to some other module. If the reassignment succeeds, card processing is not interrupted and a warning message is posted in the event log. If the reassignment fails, the software issues an error.

Indent Element

Use the following information to define the properties of an Indent Element.

Indent throughput is dependent upon module assignment per indent element. Emboss module throughput is dependant on the number, location, font, and make-up of characters to be embossed/indented. Multiple modules may be used in a system to increase system throughput by dividing lines up among modules. The slowest module will determine system throughput.

Settings Tab Properties	
Name	The name of the Indent Element
Side	The side of the card (**Front** or **Back**) on which the operation is to occur

X	The horizontal coordinate at which the operation is to occur. Click the icon to use Data Field information for the X coordinate. • For Maxsys – From 0.135 inch (3.43 mm) to 3.200 inches (81.28 mm), measured from the left edge of card to the center line of the character • For MX Series – From 0.10 inch (2.54 mm) to 3.275 inches (83.19 mm), measured from the left edge of card to the center line of the character Click the icon to select Data Field information for this operation.
Y	The vertical coordinate at which the operation is to occur. Click the icon to use Data Field information for the Y coordinate. • For Maxsys – From 0.15 inch (3.81 mm) to 1.42 inches (36.09 mm), measured from the bottom edge of the card to the center line of the character • For MX Series – From 0.16 inch (4.064 mm) to 1.46 inches (37.08 mm) for 10 CPI characters, and from 0.20 (5.205 mm) to 1.46 inches (37.08 mm) for 7 CPI characters, measured from the bottom edge of the card to the center line of the character Click the icon to select Data Field information for this operation.
Units	**Inches** or **Centimeters**
Text	The text to be indented on the card. Click the icon to use Data Field information for the Text field. Click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.
Font	The indent font to be used. Click the icon to use Data Field information. Click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.
Indent Ribbon	The ribbon stock to be used in the operation. Click the icon for Data Field information to select the ribbon. Click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.

Advanced Tab Properties	
Character Spacing (CPI)	Spacing (in characters-per-inch) of the indent characters. You can use the font's default value or you can override the default value and select a custom value using the dialog.

Direction	**Forward** or **Reverse**, the direction on the card the indent printing is to occur
Secondary Font	Japanese users print with two different fonts on the same line of Emboss or Indent. With Japanese characters, there is a distinct meaning between characters of different sizes and one field of emboss data can contain characters that need different sizes. Without defining a secondary font, either the default spacing from the primary font is used or the card setup spacing override is used for both fonts. Select the **Secondary Font** check box to enable this option and then select the font from the list of available system fonts. Click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.
Preceding Operations	Click **Add/Modify** to open the dialog from which you can select the operation(s) to occur before this operation. Use the arrows to move the operations from one column to the other.
Ganging Priority **(Maxsys Only)**	To improve throughput, indent/emboss operations can be ganged. Select the priority for the ganging operation from the list. Number *1* is given the highest priority, *None* is given the lowest priority.
Assign Relative Module (MX Series Only)	If there are multiple Embossing modules in a system, each operation defined in Card Setup can be assigned a "relative module number" to indicate which Embossing module will carry out the operation. This allows the modules to work together to increase card throughput. The MX Series software determines which Embossing module is capable of performing each operation and assigns the modules to operations that are not given relative numbers. If an operation is assigned via relative module number to a module that is not capable of performing the operation, the software will attempt to reassign the operation to some other module. If the reassignment succeeds, card processing is not interrupted and a warning message is posted in the event log. If the reassignment fails, the software issues an error.

Topping Element

Use the following information to define the properties of a Topping Element.

Settings Tab Properties	
Name	The name of the Topping Element
Side	The side of the card (**Front** or **Back**) on which the topping is to occur
Topping Foil	The foil stock to be used in the operation. Click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.

Advanced Tab Properties	
Perform Operation String	These three fields are related inasmuch as the program performs the defined operation string using the selected Data Field on the selected module. For example: If there are four Topping modules, each module has a different color foil, and the operation string calls for the use of silver foil (which is loaded on module 3), you should select the options accordingly. Operation parameters are defined in the Data Setup.
Perform Operation Data Field	
Perform Operation on Module	
Clear Perform Operations Fields	Click **Clear** to remove all information from the Perform Operations fields.
Preceding Operations	Click **Add/Modify** to open the dialog from which you can select the operation(s) to occur before this operation. Use the arrows to move the operations from one column to the other.

Laser Engraving Element

Use the following information to define the properties of a Laser Engraving Element.

Settings Tab Properties	
Name	The name of the Laser Engraving Element
Side	The side of the card (**Front** or **Back**) on which the laser engraving is to occur
Template	Select a template from the list of available templates. Alternately, you can pull template data from a Data Field, Feedback Field, or Runtime Composite Field by clicking the icon to the right and then making a selection.
Show Sample Data	Select this check box if you would like sample data displayed on the virtual card. This is done to provide a visual reference of how the finished card will look.
Map Templates	Click this button to open the Laser Template Mappings dialog.

Advanced Tab Properties	
Preceding Operations	Click **Add/Modify** to open the dialog from which you can select the operation(s) to occur before this operation. Use the arrows to move the operations from one column to the other.

Label Element

Use the following information to define the properties of a Label Element.

Settings Tab Properties	
Name	The name of the Label Element
Side	The side of the card (**Front** or **Back**) on which the operation is to occur
X/Y	The horizontal and vertical coordinates at which the operation is to occur. Click the icon to use Data Field information.
Coordinate Type	Choose **Top Left to Top Left** or **Bottom Left to Bottom Left**
Label Stock	The label stock to be used in the operation. Click the icon to select Data Field, Feedback Field, or Runtime Composite information for this operation.

Advanced Tab Properties	
Perform Operation String	These three fields are related inasmuch as the program performs the defined operation string using the selected Data Field on the selected module. For example: If there are four Label modules, each module has a different label stock, and the operation string calls for the use of stock A (which is loaded on module 3), you should select the options accordingly. Operation parameters are defined in the Data Setup.
Perform Operation Data Field	
Perform Operation on Module	
Clear Perform Operations Fields	Click **Clear** to remove all information from the Perform Operations fields.
Preceding Operations	Click **Add/Modify** to open the dialog from which you can select the operation(s) to occur before this operation. Use the arrows to move the operations from one column to the other.

Sticker Element

Use the following information to define the properties of a Sticker Element.

Settings Tab Properties	
Name	The name of the Sticker Element
X/Y	The horizontal and vertical coordinates (from the bottom left corner of the card) at which the operation is to occur. Click the icon to use Data Field information for the X and Y coordinates.

Advanced Tab Properties	
Preceding Operations	Click **Add/Modify** to open the dialog from which you can select the operation(s) to occur before this operation. Use the arrows to move the operations from one column to the other.

Dynamic OCV Element

Use the following information to define the properties of a Dynamic Optical Character Verification (OCV) Element.

Settings Tab Properties	
Name	Descriptive name (OCV1 by default)
Side	The side of the card (Front or Back) on which the element appears. Click the icon to select Data Field information for this operation.
X	Horizontal offset (in inches) from the bottom-let corner of the card. Click the icon to select Data Field information for this operation.
Y	Vertical offset (in inches) from the bottom-let corner of the card. Click the icon to select Data Field information for this operation.
Width	Width (in inches) of the OCV box. Click the icon to select Data Field information for this operation.
Height	Height (in inches) of the OCV box. Click the icon to select Data Field information for this operation.

X (Ref)/Y (Ref)	The reference coordinates (in inches) for the dynamic OCV element. Click the icon to select Data Field information for this operation.
Data	Characters displayed on the card. Click the icon to select Data Field information for this operation.
Data Contrast Type	Select the contrast type between the characters and the background on which they are printed Select **Light on Dark** if there is a light image on a dark background. Select **Dark on Light** if there is a dark image on a light background. Select **Unknown** to have the system try to determine the type. Click the icon to select Data Field information for this operation.
Font Filename	The font of the OCV characters. Click the icon to select Data Field information for this operation or **Browse** to select a font.
Font Point Size	The size of the font. Enter the value in the text box or click the icon to select Data Field information for this operation.
Pass Threshold	The value at which the OCV item will pass when tested. Enter the value in the text box or click the icon to select Data Field information for this operation.
Element Filter	Choose the Element Filter value from the list or click the icon to use Data Field information. **Intensity** (default) the color image is converted to a grayscale image and vision verification is done with that image. When **Red/Green/Blue** are selected, the camera will filter for the selected color channel from the RGB color space and covert the filtered image to grayscale for use in vision verification.
Perform Confusion Analysis	In the **Confusion Data List** either enter character data or click the icon to select Data Field information for this operation. Enter a value for the **Confusion Threshold** or click the icon to select Data Field information for this operation. Use the **Test** button to perform the Confusion Analysis.

Advanced Tab Properties	
Width/Height Scaling	The degree to which the OCV font characters have been scaled from their original size
Rotation Degrees	The degree to which the OCV font characters will be read from the X/Y reference point

Running Mini-Cards

Card Setup changes are necessary to run the ID-K specified mini-card (refer to Datacard ID-K Key Ring Card Specification 553349-001, rev. 04).

Perform the following steps to run mini-cards.

1. In Card Setup create a new, or open an existing Card Setup.
2. Click on the virtual card. In the Card Properties/Settings tab, select the **Stock Description** list and then select the **MINI_CARD** card stock.

   The MINI_CARD card stock defines where the break across the stripe is located on the card. Based on this information it restricts the encoding and the jitter checking.
3. Place a Magnetic Stripe Read and/or Verify element on the card (or select an existing element).
4. In the Magnetic Stripe Properties/Settings tab, select the **Track Type** list and then select the **ID-K** standard (e.g. **IATA_ID-K** or **ABA_ID-K**). The definition for the type of magnetic stripe is located in the magnetic stripe setup application.
5. Save the Card Setup.

Running Jobs that Alternate Between Mini-Cards and Standard Cards

The best way to alternate between mini cards and standard cards is to define two specific card setups, one for the mini-cards (see directions above) and the other for the standard card. Each card stock is put into different input trays and then a data field is used to call out the tray from which to pick. The tray selection field would also be used as the card setup selection criteria field to define which setup to use (mini or standard).

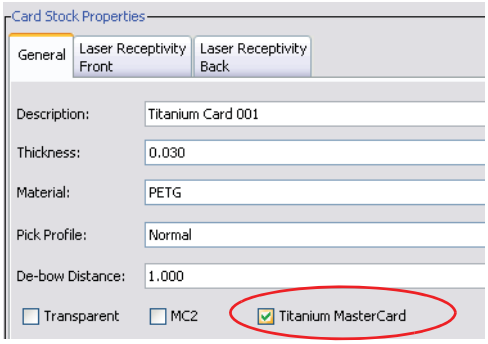
Using MasterCard Titanium Cards

MasterCard® Titanium cards have a different shape from typical credit cards.

A specific Card Stock must be defined so that the system modules (Magnetic Stripe, etc.) can compensate for the unique card shape. Card Stocks are defined using the Card Stock Setup application.

A modification to each Smart Card module hardware must be made using kit 591492-001.

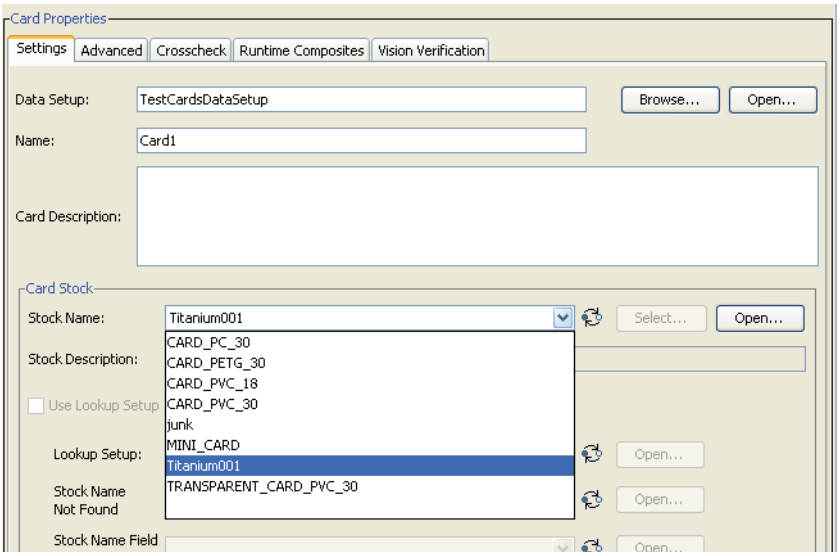
1. In the Maxsys/MX Series Production software select Applications | Stocks | Card Stock Setup from the menu.
2. Click New to open a blank setup.
3. On the General tab of the Card Stock Properties window select the **Titanium MasterCard** check box.



4. Define the other parameters as needed (consult the Maxsys/MX Series Administrator Guide for more information on Card Stock Setups).
5. Save the setup using a unique, intuitive name.
6. Create a Card Setup that will use this Card Stock.
   A. Select **Applications | Setups | Card Setup** from the menu.
   B. Click **New** to open a blank setup.

C. On the **Settings** tab of the **Card Properties** window define the parameters as needed (consult the Maxsys/MX Series Administrator Guide for more information on Card Setups).

D. For Stock Name, select the Card Stock that was created above.



Complete the Card Setup and then click Save.

Using Print Preview from Card Setup

The Print Preview command allows you to view a virtual representation of the card you have set up. To access this feature click **Print Preview** from the Card Setup window.

You must choose a data source before any preview is attempted.

The Preview Data tab allows you to filter loaded Jobs to preview or sample data from a Data Setup.

To define your Job search, select the check box next to any or all of the parameters on the jobs list that you would like to use in your search. The more you select, the

narrower the scope of the search. The following table describes the search parameters.

Preview Data Tab Properties

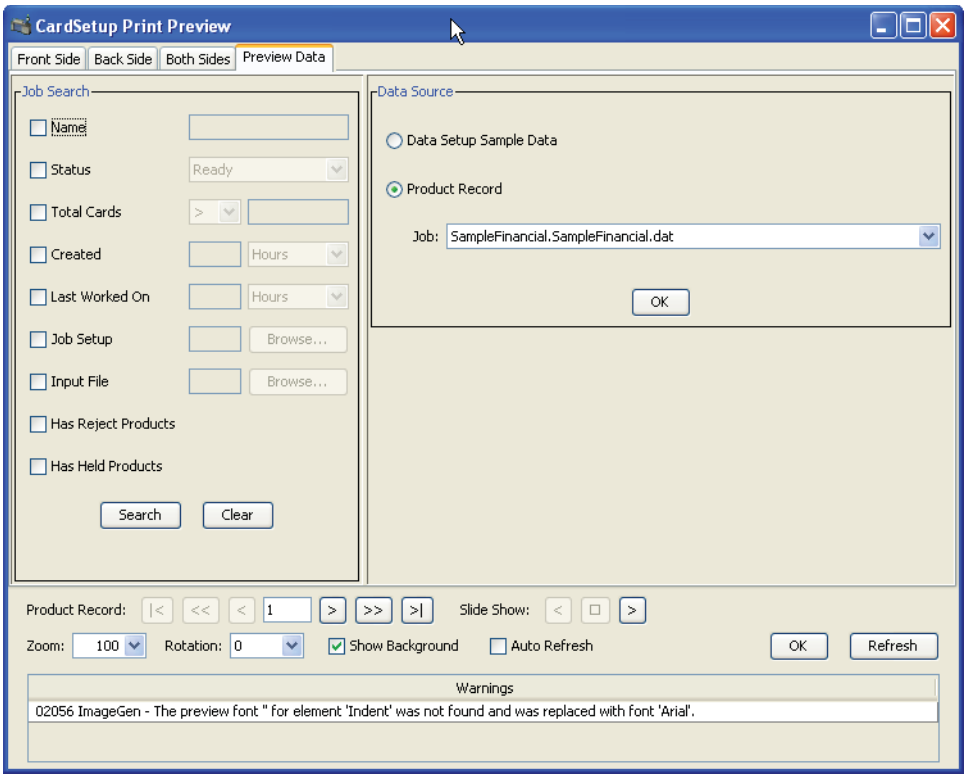
Job Search Parameters

Name	Enter the name of the job in the text box
Status	Select the status from the list. The program will display only those jobs with the selected status.
Total Cards	Total cards in the job. Enter a number in the text box and then select a quantitative indicator (less than, more than, equal to, etc.) from the list. For example, if you enter 500 in the text box and select the greater-than-or-equal-to (>=) sign from the list, the program will display only those jobs that have 500 or more cards.
Created	Enter a number in the text box and then select **Hours** or **Days** from the list. For example, if you enter "5" in the text box and select "Days" from the list, the program will display only those jobs created in the past five days.
Last Worked On	Enter a number in the text box and then select **Hours** or **Days** from the list. For example, if you enter "8" in the text box and select "Hours" from the list, the program will display only those jobs worked on during the past eight hours.
Job Setup	Select **Browse**, and then select a Job Setup from the dialog box. The program will display only those jobs that use the selected Job Setup.
Input File	Enter the Input File name into the text box. The program will display only those jobs that use the listed Input File.
Has Rejected Products	If option selected, the program will display only jobs that contain rejected products.
Has Held Products	If option selected, the program will display only jobs that contain held products.

- Click **Search**. Any jobs fitting the search criteria will appear in the **Job** list in the Data Source pane.
- Click **Clear** to clear all fields.

In the Data Source pane, select **Data Setup Sample Data** to preview the card using sample data from the Data Setup. This may be used when you are first designing a card and do not yet have a job with which to test. This is the default

selection. Select the **Product Record** option button to preview the card using data from a loaded job.



Select a job from the Job list to view the first record. To view an individual record, enter the product record number in the Product Record text box.

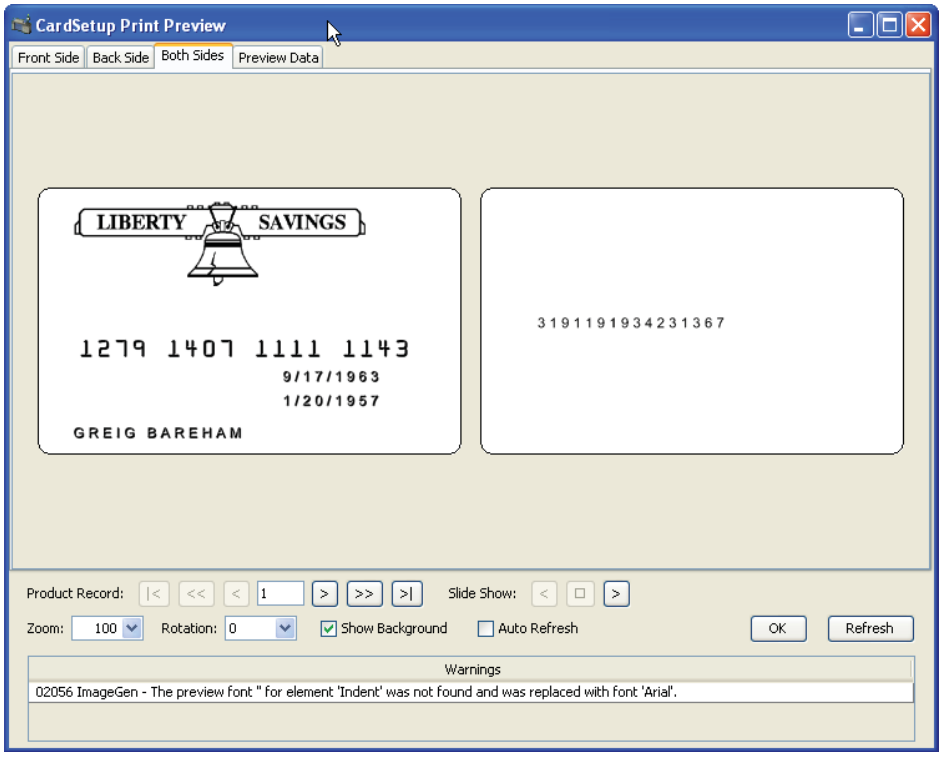
Secure data can be viewed only by those who have been given the "View Secure Data" privilege in Security Configuration. If you have not been given this privilege, sample data will appear in place of the secure data.

The following table describes the properties on the Front, Back, and Both Sides tabs.

Front/Back/Both Sides Tabs Properties	
The "Virtual Card"	The representation of the card as designed using Card Setup. Only Image, Text, and Barcode elements will display.
Zoom	Select the zoom level to view greater or less detail
Rotation	Rotates the card clockwise in increments of 90 degrees
Show Background	Select the check box to display the background image (if any). The background image is associated with the selected card stock as defined in Stock Management.

Auto Refresh	Select the checkbox to allow the preview image to refresh automatically when any change occurs to the Image, Text, or Barcode elements. A decrease in performance may occur if many changes are being made.
Refresh	Click to refresh the preview image
Product Record	Use the navigation buttons to scroll through product records. The single arrow button (>) will increment or decrement by one, the double arrow button (>>) will increment or decrement by 10, and the final button (>|)will jump to the beginning or end of the record list. Product records are used only when the **Product Record** option button has been selected in the Preview Data tab. The record will then be taken from the selected job.
Slide Show	Click the forward or reverse buttons to scroll through the product records. Click the stop button to stop the slide show.

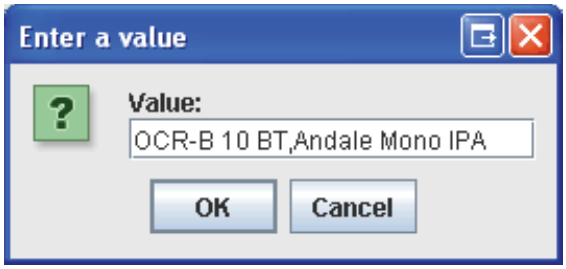
After establishing the data source, click **OK** to return to the previous tab on which you were working.



Unicode Font Image Generation Errors

If a font has been created with non-standard unicode content, cards may not print correctly (boxes will appear instead of characters). The software does not have the ability to detect this situation. The only resolution is to test the printout of the card or use the Print Preview feature, and then add fonts to the Configuration. Perform the following procedure to correct this problem.

1. Check the font version date. Older versions of fonts may have been created with non standard unicode content.
   A. In Windows Explorer, navigate to C:\Windows\Fonts.
   B. Double-click on the font in question. The version and date of creation appear in the information area.
2. Remap with the proper unicode content by using the Controller Configuration Editor.
   A. Select **Applications | Utilities | Diagnostics**.
   B. In Diagnostics, select the **Controller Configuration Editor** tab.
   C. In the Controller Configuration Editor, double-click on **System** and then **Image Generation**.
   D. Under Image Generation select **Symbol Font Family Names**.
   E. Double-click in the Value field. The Enter a Value dialog opens.



   F. Enter the font name(s) in the Value field and then click **OK**.
   G. Click **Commit** at the bottom of the Controller Configuration Editor.
3. Test the output to ensure that the font is represented correctly.

Printing Card Setups

To print a screen capture of a Card Setup window, complete the following steps.

1. From the Card Setup window (**Applications | Setups | Card Setup**), open an existing Card Setup or create a new one.
2. On the right side of the screen, select the tab you want to print.
3. Click the **Print** icon on the toolbar. The Windows Print dialog box opens.
4. Click **OK**.
   A. Select the **Output** tab, and then select file name you want to use. Ensure that the Unique File Name check box is selected.
   B. Save the Setup.

Chapter 7: Form Setup

7

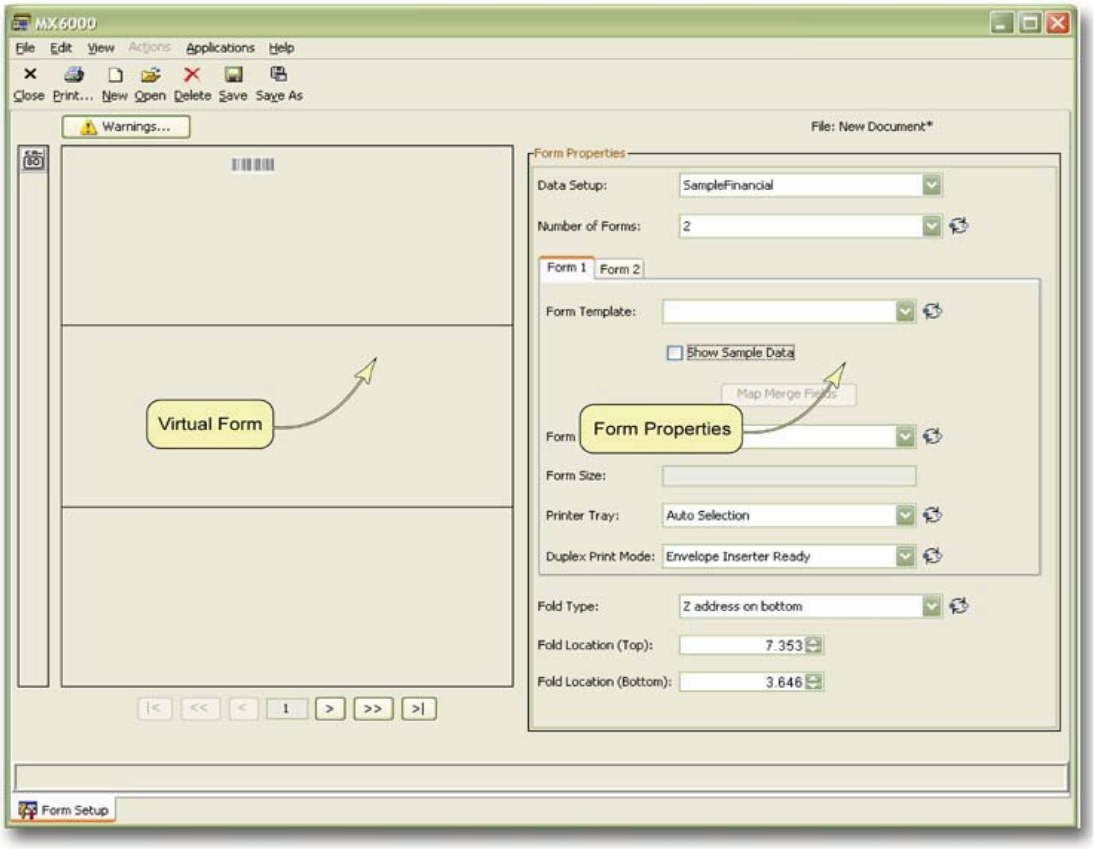
This chapter provides information on creating and modifying Form Setups.

Creating a New Form Setup

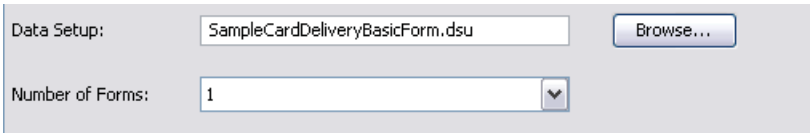
The Form Setup application is used to create and modify card delivery forms, control the layout of those forms, and select/format the form fields.

Complete the following steps to create a new Form Setup.

1. Select **Applications | Setups | Form Setup**.
2. In the Form Setup window, click the **New** icon on the toolbar.

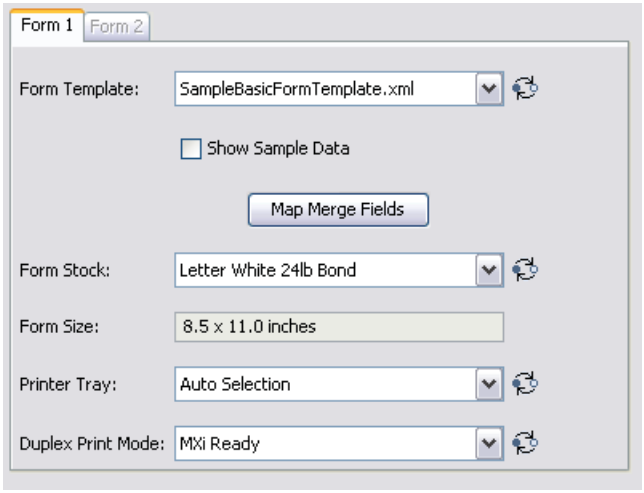


3. In the Form Properties pane, select a Data Setup by clicking **Browse** and then navigating to a Data Setup. Select the setup and then click **Choose**.



If there are problems with the Form Setup, the **Warnings** button is enabled. Click the button to display a list of the problems.

4. Under the appropriate **Form** tab, select a template from the Form Template list.



Right-click the list for other options.

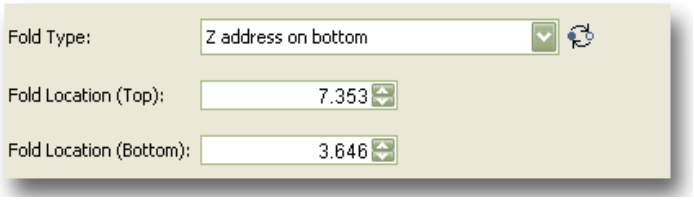
- **Value** is the default selection. This allows you to select a value from the list.
- Select **Data Field** to enable a list that contains data fields (based on the Data Setup selected above). Choose the field that contains your template information.
- Select **Printer Ready Data** to tell the program that the chosen data field contains a path to PCL (format) data that the printer can interpret.

When Data Field or Printer Ready Data is selected for a particular item, the Sample Values field appears. This field contains a list of values that, when selected from the list, allows you to see a representation of the data on the virtual form.

5. Select the **Show Sample Data** check box if you would like sample data displayed on the form. This provides a visual reference of how the finished form will look.

The Data Setup fields must have been created with sample values for this feature to work. Refer to "Data Setup" on page 65.

6. If necessary, click the **Map Merge Fields** button to launch the Map Merge Fields dialog. (Refer to "Mapping Merge Fields" on page 138.)
7. Select the paper stock from the **Form Stock** list. The program automatically populates the **Form Size** field with the default form size. (You can also right-click and select the Data Field option.)
8. Select the **Printer Tray** where the paper stock will be loaded. Generally the default **Auto Selection** is satisfactory. (You can also right-click and select the Data Field option.)
9. In instances where duplex printing will be performed, make a selection from the **Duplex Print Mode** list. (You can also right-click and select the Data Field option.)
    - MXi Ready - For use with the MXi envelope inserter.
    - Flip on Long/Short side - As implied, the form will be flipped on the selected side.
    - Envelope Inserter Ready - Defines the duplex print mode based on the fold-type (defined in the next step).
        - *C Fold* or *Half Fold* - Form will be folded on the short side.
        - *No Fold* or *Z Fold* - Form will be folded on the long side.
10. Select the paper fold type from the **Fold Type** list. Your selection will be reflected on the virtual form. (You can also right-click and select the Data Field option.)



When the fold type is not a data field, the checkbox for using default fold locations is disabled. When the fold type is a data field, the checkbox for using default fold locations is enabled. If this checkbox is checked, the fields for typing in custom fold locations become disabled. If the checkbox is unchecked, the custom fold locations fields will be enabled. This option is for those who may wish to use non-default fold locations and are only switching between fold types with the same number of folds and want to use the same non-default fold locations for all fold types.

11. Select the location of the fold (or folds, depending on the fold type selected) by entering the value in the fields. Alternately, you can use the spin controls to set the value(s).

Notes:

If the value you select is outside the acceptable range, the figure in the box will be reset to the old value.

You can also control the fold location from the virtual form.

12. If you are using an MXi and need to configure MXi jobs, refer to "Configuring MXi in Form Setup" on page 142.

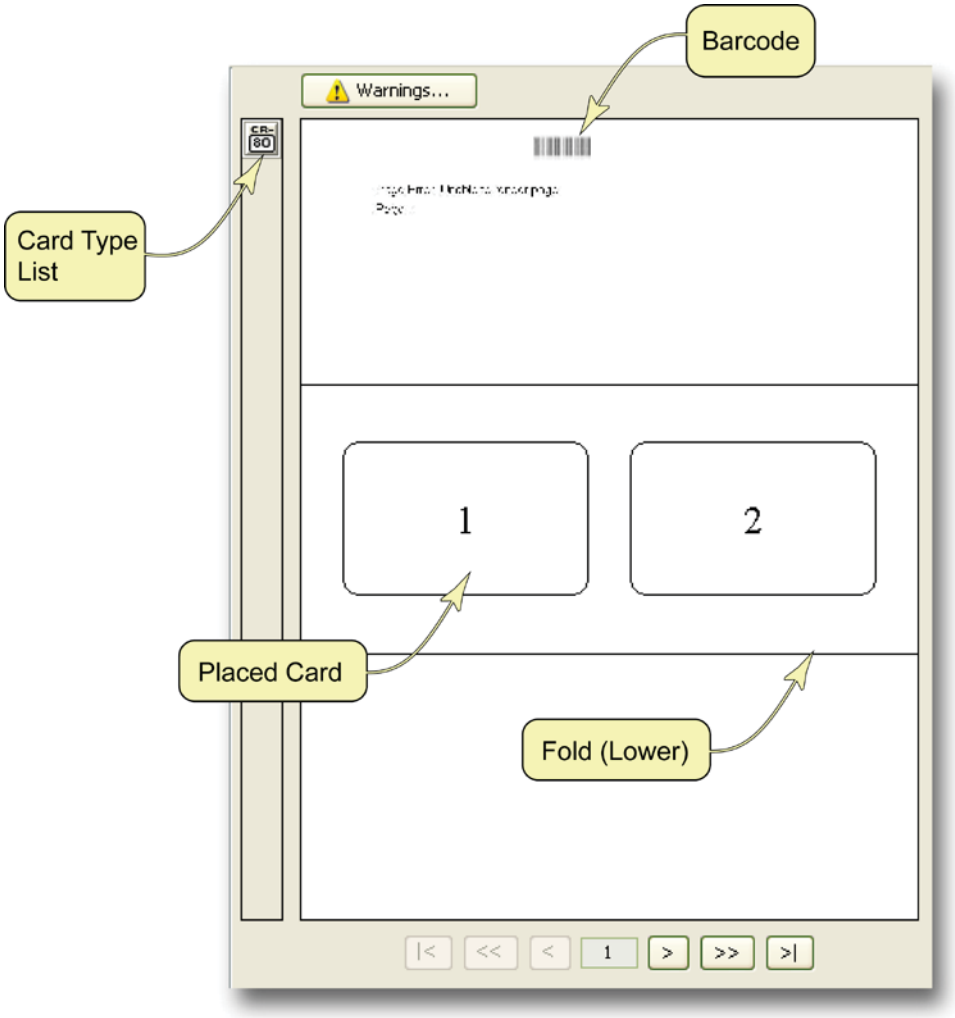
13. Complete the setup of the virtual form (refer to the next section).

If you are using nested forms, select 2 from the Number of Forms list and then repeat steps 3 through 12 on Form 2. (An additional Barcode reader, mounted in the Card Affixer module, is required for this feature.)

14. Click the **Save** icon in the toolbar when finished.

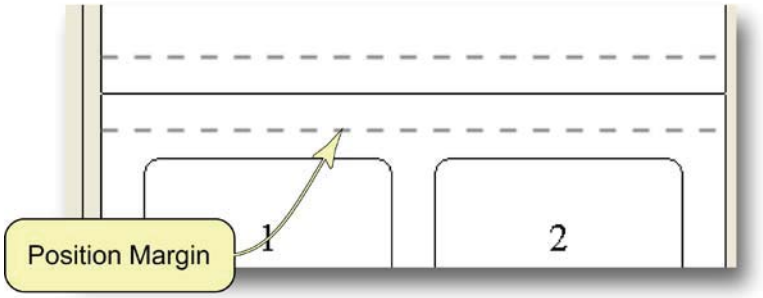
The Virtual Form

The virtual form in the Form Setup application allows you to manually select the location of cards, the Barcode, and paper folds and preview them to ensure proper placement.



Positioning the Folds

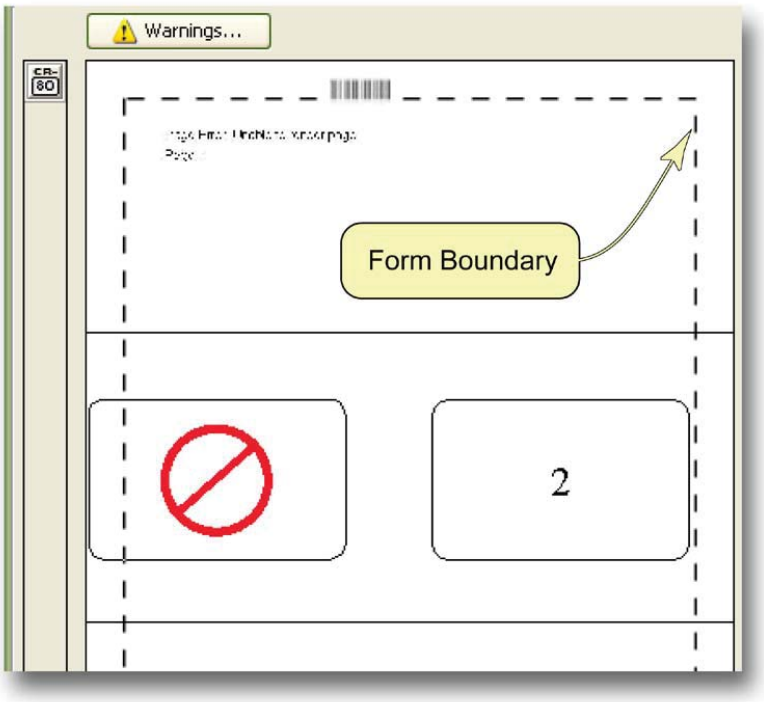
With your mouse, left-click on the fold (or folds, based on the fold type selected) and hold down to position it vertically on the form. When the mouse button is held down, position margins are displayed. Cards should not be placed inside these margins.



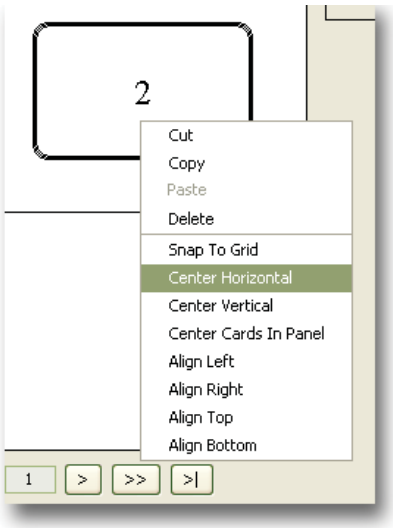
Placing and Aligning Cards

1. Select a card type from the left side of the program window and drag it onto the virtual form. The form boundaries will be displayed to ensure that the card is not placed too close to the edge. Repeat this step for each card you want on the form.

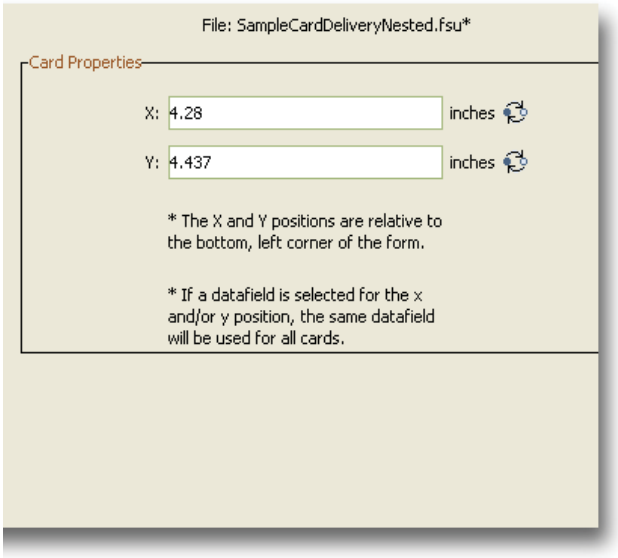
Use the rollover function to ensure that there are no problems with the placement of the cards. If there are problems, an error message and a cross-out icon will display when you place the mouse cursor over the card(s).



2. Right-click on the card to display alignment and centering options for the cards.

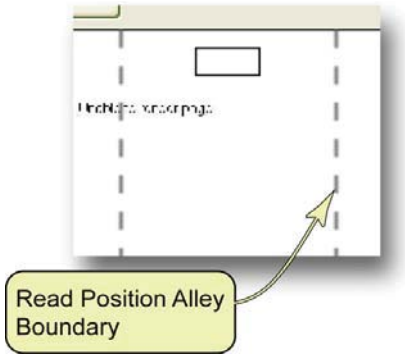


Alternately, you can click on a card to bring up the Card Properties pane in which you can specify the *X* and *Y* coordinates for the selected card.

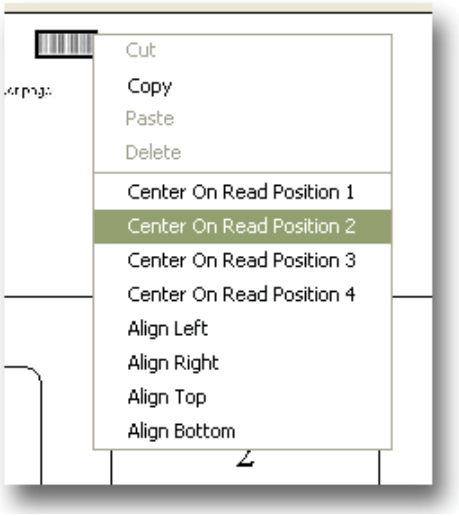


Aligning the Barcode

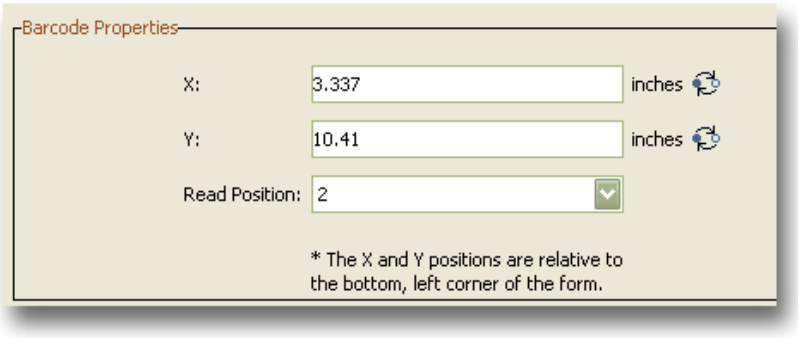
1. Select, hold, and drag the Barcode to position it on the form. When the mouse button is held down, the read position alley boundaries are displayed.



2. Right-click on the Barcode to display alignment and read position centering options.



Alternately, you can click on the Barcode to bring up the Barcode Properties pane in which you can specify the X and Y coordinates and the read position alley.



Quiet Zone

The Barcode used is Code 3 of 9 with dimensions of 1/8 inch by 1 inch. The Barcode can be placed virtually anywhere on the form, however there are some quiet space stipulations.

- 0.3 inch of quiet space to the left/right of the Barcode
- 0.1 inch from the top/bottom of the Barcode
- 0.230 inch from the top and bottom margins
- 1.016 inch from the left margin
- 0.486 inch from the right margin

Mapping Merge Fields

Mapping merge fields allows you to map fields from the template, card feedback fields, and runtime composites to a particular data field on the form. The available data fields are determined by the Data Setup that you chose for the Form Setup.

Perform the following procedure to map merge fields.

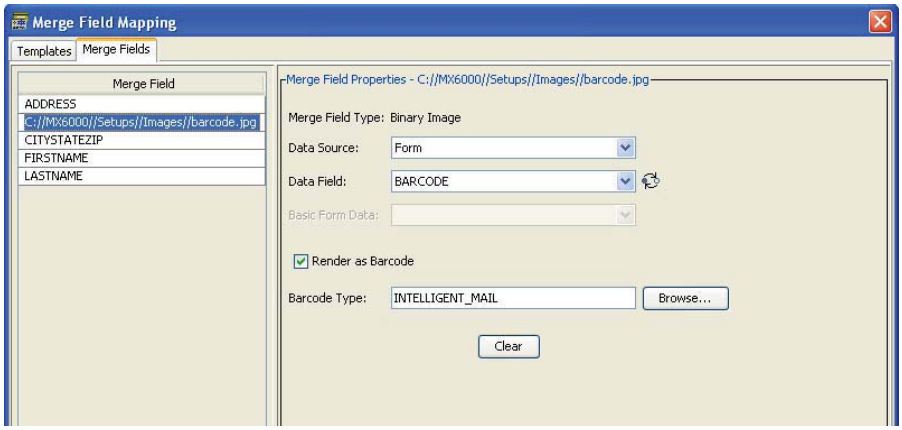
1. In the Form Properties of a Form Setup file, click **Map Merge Fields**.

Steps 2 and 3 are necessary only if your template is a Data Field instead of a specific template.

2. When the dialog is opened, click on the **Templates** tab to select the templates to use for mapping. Select the templates that you would like to use and then click the arrow button to move them into the Selected Templates pane. Use **Alt+Click** to select multiple templates.
3. Click **Next**.
4. From the merge field tab select a corresponding data field from the list.

If any field remains unmapped, an error message appears in the Warning/Errors list showing the names of unmapped merge fields.

5. Click **OK**.
6. Click **Save** on the toolbar to save changes.



For more information on template design using the Intelligent Mail Barcode, refer to the *The MXD and MXD Lite Card Delivery Systems Template Design Guide for Microsoft Word 2007 (part number 539016-005).*

Configuring the MXi Envelope Inserter

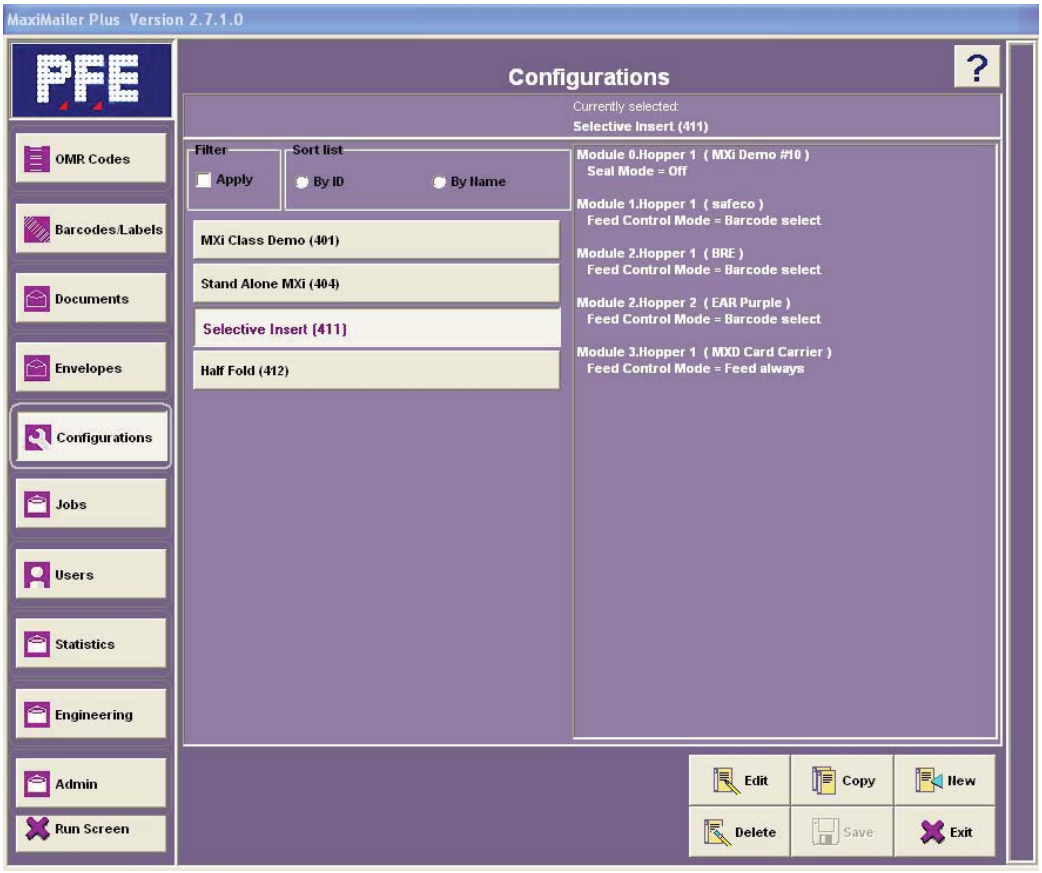
Set up jobs for the envelope inserter option on your MXi system using the PFE Maximailer documentation before completing the MXi configuration in the Maxsys/MX Series Form Setup.

If you are not using selective inserts, skip to "Configuring MXi in Form Setup" on page 142.

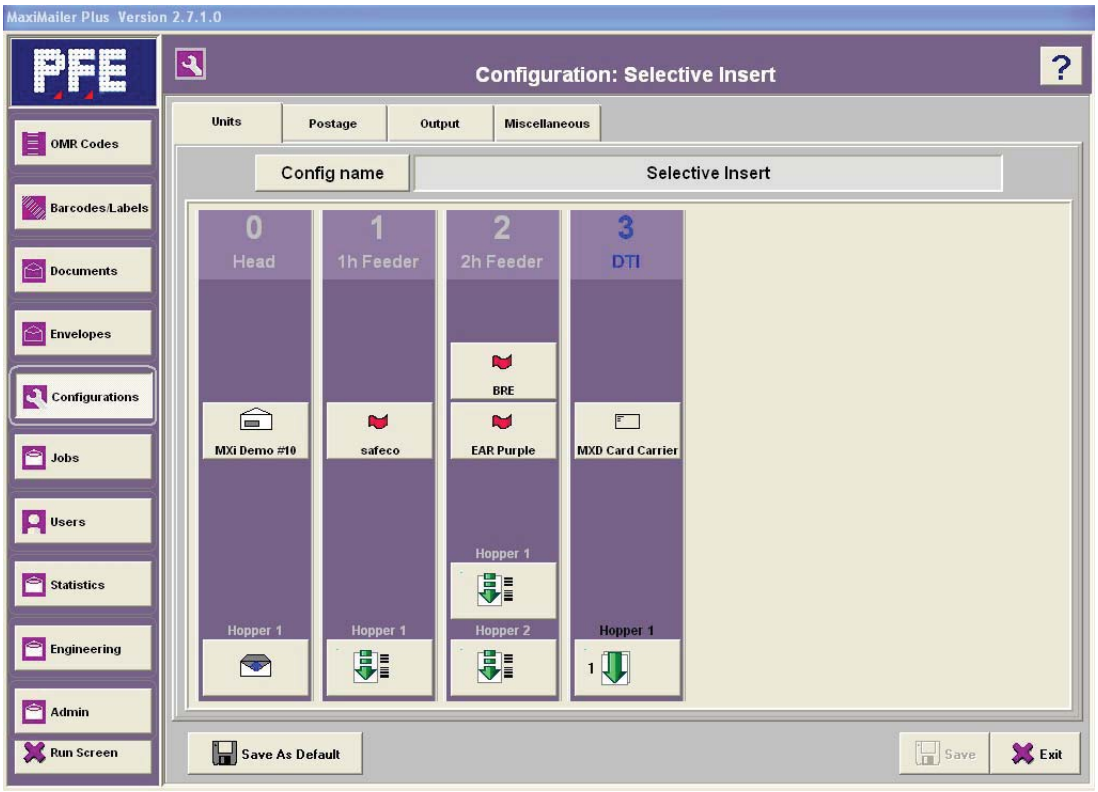
Setting Up Selective Inserts on the MXi Controller

If you are using selective inserts, use the following procedure to modify an *existing* job setup.

1. On the MXi Controller **Run screen**, select the **Setup Screen** icon in the upper right corner (next to the X).

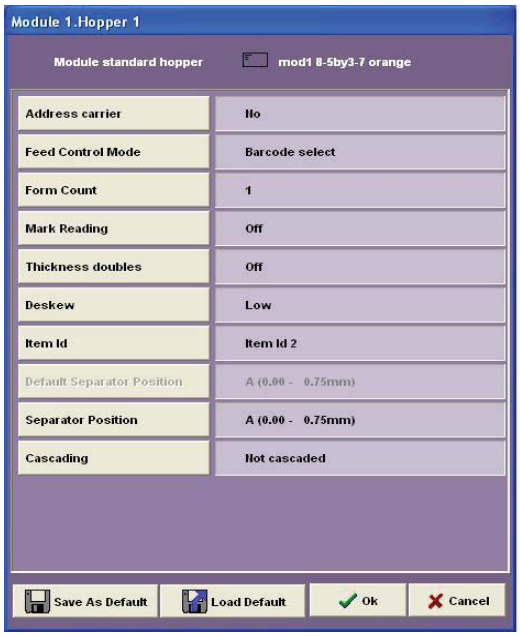


2. Select **Configurations** from the left-hand side of the screen. Select the configuration that applies to your job, and then select **Edit** on the bottom pane. A graphic view of the MXi system is displayed.



3. Select the hopper from which the insert will be taken.

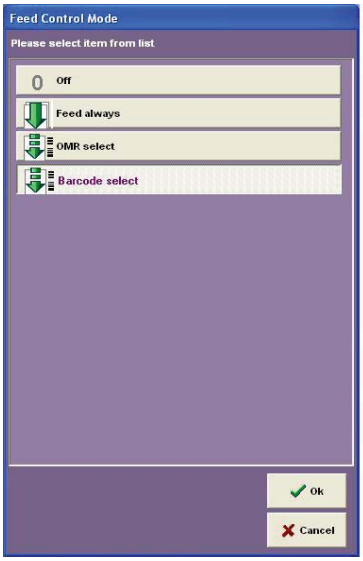
Module 0 is used to feed the envelopes. For the inserts, start with Module 1. Depending on your machine configuration, you will have either 1 or 2 hoppers per module.



4. Select the **Item Id**. Assign an Item Id number for the insert, and then select **OK** at the bottom of the dialog.

For example, the insert with Item Id 2 can be assigned to Hopper 1; Item Id 3 can be assigned to Hopper 2; and so forth. The default Item Id for normal operation (non-Selective Inserts) is **Auto**.

5. In the same hopper dialog box, select the **Feed Control Mode** value to edit it. In the Feed Control Mode dialog box, select **Barcode select**.



6. Select **OK** to save.

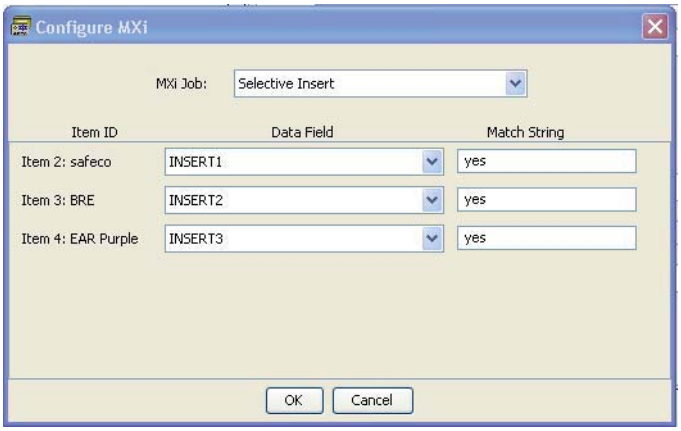
The typical Feed Control Mode value is Feed always. However, for these inserts you must use the Barcode select value.

Configuring MXi in Form Setup

Perform the following procedure to configure the MXi job(s) in the Maxsys/MX Series Form Setup.

When the MXi option is installed, the Envelope Inserter should be enabled in the system Controller Diagnostics. If you have trouble accessing the MXi information through Form Setup, make sure it is enabled. Refer to the *MXi Owner Installation Manual* for details.

1. Open the Form Setup application. Select **Applications | Setups | Form Setup**.
2. In the Form Setup window under Form Properties, click **Edit**.
3. In the Configure MXi dialog box, select the job from the **MXi Job** list.

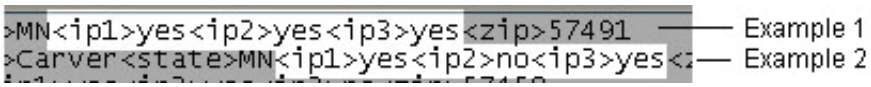


4. If you are using selective inserts with MXi, complete the following for each item listed under the job:
   A. Select the **Data Field** from the list.

   The data fields listed are determined by the Data Setup that is linked to the Form Setup.

   B. Enter the value in the data stream into the Match String text box. Select the value that is used in the data stream (this value will be matched to the insert when it is read). When the value in the Match String equals the value in the data field, the insert will be processed/fed/included in the insertion pack.

For example, the image below shows two lines of selective insert data. The tags ip1, ip2, and ip3 correspond to the Data Fields Insert 1, Insert 2, and Insert 3 respectively. The match strings are represented by 'yes' and 'no'.



Data can be viewed in the Hex Dump utility. Refer to page 199.

In the first example, all three fields contain the match string 'yes'. Referring to the Configure MXi dialog example on the previous page, because the designated match string for each field is 'yes', during the production run all three inserts will be processed. In the second example, because Insert 2 has the match string 'no', only inserts 1 and 3 will be processed.

If the Match String value does not include text that can be matched to an insert, it cannot be read and that insert will not be used for the job. If you want to intentionally exclude an insert from a job, you can use a Match String value in the data record that does not match the Match String value in the Form Setup to prevent it from being used.

5. Click **OK**.

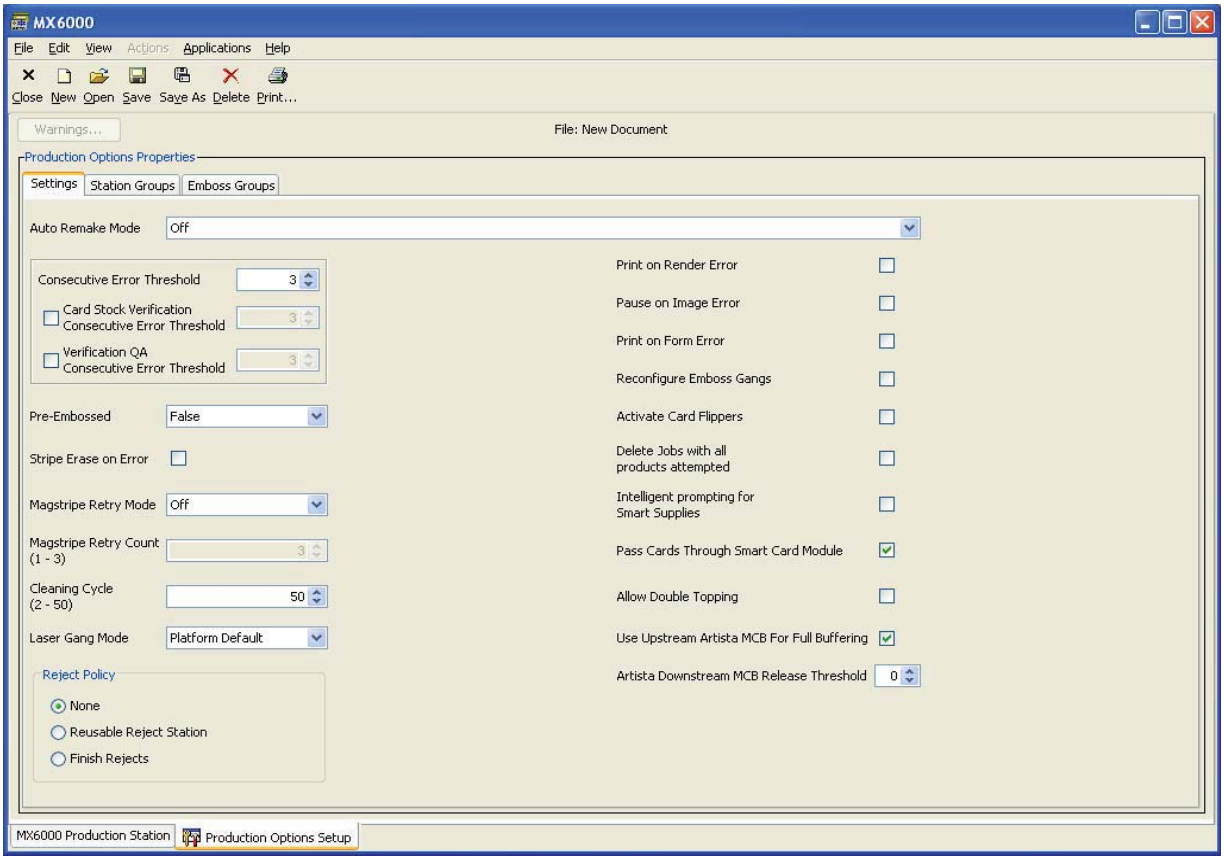
Chapter 8: Production Options Setup

This chapter provides information on creating and modifying Production Options.

Creating a New Production Options Setup

A Production Options Setup defines the operational parameters for a job. To create a new Production Options Setup, complete the following steps:

1. In the Production Options Setup window (**Applications | Setups | Production Options Setup**), click the **New** icon on the toolbar.
2. Enter the parameters on the tabs as required.



Auto Remake Mode:

- **Off —** The system will not attempt auto remakes.
- **Preserve Data Order — Entire Machine —** The system will remake the card when it fails in any module.
- **Preserve Data Order for Encoding Rejects Only —** When an encoding error occurs, the system will eject the upstream cards and remake beginning with the rejected card.
- **Preserve Data Order for Encoding and Smart Card Rejects Only —** The system will remake cards with magnetic stripe encoding or smart card encoding errors while preserving the data order.

Consecutive Error Threshold - This number denotes how many sequential errors on the same module or coupler are allowed before the system notifies the operator and stops the system, stating it had x number of consecutive errors on the same module or coupler. Each error is displayed to the operator but the system does not stop until it reaches this threshold.

Card Stock Verification/Verification QA - Allows independent management of error expectations for card stock identification and quality assurance. Select the checkboxes to enable and then enter the number of errors allowed for each scenario.

Pre-Embossed - Describes the profile of the card to the system for better picking. Select **True** or **False**.

Laser Gang Mode - Select to turn Laser Gang Mode on or off. When more than one Laser module is present in a system, Laser Gang Mode can be used to optimize production speed.

Cleaning Cycle - Enter the number of cards to be processed between cleaning cycles. The default is 50. Set a lower number if the site has a dusty environment.

Stripe Erase on Error - Select to bring the card back to be erased when a magnetic stripe encoding error occurs.

Magstripe Retry Mode - Select Re-Read or Re-Write to make the system retry on a magnetic stripe read or write error. Select Off (default) to disable.

Magstripe Retry Count - Enter the number of times the magstripe module will attempt to encode the card before it is rejected.

Reject Policy:

- **None —** Proceeds as normal, card will be rejected.

- **Reusable Reject Station**—Select if you have a reusable reject station set up in Diagnostics.
- **Finish Rejects**—Select to complete the processing of all cards that have errors.

Print on Render Error - Select to print an image on the card even though there is an error. The system will continue to print everything it can in order to determine where errors are occurring in the process.

Pause on Image Error - Select to pause the machine when there is an image error.

Print on Form Error - Select to continue printing if there is a form error. The system will continue to print everything it can in order to determine where errors are occurring in the process.

Reconfigure Emboss Gangs (Maxsys Only) - Select to automatically reconfigure emboss gangs. This is done to optimize speed when atypical emboss lines are encountered during Maxsys production.

Activate Card Flippers - Select to activate all Flipper modules in the system to rotate cards.

Delete Jobs with all products attempted - Select to automatically delete all jobs that have had all products attempted, regardless of the outcome (success or failure).

Intelligent prompting for Smart Supplies - Select to disable the display of supply prompts, other than those where RFID (Smart Supply) violations exist that require an explicit override.

Pass Cards Through Smart Card Module - By default this option is checked when creating a new production options setup. The value of this option has no effect on jobs with Smart Card operations; cards in Smart Card jobs are always racked. Cards in a non-Smart Card job will be racked if this option is not checked. Cards in a non-Smart Card job will pass through if this option is checked.

Allow Double Topping - With this option selected, the card is topped twice (if needed) by the same Topping Module. The card is moved into the first topping position (60%) and the card is topped on the first 60% of the card. Then the card is advanced to the second topping position (100%) and topped on the rest of the card. Double topping is used when the length of the embossing is greater than the ISO standard.

Use Upstream Artista MCB For Full Buffering - By default this option is checked when creating a new production options setup.

Artista Downstream MCB Release Threshold - This sets the release threshold for the downstream Multi-Card Buffer module so the adjustment can fit the application. The default is 0, but this threshold can be set to between 0 and 20 cards. Controlling this setting allows cards to start flowing into the Artista VHD before the MCB is ready to receive them.

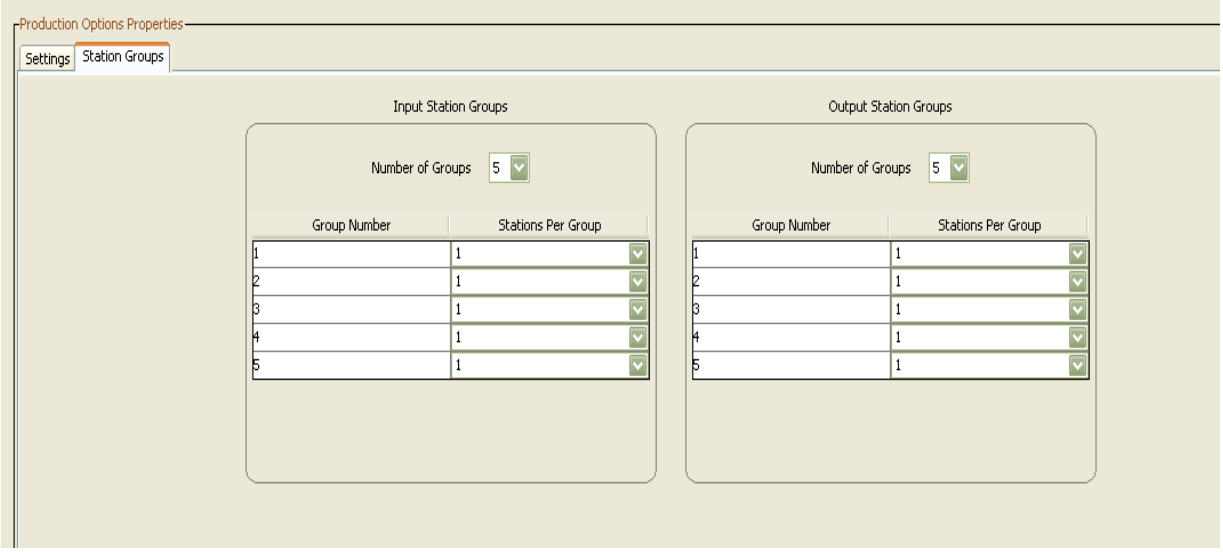
- Too high a value will increase the number of times the Artista VHD empties
- Too high a value could result in wasted ribbon and RTM.

Station Groups Tab

This tab allows you to define Input and Output Station groups to manage multiple card stocks. Enter the parameters as needed.

Groups are sets of trays to manage multiple Input and Output Stations. For example, if the system has 4 input hoppers and the production requires two different card types then inputs 1 and 2 can be ganged together for one card type, and 3 and 4 ganged together for the other card type.

1. Select the number of Input/Output Station Groups from the lists. The interface adjusts accordingly.
2. Select the number of stations per group from the list.



Emboss Groups Tab (Maxsys Only)

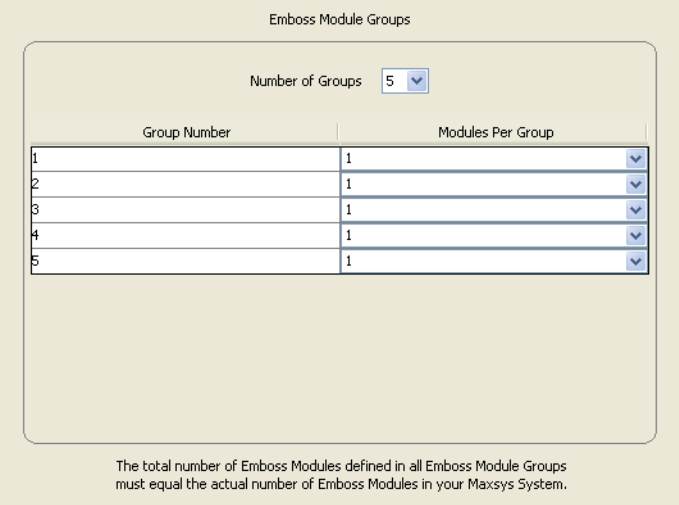
This tab allows you to define emboss module groups. Emboss grouping allows you to have more control over emboss (and indent) module ganging decisions on Maxsys machines. With emboss groups, you can indicate more precisely where the work is performed. This is controlled via the Production Options Setup and Card Setup.

The Production Options setting is to allow defining relative module groups to a unique, sequential group number. Groups can consist of one or two modules. A group of one means that work that is targeted to this group number, will be done on this module only. Work that is assigned to a group consisting of two modules, will be ganged (pseudo parallel processed) in these two modules provided the following are true:

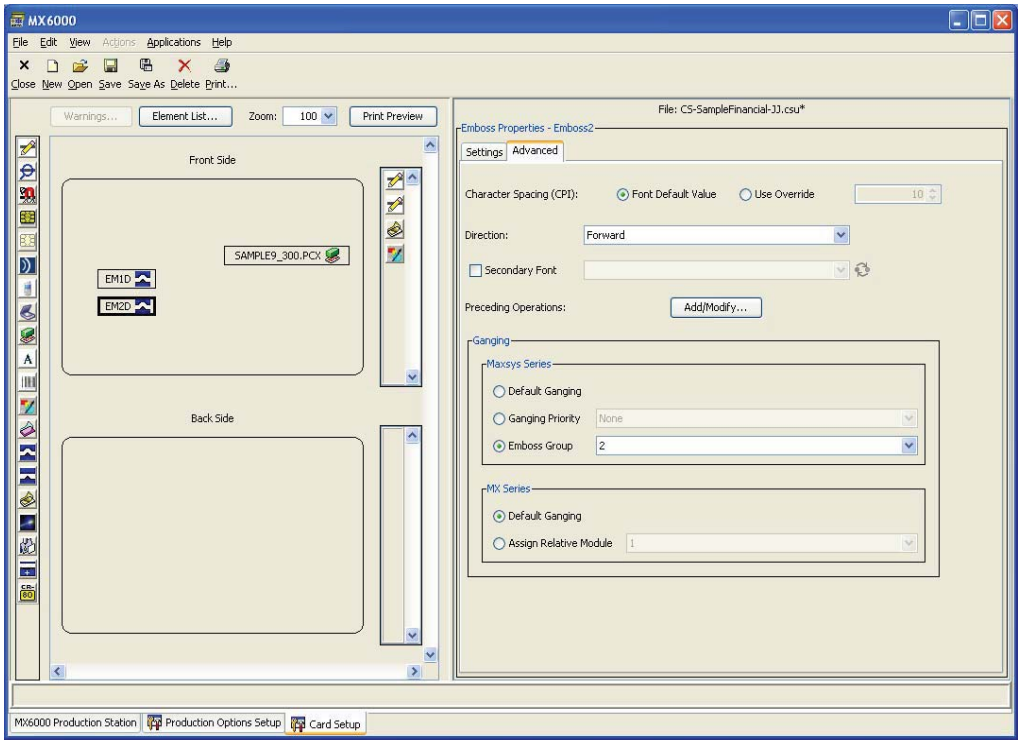
- Both modules are adjacent
- Both modules are enabled
- Both modules are able to print the specified data
- Both modules are capable of ganging the specified font (the font to be printed on these modules share the same characters)
- Both modules have the same defined print area
- One (or both) of the modules is not required to print another operation

Below is a screen shot of the Emboss Groups tab in Production Options. The number of groups is specified first, then the number of modules per group is indicated. This setup alone has no effect on module assignments. It is this setup

combined with the selection of emboss group number in Card Setup which will modify system behavior.



In the example above, the first and second emboss modules will be gang candidates and the remaining modules (three, four and five) will operate independently if so assigned in Card Setup.



The Production Options change alone has no effect. User control also requires a selection of one of the emboss groups in Card Setup in order to have any level of

control. A sample Card Setup screen shot is shown below. In this scenario, emboss operation “acct” will be assigned to emboss group 1 (ganged in first and second relative emboss modules).

- No two emboss/indent operations can specify the same emboss group.
- If an emboss/indent operation specifies a group number, that group number must be defined in Production Options.
- If an emboss/indent operation specifies a group number, that group number must correspond to a real module in the system.
- If an emboss/indent operation specifies a group number that pertains to a two group module, that group must be capable of ganging that operation.
- If an emboss/indent operation specifies a group number that pertains to a two group module, that group must include two physical modules (for example, the group cannot designate the last module in the system as the first module in the group).

Editing a Production Options Setup

Use the following procedure to edit a Production Options Setup.

1. In the Production Options Setup window (**Applications | Setups | Production Options Setup**), highlight the setup you want to edit.

   If no setups are listed, click the **Open** icon in the toolbar, browse to a Productions Options Setup, and then click **Open**.

2. Edit the parameters as needed using the information from the previous section.

3. Click the **Save** icon in the toolbar to save the new setup.

Chapter 9: Audit Setup

9

This chapter provides information on creating and modifying Audit Setups.

Overview

The Audit Setup allows you to define a format for the audit output file. The file contains production statistics for each card.

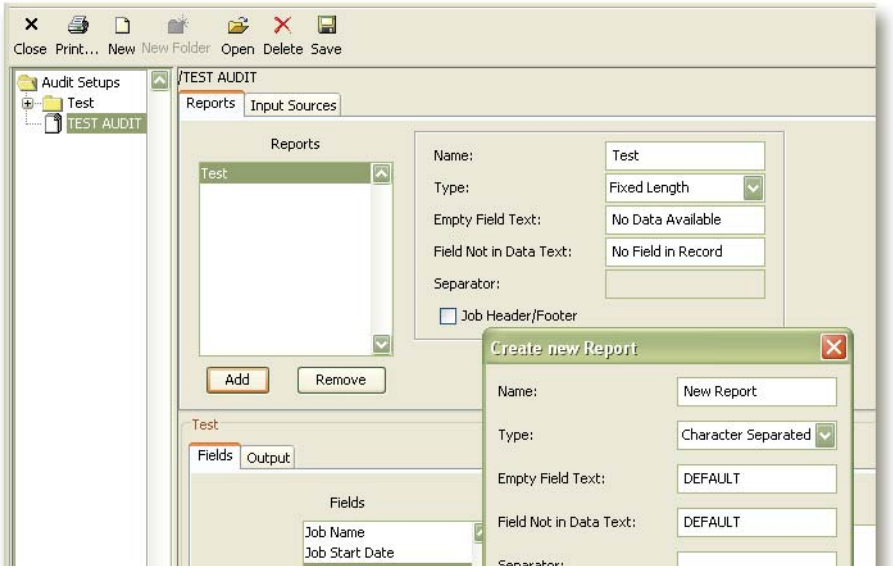
Creating a New Audit Setup

Complete the following steps to create a new audit setup.

1. Select **Applications | Setups | Audit Setup** from the menu bar.
2. Click **New** from the toolbar.
3. Click **Add Report** to define a new audit report. A new report tab will be added.

   On the Formatting tab:

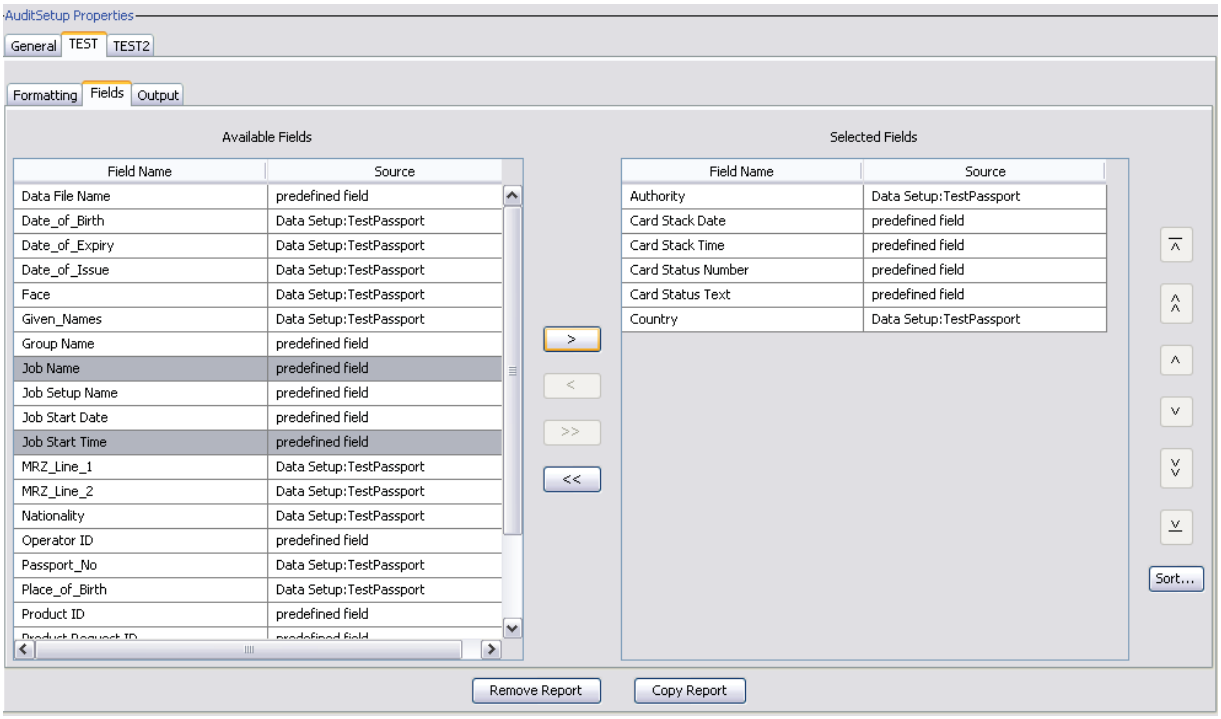
   - In the **Report** Name text box, type a name for the audit report. The name on the report tab will change to whatever you typed.



- In the **Report Type** list, indicate whether the existing audit report has character separated fields or fixed length fields.
    - If this is a character separated report, type the character(s) separating the fields in the **Field Separator** text box. You can enter a single character or space, or you can enter a unicode escape sequence (\uxxxx).
    - If this is a fixed length report, enter the field length (number of characters) in the **Default Field Length** text box. You can also include headers and footers in the report by selecting the **Job Header/Footer** check box.
- In the **Missing Field Text** text box, type text the report should fill in when a record does not contain the field the audit is requesting.
- In the **Empty Field Text** text box, type the text the report should fill in when the audit reports no data for the field.

On the Fields tab:

- In the **Available Fields** list, select the fields you want to use in the audit report and then click the right-pointing arrow. The fields are now displayed in the **Selected Fields** list.

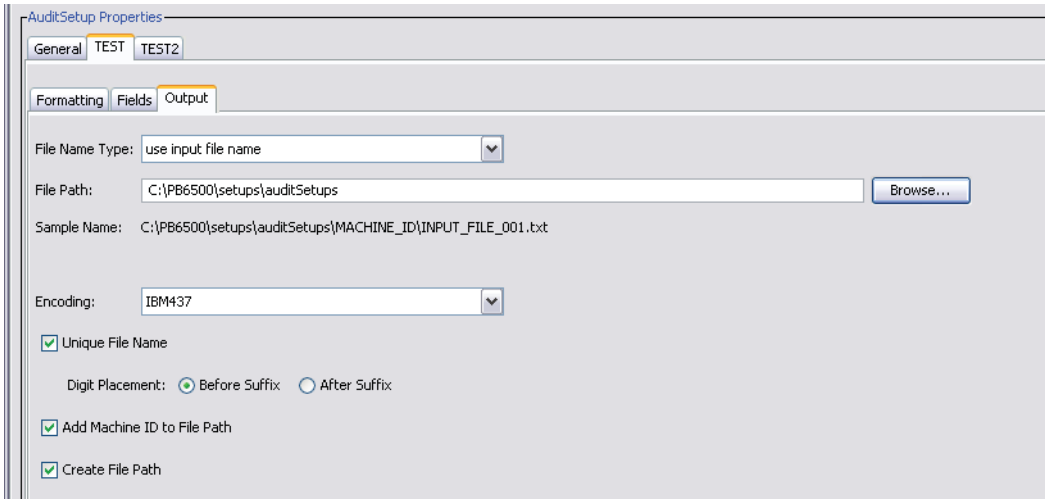


You can move all fields by clicking the double arrow (**>>**). You can select multiple fields using **Ctrl/Shift+Click**.

- To adjust the order in which the fields will appear in the audit report, select the fields and then click the up or down arrows to the left of the Fields list. The single arrow moves the field one position, the double arrow moves the field ten positions.

On the Output tab you define the audit report output file:

- Select the **File Name Type** from the list.

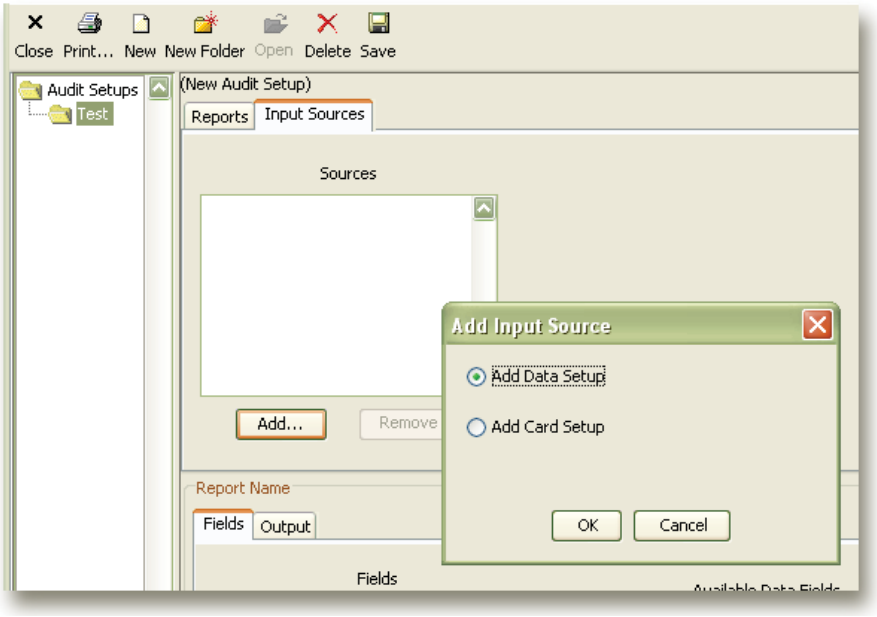


  - **Fixed** - The file name will be static. Click **Browse** to navigate to a directory and then enter the file name.
  - **Use Input File Name -** Click **Browse** to navigate to an existing file whose name will be used as the name for the generated audit report. The audit report will be located in the same directory as the selected file.
  - **Use FIR Value** - Your data must be setup to have this value defined. The value is pulled from FIR file command 'AR=', which contains the file name with the complete path.
- For file name, click **Browse** to navigate to an existing audit file. This file will be overwritten whenever the new report is generated.
- From the **Encoding** list choose an encoding type (typically IBM437, the standard ASCII encoding type).
- If necessary, select **Unique File Name** to have the system auto-increment a number at the end of the file name each time this audit report is generated. You can see the output file name after **Sample Name**.
- Select whether the **Digit Placement** will be before or after the suffix. Digit placement after the suffix is Datacard 9000 system compatible. You can see the output file name after **Sample Name**.

- If necessary, select **Add Machine ID to File Path**. This will automatically add the machine ID to the file name. You can see the output file name after **Sample Name**.
- If necessary, select **Create File Path** when the file name indicates a non-existing directory.

Click **Copy Report** to make an exact copy of the current report. It will appear as a new tab with an iterated report name. Click **Remove Report** to delete a report.

4. On the General tab, click **Add** to choose an input source that contains the fields the audit data are coming from.



- In the Add Input Source dialog box, select the input source's setup type (Data Setup or Card Setup) and then click **Choose**. These setups supply names of fields that can be audited during the job.
- The fields from the input source(s) you selected are displayed in the Fields tab for each report you add.

5. When the Reports, Input Sources, Fields, and Output tabs have been completed, click the **Save** icon on the toolbar.

Chapter 10: Global Setups

10

This chapter contains information on creating and modifying global setups. Global setups are those that are used across multiple programs within the Maxsys/MX Series software.

Barcode Setup

Barcode Setup allows you to create barcodes that will be available for the system to use. Complete the following steps to define barcodes.

1. Select **Applications | Global Setups | Barcode Setup** from the menu, and then select **New**. To modify an existing setup select **Open**.
2. Define the parameters as follows.

Type

Barcode Type	Any user-defined variation of a topology. When a topology is modified and then saved as a new barcode setup, the name will appear in this box.
Barcode Topology	Select a predefined barcode style from the list
Check Digit	Verification digit that the laser/reader uses as a redundancy check. Select the digit type from the list.
Reset to Topology Defaults	Click to reset the barcode to its default topology

Size

Bar Height	Height (in inches) of the bars
Narrow Bar Width	Width (in pixels) of the narrow bars
Narrow to Wide Ratio	The ratio of the width of the wide bar/space to the narrow bar/space (2:1 through 3:1). Determines the width of the barcode.

Placement

Quiet Zone	Whitespace before and after the barcode. Select the checkbox to enable.
Bearer Bars	A bar across the top and bottom edge of a bar code used to prevent misreads. Select the checkbox to enable.
Align with Bars	When enabled, the placement of a barcode will be aligned to the lower-left corner of the bars; otherwise it will be aligned to the lower-left corner of the entire barcode image including interpretation text and quiet zone, if any.

Human Readable Font (Not Available with PDF417 Topology)

Human Readable	Select to display human readable text below the barcode
Font	The font in which the text will be displayed
Font Size	The size of the font
Font Style	The font style (bold, italic, etc.)
View Start Digit	Select to display the start digit
View Check Digit	Select to display the check digit
Text Margin	The amount of space between the bottom of the bar and the top of the text (in thousandths of an inch, with 0.196 max)

PDF417 Properties (PDF 417 Topology Only)

Module Width/Height	Defines the smallest element's width/height within the symbol
Max Data Rows/ Columns	The barcode symbol consists of multiple rows and columns. The columns include start/stop, left/right row indicators and the number of modules in between. The rows indicate the number of vertically aligned modules in the symbol. Enter the values in each field.

PDF417 Properties (PDF 417 Topology Only)

Error Correction Level	Differing error correction levels that can endure varying levels of damage without causing a loss of data. The higher the value, the more error correction codewords.
Compaction Mode	Data is encoded using one of three modes: • Text compaction mode - encodes alpha-numeric characters and punctuation (2 characters per codeword) • Binary Compaction mode - encodes all 8-bit characters (1.2 bytes per codeword) • Numeric Compaction mode - only allows digits (2.9 digits per codeword)

3. Click **Save** (if you are modifying an existing setup to define as a new setup click **Save As)**.
4. Input a name for the setup in the dialog and then click **Save**.

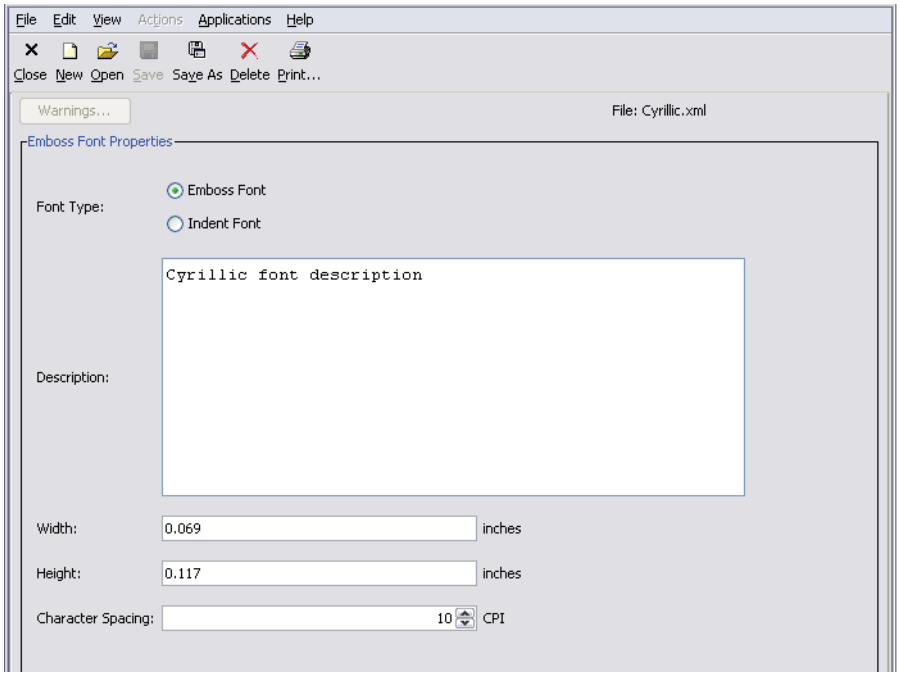
Emboss Font Setup

Adding Emboss Font or Indent Font Definitions

Emboss/Indent font definitions are used in Emboss/Indent operations and are assigned in Card Setup using the Emboss/Indent elements.

Complete the following steps to add an emboss font or indent font definition.

1. Select **Applications | Global Setups | Emboss Font Setup**.
2. Click **New** on the toolbar. The font properties screen opens.



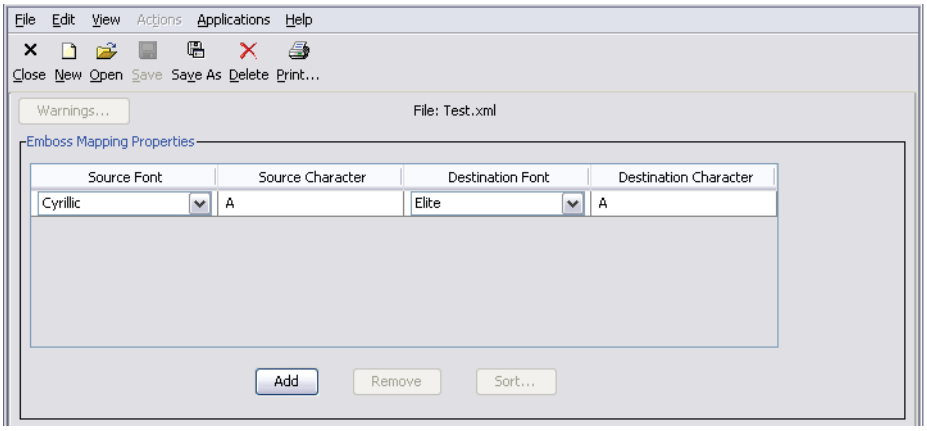
3. Select **Emboss Font** or **Indent Font**.
4. Fill in the fields to define the font.
   A. Enter a description in the **Description** text box.
   B. Define the font dimensions (height and width, in inches) based on the wheel font properties.
   C. Define character spacing (characters-per-inch).
   D. Optionally choose
5. Click **Save/Save As** on the toolbar.

Emboss Mapping Setup

Emboss Mapping Setups allow you to map any character of any font to be used as a character of another font.

Complete the following steps to map characters of a specific font to specified characters of another font.

1. Select **Applications | Global Setups | Emboss Mapping Setup**. The properties screen opens.



2. Click **Add**. A properties row opens.
3. Select a source font from the list and a source character in the text field.
4. Select a destination font from the list and a destination character in the text field.

   In the example shown in the figure above, whenever the Cyrillic character 'A' is encountered during an emboss operation, an Elite character 'A' will be used in its place.
5. Repeat steps two through four for each mapping you want to create.
6. Click **Save**.

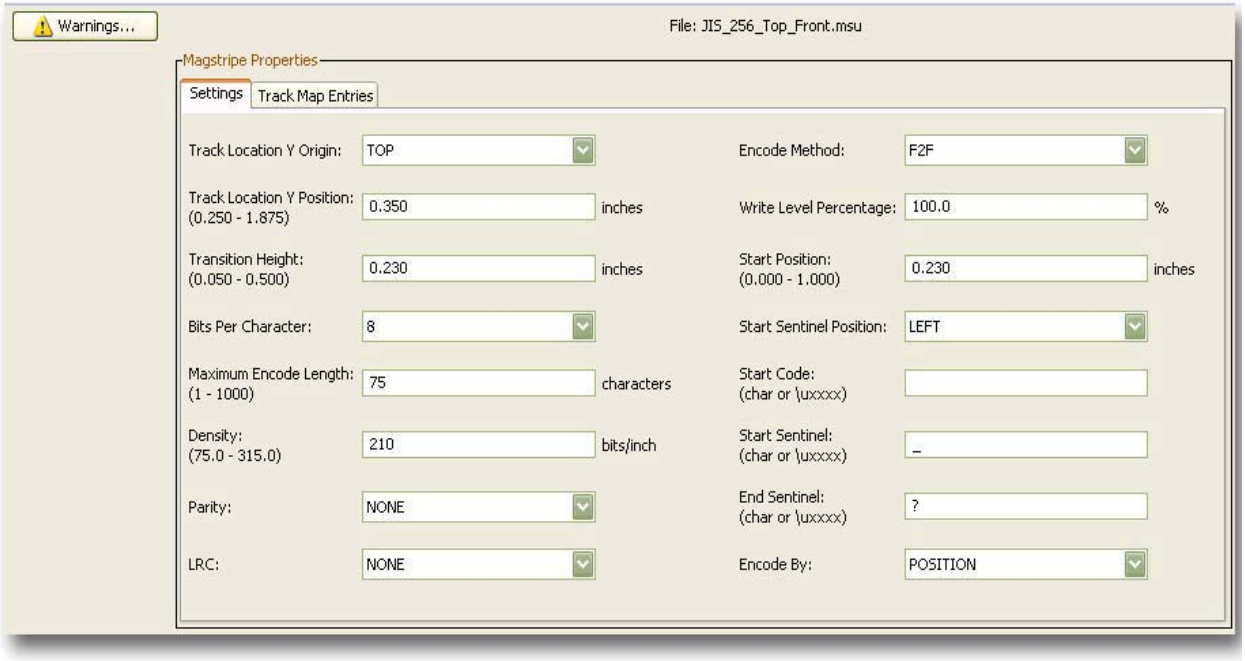
Magstripe Setup

Creating a New Magstripe Setup

Magstripe Setup allows you to define the behavior of a magnetic stripe encoding process. You can define and then use a magnetic stripe setup to encode in a particular manner or to adhere to a specific standard.

Complete the following steps to create a new Magnetic Stripe Setup.

1. Select **Applications | Global Setups | Magnetic Stripe Setup**.
2. In the Magnetic Stripe Setup window, click the **New** icon on the toolbar.
3. Define the Magnetic Stripe Properties under the **Settings** tab (refer to "Defining the Magnetic Stripe Properties" on page 163 for details).



4. If necessary, adjust the Track Map Entries to meet your encoding requirements (refer to "Track Map Entries" on page 164 for details).
5. Click **Save/Save As** from the toolbar. In the Save dialog, give the new Magnetic Stripe Setup a unique, descriptive name and then save it to the default setup location.

The Magnetic Stripe Setup will not be saved if there are any errors. Click **Warnings** to see a list of any errors in the setup.

Defining the Magnetic Stripe Properties

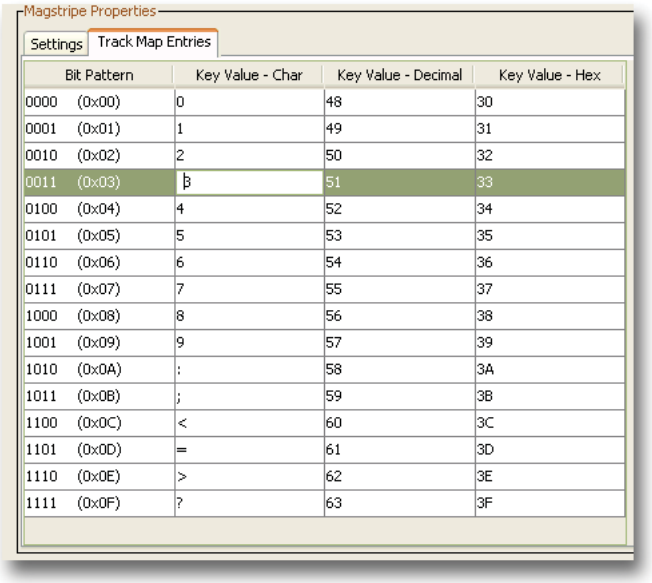
Define the magnetic stripe properties as detailed in the following table.

Track Location Y Origin	The location (top or bottom) of the track
Track Location Y Position	The distance of the track from the top of the card
Transition Height	The width of the track
Bits Per Character	The number of bits (not including the parity bit) of each character
Maximum Encode Length	The maximum number of characters allowed
Density	The number of characters/bits per inch
Parity	Character parity (even, odd, none)
LRC	Longitudinal redundancy check (even, odd, none)
Encode Method	*F2F* is currently the only supported encoding method
Write Level Percentage	The strength of the write level based on the coercivity level selected in the Card Setup
Start Position	The sentinel starting position from the edge of the card
Start Sentinel Position	The starting position (right, left) of the sentinel
Start Code	The start character/code (used for track 3 only)
Start Sentinel	The character/code in the data that causes the encoding to commence
End Sentinel	The character/code in the data that causes the encoding to end
Encode By	*Position* is the only supported option

Track Map Entries

Magnetic Stripe Setup allows you the option of altering the input character/bit pattern combination to customize your encoding. Perform the following procedure to change the character values.

1. Open a Magnetic Stripe Setup or create a new one.
2. Select the **Track Map Entries** tab to display the list of values.
3. For a selected bit pattern, double-click a corresponding Key Value (can be Character, Decimal, or Hexadecimal).



4. Type in the new value. The other character types adjust accordingly.
5. Click the **Save** icon on the toolbar to save the changes to the setup.

The Magnetic Stripe Setup will not be saved if there are any errors. Click **Warnings** to see a list of any errors in the setup.

Image Placement Setup

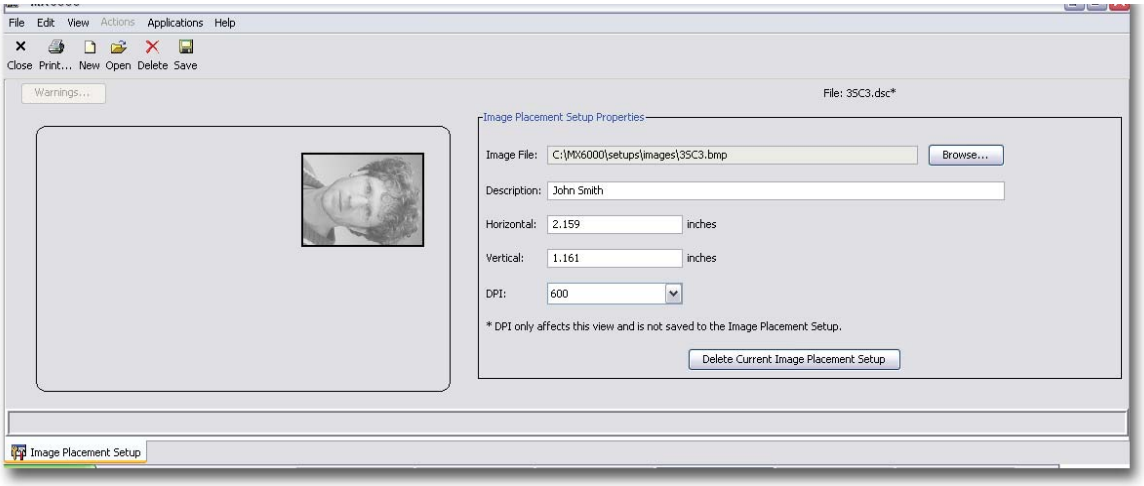
Positioning an Image File

The Image Placement Setup application is used to position graphic images.

This setup uses legacy technology from the Datacard 9000 Series systems. Datacard recommends that whenever possible, users define image location using the Card Setup's Image Element placement capabilities or in the data stream (refer to "Card Setup" on page 79).

When an image file is used in an Image Placement Setup, a corresponding file with a DSC extension is saved to the same location on the disk/network. For example, if the image JohnSmith.bmp is used to create a setup, the file JohnSmith.dsc is created in the same location when the Image Placement Setup is saved.

At runtime, the image generator will search the system for any image position values defined in Card Setups, data streams, or DCPF files. If no such information exists, the image generator will use the positioning values defined in any DSC file that corresponds to the name of the image to be printed on the card.



Creating a New Image Placement Setup

Complete the following steps to create a new Image Placement Setup.

1. Select **Applications | Global Setups | Image Placement Setup**.
2. In the Image Placement Setup window, click the **New** icon on the toolbar. A new Image Placement Setup form opens that depicts a blank card setup with a virtual card on the left side and a Properties view on the right.
3. Under Image Placement Setup Properties, click **Browse** and then navigate to the image file you would like to use. The path to the selected image appears in the Image File text box.
4. (*Optional*) Enter a description as needed to identify the image.
5. Click and drag the image on the virtual card to the desired location. Fine-tune the image location by entering the Horizontal and Vertical location values in the appropriate boxes. The zero point is the lower-left corner of the card.
6. Select the DPI value. This value allows you to view the image at various DPI settings on the card. Changing the setting does not affect the printed image, nor is the value saved to the setup. The image will always print at its default DPI setting.
7. Optionally select **Whitespace Clipping** to remove excess white space around the viewed image.
8. Click the **Save** icon on the toolbar to save the new Image Placement Setup.

Camera Setup

Camera Setup application defines camera properties, lighting and module type. A camera setup is used by Vision Verification elements or identifiers.

1. To access select **Applications |Global Setups | Camera Setup.**
2. Select the Module type, either **MX Verification** or **MX Laser Engraver2**.
3. Select the **Color** Camera option from the list.
4. Select the **White** Lighting option from the list.

Both the MX Laser Engraver2 and the MX Verification modules only support a color camera with white lighting.

5. The Light intensity is set to 50 percent by default.
6. If needed, set Exposure Time offset (-32 to 32 milleseconds). The offset value defined here in camera setup is added to the base offset value. The base offset value is set in Diagnostics and is stored in the camera. Using an offset value in

the camera setup allows the same camera setup to be used across modules (of the same type) and systems.

Mask Setup

Mask setup allows you to create a unique named setup that defines what characters are allowed in each position of a string.

The definition includes a description of the setup, the number of characters allowed, and what set of characters are allowed at each of the character positions. For most applications the characters used would be upper case A-Z and 0-9.

To access Mask Setup, select **Applications |Global Setups | Mask Setup.**

OCR Font Setup

The OCR Font Setup allows the creation of a font that is understood by the OCR vision tool with a set of characters that is applicable to the user's needs. This setup creates the OCR Font Setup file (with extension .xml) and OCR Font files (with extension .ocr). When adding an OCR element to a card setup the OCR font setup file is selected as a setting.

The OCR font is created from a Windows TrueType Font (.ttf) file and can be restricted to contain only the particular characters which are expected to be read from a card. Restricting the number of characters contained in the font can increase verification performance by reducing the number of comparisons needed to interpret a character during the read process.

To access OCR Font Setup select **Applications |Global Setups | OCR Font Setup.**

1. Select Font Type either **Windows Font** or **OCF Font**
2. To select a font from a file click **Browse** to choose a font file.
3. If desired, set the **Confusion Threshold** (default is 0.50).
4. Set the value for **Scaling** (1.00 - 10.00, default is 2.00).
5. Select the Data Contrast Type:
    - Light on Dark
    - Dark on Light (default)
    - Unknown

6. To use a character set that is different from the default (A-Z and 0-9), deselect **Use Default Character Set** and then enter the desired characters in the Character Set text box.
7. Click **Train** to create the Font and Font Setup files.

Chapter 11: Stocks

11

This chapter provides information on creating and modifying your stock inventory.

Using Maxsys Stock Setups

Those who may use Maxsys stock setups in the MX Series system should carefully read the following section. Those who will not be using Maxsys setups can skip this section.

The Stock Management system (released with Maxsys version 3.1) replaces the Inventory Management system that was used in previous releases of Maxsys. The new Stock Management system uses a different file format for storing stock files to disk. Pre-Maxsys 3.1 stock files can be read by the Stock Management system; however, Maxsys 3.1 and above cannot write stock files to disk in pre-Maxsys 3.1 format.

Anytime you click **Save** or **Save As** on a stock dialog, the file written to disk will be in Maxsys 3.1 format. Therefore, if you open a pre-Maxsys 3.1 stock object in Maxsys 3.1 and above and then click **Save** or **Save As**, the stock object will be written to disk in Maxsys 3.1 format. If you click **Cancel**, the stock file on the disk will not be modified.

If your site has multiple Maxsys systems sharing stock files and different releases of Maxsys software, you should be careful to edit only stock files with your 3.0 or earlier system.

The following is a list of scenarios to consider:

- Scenario #1 - You have different releases of Maxsys, but each Maxsys system maintains its own list of stock objects (i.e. stock objects needed by each Maxsys system is created on the Maxsys system that needs it). This is OK. You will not have any problems with stock files as long as nobody (i.e. operators, supervisors, MIS staff, etc.) copies stock files from one Maxsys system to another.
- Scenario #2 - You have different releases of Maxsys, and each Maxsys system has its own list of stock objects. However, the list of stock files is copied from one Maxsys system to another. It is acceptable to copy stock files from a pre-

Maxsys 3.1 system to a Maxsys 3.1 and above system. However, it is not acceptable to copy Maxsys 3.1+ stock files to a pre-Maxsys 3.1 system.

- Scenario #3 - You have different releases of Maxsys, and some (or all) of these systems are configured to use stock objects from a common location (i.e. a network drive, one of the Maxsys systems, etc.). This is acceptable as long as you use a pre-Maxsys 3.1 system to create new or edit existing stock files. In this scenario, a Maxsys 3.1+ system cannot be used to create new or edit existing stock files.

  One way to prevent individuals from using Maxsys to edit/create stock objects is to enable Maxsys Security Configuration (refer to "About Security Configuration" on page 203) and then disable the *Stock Management* option for selected users. This will prevent these users from gaining access to the Stock Management system.

- Scenario #4 - You have different releases of Maxsys, and some (or all) of these systems are configured to use stock objects from a common location (i.e. a network drive, one of the Maxsys systems, etc.) and you want to create stock objects using a Maxsys 3.1+ system. You will need to have one location (i.e. drive or directory) for stock files used for pre-Maxsys 3.1 systems and a different location for stock files used for Maxsys 3.1 and above.

Units of Measure

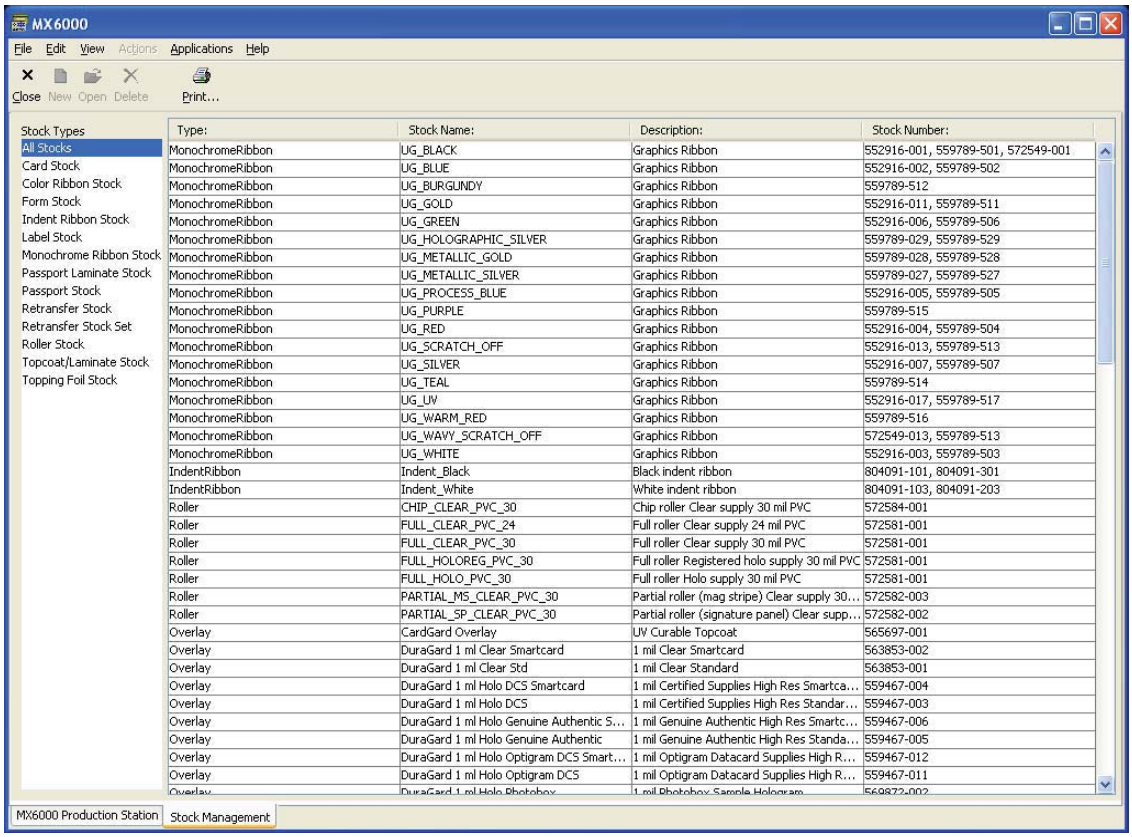
One of the reasons that Maxsys 3.1 and above stock files are incompatible with pre-Maxsys 3.1 stock files is because Maxsys 3.1+ stores "length" values to disk using "thousandths of an inch" as the unit of measure. Releases prior to Maxsys 3.1 stored length values to disk using "meters" as the unit of measure. For example, pre-Maxsys 3.1 stored 1" to disk as "0.0254" using meters as the unit of measure. Maxsys 3.1 and above stores 1" to disk as "1000.0" using thousandths of an inch as the unit of measure.

Viewing Existing Stock Descriptions

The Stock Management application stores stock descriptions. The stock information is used by Production to identify the bill of materials for a particular product.

From the main Stock Management window, you can choose to view a particular stock type (topping foil, label, card, etc.) or to view all available stock.

1. Select **Applications | Stocks | Stock Management** from the menu. The Stock Management window (which lists all inventory in the system) opens. The stock types are listed in the left-hand column.



2. From the Stock Types list, select a particular stock to view or select **All Stocks**.
3. To view the details of a particular stock item, select the item in the list and then click **Open** on the toolbar.

Adding Stock Descriptions

Complete the following steps to add a stock description.

When adding new graphics ribbon or topping foil, you must have an identical item described in Diagnostics.

1. **Select Applications | Stocks | Stock Management** from the menu bar. The Stock Management window (which lists all inventory in the system) opens.
2. Select the type of stock you want to add from the Stock Types list ("All Stocks" cannot be selected).
3. Click **New** on the toolbar. The stock definition dialog for that stock type opens.

4. Complete the stock description by filling out the fields provided (see the next section for details).

The name you enter in the Stock Name field is the name that will appear for this item throughout the system.

5. Click **Save As** on the toolbar to save the stock description.

Stock Descriptions by Type

The stock description details for each stock type are described in the following tables.

Card Stock

Card stock details are defined in the Card Stock Setup. See "Card Stock Setups" on page 178.

Cleaning Tape Stock

Parameter	Description
Stock Name	Unique, descriptive name of the stock.
Description	A description of the stock.
Stock Number	The Datacard part number of the stock to be read by the associated module.

Color Ribbon Stock

Parameter	Description
Stock Name	Unique, descriptive name of the stock.
Description	A description of the stock.
Stock Number	The Datacard part number of the stock to be read by the associated module.
Color Fields	The Stock Names and Stock Numbers for each of the Cyan, Magenta, Yellow (CMY) ribbons.

Form Stock

Parameter	Description
Stock Name	Unique, descriptive name of the stock
Description	A description of the stock
Size	Select the size of the form stock.
Equivalent Weight	Standard paper measurement. Enter the value provided on the paper ream label.
Preview (Front and Rear)	Image files that are placed on the form (letterhead, etc.). To select an image, click **Browse** and then navigate to the image location.

Indent Ribbon Stock

Parameter	Description
Stock Name	Unique, descriptive name of the stock
Description	A description of the stock
Stock Number	The Datacard part number of the stock to be read by the associated module.

Label Stock

Parameter	Description
Stock Name	Unique, descriptive name of the stock
Description	A description of the stock
Stock Number	The Datacard part number of the stock to be read by the associated module.
Size Height/Width	Height and width dimensions of the label stock

Monochrome Ribbon Stock

Parameter	Description
Stock Name	Unique, descriptive name of the stock
Description	A description of the stock
Stock Number	The Datacard part number of the stock to be read by the associated module.
Simulated Ribbon Color	Click **Choose Color** to open the color selection dialog. Use the dialog to choose the color value of the ribbon. Click the HSB/RGB tabs to fine-tune the selected color.

Passport Stock and Passport Laminate Stock appear in the list for Maxsys and MX Series systems; however, it is not applicable to these systems.

Retransfer Stock

Parameter	Description
Stock Name	Unique, descriptive name of the stock
Description	A description of the stock
Stock Number	The Datacard part number of the stock, to be read by the associated module.
Type	Select the retransfer stock type (Ribbon, Retransfer Material, or Primer)
Color Value (Ribbon only)	Click **Choose Color** to open the color selection dialog. Use the dialog to choose the color value of the ribbon. Click the HSB/RGB tabs to fine-tune the selected color. This will approximate the color when viewed in the Print Preview tool in Card Setup. The color that will print on the card is determined by the ribbon loaded in the Artista VHD module.

Retransfer Stock Set CMYK

Ribbon Stocks Tab

Parameter	Description
Stock Name	Unique, descriptive name of the stock
Description	A description of the stock
Define Ribbons	Select/enable the print head position (up to five) and then choose a corresponding ribbon stock from the **Stock Name** list.
Retransfer Material	Choose a retransfer material stock from the list.
Primer	Choose a primer material stock from the list.

Print Processes Tab

Parameter	Description
Add Print Process	1. Select a process type and then click **Add** to create a new Print Process to associate with the Retransfer Stock set. 2. Enter the process name in the text box and then select the ribbon(s) that will be used. 3. Click **Save** when finished. To remove a process select the process and then click **Remove**. **Note:** If a high density ribbon is defined in the fifth mount point, and a one color print process is defined using the high density ribbon, a Y offset box will open. The Y offset origin is the bottom edge of the printed canvas of the retransfer material. This is slightly larger than the card. In Card Setup, this is the dashed area around the card when Retransfer Print Technology is selected. This value ranges from 0 to 1.12" with a precision up to ten thousandth of an inch. The default is 0.56".

Retransfer Stock Set CMYK_Gold

Ribbon Stocks Tab

Parameter	Description
Stock Name	Unique, descriptive name of the stock
Description	A description of the stock
Define Ribbons	Select/enable the print head position (up to five) and then choose a corresponding ribbon stock from the **Stock Name** list.
Retransfer Material	Choose a retransfer material stock from the list.
Primer	Choose a primer material stock from the list.

Print Processes Tab

Parameter	Description
Add Print Process	Select a process type and then click **Add** to create a new Print Process to associate with the Retransfer Stock set. Enter the process name in the text box and then select the ribbon(s) that will be used (Gold Spot). Click **Save** when finished. To remove a process select the process and then click **Remove**. **Notes:** If a high density ribbon is defined in the fifth mount point, and a one color print process is defined using the high density ribbon, a Y offset box will open. The Y offset origin is the bottom edge of the printed canvas of the retransfer material. This is slightly larger than the card. In Card Setup, this is the dashed area around the card when Retransfer Print Technology is selected. This value ranges from 0 to 1.12" with a precision up to ten thousandth of an inch. The default is 0.56".

Roller Stock

Parameter	Description
Stock Name	Unique, descriptive name of the stock
Description	A description of the stock
Stock Number	The Datacard part number of the stock to be read by the associated module

Topcoat/Laminate Stock

Parameter	Description
Stock Name	Unique, descriptive name of the stock
Description	A description of the stock
Stock Number	The Datacard part number of the stock to be read by the associated module
Type	The overlay stock type (CardGard, DuraGard, or Topcoat)
Size (DuraGard only)	Size of the overlay media. Select **Full** if the patch covers the entire card surface. Select **Partial** and then enter the width (in inches) of the patch into the text box.

Topping Foil Stock

Parameter	Description
Stock Name	Unique, descriptive name of the stock
Description	A description of the stock
Stock Number	The Datacard part number of the stock to be read by the associated module

Editing Stock Descriptions

Complete the following steps to modify a stock description.

1. Select **Applications | Stocks | Stock Management** from the menu bar. The Stock Management window (which contains all stock inventory in the system) opens.

2. Select the stock item to change and click **Open**. The stock definition dialog window for the selected stock opens.
3. Change the information as necessary (see the previous section), and then click **Save**.

One stock name can associate with more than one Datacard part number.

Deleting Stock Descriptions

Complete the following steps to delete a stock description you no longer use.

1. Select **Applications | Stocks | Stock Management** from the menu bar. The Stock Management window (which lists all inventory in the system) opens.
2. Select the stock description to delete and click **Delete**.

Note that there is no delete confirmation dialog, so be sure you have selected the correct description before deleting.

Card Stock Setups

Card stocks can be viewed in the Stock Management list, however Card Stocks must be defined using Card Stock setup You can open the setup by double-clicking a setup in the list or by selecting **Applications | Stocks | Card Stock Setup** from the menu

This feature allows you to create many card stocks so that card stock identification can be implemented and production system downtime for allowing setup work is minimized.

- Cards can be automatically taken from the input tray for capture of front and back images
- Card images can be captured to a local disk or network mapped drive
- Card images can be used, on any production machine or any simulator, to create many card stock setups based on an existing card stock setup
- Card stock setups can be completed on any production machine or simulator

Completing Card Stock Setups involves configuring pattern and/or OCV matches on each created setup.

Perform the following procedure to create a Card Stock Setup.

1. Open the Card Stock Setup application.
2. Select **New**.

3. Drag the Pattern Match/Optical Character Verification (OCV) elements to the virtual card.
4. Define the stock properties as described in the next section.
5. Click **Save** on the toolbar.

Defining Card Stocks

The stock description details are described in the following tables. Click on the virtual card to show these parameters.

Parameter	Description
General Tab	
Description	A description of the Card stock
Thickness	Thickness (in thousandths of an inch) of the card
Material	The material from which the cards are made. Click **Edit** to add or edit material descriptions.
Pick Profile	Certain card types (SIM, Chip Contact, etc.) may require special picking. Click **Edit** to add or edit pick profile descriptions.
De-bow Distance	The distance the card needs to be pushed to return to a flat state after being processed by the overlay module.
Transparent	Select the check box if this description is for a transparent card.
MC2	Select the check box if this description is for an MC2 card.
Titanium MasterCard	The Titanium MasterCard cards have a different shape than typical credit cards (rounded sides). Select the check box if this description is for a MasterCard Titanium card. This setting allows the modules (Magstripe, etc.) to compensate for the unique card shape.
Mini-Card	Select the check box if this description is for a mini-card. In addition, define the location where the split is located on the card (i.e. distance of the split from the leading edge of the card.
Front/Rear Background	The image that will be printed on the card. Click **Import** to select the image file.

Parameter	Description
Front/Rear Aspect Ratio	The aspect ratio of the imported image (view only).
Use Camera Setup	Use parameters from the camera setup.
Front/Rear Variable Exposure	The amount of time (in microseconds) that the verification camera lens will open during the verification procedure.

Card Stock Laser Receptivity Front/Back Tabs	
Parameter	**Description**
Laser Capable Surface	Select if the card contains a laser capable surface. The laser options will become editable.
Origin Offset (X and Y axes)	The offset from the "layout origin" (bottom left corner) zero position of the card to the module-defined zero-position. These values are dependant on card size and the behavior of the card as it passes through the module.
Coordinate Offset (X and Y axes) - front only	
X - Axis Inversion	Select if the preprint is mirrored on the X axis.
Y - Axis Inversion	Select if the preprint is mirrored on the Y axis.
X - Y Axis Exchange	Select if the preprint is mirrored on both the X and Y axes.

Card Stock Elements

There are two types of elements that can be placed on the Card Stock, Pattern Match and Optical Character Verification (OCV). The tables below provide the parameters for each element type.

Pattern Match

Parameter	Description
Name	Descriptive Name (PatternMatch1 by default)
Side	The side of the card (Front or Back) on which the element appears
X	Horizontal offset (in inches) from the bottom-let corner of the card

Parameter	Description
Y	Vertical offset (in inches) from the bottom-let corner of the card
Width	Width (in inches) of the pattern match box
Height	Height (in inches) of the pattern match box
Pass Threshold	The value at which the pattern match item will pass when tested
Vision Filter Setup	Browse to select a setup or open the Vision Filter Setup Properties.
Open Vision Filter Setup/ Element Filter	The filter by which the camera distinguishes objects of similar color from one another. When you select **Intensity,** the camera will distinguish between the intensities of like colors. When **Red**/ **Green**/**Blue** are selected, the camera will attempt to filter objects of similar color within the selected color range. When HSV is selected the Target Value, Threshold and Weight for Hue, Saturation, and Brightness can be adjusted.
Apply Vision Filter to background image	Optionally apply the Vision Filter to the background image.
Background Noise	Select to include or exclude the background noise from score.
Camera Setup	Browse to select the Camera Setup.
Camera Setup/Open	In the camera setup properties select the Module Type, Camera, Lighting, Light Intensity, and Exposure Time offsets.
Image Name	The image name.
Manual X/Y offset	Offsets measured in a range of -0.200 to 0.200 inches.
Search Region	Coordinates of the search Region in inches.
Test	Click the test button to test the pattern match.

Optical Character Verification (OCV)

Settings Tab

Parameter	Description
Name	Descriptive Name (OCV1 by default)
Side	The side of the card (Front or Back) on which the element appears
X	Horizontal offset (in inches) from the bottom-let corner of the card
Y	Vertical offset (in inches) from the bottom-let corner of the card
Width	Width (in inches) of the OCV box
Height	Height (in inches) of the OCV box
X (Ref)/Y (Ref)	The reference coordinates (in inches) for the dynamic OCV element
Data	Characters displayed on the card
Data Contrast Type	Select the contrast type between the characters and the background on which they are printed Select **Dark on Light** if there is a dark image on a light background. Select **Light on Dark** if there is a light image on a dark background.
Font Filename	The font of the OCV characters. Click **Browse** to select a font.
Font Point Size	The size of the font. Enter the value in the text box or use the spin control to select the value.
Pass Threshold	The value at which the OCV item will pass when tested
Element Filter	The filter by which the camera distinguishes objects of similar color from one another. When you select **Intensity,** the camera will distinguish between the intensities of like colors. When **Red**/**Green**/**Blue** are selected, the camera will attempt to filter objects of similar color within the selected color range.

Advanced Tab

Parameter	Description
Width/Height Scaling	The degree to which the OCV font characters have been scaled from their original size
Rotation Degrees	The degree to which the OCV font characters will be read from the X/Y reference point

Testing Card Stock Elements

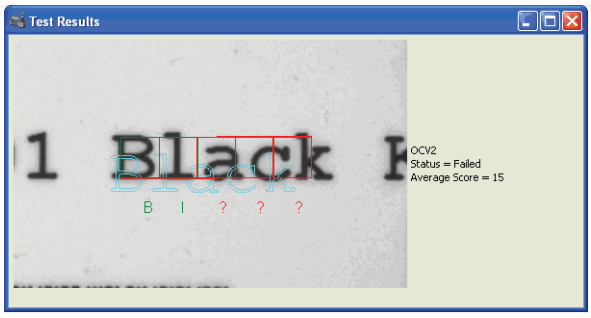
Once the Pattern Match/OCV elements are placed on the card, the Verification Module then compares the elements on the front and/or back of the card to either a pre-defined file, data element, or contents of a live data stream. An acceptance threshold must be established as the criteria for either accepting or rejecting the card. Perform the following procedure to test the card stock elements.

1. Place and configure Pattern Match/OCR elements as described above.
2. To test each element individually, click on that element and then click **Test** in the properties pane. To test all of the elements on the card click **Test All**. The result(s) will open in a new window as shown below.

In the example above, the pattern match passed with an average score of 99 and a minimum score of 99. The minimum score is entered into the Pass Threshold box in the dialog.

In the examples below, three tests of OCV characters yield different results.

- In the first example, the test failed with an average score of 15, with the program only recognizing the first two characters.



- In the second example, the test passed but only with an average score of 47 and a minimum score of 28. All characters were recognized.

- In the third example, the test passed with an average of 71 and a minimum of 44.

Chapter 12: Smart Card Management

12

This chapter provides information on using the Smart Card Management tools.

Smart Card Management Tools

Smart Card Management provides tools for configuring the applications, crypto devices, key cards, key readers, and local master keys used in the smart card personalization process.

Privileges for this tool may be defined when security is enabled; refer to Chapter 14: "Security Configuration" on page 203.

The tools are as follows:

- **Crypto Device Management** — Use Crypto Device Management to define crypto devices and specify which devices are available for use by smart card personalization applications.
- **Key Card Management** — Use Key Card Management to define key card groups and to assign key cards to groups.
- **Key Reader Management** — Use Key Reader Management to define key readers, to assign key card groups to key readers, and to specify which key readers are available for use by smart card personalization applications.
- **Local Master Key Management** — Use Local Master Key (LMK) Management to define aliases and enter key check values for LMKs.

Getting Started with Smart Card Management

To begin using Smart Card Management, you must first define your application using Application Management. Note whether or not your application requires crypto devices or key readers and then complete the following steps.

- If your application requires a crypto device or devices, use Local Master Key (LMK) Management to enter the LMK alias of each key in a crypto device, and then use Crypto Device Management to define the crypto devices.
- If your application requires a key reader or readers, use Key Card Management to define the key card groups and key cards that will be used,

and then use Key Reader Management to define the key readers and to assign key cards to key readers.

Crypto Device Management

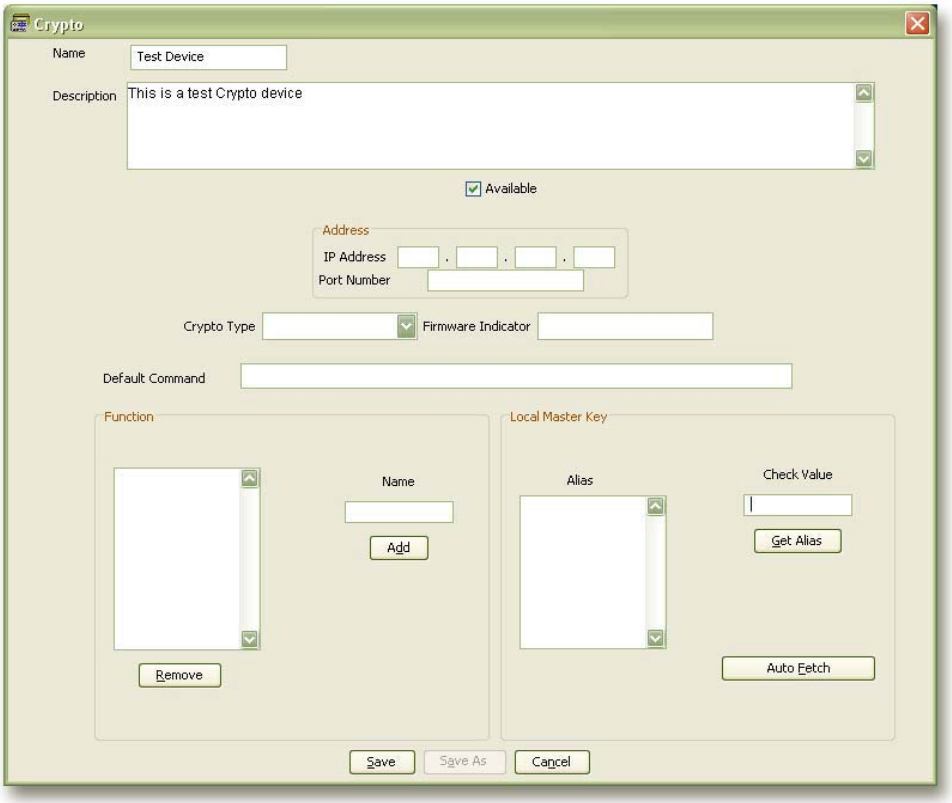
Crypto Device Management allows you to create entries for multiple crypto devices and to use custom names to identify the devices. Each cryptographic device requires a local master key (LMK) in order to encrypt and decrypt other keys used in the smart card personalization process. Only one LMK at a time can be used by a crypto device. Use Crypto Device Management to define crypto devices and specify which will be available for use during the smart card personalization process.

Adding a Crypto Device

Before creating a crypto device, you must use Local Master Key Management to enter the LMK Alias and Check Value for the local master key that will be used in the crypto device. Refer to "Local Master Key (LMK) Management" on page 197.

To add a crypto device, complete the following steps.

1. Once you have configured LMK Aliases, select **Applications | Smart Card Management | Crypto Device Management** from the menu bar.
2. Click **New** (or to modify an existing device, select one and then click **Open**) on the toolbar.



3. For name, enter a name for the crypto device.
4. For Description, enter a comment that describes the crypto device.
5. Verify that the **Available** check box is selected to make the crypto device available for use by personalization applications.
6. For Address, enter the **IP Address** and **Port Number** of the crypto device.
7. For Crypto Type, select the crypto device model number.
8. For Firmware Indicator, enter the version of firmware you are using.
9. For Default Command, enter a command. A value for the default command may have been provided. Change it as needed for the crypto device you are using. The default command is sent to the crypto device only when the Test button is selected (from the Crypto Device Management application's main screen).
10. Under Function, enter the names of the functions supported by the device in the **Name** field, and then click **Add**. Examples are P3, Affina, etc.
11. Click the **Auto-Fetch** button. If the crypto device is functioning, the Firmware Indicator and Check Value fields should be populated with values. Ensure that the values are the ones you expect for this device.

12. Once you have a value in the Check Value field, click the **Get Alias** button. This should highlight one of the values in the Alias list box. If it does not, you must define an LMK Alias in the Local Master Key Management application. Only an LMK Alias (and not a Check Value) can be used in the Card Setup Manager for mapping the Smart Card application's Crypto Device resources. You can select the contents of the Check Value field and copy them to the clipboard to ensure that you create the LMK Alias with the correct value.
13. Click **Save** on the toolbar to add the crypto device.

Deleting Crypto Devices

To delete a crypto device, complete the following steps.

1. Select **Applications | Smart Card Management | Crypto Device Management** from the menu bar.
2. Select the crypto device you want to delete.
3. Click **Delete** in the toolbar.
4. Click **Yes** to confirm the deletion of the crypto device.

Testing Crypto Devices

To test the TCP/IP connectivity of a crypto device, complete the following steps.

1. Select **Applications | Smart Card Management | Crypto Device Management** from the menu bar.
2. Select the crypto device you would like to test.
3. Click **Test** on the toolbar.
4. Click **OK**. If the test fails, verify that you have entered the correct IP address for the crypto device and that it is online and then re-test the device.

Key Card Management

Key Card Management enables the user to create key card groups, add key cards to groups, and identify groups and cards using custom names. A unique group must be created for each type of key card that will be used, and every key card assigned to a group must be identical to the others in that group. Key Card Management can be used to define key card groups and key cards.

Adding Key Card Groups

A unique key card group must be created for each type of key card that will be used. To add a key card group, complete the following steps.

1. Select **Applications | Smart Card Management | Key Card Management** from the menu bar.
2. Click **New** on the toolbar.

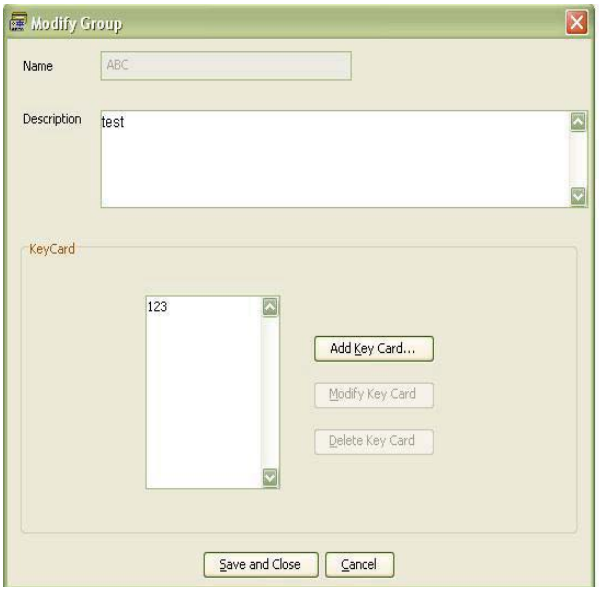
3. For Name, enter a name for the key card group.
4. For Description, enter a description of the key card group.
5. Click **Save** to add the key card group.

Adding Key Cards

Each key card assigned to a group must be identical to the other key cards in that group. To add a key card to a group, complete the following steps.

1. Select **Applications | Smart Card Management | Key Card Management** from the menu bar.
2. Double-click the group to which you would like to add a card.

If no key card groups currently exist, none will be listed. To add a group, refer to "Adding Key Card Groups" on page 189.



3. Click **Add Key Card**.

4. For Name, enter a name for the key card.
5. For Description, enter a description of the key card.
6. Click **Save** to add the key card.
7. Click **Save and Close** to save changes.

Deleting Key Card Groups

To delete a key card group, complete the following steps.

1. Select **Applications | Smart Card Management | Key Card Management** from the menu bar.
2. Select the name of the key card group to delete.
3. Click **Delete** in the toolbar.
4. Click **Yes** to confirm the deletion of the key card group.

Deleting Key Cards

To delete a key card, complete the following steps.

1. Select **Applications | Smart Card Management | Key Card Management** from the menu bar.
2. Double-click the group to which the key card belongs.

3. Select the key card to delete from the list.
4. Click **Delete Key Card**. The key card is removed from the list.

Note that there is no confirmation dialog, so make sure to select the correct key card.

5. Click **Save and Close** to save changes.

Modifying Key Card Groups

To modify a key card group, complete the following steps.

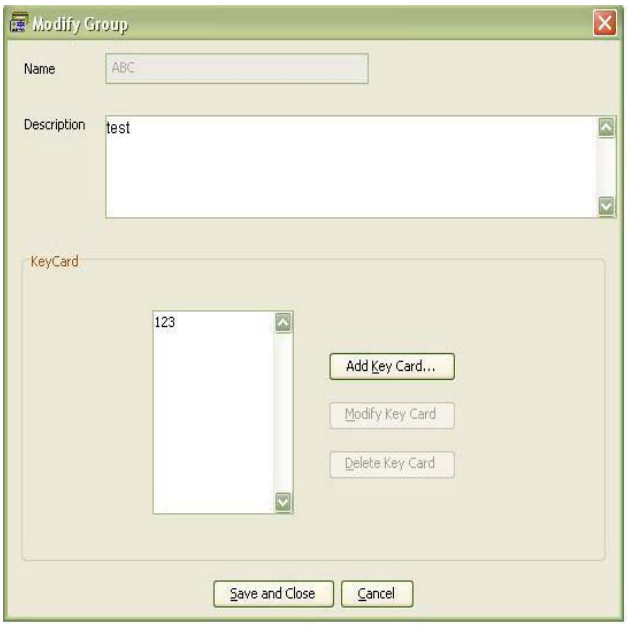
1. Select **Applications | Smart Card Management | Key Card Management** from the menu bar.
2. Double-click the group to modify.

3. Modify the group Name and/or Description.
4. Click **Save and Close** to save your modifications.

Modifying Key Cards

To modify a key card, complete the following steps.

1. Select **Applications | Smart Card Management | Key Card Management** from the menu bar.
2. Double-click the group to which the card belongs.



3. From the KeyCard list, select the key card to modify.
4. Click **Modify Key Card**.
5. Modify the key card Name and/or Description.
6. Click **Save** to close the dialog.
7. Click **Save and Close** to save your modifications.

Key Reader Management

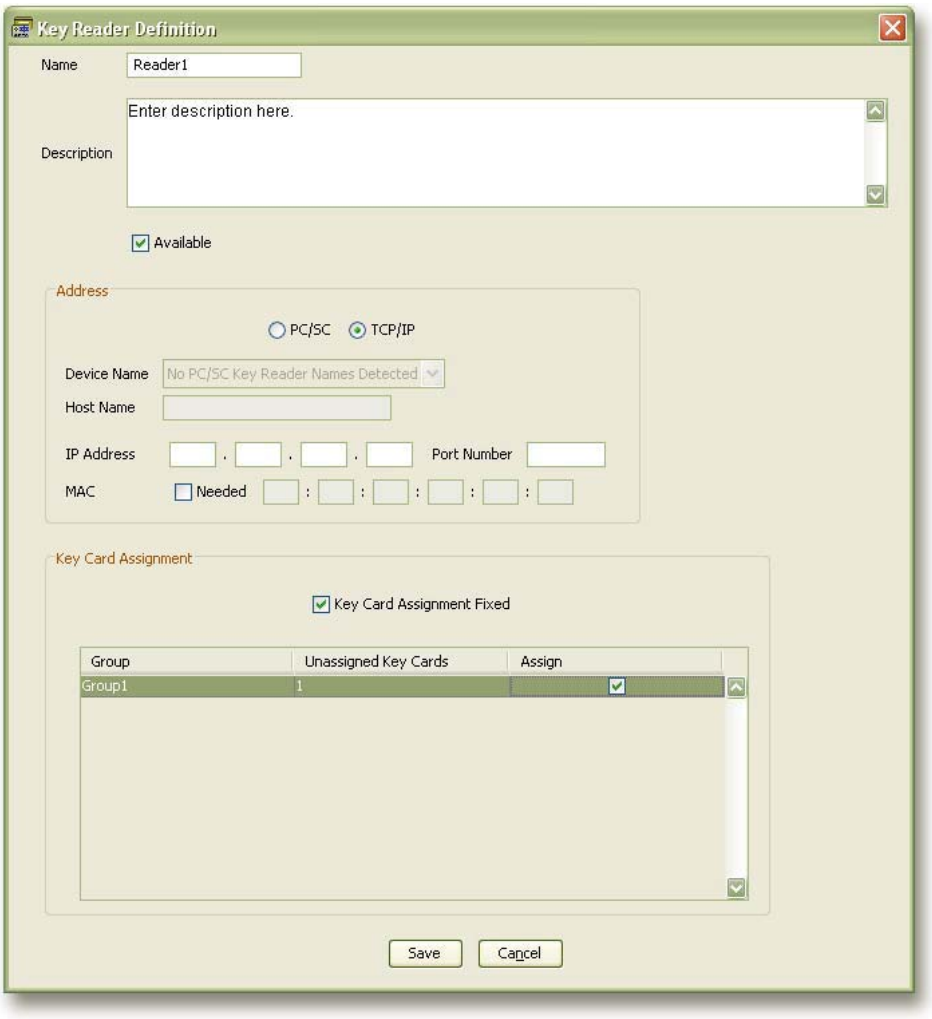
Key readers read key cards that are required to encrypt and decrypt data sent to smart cards during the personalization process. Key Reader Management enables the user to define key readers, to create entries for multiple key readers, and to identify key readers using custom names.

Adding and Defining Key Readers

Use Key Reader Management to define key readers and specify which will be available for use during the smart card personalization process.

To add and define a key reader, complete the following steps.

1. Select **Applications | Smart Card Management | Key Reader Management** from the menu bar.
2. Click **New**.



3. Enter a name for the key reader in the Name text box.
4. Enter a description of the key reader in the **Description** text box.
5. Select the **Available** check box to make the key reader available for use.
6. In the Address section of the dialog, select one of the following:
    - PC/SC (If the key reader is connected to a USB port) Select the Device Name of the PC/SC reader from the list. This list is populated when SCS is configured.
    - TCP/IP, and then enter the following:
        - The **IP Address** of the key reader. The standard TCP/IP address is 172.26.0.*x* (where *x* = the sequential number of key readers).
        - The **Port Number** used to communicate with the key reader. The standard port number for SCPM version 3.2/Affina Production Manager 4.0 and higher is 7451. The standard port number for earlier versions of SCPM is 1500.
        - The **MAC** address of the key reader (If the address is needed, select the **Needed** check box.)
7. In the Key Card Assignment section of the dialog:
    - If the key card is to be assigned to a specific key card group, select the **Key Card Assignment Fixed** check box to assign key cards that are fixed in slots (i.e. the box is locked and not accessible by the machine operator).
    - From the Groups list, select a key card group and then select its **Assign** check box to assign a key card from that group to this key reader exclusively.
8. Click **Save** to add the key reader.

Deleting a Key Reader

To delete a key reader, complete the following steps.

1. Select **Applications | Smart Card Management | Key Reader Management** from the menu bar.
2. Select the key reader to delete.
3. Click **Delete**.
4. Click **Yes** to confirm the deletion of the key reader.

Modifying a Key Reader

To modify a key reader, complete the following steps.

1. Select **Applications | Smart Card Management | Key Reader Management** from the menu bar.
2. Double-click the key reader to modify.
3. Modify the key reader parameters.
4. Click **Save** to save your modifications.

Resetting a Key Reader

If a key reader stops responding during an operation, you may need to reset the reader.

To reset a key reader, complete the following steps.

1. Select **Applications | Smart Card Management | Key Reader Management** from the menu bar.
2. Select the key reader that you would like to reset.
3. Click **Reset Reader** in the toolbar.
4. Click **OK**.

Testing a Key Reader

When testing Datacard key readers, the test function checks for a TCP/IP connection and then sends one test transaction to verify that the reader is responsive. For PC/SC readers the test is checking for connectivity. To test a key reader, complete the following steps.

1. Select **Applications | Smart Card Management | Key Reader Management** from the menu bar.
2. Select the key reader to test.
3. Click **Test** from the toolbar.
4. Click **OK**. If the test fails, verify that you have entered the correct IP address for a TCP/IP reader or that you have entered the correct host name for a PC/SC reader, and then re-test the reader.

Local Master Key (LMK) Management

Local Master Key (LMK) Management enables the user to create entries for multiple local master keys and to use aliases (custom names) to identify the keys. An LMK is required by each cryptographic device used to encrypt and decrypt other keys used in the smart card personalization process. LMKs are identified by the aliases created for them and by the encrypted key check values used to create them. Use Local Master Key Management to define LMK aliases. Aliases are used in the Card Setup to "map" the logical crypto device name (e.g. HSM1) to an actual device.

Adding Local Master Key Aliases

To add a local master key alias, complete the following steps.

1. Select **Applications | Smart Card Management | Local Master Key Management** from the menu bar. Click **New**.

2. For Name, enter a name for the LMK.

3. For Check Value, enter the check value of the LMK. Typical values are 16 characters in length.

This value can be copied from the Crypto Device Management application's Check Value field if the Auto Fetch function has been used to retrieve it from the crypto device.

4. Click **Save** to add the LMK alias.

Deleting Local Master Key Aliases

To delete a local master key alias, complete the following steps.

1. Select **Applications | Smart Card Management | Local Master Key Management** from the menu bar.
2. Select the LMK alias to delete.
3. Click **Delete**.
4. Click **Yes** to confirm the deletion of the alias.

Modifying Local Master Key Aliases

To modify a local master key alias, complete the following steps.

1. Select **Applications | Smart Card Management | Local Master Key Management** from the menu bar.
2. Double-click the LMK alias to modify.
3. Modify the LMK alias parameters.
4. Click **Save** to save your modifications.

Chapter 13: Hex Dump

13

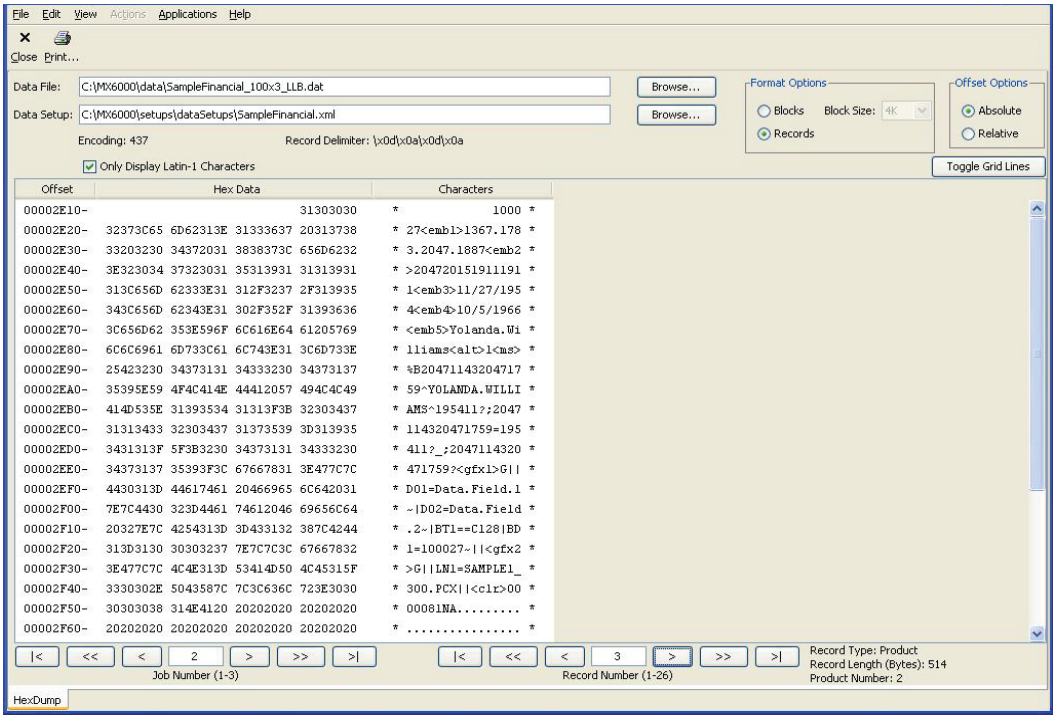
This chapter provides information about using the Hex Dump tool.

Using the Hex Dump Tool

The Hex Dump tool is used to display the raw text code of a data file. The main purpose of this tool is to troubleshoot problems with data input files that may cause errors during production. Using Hex Dump, you be able to see non-standard characters contained in your data.

Privileges for this utility may be defined when security is enabled; refer to Chapter 14: “Security Configuration” on page 203.

Browse through the data by Job and Record, to identify record type and length and to show a block or record for a specific offset. The Find tool on the Edit menu allows you to search the data for character or hex data and then browse through those search results as they are highlighted in the display.



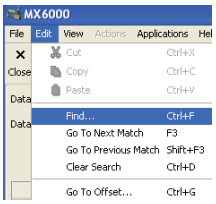
Perform the following steps to use the Hex Dump tool:

1. Select **Application | Utilities | Hex Dump**.
2. Select a Data File to view by clicking **Browse** and then navigating to the file's location. The data for the selected file will appear in the display.
3. Optionally select a corresponding Data Setup (whose encoding you would like to use to convert the data file selected) by clicking **Browse** and then selecting an available Data Setup from the list.
4. Select a format option.
    - **Blocks** - Fixed size portions of a file. The size to display can be configured by selecting the block size from the list. You can browse through the block using the navigator at the bottom of the window.
    - **Records** - Only available if a Data Setup is selected. The file is displayed by record. You can select Record Length or Record Delimiter if these are defined in the Data Setup. You can browse through the records using the navigator at the bottom of the window.
5. Select an Offset option.
    - **Absolute** - Offset relative to the beginning of the file.
    - **Relative** - Offset relative to the beginning of the block or record.
6. If desired select option to **Only Display Latin-1 Characters**.
7. If desired click **Toggle Grid Lines** to toggle-on grid lines in the table, click again to toggle-off.
8. Navigate through the data using the Job and Record number (if available) navigation buttons located at the bottom of the screen. You can navigate by job, single record, 10 records at a time, or the beginning or end of a job. The Record Type, Record Length and Product Number are displayed on the bottom right of the Hex Dump screen.

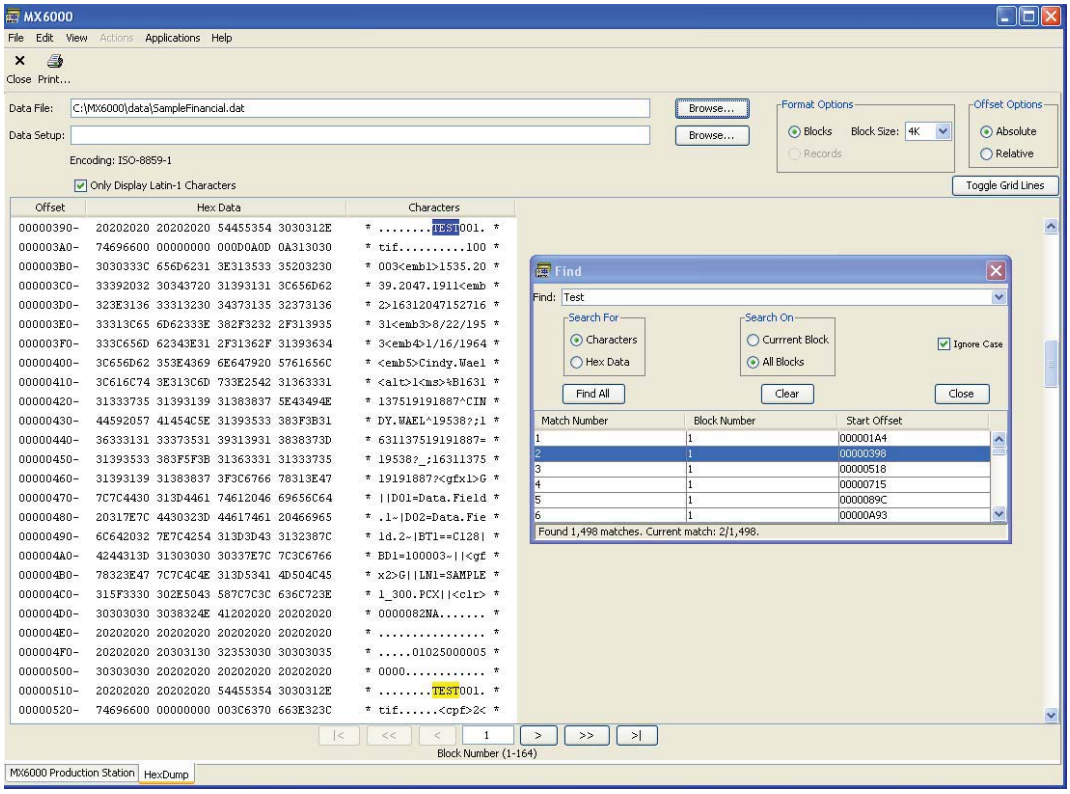
Find

Perform the following steps to use the Find command in Hex Dump tool:

1. To search the data using the Find tool select **Edit | Find** (Ctrl +f).



2. Enter a search string in the **Find** box.
3. In the Search For box choose **Characters** or **Hex Data**.
4. In the Search On box choose to search the **Current Block** or **All Blocks**.
5. Optionally choose to **Ignore Case**.
6. Click **Find All** to begin the search. Search results will appear in the Find display table. If there are no matches found, a message will appear in the status bar at the bottom of the Find display table.
7. Click in the row of search results to highlight the found text in blue. Other instances of the search item that appear in the display are highlighted with yellow.

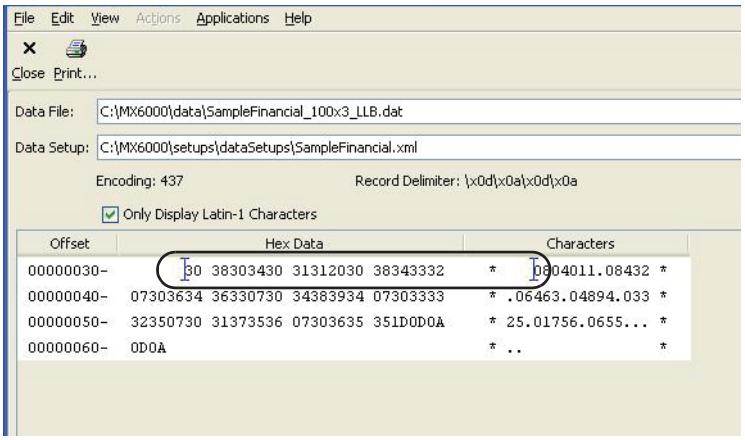


8. Click **Clear** to clear the Find field and highlights.
9. Click **Close** to close the dialog.

Go To Offset

Perform the following steps to use the Hex Dump Go To Offset tool:

1. To search the data using the Go To Offset tool select **Edit** | **Go To Offset** (Ctrl+g).
2. Select an Offset Value Type:
   - **Hexadecimal** - Enter a hexadecimal number no bigger than the one stated in the dialog box.
   - **Decimal** - Enter a decimal number no bigger than the one stated in the dialog box.
3. Click **OK** to continue or **Cancel** when finished.
4. When a valid offset value is entered, a block or record is shown within two offset position markers (I bars) in the Hex Dump Viewer display.



Chapter 14: Security Configuration

14

This chapter contains information on the use of the Security Configuration component.

About Security Configuration

The Security Configuration application allows you to assign privileges to groups when security is enabled. The groups and users assigned to those groups are created in the Windows group configuration utility.

Keep the following in mind:

- Every user must have write access to directory C:\Maxsys (or MX6000, MX2000)\StartupTracing. This directory is used to write startup tracing information. Nothing critical is written to this directory which could compromise security.
- Every user must have write access to directory C:\Maxsys\temp. This is the temp directory used to write lock file and other temporary information.
- Each user with security privilege "Diagnostics - Configuration" must have write access to the file, C:\Maxsys\Cfg\controller.properties.
- Each user with any of the "Diagnostics" security privileges must have write access to the directory C:\Maxsys\Diagnostics.
- Each user with the "Diagnostics" security privilege must have write access to the three directories:
    - C:\Maxsys\exercise
    - C:\Maxsys\FlashUpdates
    - C:\Maxsys\VPDUpdates.
- Any Administrator needing to make changes to the security settings via the Security Configuration must have write access to the files, C:\Maxsys\Cfg\SecurityFileLocation.ini, and the file whose name is contained inside C:\Maxsys\Cfg\SecurityFileLocation.ini.

- Users needing to extract a trace through the Diagnostics application must have permission to access the Maxsys DB2 database. Permission can be granted through the DB2 Control Center.

Using Security Configuration

Perform the following steps to assign privileges to User Groups:

1. Select **Applications | Utilities | Security Configuration** from the menu bar.
2. The Security Configuration window contains three tabs:

   ### General Tab

   A. Select **Enable Security** to use the security features in the software.

   ### Domains Tab

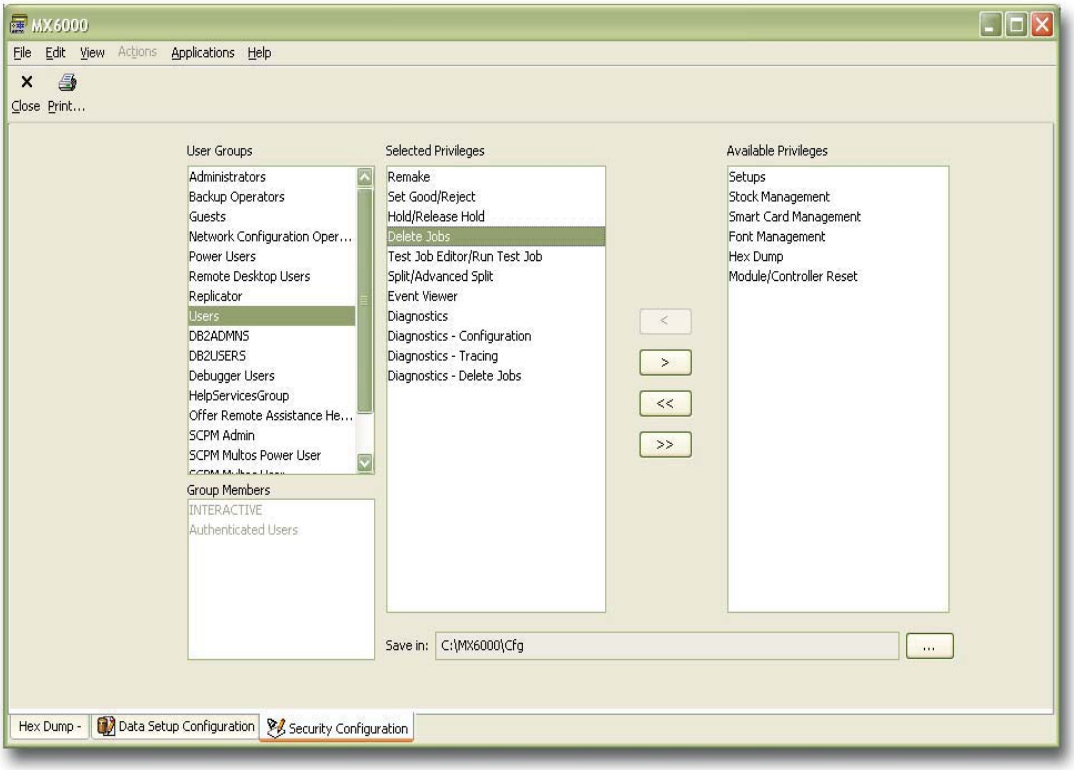
   A system manager can associate privileges with Windows domain groups so that it is easy to manage users and privileges across multiple Maxsys/MX Series systems.

   All available Windows domain groups appear in the Available Domains list. When a domain is selected, its domain groups appear in the Domain Group list.

   A. To select a domain, click on the domain name in the Available Domains list and then click the right arrow button. The domain will move to the Selected Domains list and the domain's groups will appear in the Available Groups list.

      - Click the double arrow button to move all listed domains into the Selected Domains list (and vice-versa).

- Select multiple domains by using **Ctrl/Shift+Click**.



All available domain groups appear in the Available Groups list. When a group is selected, its members appear in the Selected Groups list.

A. To select a group, click on the groupname in the Available Groups list and then click the right arrow button. The group will move to the Selected Groups list.

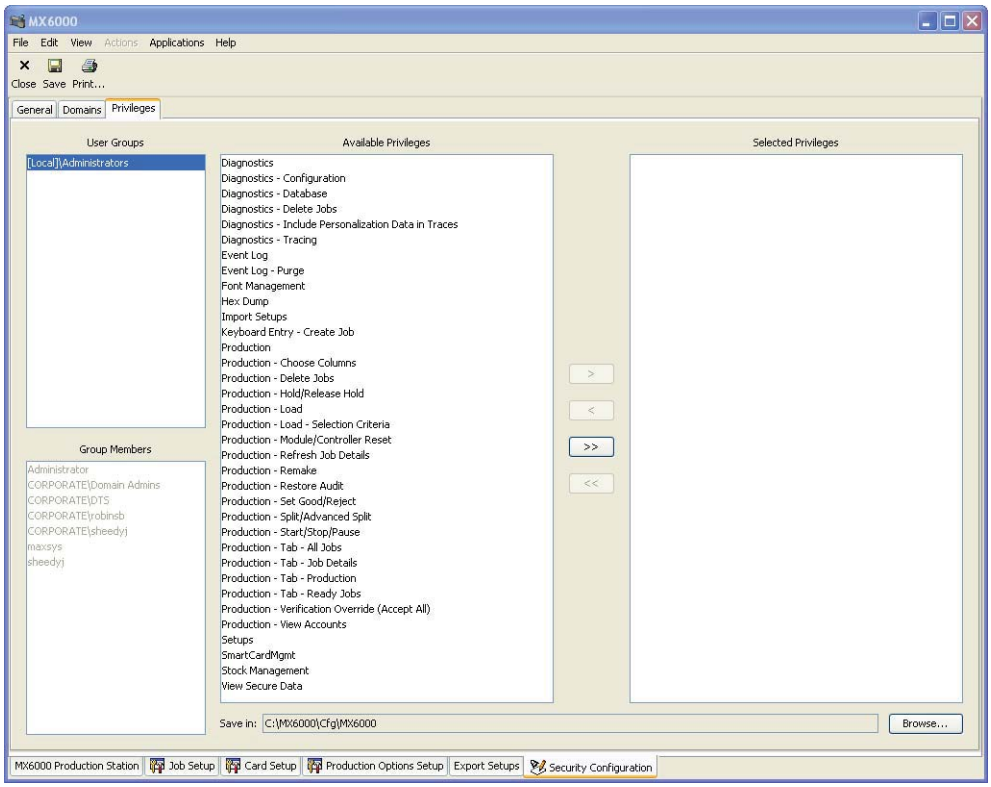
   - Click the double arrow button to move all listed groups into the Selected Groups list (and vice-versa).
   - Select multiple groups by using **Ctrl/Shift+Click**

Privileges Tab

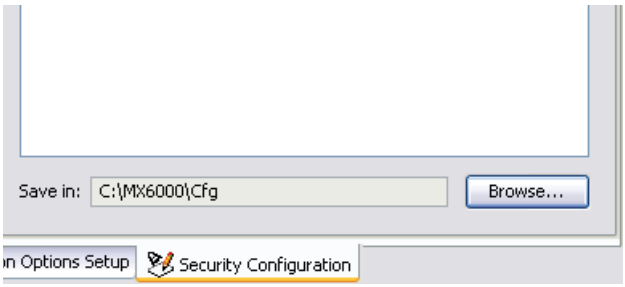
A. Select a group from the User Groups list. The members of that group will be displayed in the Group Members list below.

   The groups and users assigned to those groups are created in the Windows group configuration utility.

B. Use the arrow buttons to move privileges between the Available Privileges column and the Selected Privileges column. Those privileges listed in the Selected Privileges column will be available for all members of the selected group.



3. If necessary, choose the location in which to save the security configuration file by clicking **Browse** next to the Save in text box and then navigating to the location using the Explorer. The configuration is saved automatically to that location whenever changes are made.



Chapter 15: Export Setups

15

This chapter contains information on the use of the Export Setups utility.

Overview

The Export Setups utility allows you to bundle Setups and other related files for use in transferring between systems, facilities, etc. and for use by Datacard service personnel in debugging problems. The exported Setups are saved in a compressed zip file.

Privileges for this utility may be defined when security is enabled; refer to Chapter 14: “Security Configuration” on page 203.

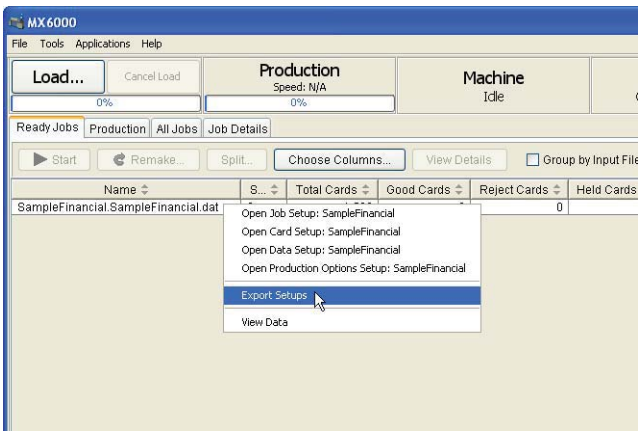
You must have Windows file permissions for any directory from which you want to export.

Using Export Setups

The utility is available from production interface and from the top menu.

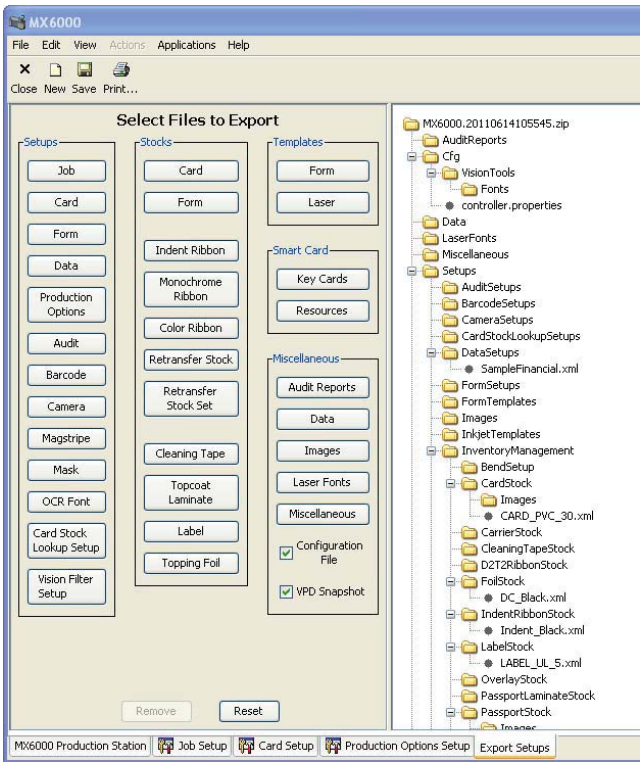
1. To access Export Setups use one of the following methods:

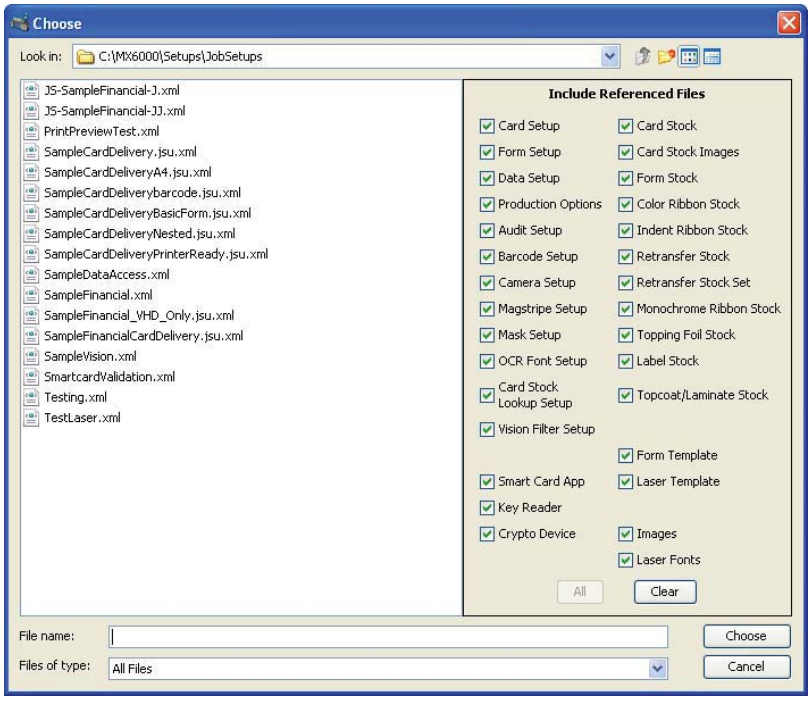
   A. From either the Ready Jobs or All Jobs tab in the production interface, right-click on a job and then select **Export Setups** from the menu.



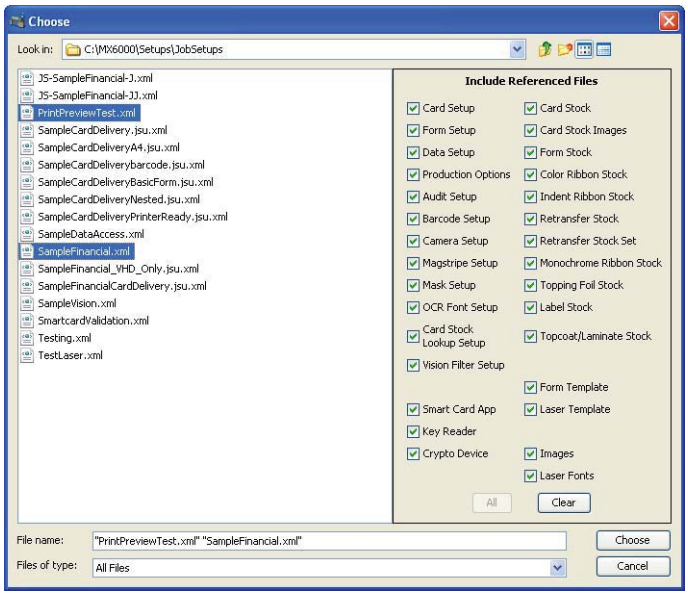
   B. Select **Applications | Utilities | Export Setups** from the menu bar.

2. Click a button in the Select Files to Export pane. In this example, a **Job** Setup is selected and the Choose dialog opens and the Job Setups that exist on the system are displayed in the window.

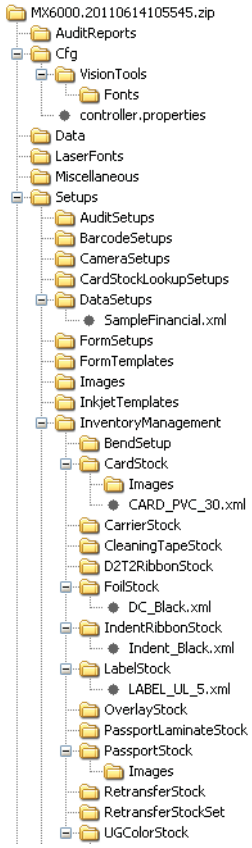




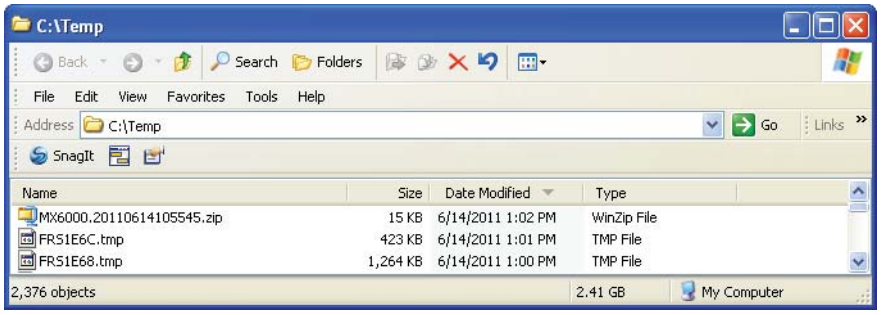
3. Select the files to export (for multiple files hold the Ctrl key and select the files) and then select any referenced files from the Referenced File list on the right side of the dialog.



4. Click **Choose**. The tree view in the right pane will reflect your selection.



5. Click **Save** from the toolbar.
6. Browse to a location to save the zip file. Click **Choose**.
7. When the export if finished, optionally click Yes to open Windows Explorer to view the file.



Chapter 16: Keyboard Entry

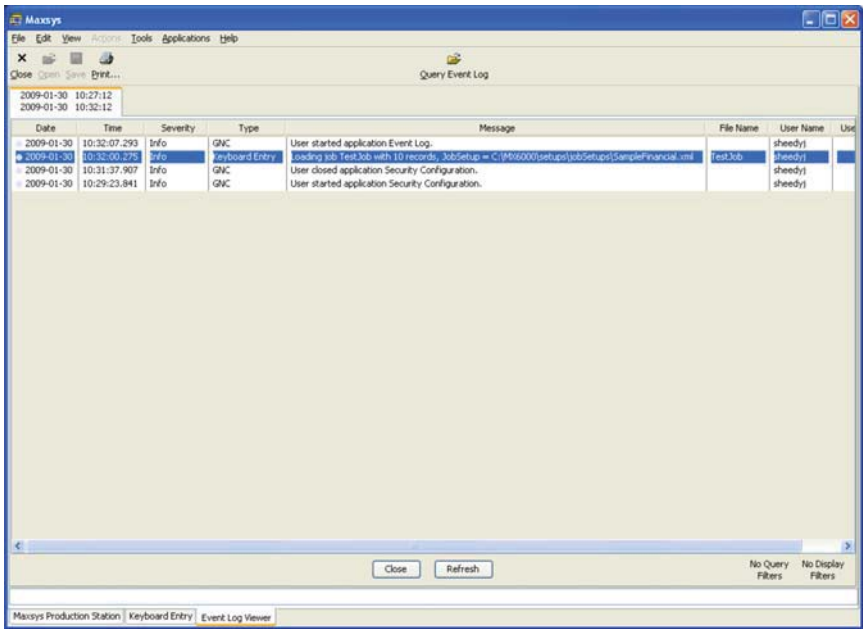
16

This chapter contains information on the use of the Keyboard Entry utility.

Overview

The Keyboard Entry utility allows job creation without an input data file. Sample data can be entered manually using the keyboard or by browsing to a file and to use as a reference in order to create a job. Manually created jobs may be reviewed prior to Production.

Once loaded, the job appears and can be run from Production like any other job. Jobs created using Keyboard Entry will be identified with an entry in the Event Log.

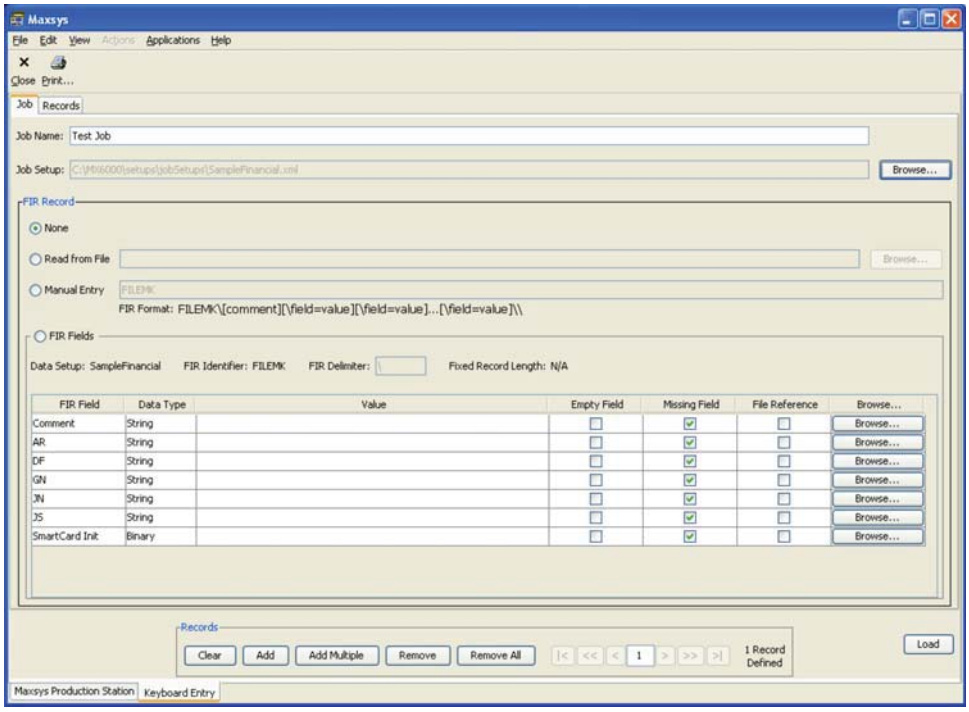


Privileges for this utility may be defined when security is enabled; refer to Chapter 14: “Security Configuration” on page 203.

Using Keyboard Entry

Perform the following steps to use this utility:

1. Select **Applications | Utilities | Keyboard Entry** from the menu bar.
2. To enter Job information select the **Job** tab.



A. Enter a **Group Name** if the Group configuration option is enabled.

B. Enter a **Job Name.**

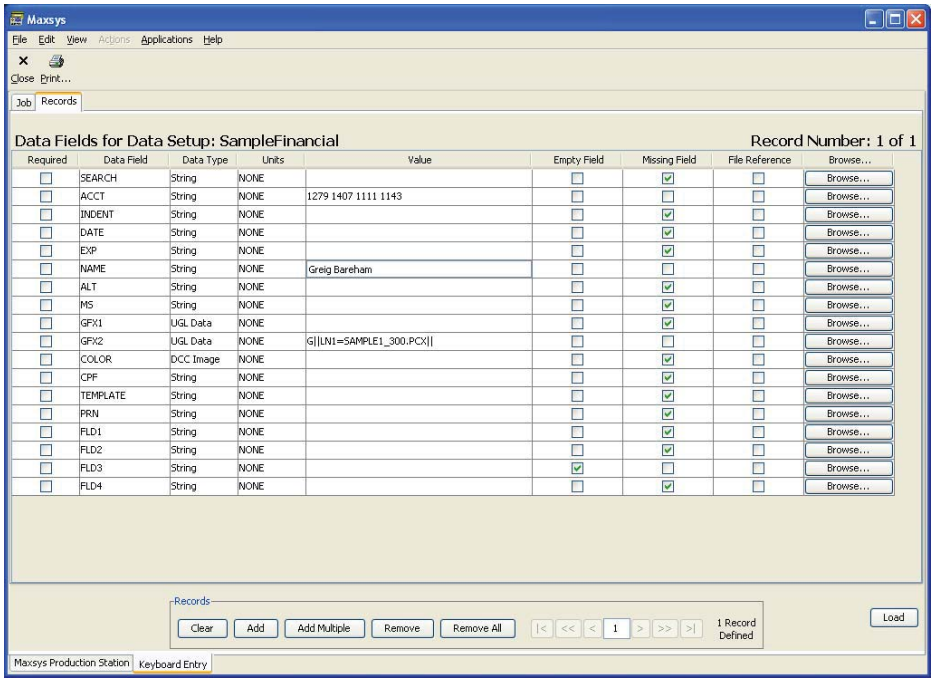
C. Browse to select a **Job Setup**. The name of the **Data Setup** used by the selected job setup will appear at the top right of the FIR Fields box and a table consisting of one row of FIR fields defined in the data setup will be shown below.

D. Select a FIR record option.

- For a job with no FIR record, select **None**.
- To read a FIR record from a file, select **Read from File**, and then Browse to select the file.
- To enter string type FIR information manually via the text box, select **Manual Entry** and enter information using the keyboard, or Cut and Paste. An example of data formatting is provided under the text box.

- To enter string or binary FIR information manually using the FIR Fields box, select **FIR Fields**. A table with FIR Field and Data Type information from the job setup is displayed. Data can be entered into the values field using the keyboard, Cut and Paste, or a file reference can be added using Browse. For information on the column headings see the list below.

3. To add and define Records either select the **Records Tab** or use the **Records Box** displayed at the bottom of the screen.

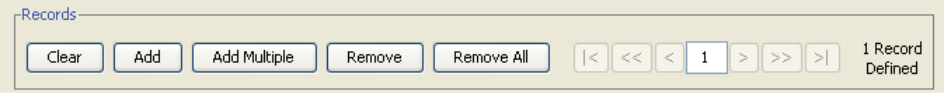


A. The **Records Tab** shows a table of the Data Fields from Data Setup based on the job setup. It allows data entry into the values field using the keyboard, Cut and Paste, or a file reference can be added using Browse. The column headings indicate data attributes based on the Job Setup.

- **Required** - Provided by the data setup.
- **Data Field** - The Field name provided by the data setup.
- **Data Type** - Provided by the data setup. For example: String, Binary, UltraGrafix Language (UGL).
- **Value** - This is where data can be entered.
- **Empty Field** - Indicates that this field content is intended to be empty or a field was created without content.
- **Missing Field** - Indicates that this field is intended to be missing and therefore no field will be created for the record.

- **Browse** - References files for field data types that are not easily added using the keyboard or Cut and Paste. For example: Binary, Graphics, Smart Card, and Magnetic Stripe content.

B. The **Records** box at the bottom of the screen provides quick access to add and clear records displayed in the Data Fields Table on the Records Tab as well as navigation tools.



- **Clear** - Clears the data currently displayed.
- **Add** - Adds a record of the data currently displayed.
- **Add Multiple** - Adds multiple records of the data currently displayed.
- **Remove** - Removes the record currently displayed.
- **Remove All** - Removes all records.
- **Navigation Buttons** - Navigate through the records.

4. When all records are defined, load the job using the **Load** button on the bottom right side of the screen. When the job is loaded, it is committed to disk and will appear in Ready jobs as any other job.

The defined records can be adjusted and loaded again as needed after testing or proofing.

Chapter 17: Back Up and Restore

17

This chapter contains information on backing up and restoring a Maxsys/MX Series system.

Backing Up and Restoring the System

After the controller software is installed, prepare a backup of the hard drive(s) so that recovery is possible. Then if the software is changed, more software is added, or setups on the drive are modified, the hard disk(s) should be backed up again. New systems ship with a CD containing Acronis software to perform the backup.

Before beginning a backup, make sure the system is as clean as possible. Purge any event logs or trace files to lower the size of the image and decrease the time needed to backup and restore. If data is present that is not needed by you or the customer, drop the database tables as described below. For security reasons do not make a backup of the system with customer data loaded, unless requested to do so by the customer.

Dropping Unnecessary Database Tables

Delete unnecessary tables before a backup (or if the Controller database gets corrupted and will not allow the user interface to start up). Use the following procedure to drop the database tables.

1. Navigate to **Programs | IBM DB2 | DB2COPY1 | General Administration Tools | Control Center**.
2. If a Control Center View dialog box is displayed, select **Advanced** option and click **OK**.
3. From the left pane select **All Databases | Maxsys | Tables**.
4. On the upper right pane select **Schema**, which will sort the database tables list.
5. Select the tables with Schema **Maxsys**; you can use the shift key to select a range in the list.
6. Right-click and select **Drop**.

7. At the Confirmation dialog verify that only tables with a schema of **Maxsys** are displayed.
8. Select **OK**.
9. Restart Datacard Maxsys services or reboot the PC. When the services restart, the database tables will be recreated.

Create the Backup

If the system is completely clean, the backup should take 10 to 20 minutes. If the system has a large database and you did not drop the tables, the backup could take several hours.

If using a large external USB drive (500 GB), do not plug in the drive yet.

1. Boot the system using the Acronis boot CD, and select **Acronis True Image (Full Version)**.
2. If using a large external USB drive, plug it in now.
3. Select **Backup**, and then click **Next**.
4. For partitions, click in the box for Disk 1 to select all partitions on that disk. Then click **Next**.
5. At the information screen, click **OK**.
6. For archive location on the left side, click the USB destination drive. Highlighting the drive will place the cursor in the File Name box below, and it will enter the drive letter in the box. Enter a name for the file to be saved to. (It is recommended that you use the machine serial number, such as MX188.tib. If you are backing up a system with multiple drives, include that in the naming of the file. If there is more than one drive in the system, use a name that identifies the drive the image is for, such as MX188_C.tib for the C: drive and MX188_D.tib for the D: drive. Click **Next**.
7. For backup mode, click on *Create a new full backup archive*, and click **Next**.
8. For backup creation options, just click **Next**.
9. For archive comments, add comments if you wish and click **Next**.
10. At the information screen, verify that everything is correct and then click **Proceed**.
11. If the system has more than one drive, back up the next drive. (A second drive typically contains the database.)

Once the backup is completed, remove the Acronis boot CD from the CD drive, close the Acronis software (which will cause the system to reboot, and remove the USB external drive (or proceed to validation).

Validating the Backup Image

1. Select the large external USB backup drive to find the image files just created.
2. Select the first file of the image, and click **Next**.
3. Verify that everything is correct, and select **Proceed**.
4. At the *Archive was successfully checked* information window, select **OK**.
5. Once the validation of the backup image files is completed, remove the Acronis boot CD from the drive, close the Acronis software (which will cause the PC to reboot), and remove the USB external drive.

Restoring the System

If the backup image was from a clean system, the restore should take 15 to 20 minutes. If the image contains data, it could take several hours.

If using a large external USB drive (500 GB), do not plug in the drive yet.

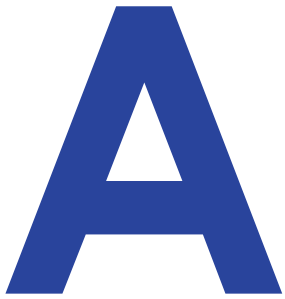
1. Boot the system using the Acronis boot CD.
2. Select **Acronis True Image (Full Version)**.
3. If using a large external USB drive, plug it in now.
4. For restoring the backup image files, select **Recovery** and click **Next**.
5. From drives listed on the left side, expand the drive where your files reside.
6. Select the image file for the machine and hard disk drive that you are restoring. Click **Next**.
7. For restoration type, select *Restore disks or partitions* and click **Next**.
8. For partition or disk restore, select the Disk 1 box to include both the NTFS (Drive C) and the MBR and Track 0 info. Click **Next**.
9. For the restored hard drive location, select the drive that you want to restore to, and click **Next**.
10. For non-empty destination HDD, click **Yes, Delete existing partition** and click **Next**.
11. For next selection, respond appropriately for whether you have another partition or disk drive to restore. Click **Next**.

12. No change is needed for Restoration Options, so click **Next**.
13. For login information, just click **Next**.
14. Confirm everything is correct, and click **Proceed**.
15. At the *data was successfully restored* information window, click **OK**.
16. Restore other drives in the system. If the system has two drives, the database might be installed on the second drive. You need to back up and restore both drives as a set.

Once the restore is completed, remove the Acronis boot CD from the CD drive, close the Acronis software (which will reboot the system), and unplug the USB external drive.

Appendix A: Miscellaneous Configuration

This appendix covers various administrative issues that may need to be addressed when configuring the system.



Configuration of Services

When the Card Issuance Software is installed for the first time, a user called *Maxsys* is created and a password is configured. By default, the Maxsys user is installed in the Local Administrators Group, and given the password *datacard*.

The following Services need to be started by the Maxsys User.

- Datacard Maxsys
- DB2 - DB2
- DB2DAS - DB2DAS00
- DB2 Governor
- SynteraMaxsysClient (if installed, you must configure manually)

You may change the default user (*Maxsys*) and password (*datacard*), (even to a "domain account") as long as the following rules are kept:

- This user that starts the Services must be in the Local Administrators group
- This user must also be in the DB2 Admin group
- This user must have at least read rights to network directories for data input, and any directories that may contain setups, images etc. write privileges would be needed to make any changes to these. Any audit files saved to a network would also be included in this rule.
- It is recommended that this user be exempt from any password expiration policies. If this is not possible, this will need to be managed as the system will not run if the password expires.

You must have domain administrator privileges to set a domain account.

If the password is changed for any reason, (either Local or Domain) it is necessary to go to Services and then change the password "Log On" to the new password for each of the above services.

User Configuration

A user to the system does not need to be in the Local (or Domain) Administrators group. They can be placed in a group that has limited access rights to the system.

Depending on what the user will be doing, (production only, card designing, diagnostic capabilities) the logged-in user will need read and possibly write privileges to the following local directories:

- C:\MX6000\Diagnostics
- C:\MX6000\Cfg
- C:\MX6000\Config
- C:\MX6000\FlashUpdates
- C:\MX6000\VPDUpdates
- C:\MX6000\Backup

The logged-in user will also need read and possibly write privileges to directories on the network that store data, setups, or audit files.

Because it is difficult to predict changes in software, and specific files, Datacard strongly recommends the logged-on user have read and write privileges to the entire MX6000, MX2000, or Maxsys directory, and also be a member of the DB2 users group.

Audit Settings

If you need to change the time or date format, log on as the user that starts the Maxsys Service, and then use **Control Panel | Regional and Language Options** to set the options.

Anti-Virus

Datacard does not validate, endorse, or recommend the use of a specific anti-virus software product for the Maxsys or MX Series Controller PCs. However, if an anti-virus product is used, select a product that does not interfere with system performance or that can be configured in such a way that it does not interfere with system performance. If configurable, on-access (or real-time) scanning should exclude the MX6000, MX2000, MX1000, Maxsys, and DB2 directory trees. In addition, periodic full system scans should be performed while the machine is not in active production.

Network Security

Any firewall application (including Windows) should exclude the local network that communicates with the modules.

Datacard further recommends that personalization systems be connected only to private networks.

Microsoft Windows Updates

Datacard does not directly validate the Microsoft operating system nor any hotfix applied to the operating system. The operating system is only validated in terms of how it affects the operation of the Datacard Controller software and Datacard system functionality.

Datacard does not recommend adding Microsoft Windows hotfixes to the Controller unless there is a specific fix that addresses the functionality of the Controller software or the system in general. If a specific hotfix needs to be applied, a Datacard service bulletin will be issued referencing the specific hotfix to be applied and how to obtain it.

Datacard does not restrict or prohibit adding Microsoft Windows hotfixes. If you want to add hotfixes in order to stay consistent with other Microsoft Windows PCs, you do so at your own risk.

Managing the Password for the Datacard System Default User Name

Datacard Maxsys, MX Series, and PB6500 systems are shipped from the factory with a default user account defined as follows:

User Name	maxsys
Password	datacard
Group Membership	DB2ADMINS
General attributes selected	Password never expires

Similarly, Datacard Affina Personalization Manager has a default user account, defined as follows:

User Name	ObjectServer
Password	datacard
Group Membership	DB2ADMINS
General attributes selected	Password never expires

If your organization's security policies require that passwords be changed on a regular basis, you must monitor the expiration schedule and reset and synchronize the passwords manually.

During production, the services listed in "Configuration of Services" on page 219 must be running. Services set up to log on as ".\maxsys" must be set up with the maxsys user password. Therefore, each time the maxsys user password is changed, the password information in the Log On tab for these services must also be changed.

To increase security further, you can set the log on as for these services to use another server for user authentication. Also, the Controller PC can be added to a domain.

The Datacard Maxsys service provides FTP services to the personalization modules. You must allow FTP connections from the personalization modules to the network adapter, which has an IP address of 172.27.0.254. If you want to use FTP services in your production environment, you need to setup your FTP server so it does not interfere with the Datacard Maxsys service.

Name	Status	Startup Type	Log On As	Used By
Cognex Reminder Service	Started	Automatic	Local System	Vision Verification
Cognex Security Service	Started	Automatic	Local System	Vision Verification
Datacard Affina PM Collector	Started	Automatic	Local System	APM
Datacard Affina PM DRM (Database Resource Manager)	Started	Automatic	Local System	APM
Datacard Affina PM Object Communicator Controller	Started	Automatic	Local System	APM
Datacard Affina PM PC/SC Key Reader Server	Started	Automatic	Local System	APM
Datacard Affina PM Resource Controller	Started	Automatic	Local System	APM
Datacard CCServer	Started	Automatic	Local System	Laser Module
Datacard Maxsys	Started	Automatic	.\maxsys	Maxsys/MX/PB
DB2 - DB2	Started	Automatic	.\maxsys	Maxsys/MX/PB DB2
DB2 Governor		Manual	.\maxsys	Maxsys/MX/PB DB2
DB2 JDBC Applet Server	Started	Automatic	Local System	Maxsys/MX/PB DB2
DB2 Security Server	Started	Automatic	Local System	Maxsys/MX/PB DB2
DB2DAS - DB2DAS00	Started	Automatic	.\maxsys	Maxsys/MX/PB DB2

Font Mapping/Datacard Converted Fonts

This feature was developed for customers who call out fonts in their data on a Datacard 9000 system, using “Datacard Converted Fonts”, and wish to use the same data on an MX Series or Maxsys system.

Font Mapping Procedure

This procedure will enable you to use existing font data and then map this data to a Windows TrueType font that exists in the system.

1. First, create a file named “dccFontmap.ini” in the \Maxsys\cfg, \MX2000\cfg directory or \MX6000\cfg directory. A sample dccFontmap.ini file exists in the MX6000\Fonts, MX2000\Fonts, or Maxsys\Fonts directory. This sample file contains all the default dcc font mapping.
2. If changes to these fonts are required or additional mappings are needed, alter this file and then copy it into the MX6000\cfg, MX2000\cfg, or Maxsys\cfg directory.
3. Use the following examples as the basis for the code you will type into the file. The syntax is explained below. Save the file after the information is entered.

   G//F01=ARIAL11/D01=TEST~// (This appears in the data)

   Sample Entry in the INI file:

   [ARIAL11]

   ttfName=Arial (This is listed as “TypeFace name” when viewing the Font in Windows Palette.)

   ttfFile=ARIAL.TTF (The actual file name of the Font)

   pointSize=11 (Must be valid, or will error)

   bold=FALSE

   italic=FALSE

- If there are two entries in the INI file, only the last entry is valid. The first one is ignored.
- The entry “ttfFile=” is ignored at this time. It must exist, but the file name is not checked.

4. The following fonts are pre-defined; however, if the system detects the presence of the dccFontMap.ini file located in the \MX6000\cfg, \MX2000\cfg, or \Maxsys\cfg directory, it is necessary to include these fonts in the file because the defaults will all be replaced by the contents of the INI file.

   dcpName, ttfName, fftFileName, PointSize, Style

   “GF1”, “GF1”, “GF1.ttf”, 18, REGULAR

   “GF2”, “GF2”, “GF2.ttf”, 12, REGULAR

   “GF3”, “GF3”, “GF3.ttf”, 10, BOLD

   “GF4”, “GF4”, “GF4.ttf”, 6, BOLD

   “GF5”, “DCP_OCR_B”, “OCRB-B12.ttf”, 10,BOLD

   “GF7”, “DCP Held”, “DCP Helv.ttf”, 18,BOLD

   “HELV___7.CPI”, “GF1”, “GF1.ttf”, 18,REGULAR

   “HELV__10.CPI”, “GF2”, “GF2.ttf”, 12,REGULAR

   “HELV-P_6.PT”, “GF4”, “GF4.ttf”, 6, BOLD

   “HELV-P14.PT”, “DCP Helv”, “DCP Helv.ttf”, 14, BOLD

   “HELV-P18.PT”, “DCP Helv”, “DCP Helv.ttf”, 18, BOLD

   “OCR-A_10.CPI”, “GF3”, “GF3.ttf”, 10,BOLD

   “OCRB-B12.CPI”, “DCP_OCR_B”,”OCRB-B12.ttf”, 10, BOLD

   “TIMES-12.PT”, “DCP Times A”,”DCP Times A.ttf”, 12, BOLD

   “TIMES-18.PT”, “DCP Timecard Times.ttf”, 18, BOLD

   “DC-OCRA.6PT”, “GF3”, “GF3.ttf”, 6, REGULAR

   “DC-OCRA.7PT”, “GF3”, “GF3.ttf”, 7, REGULAR

   “DC-OCRA.8PT”, “GF3”, “GF3.ttf”, 8, REGULAR

Ensure that **Pause on image render error** is checked in the Production Options setup (see page 147) so that if any errors occur the system will stop and the error(s) can be corrected.

Possible Errors

The following errors may be generated. Check the structure of your code to prevent such errors from occurring.

1. Runtime Font creation check

   If you use the font name and no mapping information exists in the INI for the font, or the font does not exist, the following error will occur. “Font not supported.: Name'%1' Operation: '%2' Element: '%3'.”

   Font not supported. Name: 'FontName' Operation: 'Front-Monochrome Mass Transfer (300 DPI)-UG_BLACK-Default Process-Default Group' Element: 'UGDataText3'

2. Possible dccFontMap.ini syntax errors

   00400 ImageGen - DCCFontMap Parser: 'C:\Maxsys\cfg\dccFontMap.ini' file has 5 error(s); Please see EventLog for error details.

   DCCFontMap Parser: Section 'missing ttfFile'; cannot find require field ttfFile

   DCCFontMap Parser: Section 'bad syntax'; cannot find required field ttfName and pointSize

   DCCFontMap Parser: Section 'missing ttfName'; cannot find required field ttfName

   DCCFontMap Parser: Section 'Missing pointsize'; cannot find require field pointSize

   DCCFontMap Parser: Section 'DC-OCRA.10PT'; is empty. You should remove that section or define 3 required fields.

3. Unicode Font Image Generation Errors

   If a font has been created with non-standard unicode content, cards may not print correctly. See “Unicode Font Image Generation Errors” on page 127 for information about correcting this problem.

Appendix B: Vision Verification Module

B

This appendix provides information about using the Vision Verification module to verify that the correct card stock has been loaded, to verify that the card has been personalized correctly, or both.

Introduction

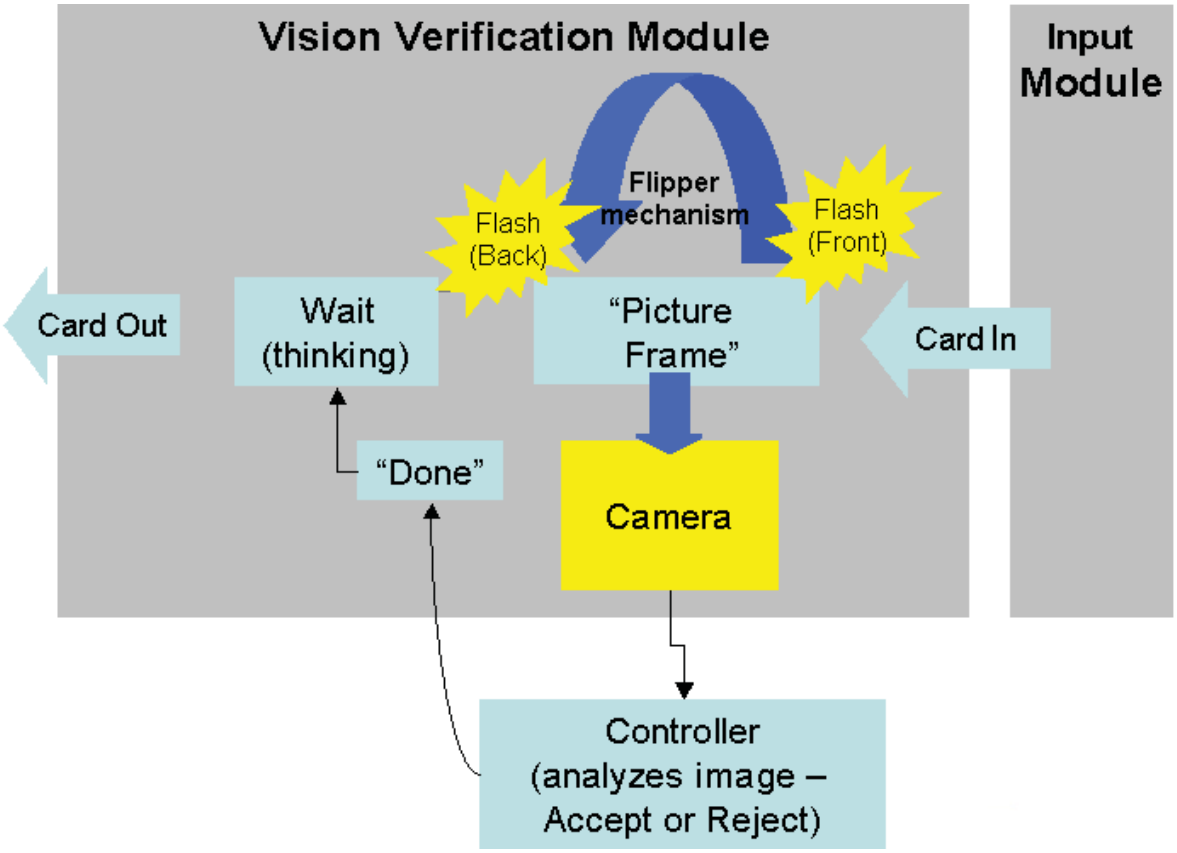
The Vision Verification module for the Maxsys or MX6000 Card Personalization System is an inline camera, lighting, and capture module for card stock verification and quality assurance. It compares pre-printed or personalized elements on the front side, back side, or both sides of the card to a pre-defined file, a data element, or the contents of a live data stream. The Vision Verification module verifies a wide variety of elements, including:

- Windows® TrueType® fonts
- Pre-printed graphics
- Laser images and graphics
- OCR-B font
- MRZ characters
- Custom font designs

The Vision Verification module can be positioned immediately after the Card Input or Card Cleaning module (for card stock verification) or after all personalization modules (for quality assurance). There can be two Vision Verification modules in a Maxsys or MX6000 System to handle both functions.

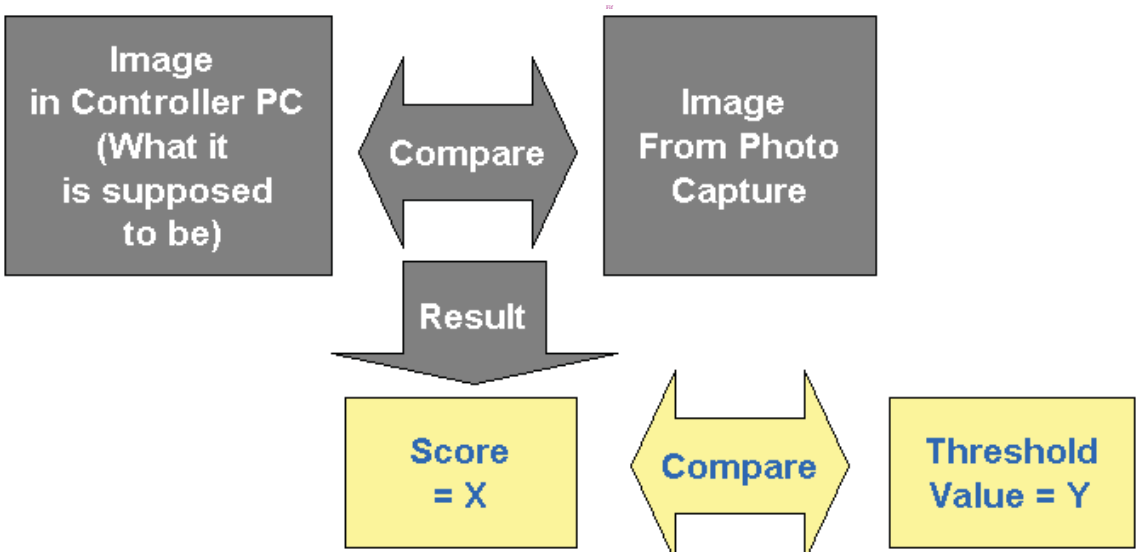
The Vision Verification module compares some element of the card stock or finished (personalized) card to either a static value or a dynamic variable. The result of the comparison is a Score that is compared to a Threshold Value that you establish. If the Score is less than the Threshold Value, the card is rejected.

More stringent (higher value) Threshold Values theoretically create more card rejects. There are trade-offs between unnecessary card rejects (false rejects) and missed errors, but because you set the Threshold Value, you can determine which trade-offs you are willing to make.



As shown in the illustration above, when a card enters the Vision Verification module the camera takes a picture of the front and back of the card and sends the images to the system Controller for analysis. While the Controller is analyzing the image, the flipper mechanism returns the card to its original position in preparation for leaving the module. If the card stock is correct, the card is personalized in subsequent modules. If the card stock is not correct, the card passes through subsequent modules without being altered and ends in the reject tray. The process is similar if the Vision Verification module is positioned after the personalization modules.

The next illustration depicts what happens in the Controller during the analysis phase of card stock verification. The Controller software analyzes the image of the current card based on the information in the Card Setup or Card Stock Setup and generates a Score of 0 to 100. (Higher scores indicate better matches.) Then the Score is compared to the Threshold Value established in the Card Setup or Card Stock Setup. If the Score is less than the Threshold Value, the card is rejected.



As mentioned, the Vision Verification module can use either pre-printed graphics or characters as a basis for generating the Score. To use a pre-printed graphic you must identify the graphic with a Pattern Match element on the Card Stock Setup. To use characters that are always the same, you identify the characters with an Optical Character Verification (OCV) element on the Card Stock Setup or Card Setup.

If you are using a Card Stock Setup, you must capture images of the front and back of the unpersonalized card stock. To use characters that change from one card to another, use an Optical Character Verification element on the Card Setup. Procedures for these tasks are described next.

Quick Stock Capture

This utility allows you to capture the front and back images of card stock. These captured images can be used to create card stock setups.

Procedure

This procedure must be performed at a Maxsys or MX6000 system equipped with a Vision Verification module.

1. From the menu bar select **Applications | Utilities | Vision Utilities**.
2. For Output Path, enter or browse to the location where you want card images stored. Select a folder that is backed up during the normal backup processes.
3. From the Stock Template list, select a Card Stock Setup that matches the thickness of the cards you are loading. Selecting **Open** will open the Card Stock Setup utility.

4. From the Batch Size list, select the number that corresponds to the number of cards you will load in the Card Input module.

   You can load as many different card stock types as needed if you change the batch size to equal the number of cards you have. The front and rear image will be captured for each card.

5. If the card has a dark background, increase the value of Front Variable Exposure and Rear Variable Exposure to improve the captured image. If it has a light or reflective background, decrease these values.

   If you have card stocks with both dark and light or reflective backgrounds, consider separating them into two batches.

6. Load non-personalized card stock in the Card Input module.

7. Click **Start**. The card stock will move through the system and the Vision Verification module will capture images of the front and back of the card. The images will be stored in a folder named with the card stock setup name and the current date and time in YYYYMMDDHHMMSS format.

Card Stock Setup with a Pattern Match Element

Procedure

This procedure can be performed at a Simulator.

1. From the menu bar select **Applications | Stocks | Card Stock Setup**.

2. Click the **New** icon.

3. Enter a meaningful Description.

   The rest of this procedure addresses only those Card Stock Setup properties that apply directly to the Vision Verification module. For information about options not mentioned here, see "Card Stock Setups" on page 178.

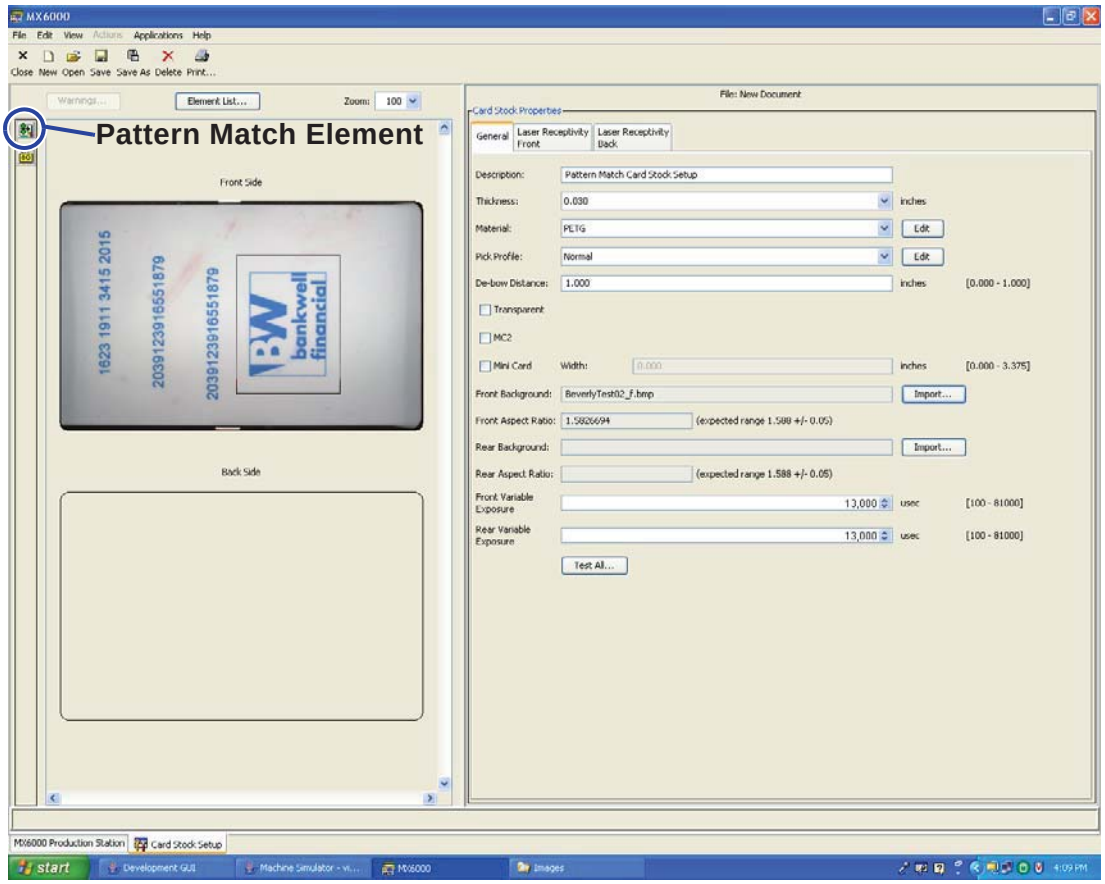
4. If you changed the exposure values for card stock capture, make the same changes in the Card Stock Properties (near the bottom of the General tab).

5. Click **Import** next to the Front Background box.

6. In the Choose dialog box, navigate to the folder where card images are stored and then select the file for the front of the card. Click **Choose**. The card image appears in the left pane and the aspect ratio of the image you selected appears under the image name.

7. Repeat steps 5 and 6 for the Rear Background box.

8. (Optional) Enlarge the image by selecting a Zoom setting.

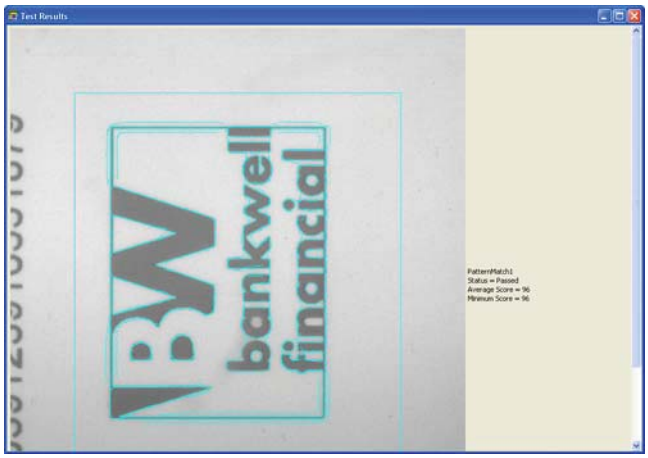


9. Select the Pattern Match Element icon, and then click on the card near the area you want to verify. A box appears where you clicked.

10. Use the mouse to move and size the box around the graphic.

    The box you define is the ideal location for the graphic. The Controller software adds a margin that is, by default, 0.08 inch larger on each side of the box. That is the area the Vision Verification software searches for the graphic. The value of the margin that is added is specified in **Diagnostics | Controller | Controller Configuration Editor** and can be changed to meet your needs.

11. Enter a Pass Threshold value that is as high as you can without causing too many false rejects, and then click **Test**. The system reports the status of the test (pass/fail), an average score, and a minimum score as in the next illustration. Close the Test Results window.



To create and check multiple elements on both the front and back of the card, repeat steps 9 through 11 for each element you want to check.

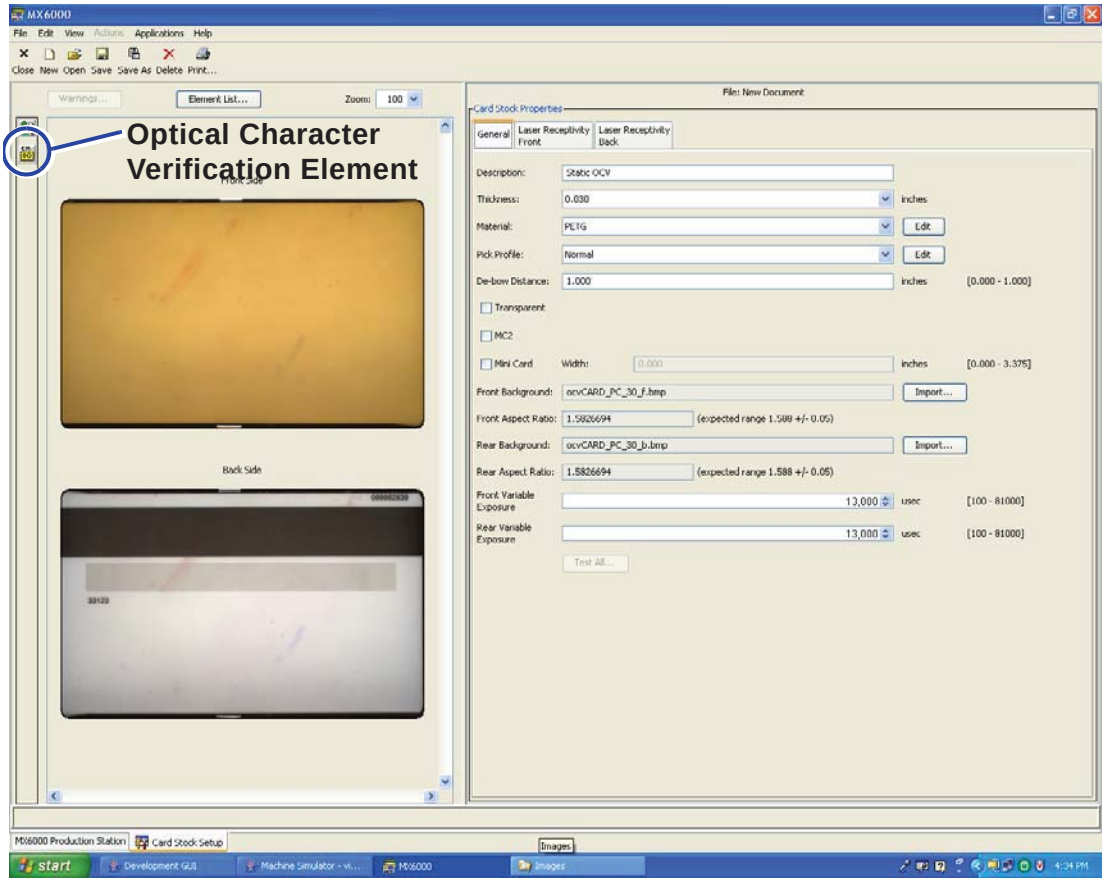
Create a Card Stock Setup with an Optical Character Verification Element

This procedure can be performed at a Simulator.

1. From the menu bar select **Applications | Stocks | Card Stock Setup**.
2. Click the **New** icon.
3. Enter a meaningful Description.

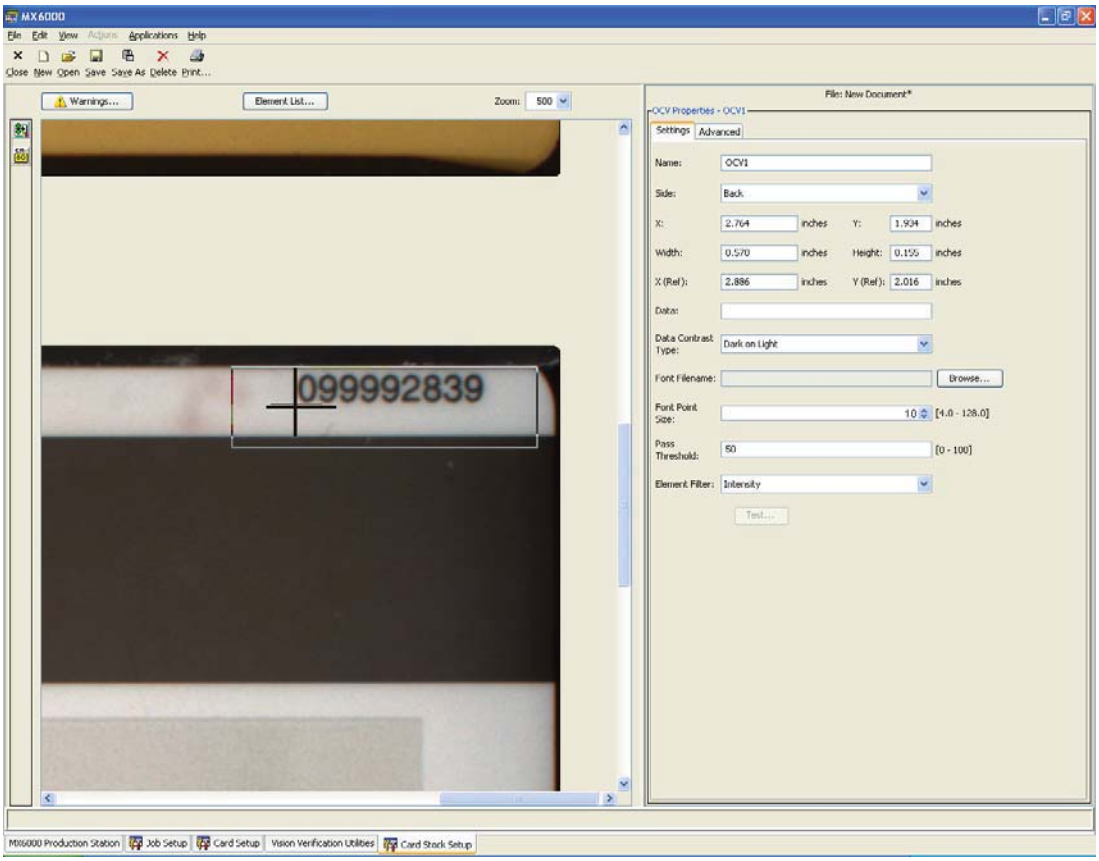
   The rest of this procedure addresses only those Card Stock Setup properties that apply directly to the Vision Verification module. For information about options not mentioned here, see "Card Stock Setups" on page 178.

4. If you changed the exposure values for card stock capture, make the same changes in the Card Stock Properties (near the bottom of the General tab).
5. Click **Import** next to the Front Background box.
6. In the Choose dialog box, navigate to the folder where card images are stored and then select the file for the front of the card. Click **Choose**. The card image appears in the left pane and the aspect ratio of the image you selected appears under the image name.
7. Repeat steps 5 and 6 for the Rear Background box.



8. (Recommended) Enlarge the image by selecting a Zoom setting.

9. Select the Optical Character Verification icon, and then click on the card near the area you want to verify. A box and cross-hair appear where you clicked.



10. Use the mouse to crop the box around the text.

    The box you define is the search region, that is, the area that will be searched for the characters you specify. Defining a larger search region can compensate for variations in the location of pre-printed text.

11. Move the crosshair so that the horizontal line of the crosshair is on the baseline of the text and the vertical line of the crosshair is at the left edge of the first character.

    The crosshair defines the ideal location (x and y values) the for the text. These must be inside of the search box and if the box is moved then these need to be repositioned.

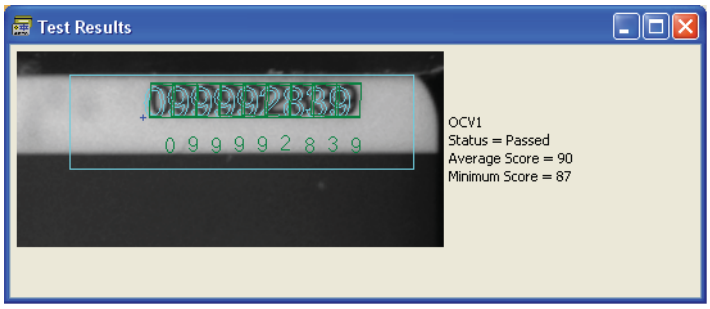
12. In the Data box, enter the characters to be verified.

13. Select the Data Contrast Type.

14. Click **Browse** and select the Font Filename for the data you are verifying. Click **Choose**.

15. Enter the Font Point Size for the data you are verifying. You can specify point sizes in tenths of a point.

16. Enter a Pass Threshold value that is as high as you can without causing too many false rejects, and then click **Test**. The system will report an average score for all the selected characters in the image and a minimum score for the character with the lowest quality. The system also reports on recommended scaling. If the green text is bigger or smaller than the image, then you can change the scaling (from the Advanced Tab). Close the Test Results window.



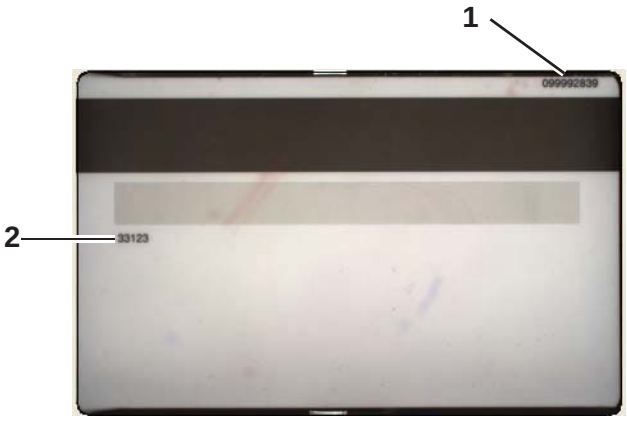
You can change the Font Point Size and Font Filename as often as necessary, and retest as often as necessary, to achieve good test results.

To create and check multiple elements on both the front and back of the card, repeat steps 10 through 16 for each element you want to check.

Verifying the Correct Stock

You can verify that the correct stock has been loaded using a text element or a graphic element. In addition, you can use multiple elements on a card on either side of the card to verify stock. The more elements you check, the more time it will take. More time is also involved with flipping the card.

When deciding what elements to use to identify stock, choose elements that are unique and that are likely to remain unique as more cards are added to your shop. Performance for text verification is better than for graphics verification, so a text element that is unique to the card (such as those marked 1 and 2 in the following illustration) would be a good choice.



Whether you use a graphic element or a text element for verification, you will need to specify verification details in your Card Stock Setup or Card Setup.

Verifying Card Stock

You can use text elements or graphic elements that are pre-printed on cards to verify that the correct card stock will be personalized.

Card Stock with a Graphic Element or Static Text

This procedure can be performed at a Simulator.

1. Create a Card Stock Setup with a Pattern Match Element (see "Procedure" on page 230) or a Card Stock Setup with an Optical Character Recognition element (see "Create a Card Stock Setup with an Optical Character Verification Element" on page 232).
2. Create a Card Setup:
   A. From the menu bar select **Applications | Setups | Card Setup.**
   B. On the toolbar click **Open** and then, from the Open dialog box, select an appropriate Card Setup.
   C. On the Card Properties Settings tab, for the Stock Name, select the Card Stock Setup you created in step 1.
   D. On the Card Properties Vision Verification tab, click the icon to the right of **Verify Card Stock**, select **Value**, and then select **True** from the list.
   E. Save the Card Setup.
3. Create a Job Setup:
   A. From the menu bar select **Applications | Setups | Job Setup.**
   B. Select **New**.
   C. Click **Browse** next to the Card Setup box, select the Card Setup you created in step 2, and click **Choose**. The associated Data Setup appears in the Data Setup box.
   D. Click **Browse** next to the Production Options Setup box, select an appropriate Production Options Setup, and click **Choose**.
   E. Save the Job Setup.

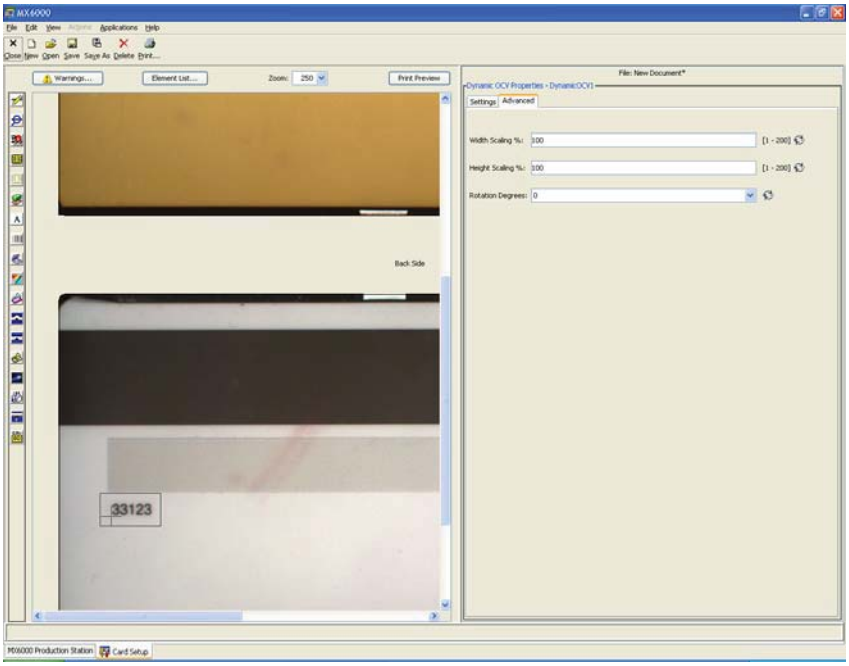
In Production, select the Job Setup you created in step 3 when producing cards.

Card Stock with a Card Setup that has a Dynamic OCV Element

This procedure can be performed at a Simulator.

A Dynamic OCV is defined on the Card Stock, and the parameters can be modified via data, so that you don't have to define multiple card stock setups. Dynamic OCV only works if the field being checked is in the same place on each card.

1. From the menu bar select **Applications | Setups | Card Setup.**
2. On the toolbar click **Open** and then, from the Open dialog box, select an appropriate Card Setup and click **Open**.
3. On the Card Properties Settings tab, for the Stock Name, select the Card Stock Setup that has front and back background images defined for it.
4. (Recommended) Enlarge the image by selecting a Zoom setting.
5. Click the Dynamic OCV Element icon in the toolbar at the right of the screen, and then click in the card near were the variable text is printed. A box and cross-hair appear where you clicked.



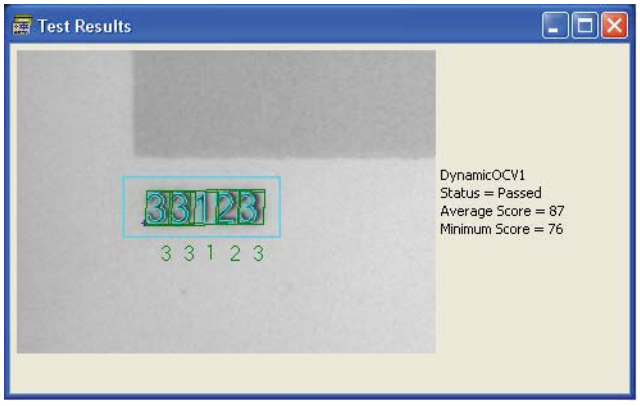
6. Use the mouse to crop the box around the text.

The box you define is the search region, that is, the area that will be searched for the characters you specify. Defining a larger search region can compensate for variations in the location of pre-printed text.

7. Move the crosshair so that the horizontal line of the crosshair is on the baseline of the text and the vertical line of the crosshair is at the left edge of the first character.

   The crosshair defines the ideal location for the text.

8. Click the icon to the right of the Data box and select **Value**.
9. Enter the characters that appear in the box you defined.
10. Select the Data Contrast Type.
11. Click **Browse** and select the Font Filename for the data you are verifying. Click **Choose**.
12. Enter the Font Point Size for the data you are verifying. You can specify point sizes in tenths of a point.
13. Enter a Pass Threshold value that is as high as you can without causing too many false rejects, and then click **Test**. The system will report an average score for all the selected characters in the image and a minimum score for the character with the lowest quality. The system also reports on recommended scaling. If the green text is bigger or smaller than the image, then you can change the scaling (from the Advanced Tab). Close the Test Results window.



   You can change the Font Point Size and Font Filename as often as necessary, and retest as often as necessary, to achieve good test results.

14. On the Card Properties Verification tab, select Data Field and then select the name of the data field.
15. Click the icon to the right of the Data box and select **Data Field**.
16. From the Data list, select the field name to compare to the pre-printing on the card.
17. Save the Card Setup.

Vision Registration

Some card stocks are designed with tight tolerances for areas that are meant to be personalized at production time. Card stock manufacturing processes may allow for some variation in the location of these areas. If personalization elements are not adjusted when pre-printing moves, the finished card can appear badly designed or badly printed.

You can use the vision registration feature of the Vision Verification module to identify shifts in pre-printed areas and adjust the personalization elements to compensate for those shifts. Then personalized data will appear as the card designer intended.

Vision Registration Procedure

1. Create a Card Stock Setup with a pattern match. (See "Procedure" on page 230.)
2. Create a Card Setup:
   A. From the menu bar select **Applications | Setups | Card Setup.**
   B. Click **New** on the toolbar.
   C. For Stock Name, select the Card Stock Setup you created in step 1.
   D. From the element list, select Text Element and then click in the card. See "Text Element" on page 103 for complete information on creating a text element.
   E. On the Vision Verification tab, select Use Printing Offset and then select the name of the pattern match defined in the Card Stock Setup.
   F. Save the Card Setup.

When the Card Setup is used in production, the Vision Verification module locates the pattern match element on each card; determines whether the element is in the location expected; and if adjustments are required, shifts the X and Y locations of each personalization element as necessary.

Verifying Correct Personalization

When a Vision Verification module is placed after personalization modules, you can use it to verify that the card was personalized correctly.

Verify Correct Personalization

1. From the menu bar select **Applications | Setups | Card Setup.**

2. On the toolbar click **Open** and then, from the Open dialog box, select the Card Setup to work with.
3. Select the card element you want to verify.
4. In the Settings tab for the element, select **Quality Check** and then enter a Pass Threshold value that is as high as you can without causing too many false rejects.
5. (Optional) Repeat steps 3 and 4 for other elements.
6. Click **Save**.

When the Card Setup is used in Production, the Vision Verification module automatically checks the quality of the card elements that have **Quality Check** selected.

Quality Assurance and Checking

You can use a Vision Verification module that is placed after personalization modules to check the quality of the card personalization. Verification can be used to check the quality of graphics text, graphics images, color images, laser text, and laser images.

The Vision Verification module will not detect the wrong color nor will it detect quality problems such as streaking or dropout unless they obscure enough of the image or text to drop the Score below the Threshold. The module checks only for contrast (outline).

You must have a font file installed in your Windows fonts directory that corresponds to the font and style that you want to check. For example, Arial Bold has a file called arialbd.ttf.

Verify Graphics Printing Quality

Use this procedure to verify the quality of text or graphics printed with a Graphics, Color, or Artista VHD module.

1. From the menu bar select **Applications | Setups | Card Setup**.
2. Click **Open** and then select the Card Setup to work with.
3. Select a text or image element in the left pane.
4. On the Vision Verification tab, select **Quality Check** and enter a Pass Threshold value that is the lowest acceptable quality.

Repeat steps 3 and 4 to check the quality of additional elements.

5. Click **Save**.

When the Card Setup is used to produce cards, the elements you selected for quality checking will be examined.

Verify Laser Engraving Quality

Use this procedure to verify the quality of text or graphics printed with a Laser Engraving module.

1. Open the ConCAD utility.
2. Click **Open** and then select the file to work with.
3. Select a text or image element in the left pane.
4. On the Verification tab, select **Verify element quality** and select a Pass Threshold value for the lowest quality that is acceptable.

Repeat steps 3 and 4 to check the quality of additional elements.

5. Click **OK**.

When the file is used to produce cards, the elements you selected for quality checking will be examined.

Font Creation Process

The Vision Verification module uses a tool from Cognex for Optical Character Verification (OCV). The tool requires as a parameter the font name for the text that is to be verified. If you do not know what the font name is and are not be able to determine a reliable substitute, you can generate a True Type font from a sample image to use as input for the OCV operation.

Tools and Requirements

- A good sample source representation of the font. You will need to capture a quality image of the card side.
- A third-party tool capable of generating a TrueType font. Datacard supplies FontCreator Pro from High-Logic with the Vision Verification module for creating TrueType fonts.
- A tool for capturing and creating individual bitmaps of each character in your font that will be used for the OCV operation. Microsoft Paint is adequate for this task.
- Cognex license (included with the Vision Verification module).

Font Creation Procedure

1. Determine which characters are required to perform the verification or OCV operation. The created font does not require that all letters and number characters be imported into the font, just those that are to be validated.

   For example, if you are going to search for a serial number such as SN25242310, you will need to import only the capital S and N and all the possible digits that could be found in the number.

2. Capture a sample bitmap image of the characters to be included in your font.

3. Use an image editor tool such as Microsoft Paint to create individual bitmaps of the font characters. It is important that you size the bitmap character and image to have the same size and spacing on all sides. It is not important what size they start as; this can be adjusted in step 5.

4. Create a new font in FontCreator or an equivalent tool, and import the images.

5. If using FontCreator, adjust the size and bearings of each bitmap using the transformer toolbar.

   A. Select the character using the selection tool and then open the transformer toolbar from the menu.

   B. If your bitmaps are consistently sized and spaced, you can adjust the size while locking the aspect ratio.

   C. After you have decided on a satisfactory height for your font, edit all other characters to be the same height.

   D. Adjust the bearing of each character to the same values to center the font.

6. Test the font in FontCreator Pro using the test mode.

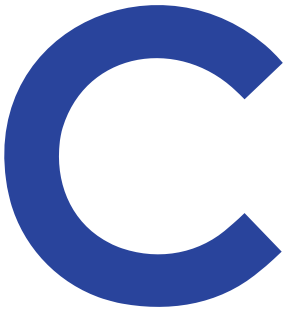
7. Save and verify that the font can be used for OCV operations:

   A. Use the procedure "Quick Stock Capture" on page 229 to capture the front and back of the card.

   B. Using the procedure "Create a Card Stock Setup with an Optical Character Verification Element" on page 232, create a Card Stock Setup and set the Font Filename to your custom font. Adjust other parameters as needed if these are available in your custom font.

   C. Click **Test**. The system will compare the OCV element on the captured card to your custom font.

Appendix C: Artista VHD Module



This appendix explains how to create the setups necessary for printing with an Artista© VHD module on an MX6000 card personalization system.

Setups can be created on an MX6000 Simulator and then copied to the production card personalization system.

Introduction

The Artista VHD module prints separate layers of cyan, magenta, yellow, black, and optionally a spot color on transparent retransfer material, and then transfers the composite image to the card using heat and an adhesive. Images are printed with pigment-based inks, not conventional dyes.

Ribbons must be installed in the following order:

- Cyan, magenta, and yellow in that order
- Black can be the fourth ribbon
- A spot color ribbon must follow black (if black is present) or yellow

The Artista VHD module prints at 600 dots per inch. An optional 1200 dots per inch printhead can be used only in the fifth printhead position.

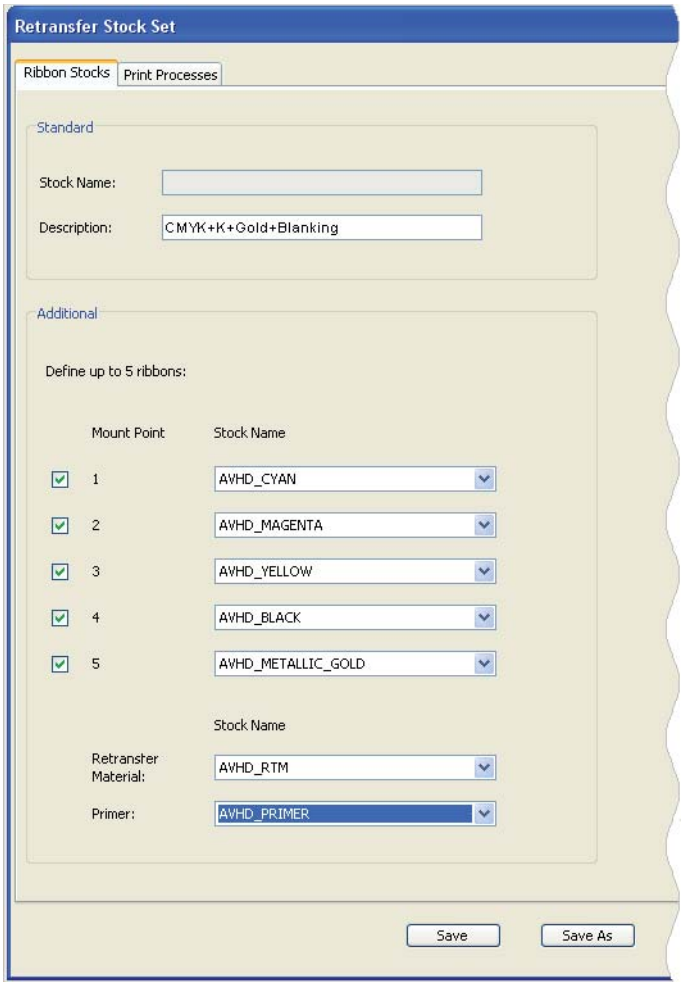
Requirements for graphics files used with the Artista VHD module are given in the *Data Formatting Guide*.

Ribbon Stock Setup

You must create a Ribbon Stock Setup for your printing jobs. Follow these steps:

1. From the menu bar, select **Applications | Stocks | Stock Management**.
2. Under Stock Types (in the left pane), select **Retransfer Stock Set**.
3. Click **New**. The Retransfer Stock Set dialog box opens.
4. On the Ribbon Stock tab, enter a description. For this example, use "CMYK+K+Gold+Blanking".
5. Click in the box for each print station (Mount Point) you will use, and select the Stock Name of the type of ribbon that will be mounted in that print station.

6. For Retransfer Material, select **AVHD_RTM**.
7. For Primer, select **AVHD_PRIMER**. At this point your Ribbon Stock Setup will look like the following illustration.



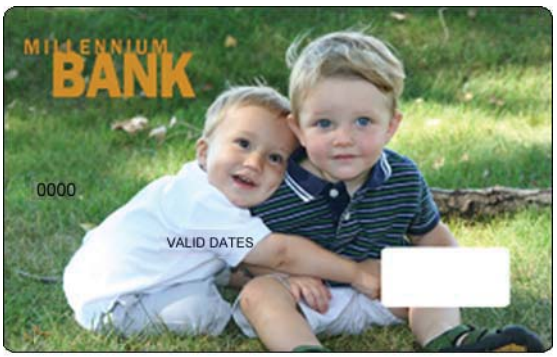
8. On the Print Processes tab, from the Add Print Process list, select **CMYK** and then click **Add**. A tab page appears.
9. Enter a name for the Print Process, such as "CMYK".
10. For each ribbon color, select the appropriate stock type and Mount Point.
11. From the Add Print Process list, select **One Color** and then click **Add**. Another tab page appears.
12. Enter a name for the Print Process, such as "gold".
13. From the Ribbon list, select **AVHD_METALLIC_GOLD (Mount Point 5)**.
14. From the Add Print Process list, again select **One Color** and then click **Add**. Another tab page appears.

15. Enter “black” for the Print Process. (This Print Process will be used for black text on the card.)
16. From the Ribbon list, select **AVHD_BLACK (Mount Point 4)**.
17. From the Add Print Process list, select **Blank Color Planes** and then click **Add**. A fourth tab page appears.
18. Enter a name for the Print Process, such as “blank”. This Print Process will be used to allow pre-printed information on the card stock to show.

If your card stock has a hologram or smart card chip, create a print process that uses **Blank Color Planes and Primer** to use for those areas.

19. Click **Save As** and enter a name for the Retransfer Stock Set, such as “CMYK+K+Gold+Blanking”. The Retransfer Stock Set dialog box closes and the stock set you created appears in the list.

Card Setup



The following procedure will create a Card Setup for the card shown above. The procedure addresses only those aspects of a Card Setup that are unique to cards printed with an Artista VHD module. It does not address embossed data, magnetic stripe encoding, or other card elements performed by other modules.

The example card requires three graphics files:

brothers.jpg

logo.bmp

knockOut.bmp

1. From the menu bar, select **Applications | Setups | Card Setup**.
2. Create a new card setup (see "Creating a New Card Setup" on page 80 or "Creating a New Card Setup from an Existing Card Setup" on page 82).
3. To specify a background that will cover the entire card, follow these steps:
   A. From the element list (icons on the left side of the window), drag an Image Element to the Front Side of the card.
   B. In the Settings tab of the Image Properties (right pane), enter "background" for Name.
   C. Click **Browse** and navigate to the location where the background image is stored.

      Or

      To have the background image specified by the data stream, click the icon to the right of the text box, select **Data Field**, and then select the appropriate data field from the list.
   D. For Print Technology, select **Retransfer** from the list.
   E. For Ribbon Set, select **CMYK+K+Gold+Blanking** (the Ribbon Set created in "Ribbon Stock Setup" on page 243).
   F. For Print Process, select **CMYK**.
   G. For the X location, enter -0.0625 and for the Y location enter -0.0575. These settings ensure that the entire card surface will be covered with the image.
4. To specify a logo that will be printed with a spot color (the fifth print station), follow these steps:

A. From the element list, drag an Image Element to the Front Side of the card.

B. In the Settings tab of the Image Properties (right pane), enter “logo” for Name.

C. Click **Browse** and navigate to the location where the logo image is stored.

Or

To have the logo file specified by the data stream, click the icon to the right of the text box, select **Data Field**, and then select the appropriate data field from the list.

D. Drag the Image Element to the correct location on the Front Side of the card.

Or

Enter exact values for the X and Y coordinates.

Or

To have the location of the logo specified by the data stream, click the icon to the right of the X text box, select **Data Field**, and then select the appropriate data field from the list. Repeat for the Y coordinate.

E. For Print Technology, select **Retransfer** from the list.

F. For Ribbon Set, select **CMYK+K+Gold+Blanking**.

G. For Print Process, select **gold**.

5. To specify a knockout (an empty area in all image planes to reveal pre-printing on a card or the base color of the card), follow these steps:

A. From the element list, drag an Image Element to the Front Side of the card.

B. In the Settings tab of the Image Properties (right pane), enter “knockout” for Name.

C. Click **Browse** and navigate to the location where the knockout image is stored.

D. Drag the Image Element to the correct location on the Front Side of the card.

Or

Enter exact values for the X and Y coordinates.

E. For Print Technology, select **Retransfer** from the list.

F. For Ribbon Set, select **CMYK+K+Gold+Blanking**.

G. For Print Process, select **blank**.

6. To specify static text to appear on each card, follow these steps:
   A. From the element list, drag a Text Element to the Front Side of the card.
   B. In the Settings tab of the Image Properties (right pane), enter "valid dates" for Name.
   C. Click the icon next to the Text Data text box, select Value, and then enter "VALID DATES" in the text box.
   D. Select a Font, Font Style, Font Size, and Justification from the lists.
   E. For Print Technology, select **Retransfer** from the list.
   F. For Ribbon Set, select **CMYK+K+Gold+Blanking**.
   G. For Print Process, select **black**.
7. To specify text that changes from card to card, follow these steps:
   A. From the element list, drag a Text Element to the Front Side of the card.
   B. In the Settings tab of the Image Properties (right pane), enter "BIN" for Name.
   C. Click the icon next to the Text Data text box, select Data Field, and then select the appropriate data field from the list.
   D. Select a Font, Font Style, Font Size, and Justification from the lists.

The Font, Font Style, Font Size, and Justification can be controlled by data fields.

   E. For Print Technology, select **Retransfer** from the list.
   F. For Ribbon Set, select **CMYK+K+Gold+Blanking**.
   G. For Print Process, select **black**.

Appendix D: Resource Editor Translation Tool

D

This appendix contains information about using the Resource Editor tool.

Overview

When you order software from Datacard, it includes the standard Factory Translations. In addition to the Factory Translations, Datacard also offers User Translation files that can be ordered separately. These files can be installed and used to create other non-standard translations of certain interface elements such as labels, names on buttons, and error messages. (For more information about translations, contact a Datacard representative.)

Datacard provides support for several resource bundles (special files that store interface text elements) for the Factory Translations. These files are contained in the C:\[product]\bin\Controller.jar file. Because a new Controller.jar file is shipped with each release, Datacard does not allow user modification of the Factory Translation resource bundles.

Creating or Modifying User Translations

Users may create their own translations or install non-supported translations. The User Translation resource bundles (special files that store interface text elements) are contained in JAR files in the C:\[product]\translations\ directory and will remain in place even when a new product release is installed.

User Translation files (resource bundles) allow read/write access and may be modified. Different versions of a resource bundle may be created to support different languages. A tool called the Resource Editor allows users of the software to edit existing translations, add new translations, and compare versions of resource bundles.

To use the Resource Editor tool, follow these steps:

When viewing a translation in the Resource Editor, the following color coding is used:

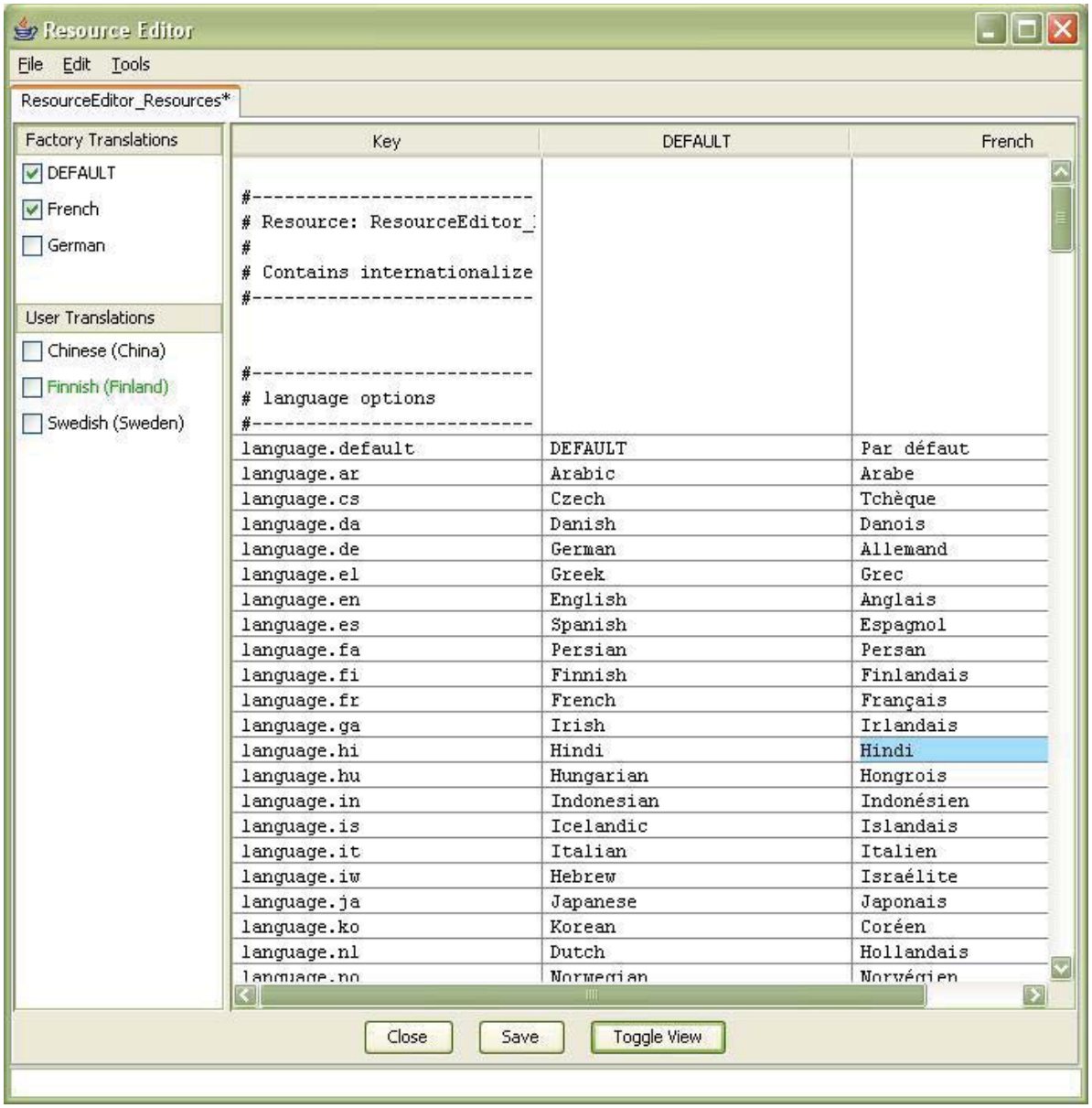
- Pink — Missing properties (translation items that have no entry)
- Blue — Untranslated properties (items that look the same as the default values)
- Green — Modified properties (items changed by the user) (When the user saves the modifications, the green color is removed.)

1. Make sure all software applications are closed.
2. In Explorer, navigate to the **C:\Maxsys\bin** or **C:\MX6000 (or 2000)\bin** folder.
3. Locate and open the **DCCResourceEditor.exe** file.
4. In the Resource Editor menu bar, select **File | Open**.
5. In the bin folder, select **Controller.jar** and click **Open**.
6. In the next dialog, navigate to the appropriate properties files and click **Open**. The path to the properties files reflects the Java package structure. Each properties file opened is displayed under a tab in the Resource Editor window.

Resource bundles whose name ends with "...Constants.properties" should not be translated. These bundles contain constants needed for the operation of the Maxsys/MX Series Controller software and do not affect what is displayed on the screen.

7. Select a check box in the left pane to display a column with editable properties. Only the available translations are listed.

The default option is English.

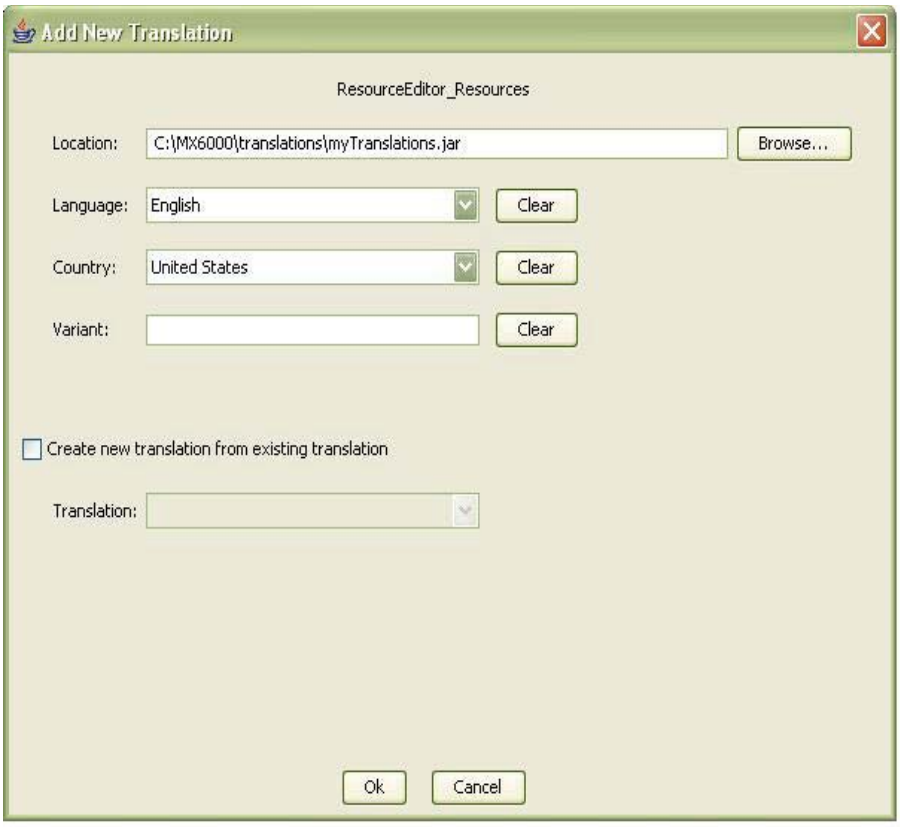


8. To view multiple columns, click **Toggle View**.
9. To view the current locale, select **Tools | Current Locale** from the menu bar.

10. To add a new translation:

    A. Select the file tab for which you want to add a translation.

    B. From the **Tools** menu, select **Add Translation.**



    C. Browse to select the location for the new translation.

    D. Select a language from the list.

Czech and Dutch are not standard supported languages.

    E. Select the corresponding country from the list.

    F. If you are creating the new translation by modifying an existing translation, select the **Create new translation from existing translation** check box and select the existing file from the list.

    G. Click **OK** to add the translation. The new translation is listed under User Translations in the left column of the Resource Editor.

11. To view the difference between the default resource bundles and determine any properties that have been added or updated between releases:

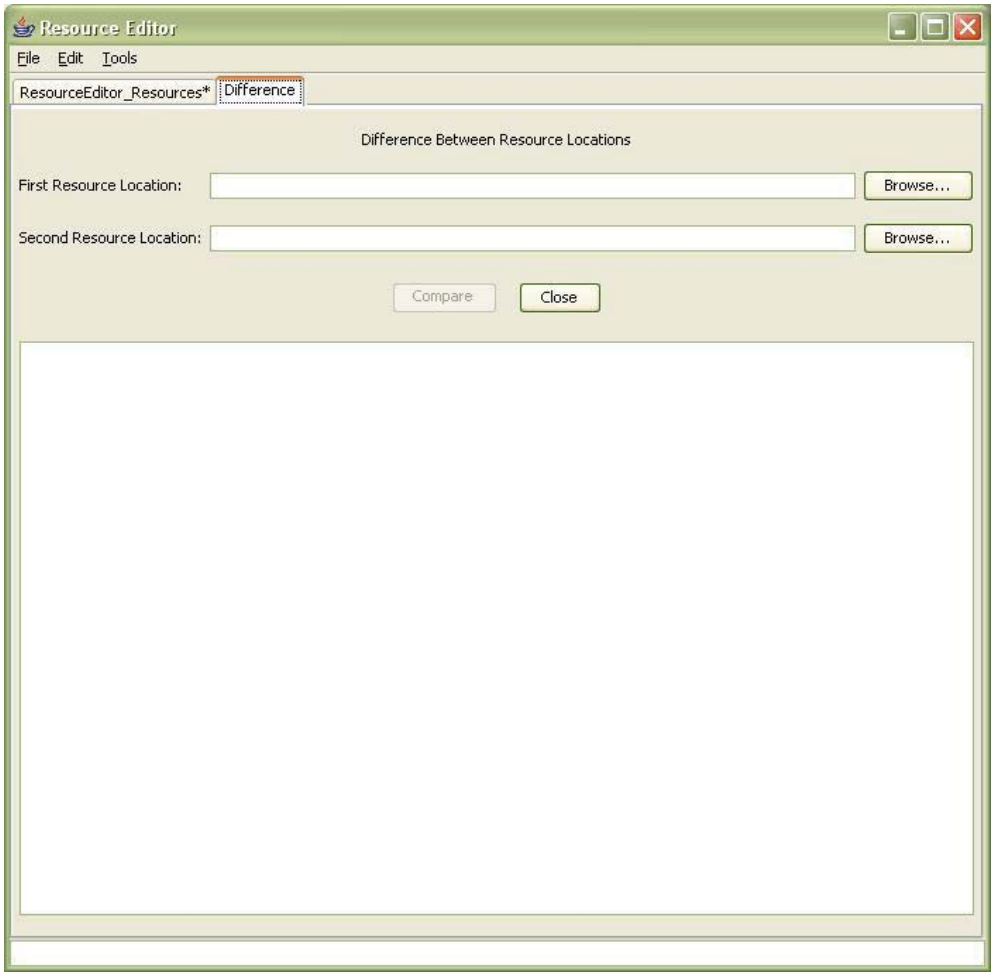
To use this tool effectively, you must have saved a copy of your Controller.jar file before installing the new Maxsys/MX Series software release.

A. From the **Tools** menu, select **Difference.** The Difference tab is displayed.

B. Browse to locate the resource locations to compare.

C. Click **Compare**.

The differing properties between the selections are displayed.



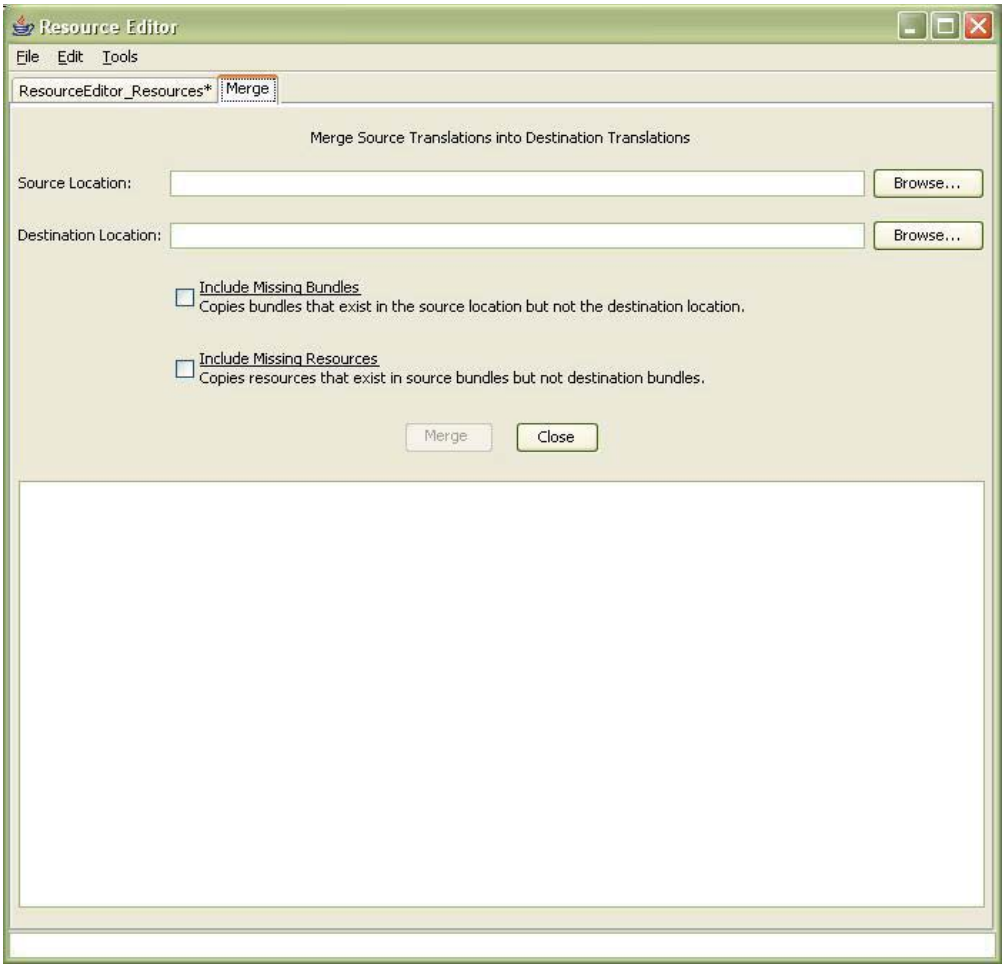
12. To merge translations:

    A. From the **Tools** menu, select **Merge Translations**. The Merge tab opens.

    B. Browse to the locations you want to merge.

    C. Select the **Include Missing Bundles** or the **Include Missing Resources** check box if applicable.

    D. Click **Merge**. Comments appear in the bottom of the window.



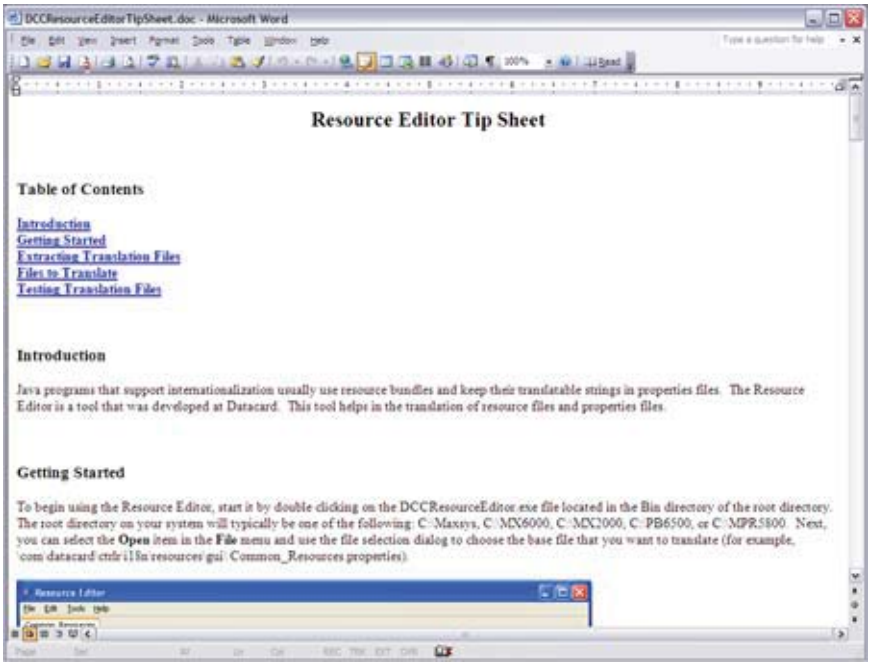
13. Click **Close** to close the Resource Editor.

Tip Sheet

The Resource Editor tip sheet provides information on the use of the tool. This document can be accessed from the Resource Editor menu.

The tip sheet is in Microsoft Word (.doc) format. Word must be installed on your system in order to view it.

- Select **Help | Tip Sheet**. The tip sheet will open.



Appendix E: ConCAD

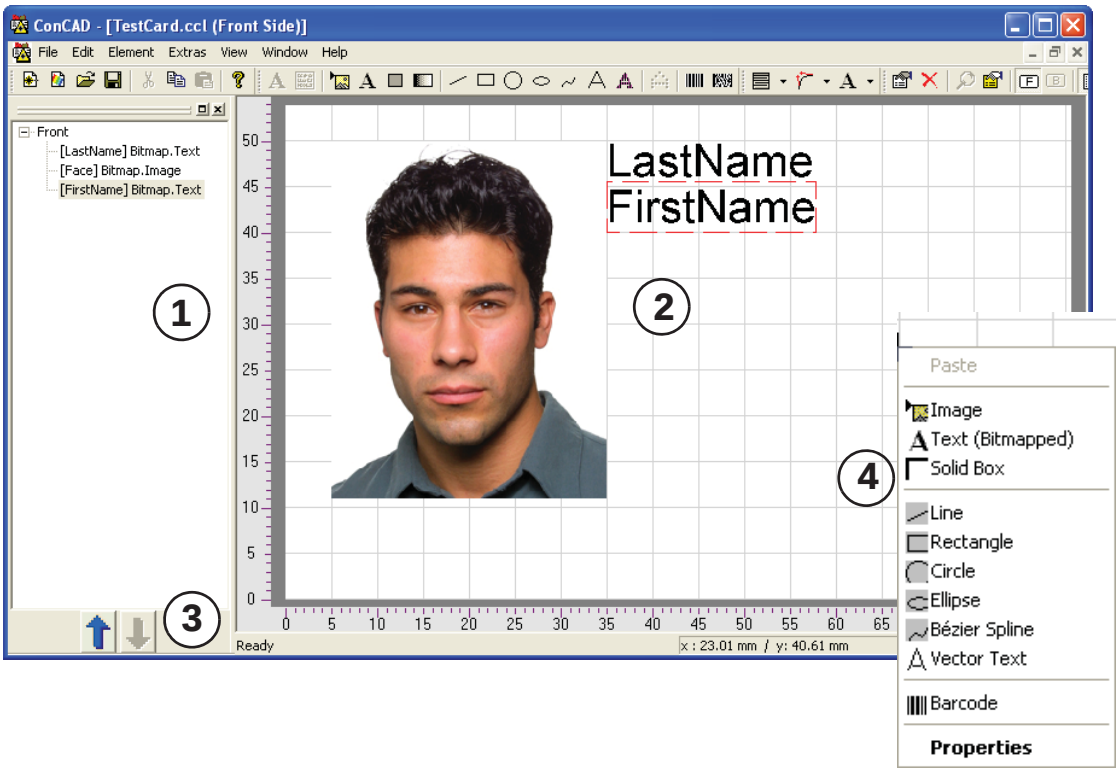
This chapter contains information on the setup and use of the ConCAD utility. ConCAD is available on MX6000 systems that have card laser engraving capability.

Overview

The ConCAD program is an image generation tool for the laser module and for the inkjet module.

The Main Window

The Main Window contains the Element List (1) and the Page Area (2). Clicking on an element in the element list and then on one of the arrow keys (3) will move the selected element either up or down the order of the list. Right-click in the page area where there is no element to bring up a context menu (4). All functions are accessible through the top menu, the toolbar, and the context menus.



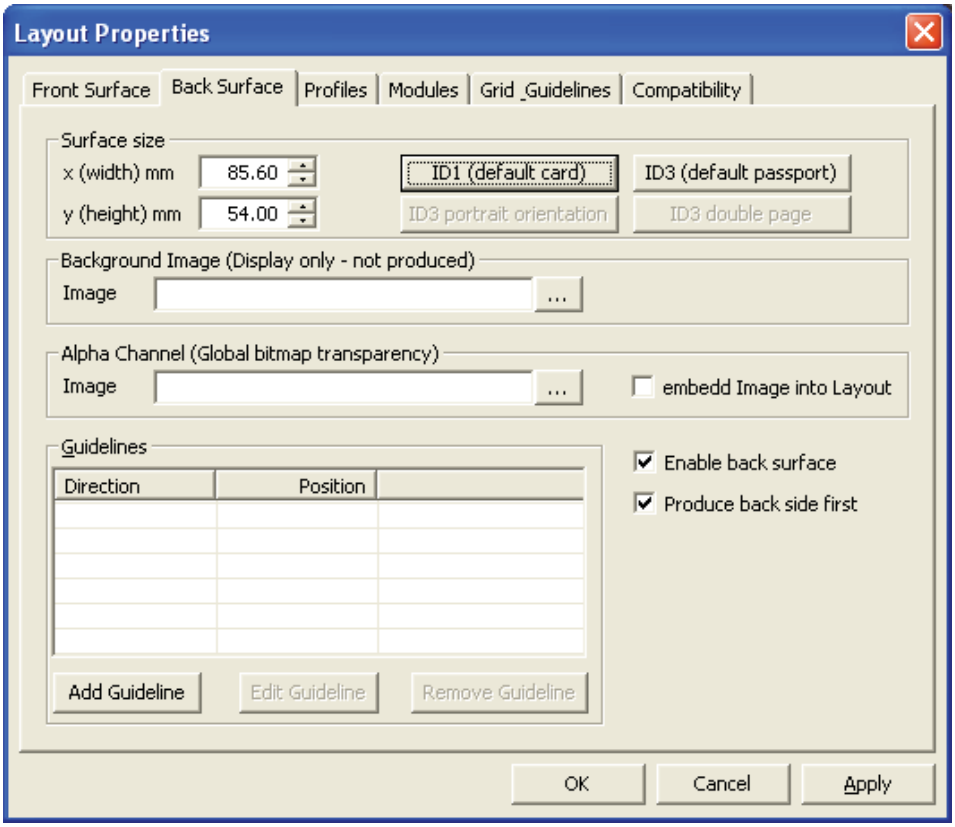
Layout Properties

Use Layout Properties to define the features of the layout. To access right-click in the page area where there is no element and then select **Properties** from the menu. From the layout properties tabs, define the properties for the layout. Each field is described in detail below.

Front/Back Surface

Select **Back Surface** on the back surface tab to enable a two-sided layout.

If both front and back surfaces are used, it is best to also select **Produce Backside First** for better throughput.



Surface Size

Size can be set by manually by entering the x (width) and y (height) parameters measured in millimeters, or by selecting a preset value for cards or passports.Both front and back surface sizes must be set.

ID1 (default card)	ID3 (default passport)
ID3p (passport portrait orientation)	ID3 (passport double page)

Background Image

The background image gives a visual representation of preprinted artwork, it is not laser engraved. Click the ellipses (**...**) button to select the background image. This image is display only and not produced.

Alpha Channel

Some products have areas that contain special features, e.g. a kinegram. Depending on the material, these areas may be more sensitive to laser energy causing bubbling or delamination of product layers. To prevent this from occurring the laser power must be reduced in these areas.

A grayscale image can be created that represents the laser-receptive area of the product and is used to control the laser power of selected elements on an area basis. In this image, white corresponds to full laser power and black corresponds to zero laser power. Gray levels are used to vary laser power between these two extremes. This is done by an alpha blending process and the image mentioned above represents the alpha channel.

The image must be of the same size as your layout and is currently limited to a fixed resolution of 96 dpi (which is enough for this purpose). For ID-1 layouts, the alpha image should be 324 x 204 pixels and for ID-3 layouts, the alpha image should be 472 x 332 pixels. The image is aligned to the bottom-left edge (0.0 / 0.0 Coordinate) of the layout.

This power reduction only works with bitmap based laser elements, not with vectors.

- Click the ellipses (**...**) to select an image to use for the alpha channel.
- To use this feature, an element's **Alpha Blending** check box must be selected. See Bitmap Settings tab of Element Properties.
- Select the **emb** checkbox to embed the image in the layout. Once loaded, the image is stored in the layout file. This is useful if the image might not be persistent at the specified file path. If not embedded, ConCAD attempts to load the image from the specified location every time the layout is opened. If the file is no longer in the location, there will be an error when opening the layout.

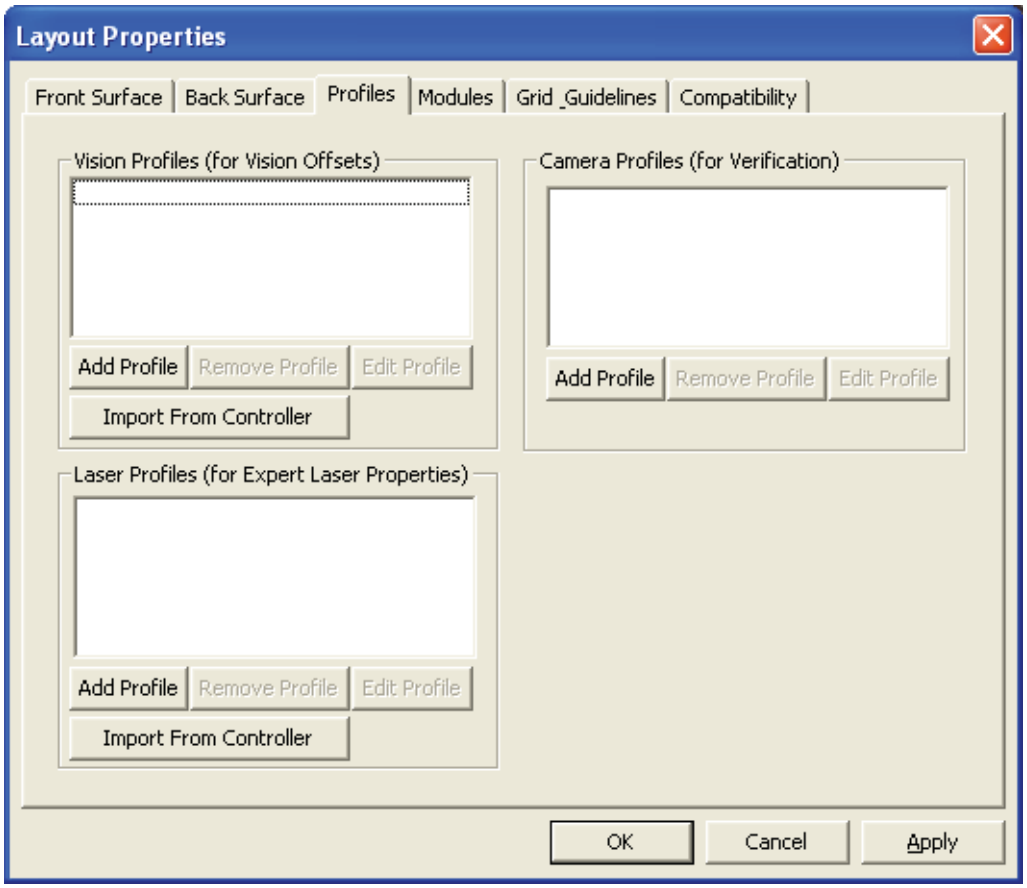
Guidelines

Guidelines that can be displayed on the front/back side are defined in the respective lists by selecting **Add Guideline**, **Edit Guideline**, or **Remove Guidelines**. The guidelines can be shown or hidden by using the **View** menu.

Units are in millimeters unless otherwise indicated.

Profiles

Use the profiles tab to define the Vision, Camera and Laser Profiles for a layout.



Vision Profiles

Only vision profiles listed here will be available in the Element Info tab of an object's Element Property Form. The file names listed in this area must match profile names in the module VPD.

Vision profiles are defined by selecting **Add Profile**, **Remove Profile**, **Edit Profile** or **Import From Controller**.

The order of vision profiles in this list is the order they will be processed, therefore it is important to consider how the product will be processed before adding profiles. In general, if the back surface is used it is best to have the back surface vision profile at the top of the list (better throughput).

If a vision profile has been added and elements refer to it, then deleting the profile will cause those elements to refer to no profile.

Camera Profiles

Camera profiles are used for vision verification operations. Camera profiles define the picture and camera to use to verify the element.

Only camera profiles listed here will be available in the Element Info tab of an object's Element Property Form. The file names listed in this area must match profile names in the module VPD.

Camera profiles are defined by selecting **Add Profile**, **Remove Profile**, **Edit Profile** or **Import From Controller**.

Laser Profiles

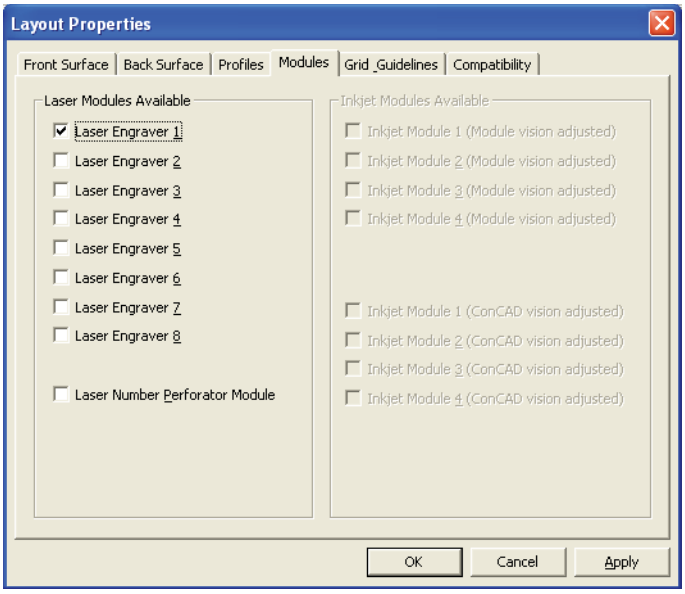
Only laser profiles listed here will be available in the Element Info tab of an object's Element Property Form. The file names listed in this area must match profile names in the module VPD.

Laser profiles are defined by selecting **Add Profile**, **Remove Profile**, **Edit Profile** or **Import From Controller**.

Modules

Laser and/or inkjet modules activated here will be available in the Element Info tab.

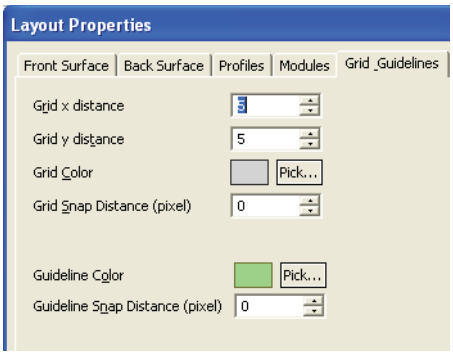
Select **Number Perf** if the module(s) will perform number perforation.



Grid Guidelines

Grid x/y distances (the distance between grid lines), grid color, and guideline color are defined on this tab.

The grid can be shown or hidden by using the **View** menu.



Compatibility

Use the options on the compatibility tab to customize for the following options.

Bitmap Filtering

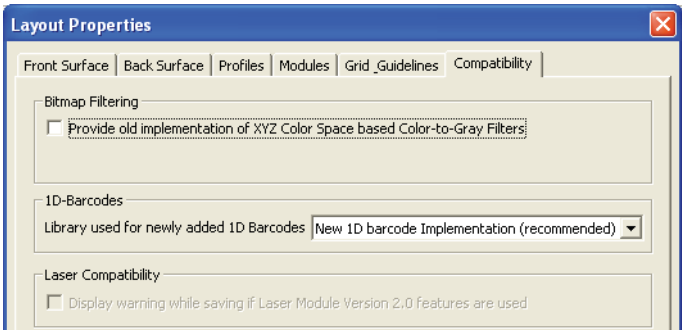
Select this option to provide the old implementation of XYZ color space based color-to-gray filters.

1D-Barcodes

Provides an option for which barcode library to use. Legacy (version 5.5 or earlier) or current (recommended).

Laser Compatibility

Select to display a warning if saving a ConCAD layout that uses features of the Laser Engraving module Gen 2.



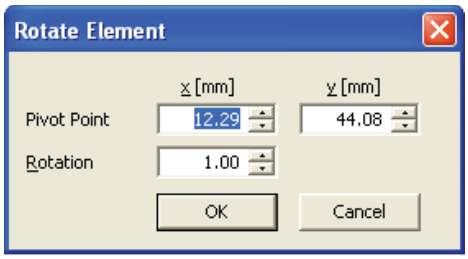
Menus

File

Tool	Description
New	
New Laser Template (CTRL+N)	Opens a new blank laser template file.
New Inkjet Template (CTRL+I)(	Opens a new blank inkjet template file.
Open... (CTRL+O)	Opens an existing file.
Close (CTRL+W)	Closes the current file.
Save (CTRL+S)	Saves the current file as a ConCAD Layout File (*.ccl)
Save As...	Saves the current file under a new name.
Export DSP File	Creates actual laser data based on the default values/images as shown in the layout. The DSP file can be sent to the laser system (Laser Control DSP) using low-level functions to be lased without using the normal production flow. This function is useful for Datacard service or during production or development. **Note:** A DSP file cannot be converted back into a ConCAD Layout file.
Export as Image	Export an image file in .png format with options for DPI, size override, include fixed elements and background image.
Print... (CTRL+P)	Displays the Print File Dialog for the current file. The layout area and X, Y scales will be printed.
Print Preview	Displays the print preview for the current file.
Print Setup	Shows a simple Print Setup Dialog for the current file.
Recent File List	A list of the most recently opened files.
Exit	Closes all files and exits the program.

Edit

Following are the operations available from the edit menu. To select multiple objects press and hold CTRL and click on the objects.

Tool	Description
Cut (CTRL+X)	Cut selected object(s). This operation is available on the context menu.
Copy (CTRL+C)	Copy the selected object(s) to the clipboard. Select from the element list or layout area.
Paste (CTRL+V)	Paste the clipboard object(s) onto the page area at the location of the copied object.
Delete (Del)	Delete selected object(s).
Rotate (CTRL+R)	Opens dialog with options for rotation of the selected object(s). Designate the **Pivot Point** on the **x** or **y** axis (mm) of object and **Rotation** in degrees. 

Element

Use this menu to add new objects to a page. Most menu items can also be accessed by right-clicking in the Page Area. New elements can also be added by using the appropriate tools in the toolbar.

When a new element is selected from the menu/toolbar, the corresponding Element Property window will open.

Extras

This menu contains the Dot Matrix Font Editor and the Vector Font Editor tools.

The vector font editor is a tool to create, import and modify Datacard proprietary Vector fonts. Datacard strongly discourages using the tool without further background knowledge in vectors, laser vector processing and deep knowledge of the Datacard laser control system. Instead we recommend to ask Datacard

Service for assistance if ther is a need a specially developed or modified vector font.

View

The view can also be adjusted by using the appropriate tools in the toolbar. Most values, such as the placement of guidelines, must be set or adjusted in the Layout Properties window.

Tool	Description
Orientation	Used to rotate the orientation of the layout as shown on the screen. Options are Default (0º), 180º rotated, Portrait View (270º), and Reverse Portrait View (+90º). Elements added to a rotated layout will automatically rotate to match the layout.
Page	Alternately displays the front/back side. The feature is disabled if there is no back side.
Grid	Displays/hides the grid. The grid's x and y distances can be set in the Layout Properties window.
Guidelines	Displays/hides the guidelines. Guidelines are defined in the Layout Properties Form.
Ruler	Displays/hides the horizontal and vertical rulers.
Bitmap View Type	If this feature is set to filtered all selected filters will be applied to the preview. See "Filter" tab on "Filter Tab" on page 273.
Alpha Channel	Displays/hides the alpha channel, if used. See "Alpha Channel" on page 259 for more information.
Lock Element Positions	If enabled, all elements will be locked to their positions on the page area. Elements cannot be moved by clicking and dragging with the mouse. They can only be moved by changing the x/y values in the element window.
Element List	Displays/hides the Element List. Objects in the layout can be selected by selecting them in the Element List. Double clicking an object's name in the Element List will show its Element Property form. Single-clicking a selected element will allow a name change.

Tool	Description
Status Bar	Displays/hides the status bar at the bottom of the window.
Toolbars	Options to display/hide the Main, Actions, and Add Elements toolbars (Old Style and Drop Down options). Options will be different for Laser Templates and Inkjet Templates.
Resets Bar/States Positions	Resets the view, toolbars, states, and positions.

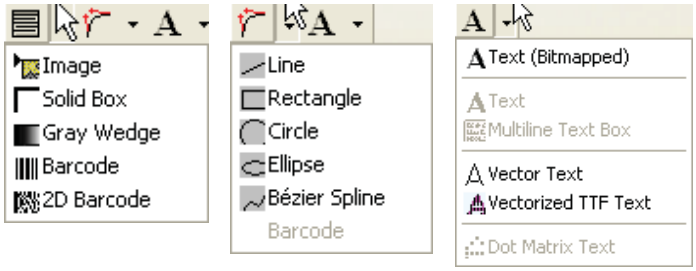
The Toolbar

The toolbar groups in the ConCAD program are listed below.

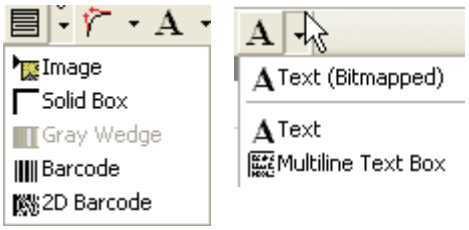
Main

Add Elements (old style)

Add Elements to a Laser Template (drop down)

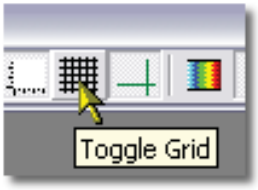


Add Elements to an Inkjet Template (drop down)



Properties/View

Move the mouse cursor over an icon for a description of the icon.



Buttons

The following buttons appear in most dialogs.

OK	Apply property values and close window.
Cancel	Cancel and close form.
Apply	Apply property values.
Next/Previous (Laser)	While editing an element in a Laser template, clicking Next will apply the changes (keeping dialog open) and then highlight the next available element. Clicking previous will apply the changes and then highlight the previous element.

The Element Property Window

The Element property window can be accessed by either double-clicking an element on the page, by using the property tool in the toolbox, or by selecting **Properties** in the context menu.

Element Tab Definitions

Element Info Tab

This tab is common to all template elements.

Element Name	Optional. If Mutability Setting is set to variable, then the element name must be defined.
Type Description	Object type, read only.
Mutability	Object dependant, read only. Values are “Always fixed” for vector shape objects or “Can be variable” for bitmap types and vector text.
Variable Type	Object dependant, read only. Values are “Binary” for images, “Text” text objects and “n.a.” for vector shape objects.
Mutability Setting	Can be “fixed” or “variable” for Bitmap and vector text objects, empty and disabled for vector shape objects.
Module to produce on	Values can be "Laser Engraver #1" through "Laser Engraver #4" ("Laser Engraver #1" is the default setting).
Vision Registration Profile	This drop down list will display all Vision Profiles defined in Layout Properties.

Processing Tab

This tab is common to all elements in a laser template.

Tilting Axis/Angle

The direction and degree to which the product is angled during element lasing. Values:

- Horizontal axis
- Vertical axis(MX6000)
- No Tilting (default) - If “No Tilting” is set the track bar will be disabled.

Note: Tilting is used for lasing special lens structures.

Process Distance

If a process distance other than 0 is chosen, the product gets lased out of the defined laser working plane (distance of the product from the laser beam train).

By using this, you can lase an element either further away from (process distance > 0) or closer to (process distance < 0) the beam train.

This has several effects on the appearance of the lased object, depending on other settings and the actual material behavior.

Process distance > 0

- Lase element further away from beamtrain
- Lighter image
- Larger laser dots
- Blurry

Process distance < 0

- Lase element closer to beamtrain
- Lighter image
- Smaller laser dots
- “Pixel” appearance
- Burning
- Gray areas outside of bitmap areas
- Lines in images

Range: -30 to 30

Pixel Repetition

Laser pulse repetition at every pixel multiple times. The result is a much darker mark. Generally should not be used.

Range: 1 to 4294967295

Reset All

Sets the default values for all three properties.

Bitmap Settings Tab

This tab is common to all bitmapped elements.

Alignment Point	The x/y coordinate (mm) to which the image is aligned.
Horizontal Pos.	Horizontal alignment (left, center or right) with the alignment point.
Vertical Pos.	Vertical alignment (top, middle or bottom) with the alignment point.
Rotation	Rotation of the image (range: -180 to 180 degrees) around the alignment point When rotating an element, the laser line or scan direction will also change.
Shear	Adjustment for shear on either the x or y axis.
Output DPI	Integer between 0 and 16000 or Auto.
Output DPI y	Ability to set the resolution in y direction. Available only when using Mode 5 (Independent y resolution). See in "BMP Laser Details" on page 270
Crop White Space	By default cropping is enabled on all sides.
Alpha Blending	Select Alpha Blending to enable Alpha Channel feature. See "Alpha Channel" on page 259.
Read Only: Bitmap Output Size	The x/y dimensions (mm or pixels) of the bitmap.
Enhance Edge	Selection of this feature uses different laser settings to increase contrast at gray level edges, for example at a white-to-black or black-to-white transition. It is recommended for most types of elements containing black and white content (few or no gray pixels). Examples include text, barcodes, signatures, and logos. It should not be used for portraits. Enhance edge mode may be slower than non-enhanced edge mode. **Note:** Enhance edge is activated by default for bitmapped text and barcodes, deactivated by default for bitmap images.
Negative	Inverts the gray levels of the image (black = white; white = black)

BMP Laser Details

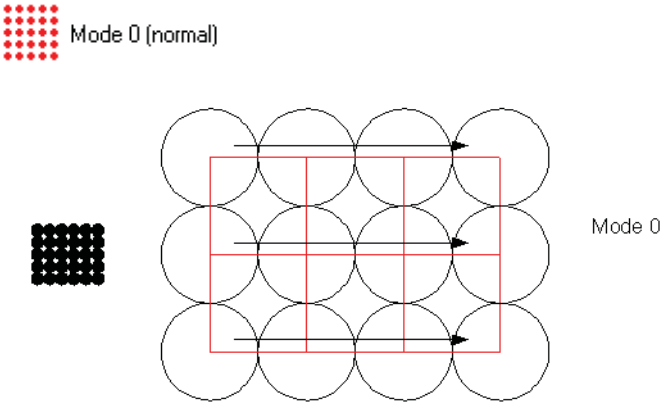
Use this tab to set laser details for bitmapped elements. The Raster Mode, Line direction, Color Mode, Scan Mode and other options are explained below.

Raster Mode

The display of data on a grid of pixels arranged in columns and rows. Mode 0 is the preferred mode for most applications (all rows are in one y, all columns in one x position). See the examples below. Modes 0, 1, 3, and 5 are used in ConCAD.

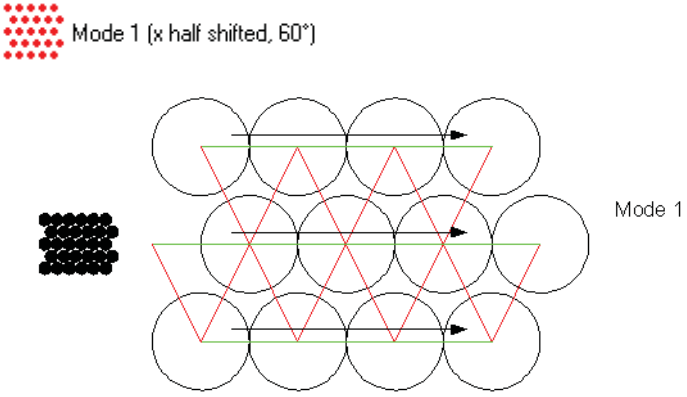
Mode 0 (Normal)

Best for reproducing fine detail, especially for features that approximate vertical and horizontal lines.

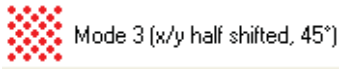


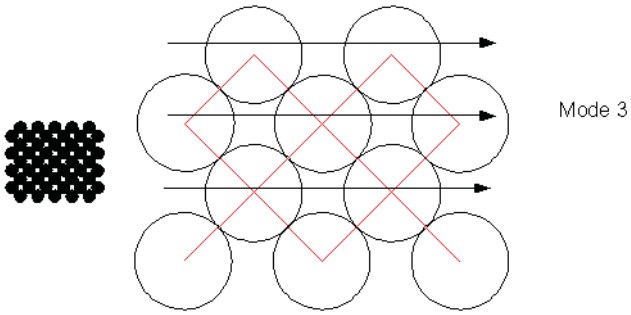
Mode 1 (x half shifted, 60°)

May yield better results for sensitive product materials that tend to burn in black areas.



Mode 3 (x/y half shifted, 45°)





Mode 5 (Independent y resolution)

Line Direction

The way laser dots are applied to the product. The laser line direction is relative to the rotation angle specified for the element. Laser line direction can be row-by-row (horizontal lasing) or column-by-column (vertical lasing direction).

There are several things to consider when choosing the lasing direction:

- Speed will be fastest when the least number of scans is used. When objects are more or less square (e.g. facial portrait) the speed difference is small.
- Overall appearance of facial portraits is best when scanned horizontally (especially true for small images).
- When an image contains many parallel lines (e.g. 1D or 2D barcodes) scan along the line direction.
- Sensitive regions of product material may be affected by laser line ramp-up areas (before and after the laser line).

Notes:

- If the element is rotated, the laser line direction will also rotate. Select the best laser line direction for an element in the 0 (zero) rotation angle.
- In Mode 3 there will be more rows of pixels but fewer pixels per row.
- Mode 3 does not work correctly with the vertical bitmap laser direction.

Color Mode

There are three options for the color mode:

- Grayscale (regular)
- Grayscaled Bitstream
- Bitstream (black and white only)

Scan Mode

Unidirectional lases each line of a bitmap in one direction (left-to-right)**.**


Unidirectional

Bidirectional lases every other line of a bitmap in the opposite direction (1st row: left-to-right, 2nd row: right-to-left).


Bidirectional

Improves the lasing speed, because the mirrors don't have to move back before the next line, but generates an offset between the even and odd rows and has other related effects. As such, it is not recommended for use when image quality is a priority.

Other Options

Enhanced Edges (overshot) uses different laser settings to increase contrast at gray level edges. An example would be at a white-to-black or black-to-white transition.

It is recommended for most types of elements containing black and white content (few or no gray pixels). Examples include text, barcodes, signatures, and logos. It should not be used for portraits.

Enhance edge mode may be slower than non-enhanced edge mode.

Note: Enhance edge is activated by default for bitmapped text and barcodes, deactivated by default for bitmap images.

Negative (inverted) inverts the gray levels of the image (black = white; white = black)

Verification Tab

Use this tab to enable Verification functionality and set the threshold value. Select the **Verify Element Quality** check box to enable.

1. Enter the **Pass Threshold** value in the text box.
2. Select the **Camera Profile**
3. Optionally choose to include **Background Noise**.

4. Set the data contrast.
5. Optionally select ICAO Specification
6. Optionally perform the confusion analysis
   A. Set Confusion threshold
   B. Enter Confusion Data List

Filter Tab

This tab is used to define the settings that are used to convert RGB color images to grayscale and to modify or enhance an image for best results on products.

It is important to note that the changes made in this procedure will affect every image lased by the system. Ensure that the best possible image quality is being used and that there is a high degree of similarity (level, contrast, etc.) among all pictures. Verify settings with extreme image examples.

All effects from filter setting can be seen on the display if the menu item **View | Bitmap View Type | Filtered** is set in the menu.

Color to Grayscale Conversion Method	Select from predefined methods. **Note**: Previous versions of ConCAD used the **Y-Channel from YCbCr (CCIR 601**) method as the default.
Filter Window	This window contains the filters that will be applied during the conversion process. **Note**: The filters will occur in the order listed. • Select a filter from the New list and then click **Add** to add the filter to the list. • Use the arrow buttons to move the selected filter up or down in the list. • To remove a filter from the list, select the filter and then click **Remove**. • To edit the properties of a filter, select the filter and then click **Edit** or double-click on the filter in the list. • To preview the changes being made to the image select the **Preview** checkbox.
Filter Types	**Resize for Laser** - This filter may only be used one time on the list and will use the DPI value found on a different tab for the element. In general, it is only necessary to use the Resize for Laser filter if the Unsharp Mask filter is used. In this case, the Resize should occur just before the Unsharp Mask.

Input Levels - Adjust the Black and White Threshold levels to attain the best looking image. Increasing the black level will result in a darker image and decreasing the white level will result in a lighter image. This may result in loss of gray level information (similar to a contrast change). Use of the Auto level filter is preferred in this instance.

Click **Input Histogram** to view the histogram of the image before any changes have been made.

Output Levels - Adjust the Black and White Threshold levels to attain the best looking image. Increasing the black level cause darker gray levels to be printed lighter. Decreasing the white level will cause the lighter gray levels to be printed darker. This will reduce the dray level range of the image.

Keep Max Threshold - When changing other gray levels (e.g. Output Levels White Threshold < 255), the value of a maximum white pixel (tone=255) shall not be changed. This is useful for pictures that ran through a background removal algorithm and where the background is completely white when limiting white tones to a light gray, however the background shall not be changed. Note that When opening an older ConCAD file, this setting is deactivated.

Click **Output Histogram** to view the image histogram. This is what will be printed.

Gamma - The Gamma adjusts the gray levels of midtone values. A higher gamma value yields an overall lighter image. The correct gamma value depends on the adjustment of the laser beam train.

For MX6000 systems, the ideal gamma setting is 1.00.

For PB6500 systems, the ideal setting is 2.20.

Auto Levels - ConCAD identifies the lightest and darkest pixels and then redistributes intermediate pixel values proportionately to provide a more balanced image. The recommended settings are:

- Black Limit - 1
- White Limit - 230
- Black Clip - 0.5%
- White Clip - 0.5%

The use of Auto Level is preferable to changing the input levels.

Unsharp Mask - Used to sharpen the image. The image must be resized before using this filter. The recommended settings (for a 400 DPI image) are:

- Radius - 35
- Amount - 270
- Threshold - 90

If a different DPI is used for printing, a different radius is needed to obtain the same results. Generally, a radius of 3.5 works well for 400 DPI +/- 10%.

Bitmap Image Element

File	The path to the image file. If necessary, click the ellipses (...) button to navigate to a different image.
Embedded	Important: Only use this option if the element form has been closed at least once after selecting a file (in order to load the image into the layout). Selecting this will increase the file size of the layout since the image will be saved inside the layout.
Sizing Mode	Depending on the size of the input image, the ConCAD layout, and the setting of the size of an image in the layout, the images may be resized for lasing.
Fit (isotropic/ keep aspect ratio) into)	Resizes the image so it is no larger than both the width and height specified. The aspect ratio is not changed.
Size exactly (anisotropic) to	Resizes the image to the defined width and height. May change the aspect ration of the image. It should not be used for portraits.
Fit to Width	Resizes the image to fit only the defined width and calculates the height to maintain aspect ratio.
Fit to Height	Resizes the image to fit only the defined height and calculates the width to maintain aspect ratio.
Get Size from Image File using DPI embedded in file	Sizes the image using the DPI setting embedded in the image file.
Get Size from Image File using Output DPI	Resizes the image according to the output DPI value specified on the element's Image tab. **Note:** This is the only sizing mode that guarantees that the image is not resized. For every other mode the image may be resized.
Get Size from Image File at...DPI	Will resize the image according to the specified DPI value. DPI values range from 0 to 4294967295.

Resize Algorithm

ConCAD supports nearest neighbor, bilinear, and bicubic. They all produce different results. You should conduct tests with each algorithm to determine which is best for your application.

- **Nearest Neighbor (preserve edges) -** This mode is the fastest and results in the sharpest edges, but use may result in the loss of some gray scales or in incorrect dimensions of small, thin lines (or even the elimination of small features).
- **HQ Bilinear**
- **HQ Bicubic mode (best for natural images) -**This mode is the slowest and gives the best optical appearance, but works somewhat like a soft-focus filter and reduces dynamic contrast (i.e. changes high-contrast white/black/white edges to light gray/dark gray /light gray edges).

Bitmap Text Element

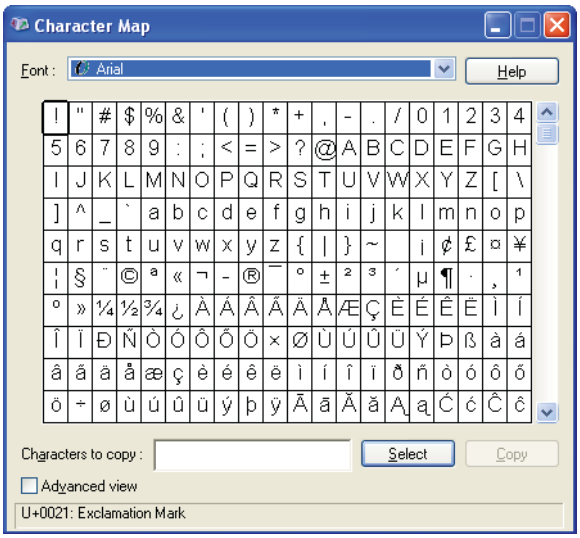
Use this tab to define text and font settings.

Text

The text to be lased.

Font

The font that will be used. To view the character map for the selected font click the character map button.



Size

The font size (in points). Can be selected in increments of 0.10mm.

Font Attributes

Select any combination of the following font attributes: **Bold**, **Italic**, **Underline**, **Strikeout**, **Smoothing.**

Smoothing font edges results in a less jagged appearance, but generally should not be used since it will reduce the sharpness of characters. Pixel effects are usually not detectable at DPI values of 350 or more.

Add EM Width for Text Width Calculation

This setting is a work-around for some TrueType Fonts (Arial included) that render incorrectly. Some characters with diacritical marks have a mark that is left outside of the bounding box of the character (to the right) and will not be printed.

With this option selected, the bounding box (and thereby the bitmap used as the rendering area) is extended to the right by one EM width (the point size of the character). The EM is used because of its size regardless of the font size selected.

Text Color

The color of the lased text (grayscale only).

Background Color

The background color (grayscale only). Setting to a value lower than 255 will improve text contrast, especially for small fonts. 245 to 250 are typical values.

Text Width

The width of the text entered in the Text field (in mm).

If Text is Wider

Options for how the program handles a situation where the text is wider than the text width field, if specified (see above).

- **Ignore** - The error is ignored (text may overlap other elements or run off the edge of the card).
- **Crop Text to Maximum Width** - The text is cropped at the defined width (text characters longer than specified will not be printed).
- **Throw Conversion Error** - An error message will appear and the element will not process.
- **Shrink to Fit** - The text will be compressed to fit the text width (only the width will change).

Expand Smaller Text

If a text field is configured at a certain size (Text Width value set > 0) there are several options to use if the text is wider than the field. This option can be used to scale smaller (narrower) text to achieve the selected width. This is done on the bitmap level, so for extreme expansion ratios you will see a visible aliasing effect (only the width will change).

Solid Box Element

Use this tab to define a solid box filled with a shade of gray.

Size	Size of the box (width and height) in mm.
Fill/Border Color	Use the color definition boxes to determine color. For laser templates **Gray Only** must be selected to limit the color choices to grayscale.
Border Thickness	Thickness of the border, in mm.

Wedge Element

Wedge elements are available only on laser templates. The start color (shade of gray) defined below will gradually blend with the end color to create a gradient effect.

Start Color	The color (shade of gray) that will appear at the left side of the box. Use the color definition boxes to determine color. **Gray Only** must be selected to limit the color choices to grayscale.
End Color	The color (shade of gray) that will appear at the right side of the box. Use the color definition boxes to determine color. **Gray Only** must be selected to limit the color choices to grayscale.
Levels	The number of color levels (shades of gray), (2-256) that will appear.
Width Per Level	The width (in pixels) for each level. The number of levels and the width per level determines the width of the box.
Height	Height of the box, in mm.
Border Thickness	Thickness of the border, in mm.
Border Color	Use the color definition boxes to determine the border color. **Gray Only** must be selected to limit the color choices to grayscale.

Vector Settings Tab

Vector elements are available for laser templates only. The vector settings tab is common to all vector-based images.

Vector Mode

Black line	Results in a solid, non-tactile line, depending on laser settings and card material.
Tactile line	A tactile vector is a vector that is lased so that the material actually breaks up. This results in a tactile surface (when moving your finger over it you can feel it), depending on laser settings and card material.
Manual	Manually enter all settings (see below).

Fill Mode (enabled if Vector Mode is set to "Manual")

Hatch	Hatching is a technology used to automatically produce vectors of a certain line width. Small vector lines are produced orthogonal to the vector direction.
Wobble	A technique to lase thick vectors. Normally the laser produces a very thin line. By wobbling, the line can be made thicker or stronger. The laser beam rotates along a line in a spiral movement with a certain amplitude (spiral diameter = line thickness) and frequency (Wobble Frequency).
No Filling	No filling will occur.

Settings

Line Thickness (mm)	Line thickness, must be entered manually.
Point Density (dpi)	Enabled if **Vector Mode** is set to "**Manual"**. DPI values can range from 0 to 4294967295
Wobble Frequency (Hz)	Enabled if **Fill Mode** is set to "**Wobble".** See the description for "Wobble" above.
Vector Power	Enabled if **Vector Mode** is set to "**Manual".** The selected laser power level for this vector.

Vector Line Element

This tab allows you to define x/y-coordinates for the line's start and end points.

Start Point	Define the x/y coordinates for the start point.
End Point	Define the x/y coordinates for the end point.
Read Only Properties	Length and angle of the vector line.

Vector Rectangle Element

Base Point	The position of the base corner (bottom left) corner of the rectangle (P_0)
Size	The size of the shape (in mm).
Rotation Angle	The number of degrees the shape will be rotated.
Laser Processing Order	**Starting Corner** - The corner where the lasing starts (typically P_0=base point, see above - P_1, P_2, P_3 are the other corners in a counterclockwise direction). **Direction** - The direction the rectangle is drawn originating with the starting corner.

Vector Circle Element

Center Point — Location of the circle's center point.

Radius — The size of the circle (in mm).

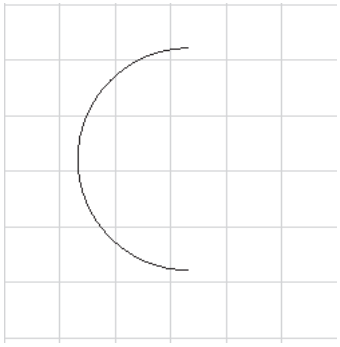
Start Angle — The position, given in degrees as a direction from the center point, where the circle begins.

Angle direction is given mathematically (i.e. 0° = 3 o'clock, positive values = counterclockwise).

Processing Angle — The length of the circular arc in degrees beginning at the start angle (360° is a full circle, 90° a quarter circle).

Processing angle is given in mathematical direction (i.e. positive degree values = counterclockwise; negative values are clockwise).

Example: Start angle 90°, processing angle 180°: A circular arc is drawn as a line from the top (12 o'clock) to the bottom (6 o'clock) counterclockwise (the left half of a circle).



Read Only Properties — Start and end points for each axis.

Vector Ellipse Element

Center Point — Location of the ellipse's center point.

Radius — The size of the ellipse (in mm). The x and y dimensions determine the shape of the ellipse.

Ellipse Rotation	The ellipse radius can be defined along the x and y position. That means an ellipse can be defined that is either lying (x-radius > y radius) or standing (y-radius > x-radius). To draw ellipses that have the semi-major/semi-minor axis in different directions than the x/y axes, the ellipse can be rotated. Rotation is in mathematical direction (positive angle: counterclockwise; negative: clockwise).
Start Angle	The position, given in degrees as a direction from the center point, where the ellipse begins. Angle direction is given mathematically (i.e. 0° = 3 o'clock, positive values = counterclockwise).
Processing Angle	The length of the circular arc in degrees beginning at the start angle. 360° is a full circle, 90° a quarter circle. Processing angle is given in mathematical direction (i.e. positive degree values = counterclockwise; negative values are clockwise).
Read Only Properties	Start and end points for each axis.

Vector Beziér Spline Element

Use this tab to define coordinates for all four points of the spline. The combination of the coordinates determine the length and depth of the curve. Note that the Beziér spines used by ConCAD are cubic Beziérs.

Start Point	Location (x/y coordinates) of the starting point.
Control Points (1 and 2)	The position of the control points along the curve.
End Point	Location (x/y coordinates) of the end point. **Note:** The line drawn will not go through the control points unless the line is straight.
Arc Length	Read only, arc length in mm.

Vector Text Element

Alignment Point	Location (x/y coordinates) of the text string with respect to the layout.
Text Alignment	Alignment (x/y axis) of the text string.

Text	The text string to be lased.
Font	The font that will be used to lase the text.
Size	The size of the font (in em heights). One EM equals the point size of the character (for example, a 16 point font will have an em value of 16 points).
Ratio	Scales the aspect ratio of the font. A number smaller than one will shrink the width a number greater than 1 will expand the width.
Rotation	Rotation of the image (range: -180 to 180 degrees) around the alignment point When rotating an element, the laser line or scan direction will also change with it.
Space Between Characters	The amount of space (in mm) between the font characters (1/16 em is the default value).
Use actual character width	Select Use actual character width to force a proportional font.

Vectorized (TTF) Text Element

This element is available for laser templates.

Text	The text string to be lased.
Font	The type face or family that will be used to lase the text.
Font Characteristic	The angle and weight of the font.
Text Width	Width of the text entered in the text field (in mm).
Size	The font size (in points).
If text is wider	These options are available when text width is greater than 0. Options are to Ignore, Crop text to maximum width, Throw a conversion error, Shrink to fit and the option to expand smaller text is available.

Perforated Number Element

The dot matrix font is only used with Number Perf layouts. To create a number perf layout, you must enable a number perf module (PB6500):

1. Right-click the background of the card/passport surface and then select **Properties** or click the yellow layout properties icon in the toolbar
2. In the Available Modules box, enable **Number Perf**.

Alignment Point	Location (x/y coordinates) of the top-left number string.
Text	The text to be lased.
Font	The font that will be used.
Dot Spacing	The amount of horizontal (x) and vertical space (y) between the perforated dots. Based on the x value, selecting **Default Ratio** will change the y value to create the standard x: y ratio.
Space Between Characters	The amount of space between the perforated numbers.
Dot Diameter	The diameter of the perforated dots. **Note**: This setting is for ConCAD display purposes only. The effective dot diameter is determined by the laser power parameters and the material on which the perforation is being made.

Barcode Element Tab

Barcode elements are available for both laser and inkjet templates. Barcode elements for inkjet templates have more color options.

Symbology	Type of barcode being used.
Text	The text to be lased or printed.
Auto-Calculate Check Digit	Many barcodes include a check digit. The check box defines if the check digit shall be generated by ConCAD (activate check box) or already is part of the text data (deactivate checkbox). Some users generate the check digit as part of their data and send it to ConCAD at production time. In this case disable the checkbox. Others only send the raw data without the check digit - in this case enable the checkbox, if the application requires a check digit.
Barcode Height	The height (in mm) of the barcode.
Narrow Bar Width	The width (in pixels) of the narrow bars. In general, at least three pixels are needed to avoid poor quality results.
Barcode Color	The grayscale color of the barcode. Click to pick RGB color (inkjet templates only).
Background Color	The grayscale color of the background. Click to pick RGB color (inkjet templates only).
Show Text Below Barcode	If enabled, select the font and size of the text to show below the barcode.
Text Color	Click to pick RGB color (inkjet templates only).

Note: The best balance between speed and quality is usually obtained with the scan direction parallel to the bar direction, three pixel bar width, edge enhance not checked.

2D Barcode Element

The 2 dimensional bar code element is available only for an inkjet template.

Symbology	Type of barcode being used.
Text	The text to be lased/printed.
Sizing Mode	Choose from three modes. **Pixel per Module** enables module width and height adjustment in pixels. Maximum Size, or Exact Size enables barcode width and height in mm.
Module Width/Height	The height and width (in pixels) of the barcode.
Barcode Width/Height	The height and width (in mm) of the barcode.
Barcode Color	The grayscale color of the barcode. Click to pick RGB color.
Background Color	The grayscale color of the background. Click to pick RGB color.

Appendix F: Ring Search Vision Profiles

F

This chapter includes information about the configuration and use of Ring Search Vision Profiles. ConVision is only available on systems that have laser engraving capability.

Introduction

Background artwork is applied to products with a certain degree of placement tolerance. Ideally, the information that is laser engraved should follow the drift in the product's background image, so that the final product has background artwork consistently placed with respect to the engraved data.

To accomplish this, the laser module must have a reference mark present in the background artwork. The laser module can search for this reference mark at production time, compute the offset of the actual mark from the ideal mark location on the product, and then apply this offset to the laser engraved data.

For example:

Ideal Mark Location:	x=45 mm, y=10 mm
Actual Mark Location:	x=46 mm, y=8 mm
Offset:	x=1 mm, y=-2mm
Ideal Laser Text Origin:	x=12 mm y=26 mm
Adjusted Laser Text Origin (Ideal + Offset):	x=13 mm, y=24 mm

In this example, the actual mark is offset by 1 mm in the horizontal direction and -2 mm in the vertical direction. The laser text origin must be adjusted accordingly, so that the lazed text will fall in the proper location with respect to the rest of the background elements on the product.

There are two algorithms for searching for reference marks in the laser module:

- **ConCAD**

  This algorithm is suitable only for reference marks consisting of horizontal and/or vertical lines on a solid color background. It operates by searching over a specified region of an image for lines.

- **Ring Search**

  This algorithm is more suitable for products with busy backgrounds. There is no need to have a completely solid color background over the entire search area.

  This algorithm is described later in this chapter.

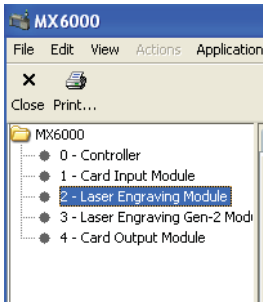
The algorithm that will be used and the parameters for that algorithm are specified in a *Vision Profile*. A Vision Profile describes the search area and other search parameters used for a specific vision mark on a product. Vision Profiles are stored in the module VPD and are given user-assigned names.

In a product Setup, for each laser engraving operation element, a Vision Profile can be specified. If specified, the Vision Profile will be loaded and the reference mark will be sought and used to determine the offset to apply to the laser data.

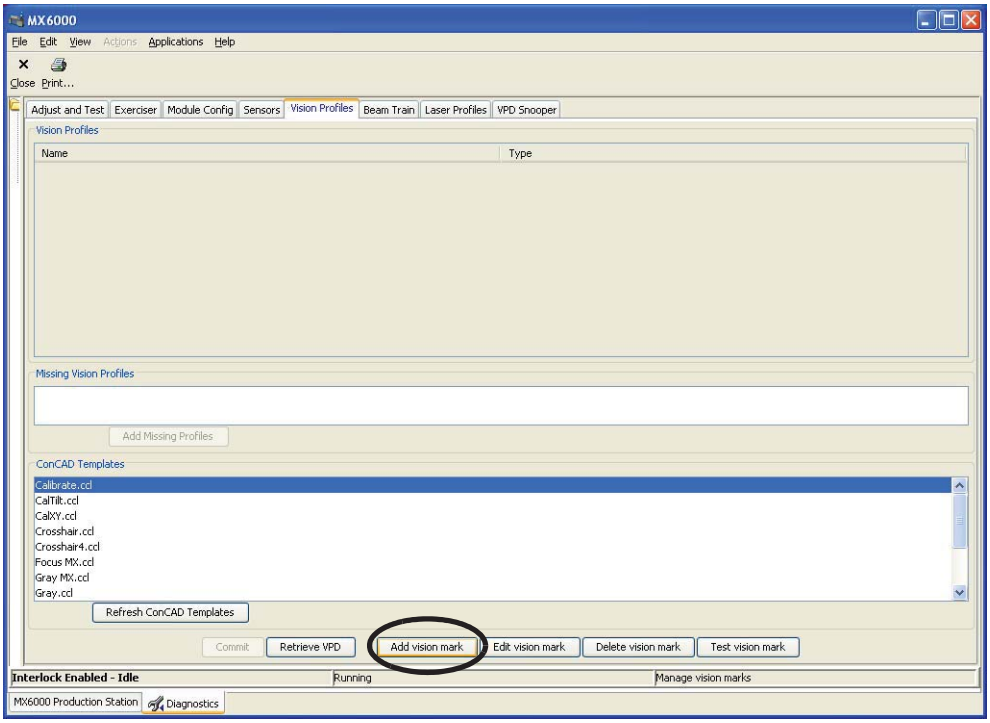
Setting Up a Ring Search Vision Profile

A Vision Profile is setup from the laser module diagnostics panel.

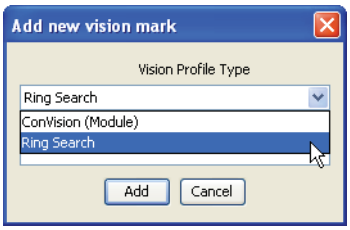
1. Select **Applications | Utilities | Diagnostics**
2. Select the Laser Engraving Module from the list of system modules.



3. Click to select the Vision Profiles tab.
4. At the bottom of the tab, click **Add Vision Mark** to create a new vision mark.



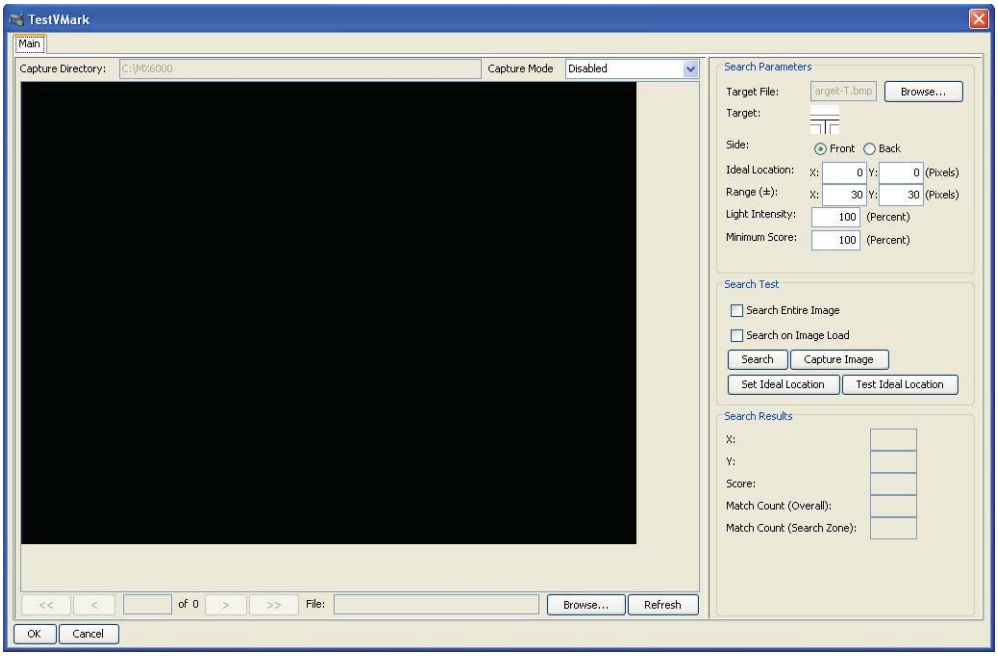
5. For Vision Profile Type select **Ring Search** from the list.
6. Enter a name for the vision mark and click **Add**.



7. With Ring Search selected, click **Add** to continue.

8. In the black box is an image display area that will be used to show the camera's view of the product.

   This image is the basis for determining the search parameters.

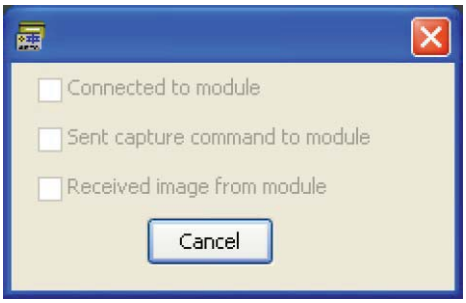


Loading Images

To begin the process, an image must be loaded. This can be accomplished one of two ways. The easiest way is to manually load a product into the vision module and then click **Capture Image**. This will capture only one image at a time.

A batch of images can be loaded efficiently by saving the Vision Profile with the Capture Mode set to **Enabled (Security Risk)**. The Vision Profile can be referenced by a product setup. Execute a production run, and the images will be captured into the capture directory specified. Note that for an initial test batch, you may want to set the search parameters so that they will always succeed, avoiding errors during production. A search area somewhere on the product with a minimum score of 0 will always succeed.

When capturing an image using the Capture Image button, the following dialog box will appear:



The dialog box shows capture progress. You can also use the dialog to cancel the capture.

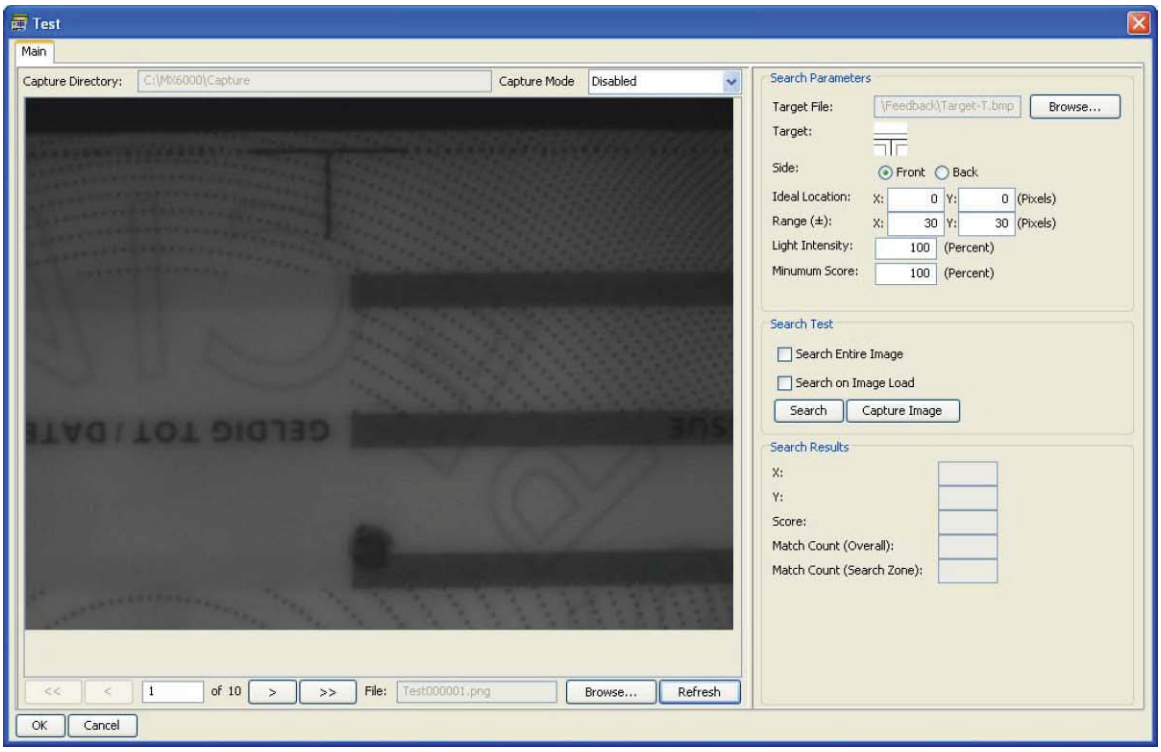
Note that:

- Images are captured to the "Capture Directory" specified in the program. The capture directory defaults to the root installation directory for the controller software.
- Ideally, the capture directory should be set to a different directory than the default. The directory can be set using the bottom **Browse** button. This button is used to browse for a single image file, but it also serves to specify the capture directory. Simply browse to a PNG image you wish displayed, and the directory that the file resides in will become the capture directory.
- For "live capture" using "Capture Image," this directory must have read/write access for the currently logged in user. When capturing during production, this directory must have read/write access for the "Maxsys" user (or whichever user account the "Datacard Maxsys" service is configured to run under). Ideally, the capture directory will have read/write access for both the currently logged in user and the Maxsys service user account.
- You can enter a non-existent file name to force the setting of the capture directory. For example, if you have a capture directory of “C:\MX6000\Capture” you wish to use, but there are no files in that directory yet, you can browse for the image file and enter “C:\MX6000\Capture\Nothing.png”.

Defining and Testing Search Parameters

Once the image is loaded, the search parameters can be defined and tested to see how well they perform.

The image below shows the dialog with a loaded image.



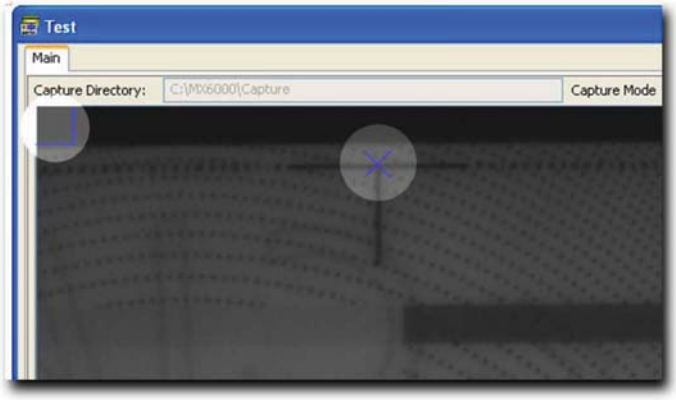
In this case, our target is a "T" shape near the top of the product. The target file used is the default "Target-T.bmp" file. This is the default target provided with the controller software. A different target can be specified using the **Target File/ Browse** button.

This Vision Profile uses the front (default) side of the product.

Specifying the Ideal Location for the Reference Mark

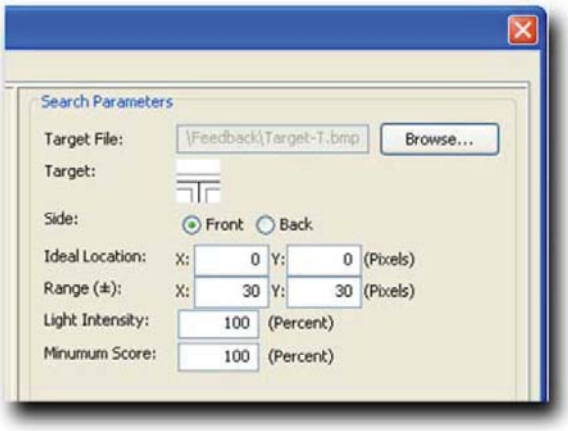
Perform the following procedure to specify the ideal location for the reference mark.

1. To find the reference mark on the sample image, left click on the reference point of the reference mark. In this example, the place where the horizontal and vertical lines meet is the reference point of the reference mark (the top-center of the T). Left clicking on this point causes the search computation to be performed at your mouse position, yielding the following:

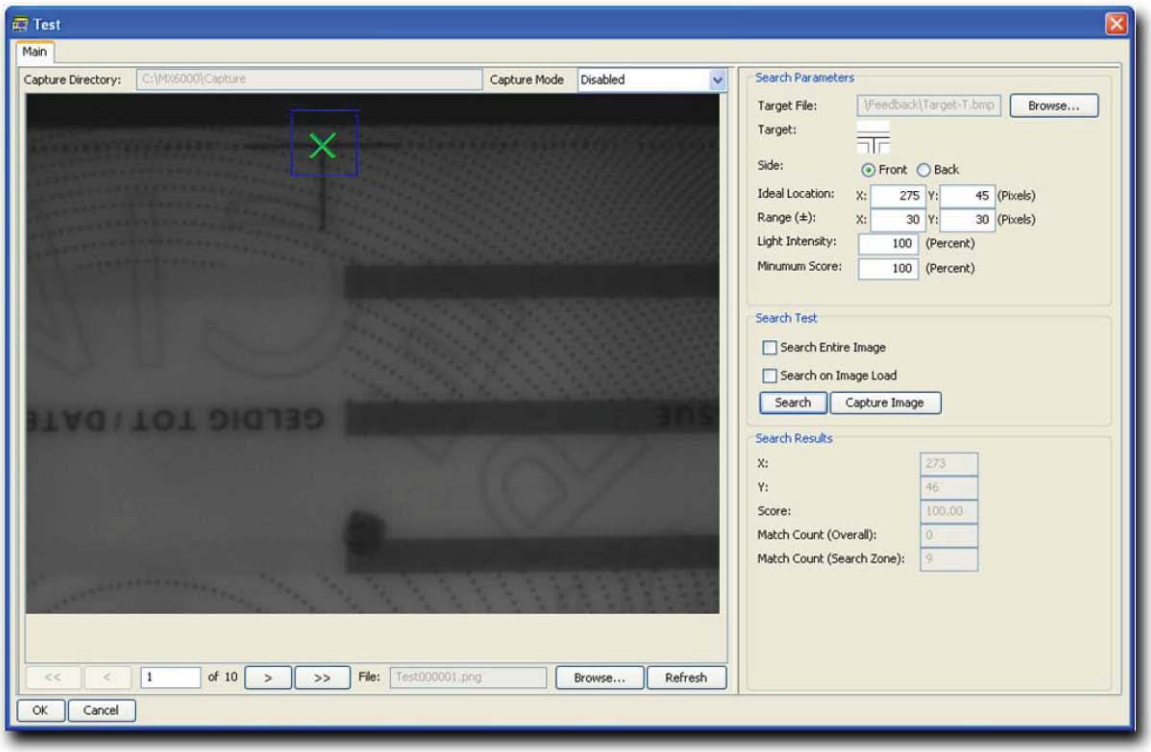


The blue rectangle shows the search area, which currently is set to the default at the top-left edge of the product. The blue X marks the search position.

Note that under Search Results, the X and Y coordinates of the blue X have been automatically entered, with a score of 100%.



2. Manually enter the X and Y coordinates into the Ideal Location field. The numbers can be rounded off, the absolute correct position of the mark is not necessary.
3. Click **Search.** The following screen is displayed:



The blue X marks the target position chosen by the search algorithm. The green X marks indicate other marks in the search zone which also match the search parameters. The search algorithm will always choose exactly one best match point. In this example, it will be the top-left-most location with the best score in the search area.

Note that the search area box (the blue box) has moved to be centered around our newly specified ideal location (see the image on the previous product).

The size of the search area can be adjusted by setting the Range values. For optimal performance, the search zone should be as small as possible, with all the actual reference marks for all the products falling within the search zone. If the printing tolerance is very tight, the search area can be made very small. If the printing tolerance is not tight, then a bigger search area (and slower performance during searching) will be required.

Setting Light Intensity

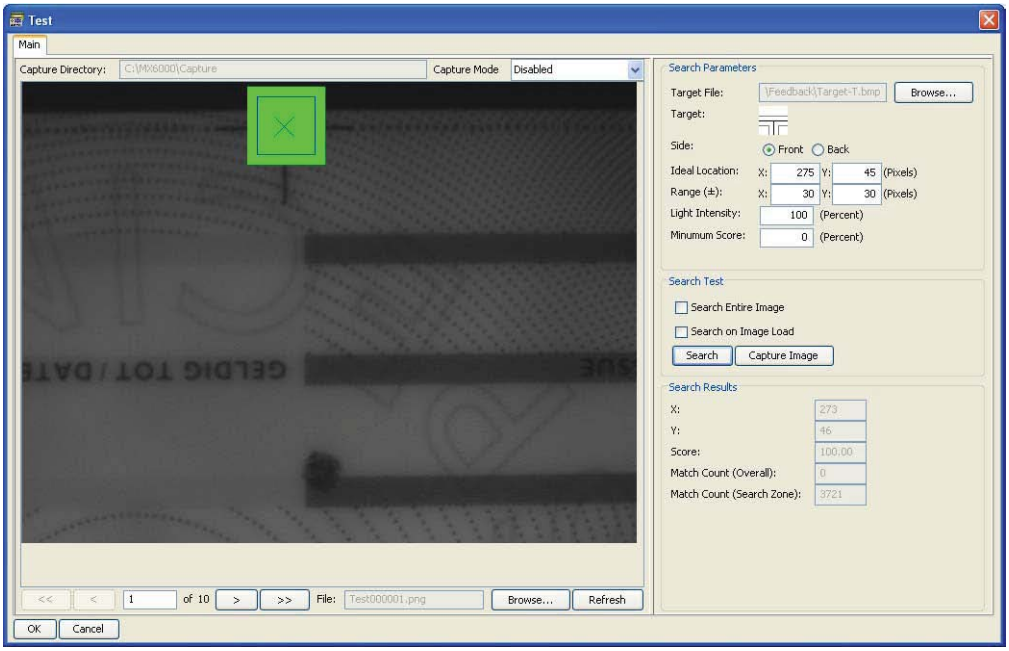
Light Intensity can be set to provide acceptable image appearance. Generally, if the image appears acceptable to the human eye, the search algorithm will be able to perform well. Currently, the recommended light intensity setting is 50%.

Determining the Minimum Score

The **Minimum Score** is used to enable the detection of products inserted in the wrong orientation. If a product is inserted upside down, for example, some unintended region of the product will be captured by the camera. In such an occurrence, the product should be rejected. The search algorithm can accomplish this by looking at a minimum score threshold provided.

The example above has a minimum score of 100%. There are actually nine matching locations within the search zone for this particular image.

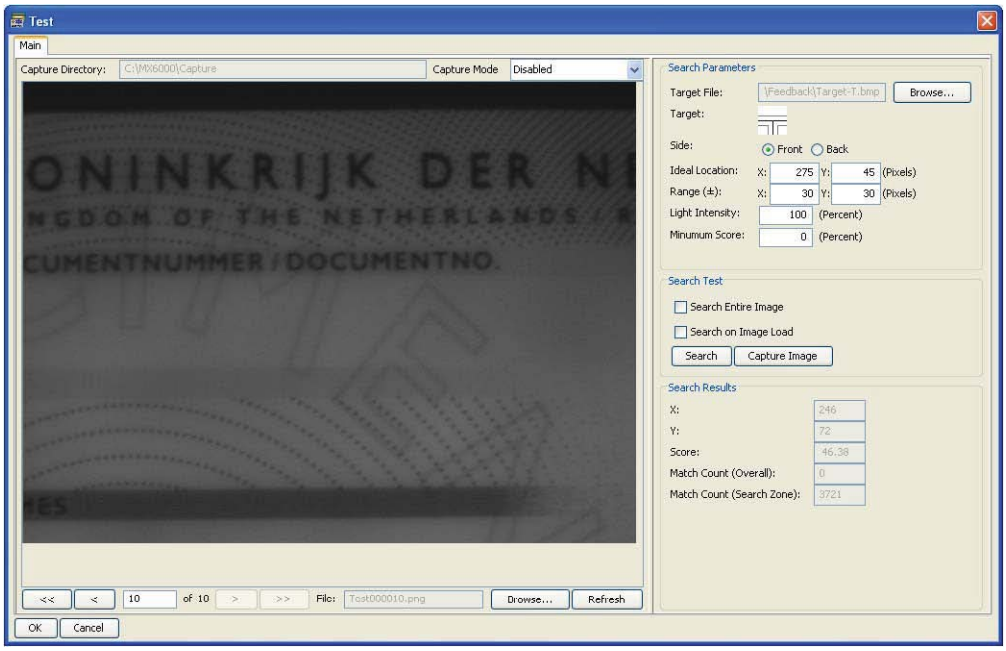
In the example below, there is a minimum score of 0% for the same image, meaning that any score will satisfy the search criteria.



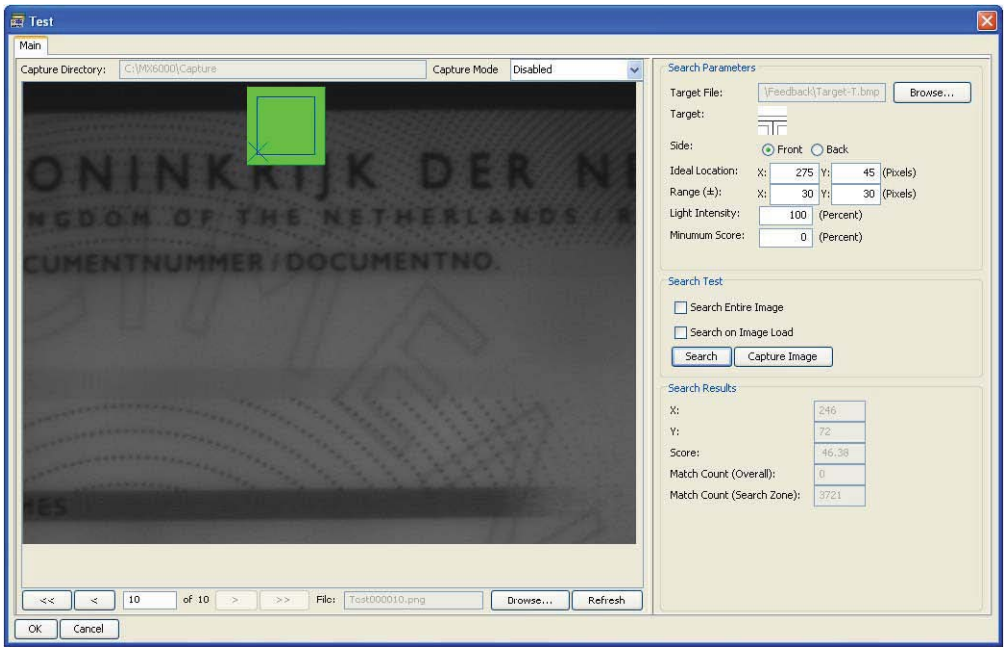
Note that the entire search area is covered with green Xs, except for the blue X marking the best match point chosen within the search area. This shows that the search algorithm will always look for the best score it can find on the image. The blue X is actually in the right location (the same location as with a minimum score of 100). The flood of green Xs show that any point within the search area would have passed the minimum score test. If the mark was actually absent from the product, some other point would have been chosen in the search area.

Using a minimum score of 0 will always result in a found target (even if there is physically no such target on the image). There will be no way for the algorithm to signal a misoriented product if you set the minimum score to 0.

To determine an acceptable setting for the minimum score, misoriented products can be examined, or you may shift the ideal location around on the product to see what the max score is for an area. A misoriented product is shown below.

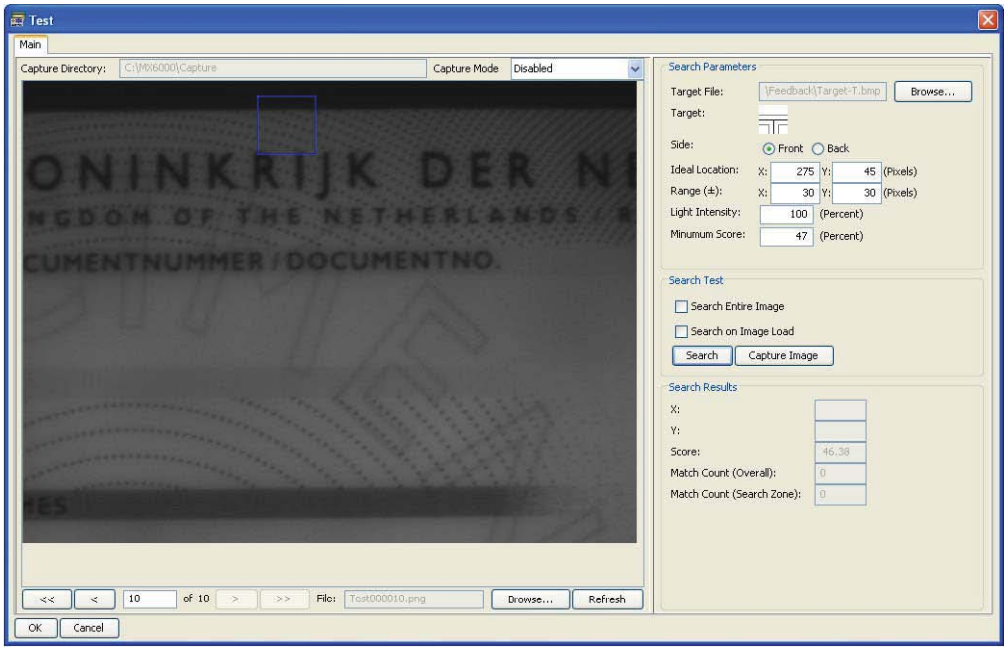


Running the search with a minimum score of 0 yields the following:



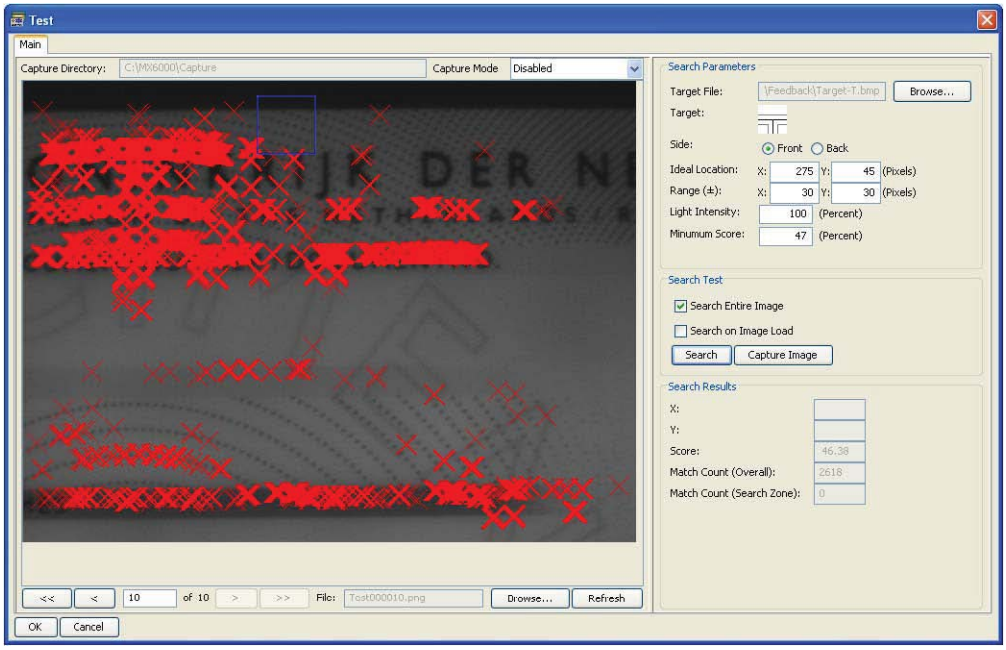
In the Search Results area, the match point chosen is at (246, 72), and a score of 46.38 is achieved. That is the best score possible given the search area.

If the minimum score is set to 47, the following result occurs:



There are no matches for the target. If such an image came in at production time, the search algorithm would reject the product indicating that the reference mark was not found.

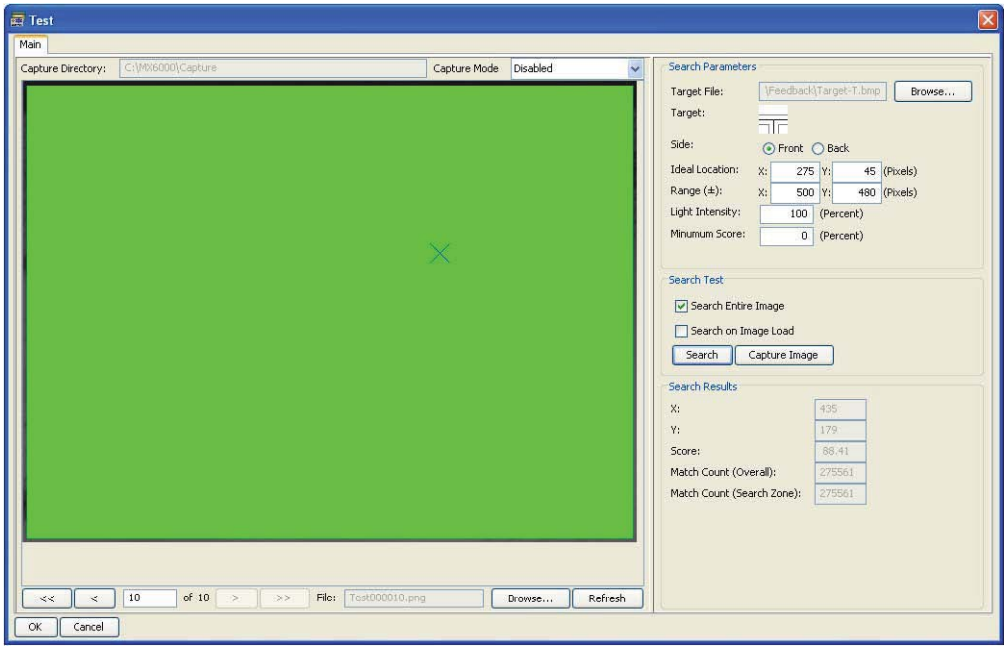
In addition to simply searching over the indicated search area, the entire image can be searched. Select **Search Entire Image** and click **Search** again, the result are shown below.



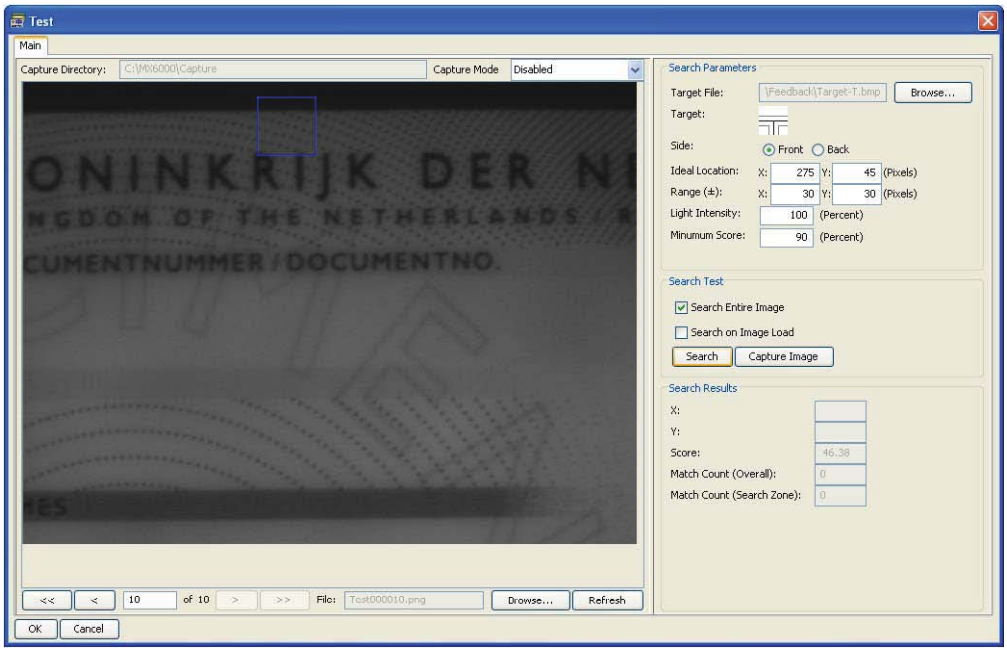
Within the search zone, there are still no matches (which is ideal for this misoriented product). Outside the search zone, a large number of red marks indicate the areas that satisfy the minimum score outside of the search zone. If the search zone is expanded slightly, it would encompass some of these points, and would again yield a false find at production time.

Ideally the minimum score would be set so that all properly oriented products would pass (giving a score >= the minimum score) and all misoriented products would fail (giving a score < the minimum score). It may be impossible to attain this ideal, because product designs may contain artifacts that too closely resemble the search target.

To find the maximum score over the entire image, the Range can be set to encompass the entire image, set the Minimum Score to 0, and then click **Search**. In this case, the following occurs:



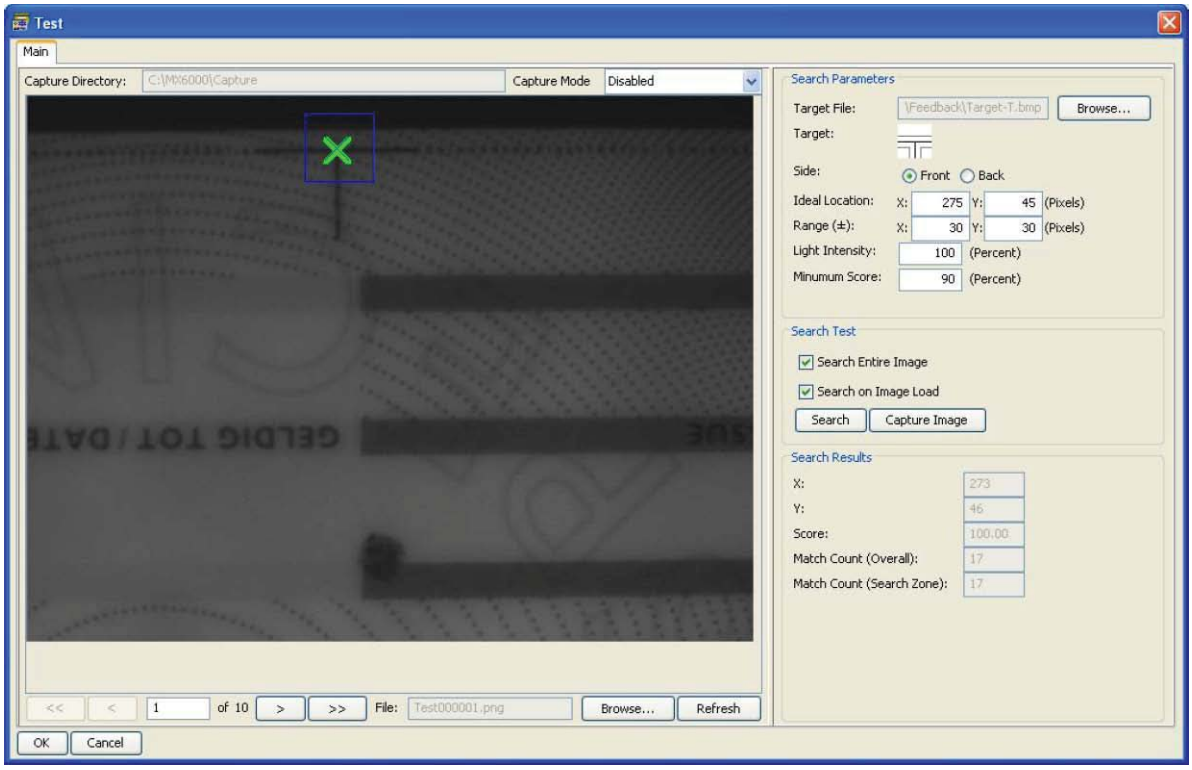
The max score above was 88.41. Setting the range back to 30 and using a minimum score of 95 now results in the following:

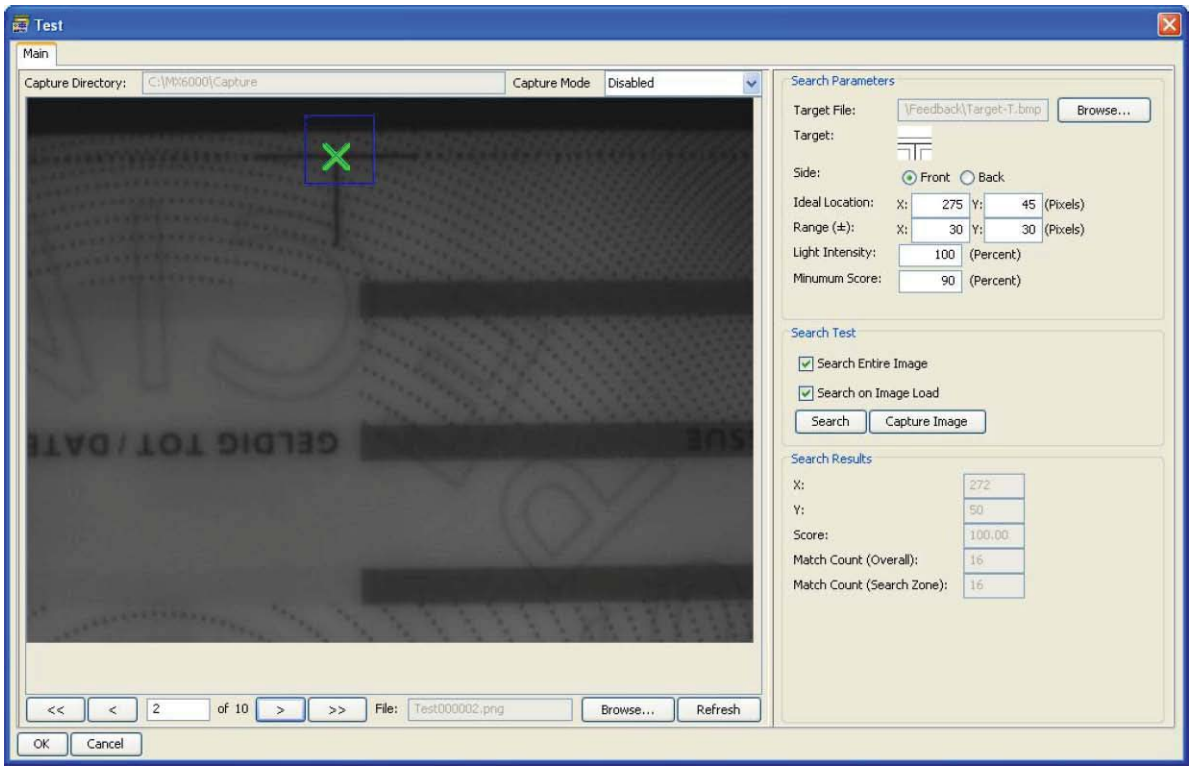


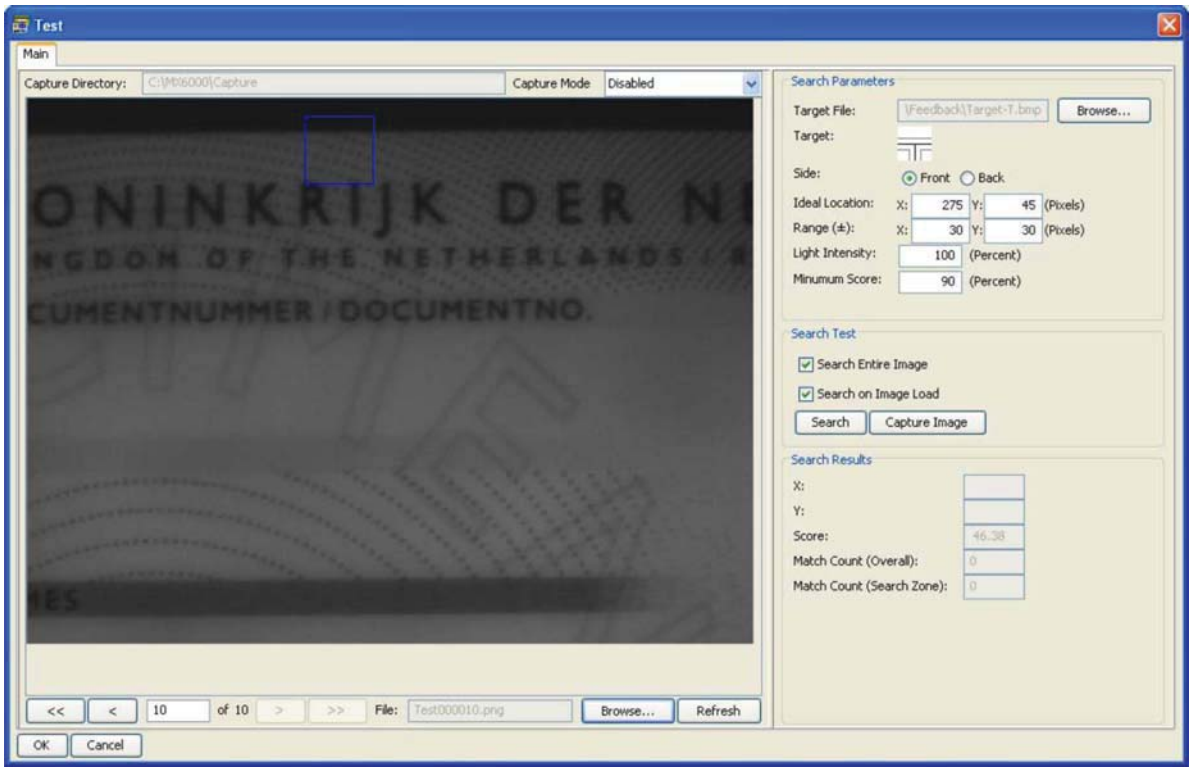
The threshold is now set to 90, which will work on the first image, since that first product yielded scores of 100. This threshold also rejects every point on this current image, so that if the product were misoriented in this manner at production time it would be rejected with a “target not found” error.

The batch of images can now be tested using the defined search parameters. Using the navigation buttons below the captured image, navigate to the beginning of the image set and step through the images. For ease in analysis, check the **Search on Image Load** checkbox, to avoid repetitive clicking of the Search button.

Images from this sequence are shown below.

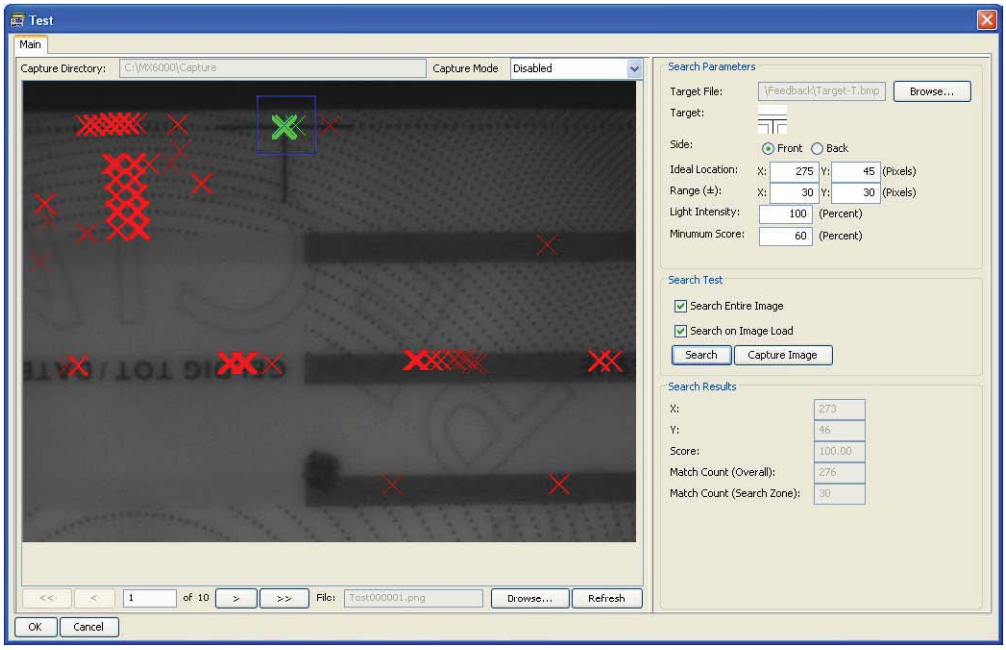



Test
Main
Capture Directory:
C:\MX6000\Capture
Capture Mode
Disabled
Search Parameters
Target File:
\Feedback\Target-T.bmp
Browse...
Target:
Side:
Front
Back
Ideal Location:
X: 275 Y: 45 (Pixels)
Range (±):
X: 30 Y: 30 (Pixels)
Light Intensity:
100 (Percent)
Minumum Score:
90 (Percent)
Search Test
Search Entire Image
Search on Image Load
Search
Capture Image
Search Results
X: 272
Y: 50
Score: 100.00
Match Count (Overall): 16
Match Count (Search Zone): 16
<< < 2 of 10 > >> File: Test000002.png Browse... Refresh
OK
Cancel


Test
Main
Capture Directory:
C:\MX6000\Capture
Capture Mode
Disabled
Search Parameters
Target File:
\Feedback\Target-T.bmp
Browse...
Target:
Side:
Front
Back
Ideal Location:
X: 275 Y: 45 (Pixels)
Range (±):
X: 30 Y: 30 (Pixels)
Light Intensity:
100 (Percent)
Minumum Score:
90 (Percent)
Search Test
Search Entire Image
Search on Image Load
Search
Capture Image
Search Results
X:
Y:
Score: 46.38
Match Count (Overall): 0
Match Count (Search Zone): 0
<< < 10 of 10 > >> File: Test000010.png Browse... Refresh
OK
Cancel

Ring Search Controls

This section provides descriptions for each of the parameters in the Ring Search dialog.



Capture Directory

Specifies where captured images are to be stored. This is also the input for the image display region below.

Capture Mode

Indicates whether images are to be captured at production time. Use caution when enabling, as you can fill the storage space with these images, and there is some security risk if these images contain perso-data.

Image Area (Below Capture Directory)

Shows a current sample image for analysis. After a search is performed, this contains the markup indicating search result information. The blue rectangle is the search area. The Xs indicate match points (points which satisfy the minimum score threshold). The blue X indicates the chosen match point. Green Xs indicate alternate points in the search zone. Red Xs indicate alternate points outside the search zone.

The out-of-search-zone area is only analyzed if the Search Entire Image checkbox is checked. When that checkbox is clear, you will never get a red X.

Navigation Bar (Below Image Area)

Allows navigation through the images in the capture directory.

The **Refresh** button re-scans the directory for files.

Target

Shows the target file name and target image. Select a target using **Browse**.

Side

The side of the product to reference.

Ideal Location

Reference mark location for the ideal product.

Range

Pixel area to search around the Ideal Location. Defines the size of the search area.

Light Intensity

Percent of illumination to use when capturing the image.

Minimum Score

Minimum acceptable score for a target to be considered found. Used to discriminate target presence from absence. Note that this is an integer value.

Search Entire Image

When checked, the entire image, including areas outside the search zone, will be analyzed for marks that match the search criteria. Useful when analyzing mark-absent images to ensure they are rejected by the search algorithm.

Search on Image Load

When checked, whenever you navigate to a new image in the image display area, searching is performed.

Search Results

X/Y: Indicate the chosen match point. These are empty if no point matched in the search area.

Score: The best score found. Note that this is updated even in the case where no match was found.

Match Count (Overall): The total number of points matching the search criteria over the entire image. If "Search Entire Image" is unchecked, this will just include the search area.

Match Count (Search Area): The total number of points matching the search criteria within the search area.

Vertical Splitter (to right of Image Area)

This can be dragged to change the split point between the image area on the left and the rest of the parameters on the right.

Image Capture

When images are captured either from the Ring Search Vision Profile dialog or during production, they are stored in the Capture Directory specified in the Vision Profile.

The images are stored in the following naming format:

{VisionProfileName}{n}.png.

Where {n} is at least a 6 digit decimal number.

Normally the images start with number 1. A Vision Profile named *Test* would thus generate this capture sequence:

Test000001.png

Test000002.png

...

When initially capturing an image, the capture logic will first attempt to use {n}=1. If that file already exists, it will advance to try {n}=2. It will keep advancing for some small number of attempts to find a file that does not exist, and then create that file.

Once that small number of attempts is made (10), the storage logic will give up on quickly creating a file name and will search the directory for existing files. If you have thousands of files in the capture directory, this will take a long time. The search for a file name will yield the max {n} in use for the {VisionProfileName}. The search code will then proceed to try creating files again sequentially, starting 1 past the max value seen. Currently this will be limited to the same small number of tries cited above (10).

As such, for each image store attempt, we will currently attempt a max file creation count of 20 and 1 directory scan. This should typically not take very long.

Keep in mind that if the directory access permissions prevent storage of the image, a time hit will be incurred on each image that comes along. This may substantially slow down system performance.

Also keep in mind that if you are running multiple vision profiles per job, all directed at the same storage directory, and all with capture enabled, the collisions can be costly. In theory, if you have more than 10 vision profiles, this could result in file naming competition which would force directory scans to be completed. The competition could even result in some images failing to get stored at all, as there are a fixed number of attempts made.

This is a best-effort service. Failure is not treated as an error. There will be no error messages generated due to file name competition, nor for directory permission problems.

At production time, you will need the “Datacard Maxsys” service's user account to have read/write access to the output directory. At design-time, you need the currently logged in user running diagnostics to have read/write access.

Ring Search Target Design

The target images for the Ring Search algorithm are simple BMP image files. These image files use specially colored pixels to indicate different regions of the image. The pixel colors are all grayscale values (red, green, and blue coordinates of the same exact value). The colors are:

IGNORE (WHITE=255)

> The background of the image must be perfect white. The search algorithm knows to ignore these pixels.

FOREGROUND (BLACK=0)

> Indicates the foreground pixels. These should be the centerline for the actual reference mark itself.

BACKGROUND (GRAY=128)

> Indicates a background pixel. This actually marks pixels that must be a different color than the FOREGROUND pixels on the search images.

REFERENCE_POINT (DARK_GRAY=64)

> Exactly 1 pixel must have this color. This is the reference point itself on the target. For the "T" default target, this is the intersection of the horizontal and vertical lines.

Custom targets can be designed to meet the specific needs of a design. Start with the Target-T.bmp file given as part of the controller software distribution. You

can copy and paste the proper pixel values from this sample image to construct a new image, one pixel or line at a time.

This is the Target-T.bmp file (...\setups\CustomApps\Feedback\target-t.bmp):

- Note that the FOREGROUND is the T shape, except that the intersection point is in the REFERENCE_POINT color.
- Note that the background markers are single pixel lines as well. This is for performance. Adequate recognition will occur using single pixel lines for the foreground and background, and the fewer pixels we have to analyze the better for speed.
- There is no need to restrict yourself to single pixel wide lines. Nor is there a need to be restricted to orthogonal lines. For example, you could design a Y pattern, L pattern, etc.
- Be careful not to design patterns that are impossible to match for different camera zoom levels. The camera placement on current vision modules is inconsistent, so images will appear different size on different laser modules. You wouldn't want a closed shape in such a case, because shapes will be different sizes on different cameras at different times, due to camera positioning discrepancies.
- Open targets are suitable. These are targets that have an intersection of straight (but not necessarily orthogonal) lines. The lines need not intersect.
- The target shape should be chosen so that it will not be easily confused with other artifacts on the background of the image. Keep in mind that as products are inserted in different orientations, you want to be able to reject misoriented products (not find false matches).
- Targets can typically be quite small and yield excellent search results, if they are carefully designed so that there aren't “false matches” elsewhere on the product. For example, the Target-T.bmp sample is only 30x30 pixels in size, which comes to about 1mm by 1mm for the laser module. A target on the product can be this small and still be reliably recognized.
- Note that the targets for the Ring Search algorithm can often be much smaller than targets for the ConVision algorithm, and still yield excellent results.

Search Algorithm

The search algorithm is as follows:

- For each point in the search area, compute a score. The first point found which yields the best score (keeping in mind that there can be many occurrences of the best score over the search area) will be the match point. If that match point score is >= min score, it's good, else generate a target-not-found error.

Scoring at each point is conducted by:

- "Sample all the FOREGROUND pixels (the pixels specified on the target image at color FOREGROUND). Generate a histogram of their light intensities. Chop off the top N% (currently 10%) of the samples. This generates a background threshold BT.
- “Sample all the BACKGROUND pixels (the pixels specified on the target image at color BACKGROUND). Count the number of these pixel values that are > BT. The percentage of background pixels > BT is the score at this point. Thus, the score will always be between 0 and 100.