Manual Number: MCYCVB01
Edition (ECN): 2022362

Controller Reference Using the Device Master Controller

PELLERIN MILNOR CORPORATION Post Office Box 400, Kenner, Louisiana 70063–0400, U.S.A.

Contents

Figures

Tables

This page intentionally blank

Preface

About the Windows Device Master Manual

The Milnor® Windows Device Master controller consists of software and hardware designed to control conveyor belts and other devices according to instructions from a Milnor® Miltrac™ system, and to communicate the contents and actions of these devices to the Miltrac™ controller. The controlled belts are usually present, but may also exist only in the logic of the controller (phantom devices). In the context of this manual, a *device* is one or more physical or phantom belts operated with a single set of Miltrac™ commands.

.1 Scope

BNYCVD01.C02 0000214914 A.3 B.2 A.4 1/2/20, 2:22 PM Released

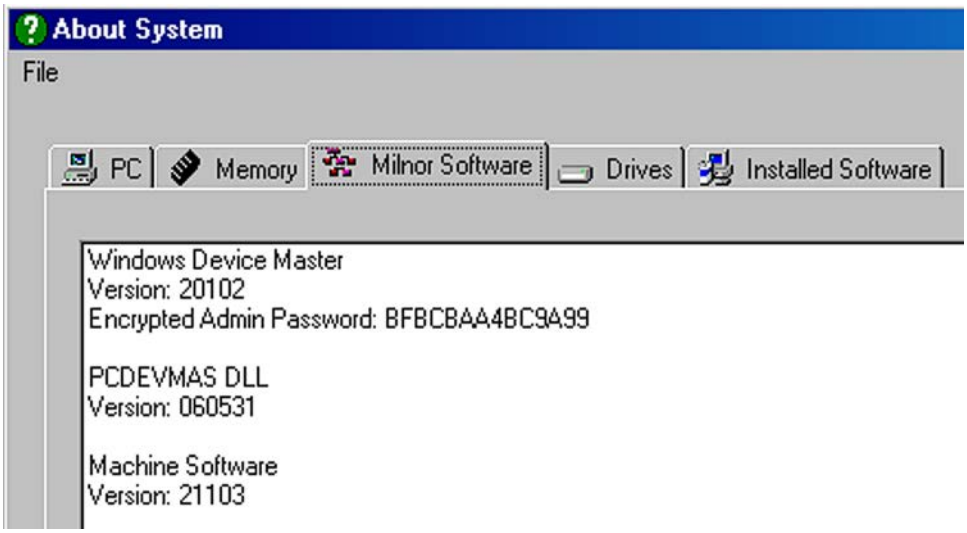
This manual provides instructions on configuring, monitoring, and troubleshooting the Milnor® Windows Device Master belt controller. Refer to additional documentation provided with this controller for additional information. Replacement documentation is available from the Milnor® parts department.

.2 Identifying the Software Version

BNYCVD01.C03 0000214913 A.3 B.2 A.4 1/2/20, 2:22 PM Released

Have the version number of your Windows Device Master controller software available any time you call for technical assistance. This number is visible in the lower right corner of the main Device Master screen. Additional information is available by selecting the **Help** topic from the main **Device Master** menu, then selecting **System Information**. The Milnor® **Software** tab (Figure 1, page 2) shows a list of Milnor® software installed on this computer, as well as all available software versions.

Figure 1. Milnor® Software Tab



.3 Trademarks

BNUUUU02.R01 0000158093 B.2 A.4 E.2 3/3/21, 9:47 AM Released

These words are trademarks of Pellerin Milnor® Corporation and other entities:

Table 1. Trademarks

AutoSpot™	GreenFlex™	MilMetrix®	PulseFlow®
CBW®	GearTrace™	MilTouch™	RAM Command™
Drynet™	GreenTurn™	MilTouch-EX™	RecircONE®
E-P Express®	Hydro-cushion™	MILRAIL™	RinSave®
E-P OneTouch®	Mentor®	Miltrac™	SmoothCoil™
E-P Plus®	Mildata®	PBW™	Staph Guard®
Gear Guardian®	Milnor®		

BNUUUT01 / 2018466 BNUUUT01 B.3

How to Contact Milnor®

Your authorized Milnor® dealer can assist you with your Milnor® machine and knows about the local conditions that may be pertinent to the installation, use, or maintenance of the machine. Contact your dealer first. For assistance from the Milnor® factory, refer to Table 2, page 3 for contact information.

Table 2. Pellerin Milnor® Corporation Contact Information

Purpose	Department	Telephone	FAX	E-mail/Web site
Order or ask about replacement parts	Parts	504–712–7775 or 800–299–1500	504–469–9777	parts@milnor.com
Get advice on installing, servicing, or using	Customer Service/ Technical Support	504–712–7780	504–469–9777	service@milnor.com www.milnor.com (Customer Service)
Learn about, request, or enroll in Milnor® service seminars	Training	504–712–7716	504–469–9777	training@milnor.com
Determine warranty eligibility or claim status	Warranty Administration	504–712–7735	504–469–9777	service@milnor.com (Attention: Warranty)
Ask about, comment on, or report an error in equipment manuals	Technical Publications	504–712–7636	504–469–1849	techpub@milnor.com
European contacts	Milnor® International	+ 32 2 720 5822	—	milnor@milnor.be
Ask about the shipping weight of your machine before it arrives at your facility	Logistics Department	504–712–7686	504–471–0273	—

```
Pellerin Milnor Corporation
Post Office Box 400
Kenner, LA 70063-0400

Telephone: 504-467-9591
http://www.milnor.com
```

1 Operation

1.1 The Normal Start-up Sequence

1. On system start-up the **Main** screen—shown in Figure 2: **Main** Display, page 5 —is displayed while the Device Master computer tries to establish communications with the processor board. If the computer is unable to communicate with the processor, an error window is displayed, as shown in Figure 3: **Communications Failure** Error Window, page 5 . The operator has the option to **Abort**, **Retry**, or **Ignore** the failure.
   - **Abort**—terminates the Device Master application
   - **Retry**—repeats the attempt to establish communications
   - **Ignore**—places the Device Master application in simulator mode, which allows the user to utilize the Device Master application without a physical connection to the controller.
2. If the communication is successful, the operating system initially invokes **Manual** mode, described in Section 5.2 : Manual Operation, page 67. The **Manual mode** window displays the status of all inputs and outputs, and may be used to manually turn all outputs **on** or **off**.
3. The **Initialize Devices** form (Figure 4: **Initialize Devices** Window, page 5) is automatically displayed when the **Manual mode** window is closed. Each device (other than the *Allied Dryer* device) runs its belt in a pre-established direction for initialization until either the applicable photoeye is blocked or the configured **Clear Belt Time** expires (described in Section 3.1.2.3.22.3 : Clear Belt Time, page 53). This form provides a visual indication of the status of each device during initialization.
4. When all devices are initialized, a message box (Figure 5: Is **Device Loaded?** Window, page 5) is displayed sequentially for each device where the photoeye was blocked to confirm whether or not the device is loaded. For each loaded device, a **Data Entry** form (Figure 6: **Data Entry** Window, page 6) is displayed to provide for cake data entry. Data is uploaded to the processor when the **Data Entry** form is closed.
5. Following initialization, control returns to the **Main** screen. From the **Main** menu, the user has the following options: **File**, **View**, **Admin Logon**, and **Help**. Each of these options, as well as others that are available only to system administrators, is described in Section 1.2 : Using the Menu System, page 6.
6. The message box shown in Figure 7: **Processor Board Reset** Error Window, page 6 is displayed when a problem occurs which causes the processor board to reset. Click **OK** to re-initialize the control to **Manual mode**.

Figure 2. Main Display

Figure 3. Communications Failure Error Window

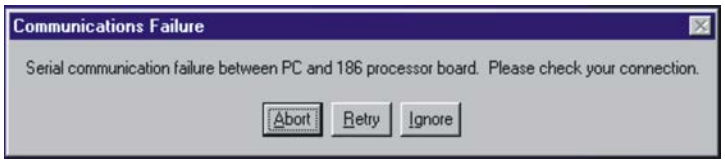


Figure 4. Initialize Devices Window

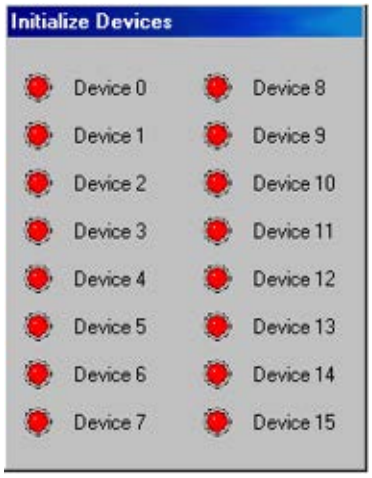


Figure 5. Is Device Loaded? Window

Figure 6. Data Entry Window

Figure 7. Processor Board Reset Error Window

BNYCVO02 / 2019033 BNYCVO02 0000215034 A.6 1/2/20, 2:22 PM Released

1.2 Using the Menu System

BNYCVO02.C01 0000215072 B.2 A.4 A.6 1/2/20, 2:22 PM Released

The user interface of the Milnor® Windows Device Master controller system uses the hierarchical menu system common to the Microsoft® Windows® operating system.

When the Device Master system is operating, it can be in one of two modes:

- The **administrator** level allows the user complete access to all configuration and operating data.
- The **operator** level allows the user access to features necessary to operate the system, while restricting access to configuration data and system accumulators.

The appearance of the **Main** menu—shown in Figure 8, page 7—changes to reflect the additional functions available to the system administrator. This document describes the function of each menu item at both the **Administrator** and **Operator** levels, and provides references to detailed information about the options available in each menu selection.

Figure 8. Main Menus

Any menu selection which is used to modify configuration data cannot be implemented while the Device Master controller is in operation. In those cases, the user will first be prompted by a message box, as shown in Figure 9, page 7, to disable the three wire circuit before access to that selection is allowed.

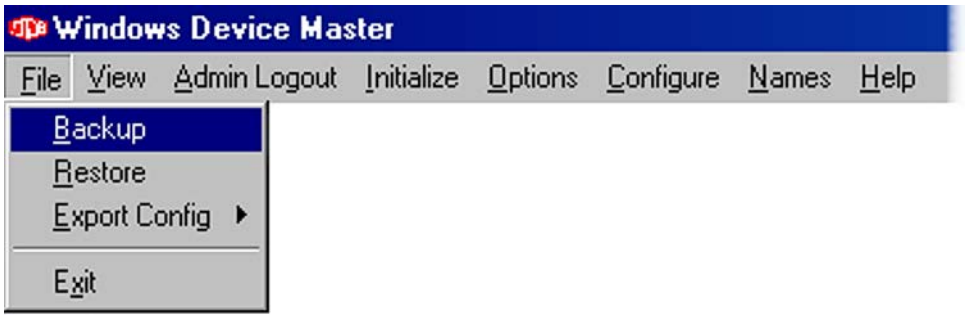
Figure 9. Three Wire Message Box

1.2.1 File Menu

BNYCVO02.C02 0000215087 B.2 A.4 A.6 1/2/20, 2:22 PM Released

Display or Action	Explanation
Alt + F	from the main window selects the **File** menu item (Figure 10, page 7). The **File** menu item can also be selected from the main menu by clicking on the **File** menu item. The **File** menu item is available to all users.

Figure 10. Device Master File Menu



1.2.1.1 Backup

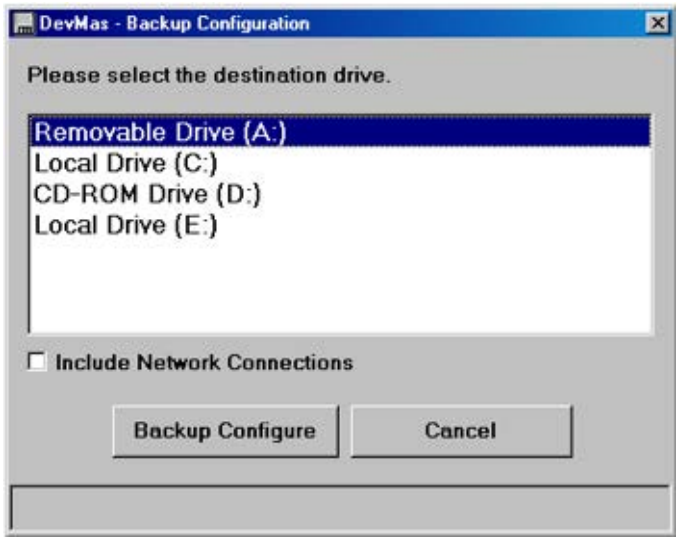
BNYCVO02.C03 0000215085 A.3 B.2 A.6 1/2/20, 2:22 PM Released

Display or Action	Explanation
B	from the **File** menu, this keystroke (or clicking on the **Backup** menu item) displays the **Backup Configuration** form (Figure 11, page 8), which allows the user to select the desired destination drive to which the backup will be saved. Network drives are available if the **Include Network Connections** option is checked. Clicking on the **Backup Configure** button begins the process of saving data from the computer to the selected destination drive. **Backup** creates three files on the destination drive under the directory `\computername\DevMas`, where `computername` is the name associated with the Device Master computer:

- `devmas.reg`—contains all system and device configuration data
- `names.mdb`—contains all user-defined names data, and
- `language.mdb`—contains all non-English language translation data.

As these files are written to the destination drive, the status of the copy is displayed in the text box at the bottom of the **Backup Configuration** form. Click on the **Cancel** button to close the **Backup Configuration** form when the copy process is complete.

Figure 11. Backup Configuration Form



1.2.1.2 Restore

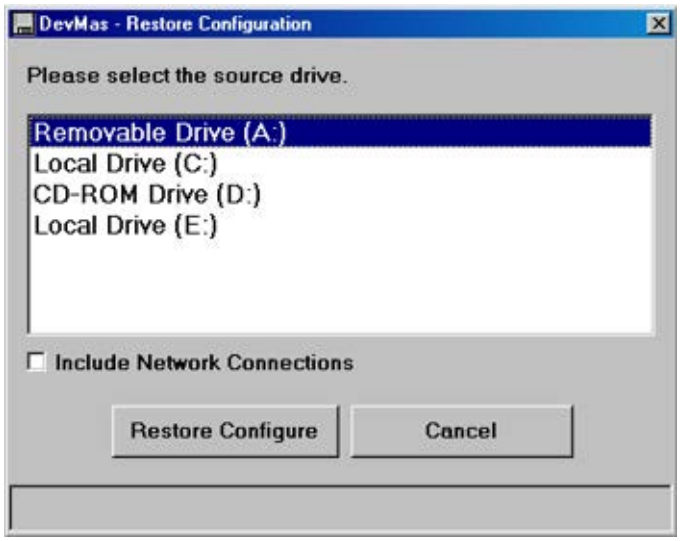
BNYCVO02.C04 0000215083 B.2 A.4 A.6 1/2/20, 2:22 PM Released

Display or Action	Explanation
R	from the **File** menu, this keystroke (or clicking on the **Restore** menu item) displays the **Restore Configuration** form (Figure 12, page 9), which allows the user to select the desired source drive from which the backup will be retrieved. Network drives are available if the **Include Network Connections** option is checked. Clicking on the **Restore Configure** button begins the process of restoring data from the selected source drive to the computer. **Restore** overwrites all system, device, and page configuration data with the information from the `devmas.reg` file, and copies the `names.mdb` and `language.mdb` files to the hard drive of the computer. Existing files named `names.mdb` or `language.mdb` are overwritten. **Restore** only looks for those source files stored on the selected source drive under the directory `\computername\DevMas`, where `computername` is the name associated with the Device Master computer.

As these files are read from the source drive, the status of the copy is displayed in the text box at the bottom of the **Restore Configuration** form. Click on the **Cancel** button to close the **Restore Configuration** form when the copy process is complete.

The **Restore Configuration** menu selection is not accessible if the **three wire circuit** is enabled. In this case, the user will be prompted to disable the **three wire circuit** before proceeding.

Figure 12. Restore Configuration Form



1.2.1.3 Export Configuration

BNYCVO02.C05 0000215082 A.3 B.2 A.6 1/2/20, 2:22 PM Released

Display or Action	Explanation
E	from the **File** menu, this keystroke (or holding the mouse cursor over the **Export Config** menu item) displays the sub-menu item **Text File** as shown in Figure 13, page 10. Clicking on **Text File** causes the configuration data to be written to `C:\DevMasConfig.txt`. If a file by this name already exists, it will be overwritten. Once created, the file automatically opens in Windows Notepad for viewing and/or printing as shown in Figure 14, page 10.

Figure 13. Export Configuration Menu Item

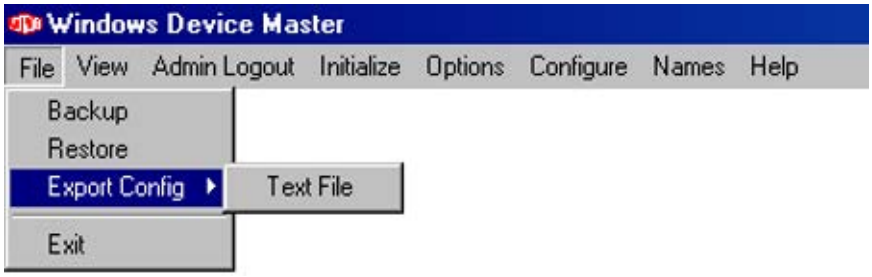
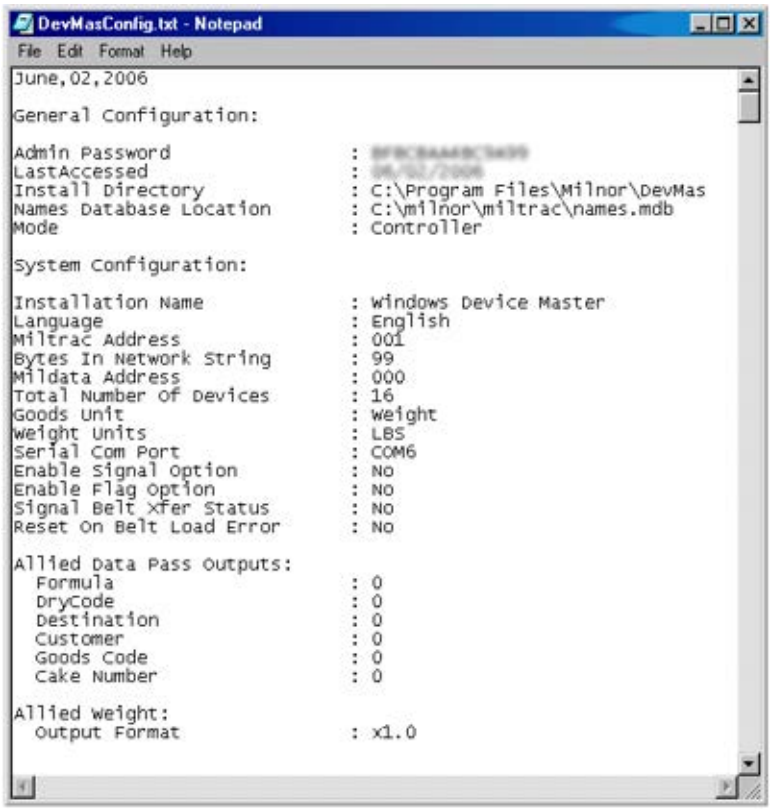


Figure 14. Exported Configuration in Windows Notepad



1.2.1.4 Exit

BNYCVO02.C06 0000215079 A.3 B.2 A.6 1/2/20, 2:22 PM Released

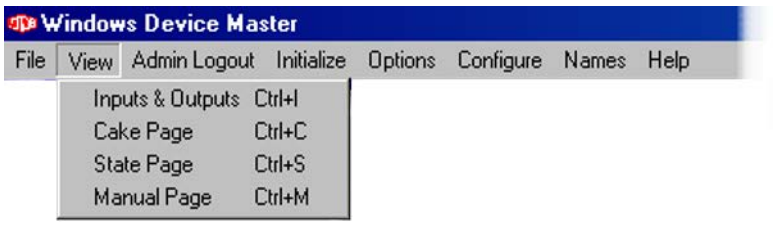
Display or Action	Explanation
X	from the **File** menu, this keystroke (or clicking on the **Exit** menu item) closes the Device Master application. The **Exit** menu item is accessible only when the user is logged on as an administrator

1.2.2 View Menu

BNYCVO02.C07 0000215110 A.3 B.2 A.6 1/2/20, 2:22 PM Released

Display or Action	Explanation
Alt + V	from the main window selects the **View** menu item. The **View** menu item can also be selected from the main menu by clicking on the **View** menu item. The **View** menu item is available to all users.

Figure 15. Device Master View Menu



1.2.2.1 Inputs and Outputs

BNYCVO02.C08 0000215108 B.2 A.4 A.6 1/2/20, 2:22 PM Released

Display or Action	Explanation
I	from the **View** menu, this keystroke (or clicking on the **Inputs and Outputs** menu item) accesses the **Inputs and Outputs** page. This page is also available from the Device Master main page by pressing **Ctrl** + **I**. Refer to Section 1.4 : Viewing Electronic Inputs and Outputs, page 25 for an explanation of the **Inputs and Outputs** page.

1.2.2.2 Cake Page

BNYCVO02.C09 0000215107 B.2 A.4 A.6 1/2/20, 2:22 PM Released

Display or Action	Explanation
C	from the **View** menu, this keystroke (or clicking on the **Cake Page** menu item) accesses the **Cake** page. This page is also available from the Device Master main page by pressing **Ctrl** + **C**. Refer to Section 1.3.1 : Cake Page Description, page 19 for an explanation of the **Cake** page.

1.2.2.3 State Page

BNYCVO02.C10 0000215106 B.2 A.4 A.6 1/2/20, 2:22 PM Released

Display or Action	Explanation
S	from the **View** menu, this keystroke (or clicking on the **State Page** menu item) accesses the **State** page. This page is also available from the Device Master main page by pressing **Ctrl** + **S**. Refer to Section 1.3.2 : State Page Description, page 22 for an explanation of the **State** page.

1.2.2.4 Manual Page

BNYCVO02.C11 0000215105 B.2 A.4 A.6 1/2/20, 2:22 PM Released

Display or Action	Explanation
M	from the **View** menu, this keystroke (or clicking on the **Manual Page** menu item) accesses the **Manual** page. This page is also available from the Device Master main page by pressing **Ctrl** + **M**. Automatic operation of all Device Master-controlled devices is suspended when the **Manual Page** menu item is selected. Refer to Section 5.2 : Manual Operation, page 67 for an explanation of the **Manual** page.

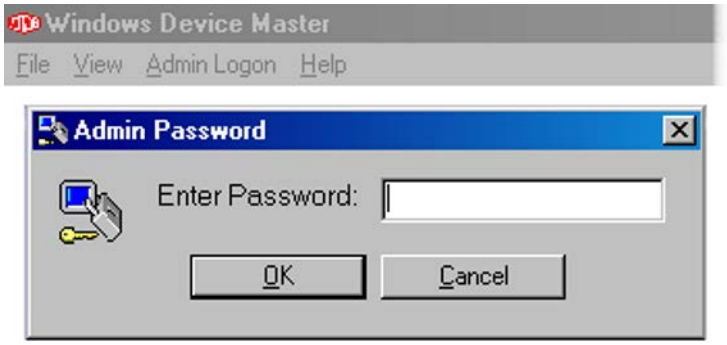
1.2.3 Admin Logon/Logout Menu

BNYCVO02.C13 0000215193 B.2 A.4 A.6 1/2/20, 2:22 PM Released

Display or Action	Explanation
Alt + A	from the **Operator** main window invokes the **Admin Logon** window. The **Admin Logon** window can also be invoked from the main menu by clicking on the **Admin Logon** menu item. The **Admin Logon** window is used to gain access to the **Administrator** menu. When the **Admin Logon** menu item is selected, the user is prompted for a password (Figure 16, page 13). By entering a valid password, the user is provided access to the **Administrator Main** menu.

TIP: An encrypted representation of the administrator password is shown on the **Main** display, below the Milnor® logo. This information can be used to recover a lost password.

Figure 16. Device Master Administrator Logon Menu Selection



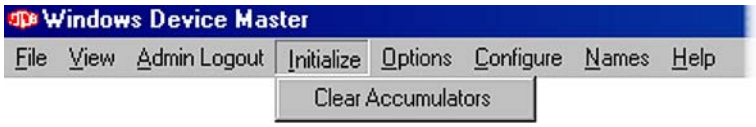
Display or Action	Explanation
Alt + A	from the **Administrator** main window invokes the **Admin Logout** menu item. **Admin Logout** can also be invoked from the main menu by clicking on the **Admin Logout** menu item. The **Admin Logout** menu item returns the user to the **Operator Main** menu.

1.2.4 Initialize Menu: Clear Accumulators

BNYCVO02.C14 0000215191 B.2 A.4 A.6 1/2/20, 2:22 PM Released

Display or Action	Explanation
Alt + I	from the main window selects the **Initialize** menu item. The **Initialize** menu item can also be selected from the main menu by clicking on the **Initialize** menu item. This item is available only when the user is logged is as an administrator.
C	from the **Initialize** menu, shown in Figure 17, page 13, this keystroke (or clicking on the **Clear Accumulators** menu item) clears the controller accumulators. The Device Master controller maintains two accumulators: the **Empty timer** and the **Loaded timer**, which are both displayed on the **State Page** (see Section 1.3.2 : State Page Description, page 22).

Figure 17. Device Master Initialize Menu



1.2.5 Options Menu: Clear Memory

BNYCVO02.C12 0000215189 A.3 B.2 A.6 1/2/20, 2:22 PM Released

Display or Action	Explanation
Alt + O	from the main window selects the **Options** menu item (Figure 18, page 14). The **Options** menu item can also be selected from the main menu by clicking on the **Options** menu item. This item is available only when the user is logged is as an administrator.

Figure 18. Device Master Options Menu

1.2.5.1 Clear Memory

BNYCVO02.C15 0000215187 A.3 B.2 A.6 1/2/20, 2:22 PM Released

Display or Action	Explanation
C	from the **Options** menu, this keystroke (or clicking on the **Clear memory** menu item) prompts the user to verify the **Clear Memory** selection (Figure 19, page 14). Click the **Yes** button to clear the controller memory. This action resets all system, device, and page configuration data to its default values, but does not affect the user-defined names data.

Figure 19. Clear Memory Confirmation Window

The **Clear Memory** menu selection is not accessible if the three wire circuit is enabled. In this case, the user will be prompted to disable the three wire circuit before proceeding.

1.2.5.2 Change Admin Password

BNYCVO02.C16 0000215244 A.3 B.2 A.6 1/2/20, 2:22 PM Released

From the **Options** menu, clicking on **Change Admin Password** opens the **Change Current Password** window (Figure 20, page 14) to allow the user to replace the existing administrator password with a new password of three to 10 characters for access to the **Administrator Main** menu. Password entry is case-sensitive.

Figure 20. Change Current Password window

1.2.5.3 Event Log

BNYCVO02.C17 0000215242 B.2 A.4 A.6 1/2/20, 2:22 PM Released

From the **Options** menu, clicking on the **Event Log** menu item enables or disables the **Event Log** feature, depending on its current state. A check mark next to the **Event Log** menu item indicates that the feature is currently enabled (Figure 21, page 15).

Figure 21. Event Log Enabled

When the **Event Log** feaure is enabled, Device Master controller will add an entry to the event log file, `C:\Program Files\Milnor\DevMas\DevMas.log`, which includes a date and time stamp, whenever a specific pre-established event occurs (Table 3, page 15). **The Event Log** feature is mainly for diagnostic purposes, and should not normally be enabled.

Table 3. Logged Events

Event Log enabled	Administrator logged on
Event log disabled	Administrator logged out
3-Wire disabled	Diagnostics enabled
3-Wire enabled	Diagnostics disabled
3-Wire fault	Device Master Controller unloaded
Comm Stats reset	

1.2.6 Configure Menu

BNYCVO02.C18 0000215240 B.2 A.4 A.6 1/2/20, 2:22 PM Released

Display or Action	Explanation
Alt + **C**	from the main window selects the **Configure** menu item. The **Configure** menu item can also be selected from the main menu by clicking on the **Configure** menu item. This item is available only when the user is logged is as an administrator. All configure decisions are described in Section 3.1 : Configuring the Device Master Controller, page 41.

Figure 22. Device Master Configure Menu

1.2.6.1 System

BNYCVO02.C19 0000215239 B.2 A.5 A.6 1/2/20, 2:22 PM Released

Display or Action	Explanation
S	from the **Configure** menu, this keystroke (or clicking on the **System** menu item) accesses the **System Configuration**. The **System Configuration** menu selection is not accessible if the **three wire** circuit is enabled. In this case, the user will be prompted to disable the **three wire** circuit before proceeding. Refer to Section 3.1.1 : System Configuration, page 41 for an explanation of **System Configuration**.

1.2.6.2 Devices

BNYCVO02.C20 0000215238 B.2 A.5 A.6 1/2/20, 2:22 PM Released

Display or Action	Explanation
D	from the **Configure** menu, this keystroke (or clicking on the **Devices** menu item) accesses the **Device Configuration** screen. The **Device Configuration** menu selection is not accessible if the **three wire** circuit is enabled. In this case, the user will be prompted to disable the **three wire** circuit before proceeding. Refer to Section 3.1.2 : Device Configuration, page 46 for an explanation of **Device Configuration**.

1.2.6.3 Pages

BNYCVO02.C21 0000215237 B.2 A.5 A.6 1/2/20, 2:22 PM Released

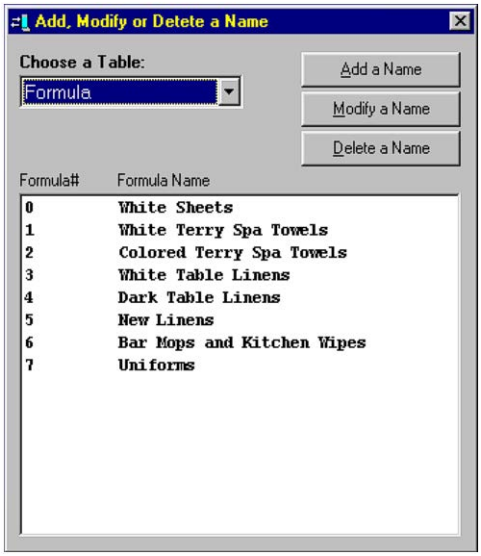
Display or Action	Explanation
P	from the **Configure** menu, this keystroke (or clicking on the **Pages** menu item) accesses the **Page Configuration** screen. Refer to Section 3.1.4 : Pages Configuration, page 56 for an explanation of **Page Configuration**.

1.2.7 Names: Add, Modify, or Delete a Name

BNYCVO02.C22 0000215273 A.3 B.2 A.6 1/2/20, 2:22 PM Released

Display or Action	Explanation
Alt + **N**	from the main window accesses the **Names** window, as shown in Figure 23, page 17. The **Names** window can also be selected from the main menu by clicking on the **Names** menu item. This item is available only when the user is logged is as an administrator. The **Names** window allows an administrator to add, modify, or delete the user-defined names associated with the data fields displayed on the **Cake** page (Formula, Extract code, Dry code, Destination, Customer, and Goods code).

Figure 23. Device Master Names Window

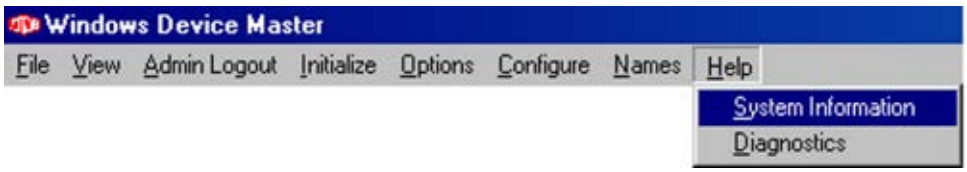


1.2.8 Help Menu

BNYCVO02.C23 0000215319 A.3 B.2 A.6 1/2/20, 2:22 PM Released

Display or Action	Explanation
Alt + **H**	from the main window selects the **Help** menu item (Figure 24, page 17). The **Help** menu item can also be selected from the main menu by clicking on the **Help** menu item. This item is available to all users.

Figure 24. Device Master Help Menu

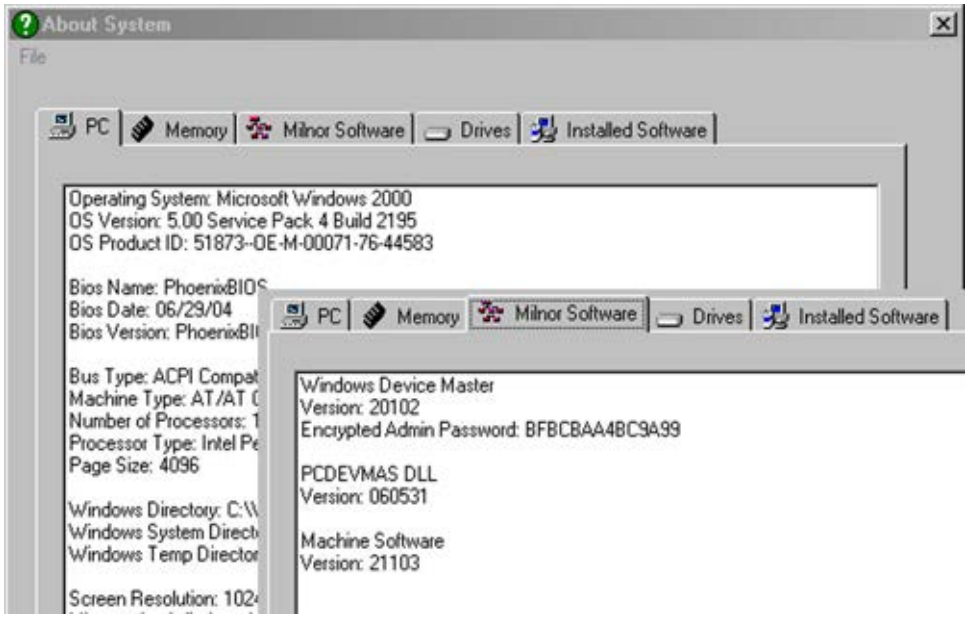


1.2.8.1 System Information

BNYCVO02.C24 0000215317 A.3 B.2 A.6 1/2/20, 2:22 PM Released

Display or Action	Explanation
S	from the **Help** menu, this keystroke (or clicking on the **System Information** menu item) accesses the **About System** window, shown in Figure 25, page 18. The **About System** window comprises several tabbed pages which display various information about the computer running the Device Master application, including the Device Master application software and machine software versions. All of this information can be saved to a text file from the **File** menu in the window, if necessary.

Figure 25. Typical About System Windows

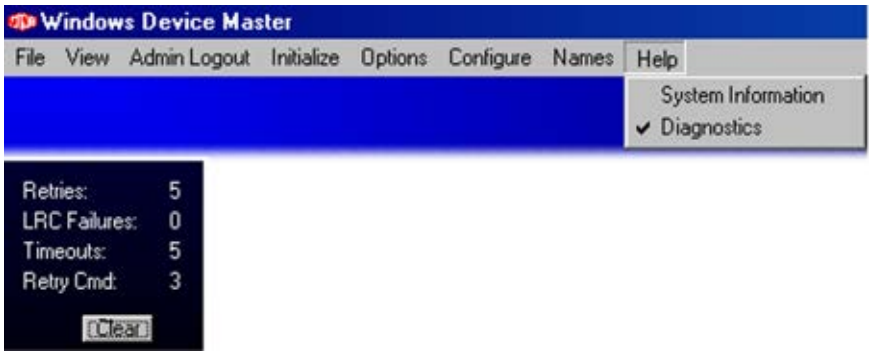


1.2.8.2 Diagnostics

BNYCVO02.C25 0000215315 A.3 B.2 A.6 1/2/20, 2:22 PM Released

Display or Action	Explanation
D	from the **Help** menu, this keystroke (or clicking on the **Diagnostics** menu item) enables or disables the **Diagnostics** feature depending on its current state. A check mark next to the **Diagnostics** menu item indicates that the feature is currently enabled (Figure 26, page 18). When the **Diagnostics** feaure is enabled, several accumulators, which track communication failures between the PC and processor board, are displayed in the lower left-hand corner of the **Main** page. A **Clear** button is provided to allow the user to reset the accumulators. The **Diagnostic** feature is used as an aid in troubleshooting communication problems, and should not normally be enabled.

Figure 26. Device Master Diagnostics



BNYCVO03 / 2019033 BNYCVO03 0000215123 A.6 1/2/20, 2:22 PM Released

1.3 How to View Cake Data and Device Status

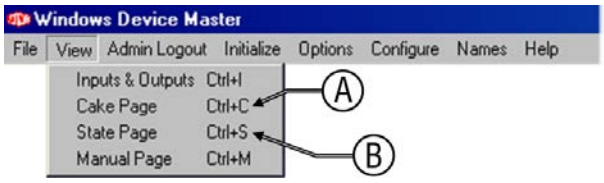
BNYCVO03.C01 0000215122 B.2 A.5 A.6 1/2/20, 2:22 PM Released

All monitoring of normal Device Master operation is done by observing the **Cake Page** and the **State Page** while the system is operating. The **Cake Page** displays cake data for each Device Master-controlled device, while the **State Page** displays the Miltrac™ status for each Device Master-controlled device.

Display or Action	Explanation
Ctrl + C	from the Device Master main window, invokes the **Cake Page** display. This display can also be accessed from the **View** menu, shown in Figure 27, page 19.
Ctrl + S	from the Device Master main window, invokes the **State Page** display. This display can also be accessed from the **View** menu, shown in Figure 27, page 19.
Exit	closes the **Cake Page** or **State Page** display and returns to the Device Master main window.

Figure 27. Displaying the Cake and State Pages

Menu Selection Screen



Legend

A . . . Cake Page menu item

B . . . State Page menu item

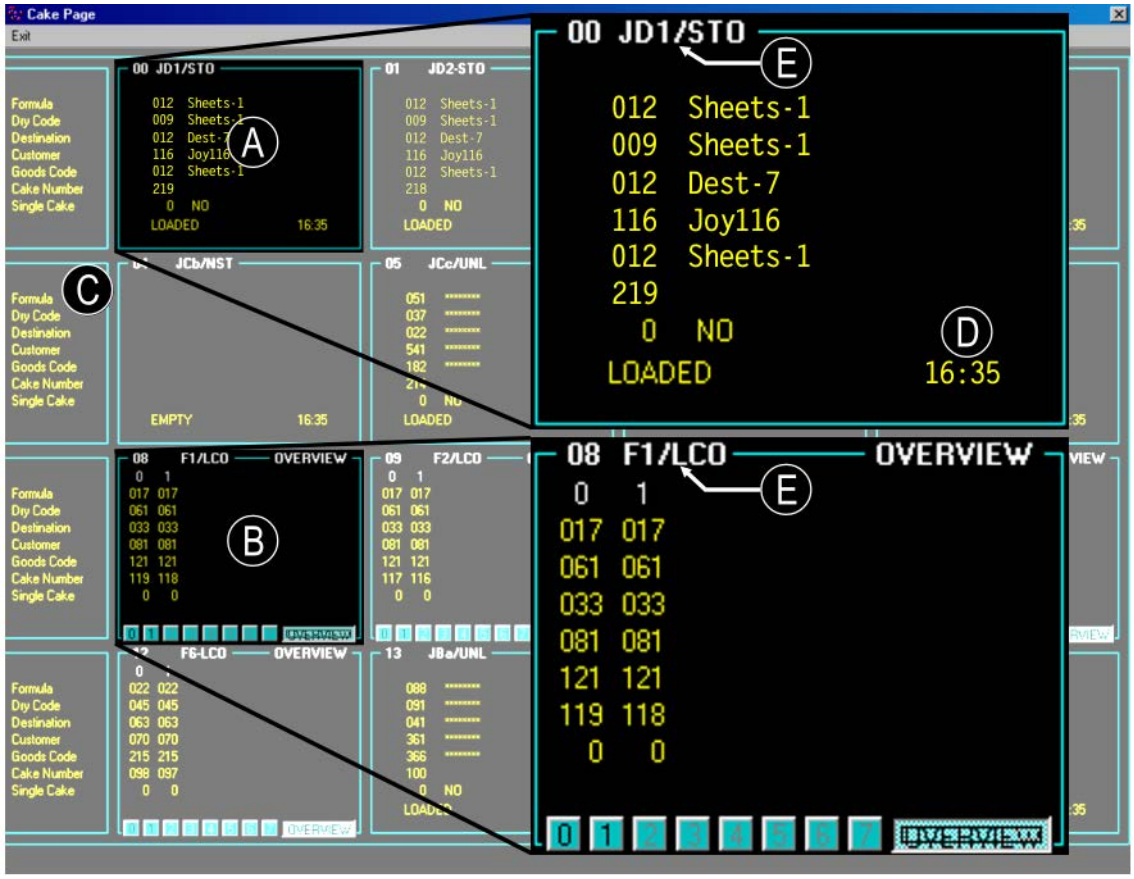
1.3.1 Cake Page Description

BNYCVO03.C02 0000215471 B.2 A.4 A.6 1/2/20, 2:22 PM Released

The **Cake Page**, shown in Figure 28, page 20, provides batch data about the goods on each device controlled by Device Master. An administrator specifies which data to display on this page from the **Configure/Pages** menu item of the main Device Master screen, as explained in Section 3.1.4 : Pages Configuration, page 56 and Figure 39: Typical Pages Configuration, page 57 . Up to seven types of data can be displayed simultaneously for each device.

Figure 28. Cake Page

Overview and Detail



Legend

A . . . Typical standard device window
B . . . Typical Linear Costa device window
C . . . Batch data categories
D . . . Time device has contained this batch
E . . . Device number and name

1.3.1.1 Device Number and Name

BNYCVO03.C03 0000215469 B.2 A.4 A.6 1/2/20, 2:22 PM Released

The first Device Master device is designated **device number** 00, and subsequent devices are numbered sequentially to the maximum device number of 15 (16 devices).

An administrator for the Device Master controller can assign a descriptive **Device Name** to each device during configuration. Refer to Section 3.1.2.1 : Device Name, page 47 for information on configuring a device name. On the Device Master **Cake Page**, the device number and name appear in the upper left of the box associated with the device.

1.3.1.2 Batch Data

BNYCVO03.C04 0000215468 B.2 A.4 A.6 1/2/20, 2:22 PM Released

Batch data is information associated with each load of goods (batch). Most batch data describes how goods should be routed and processed as they flow through the laundry, while other fields are more useful for laundry accounting. User-defined names can be programmed as a convenience in identifying the various batch codes. Refer to Section 1.2.7 : Names: Add, Modify, or Delete a Name, page 16 for an explanation on how to program names for batch codes.

The **Formula** field contains the wash formula number for processing the load. This three digit number between 000 and 999 corresponds to the formula number used in the washing device. Formula names entered via the **Names** menu appear beside the formula number.

The **Extract code** is used by the extraction device when processing the batch. Extract codes are three digits from 000 to 255, allowing selection of one of the 16 different formulas in presses and centrifugal extractors. Extract code names entered via the **Names** menu appear beside the extract code number.

The **Dry code** is the formula used by the dryer for processing the goods. Valid dry codes are 000 through 255. Dry code names entered via the **Names** menu appear beside the dry code number.

The **Destination** field is used to specify where to route the goods after discharge from the dryer. Valid destination codes are 000 through 255. Destination names entered via the **Names** menu appear beside the destination code number.

The **Customer** field is often used in laundry accounting to track the number of batches processed for each customer. Valid customer numbers are 000 through 999. Customer names entered via the **Names** menu appear beside the customer code number.

Goods codes are used by older Milnor® CBW® systems with Miltron controllers. This code identifies a subset of a general class of goods. All batches conforming to the general class are processed using the same wash formula, but each specific goods code within that class causes variations in processing, increasing the number of available wash formulas. While some systems may use goods codes to control post-wash processing, these codes are primarily used for accounting purposes. Valid goods codes are 000 through 999. Goods code names entered via the **Names** menu appear beside the goods code number.

The **Weight** field displays the weight of the goods when they entered the system. Depending on the loading system, the goods may be weighed electronically, or the weight may be entered manually by an operator. The units name (LBS or KG) that appears next to the weight value corresponds to the configuration for weight units as described in Section 3.1.1.1.1.7 : Weight Units, page 43.

Cake Number is a value between 000 and 255 generated sequentially by the Milnor® CBW® controller and passed by the Miltrac™ controller. This number identifies the order in which the cakes entered the system

The **Single Cake** attribute designates a load of goods which must be processed separately. The **Single Cake** field can have a value of 1 (Single Cake=**Yes**) or 0 (Single Cake=**No**). Batches that are **not** denoted as single cakes (Single Cake = **No**) may be combined with other cakes if all compatibility conditions are met.

1.3.1.3 Device Loaded/Empty Timer

BNYCVO03.C05 0000215467 A.3 B.2 A.6 1/2/20, 2:22 PM Released

The timer at the bottom of each device box displays how long (mm:ss) the current batch has been in this device (the **Loaded** timer), or how much time has elapsed since the device discharged its last batch (the **Empty** timer). This timer resets each time the device discharges a cake or receives a cake. The **State Page** (described in Section 1.3.2 : State Page Description, page 22) displays **cumulative** empty and loaded times for each device. The **Device Loaded/Empty Timer** is not applicable to the multiple-cake Linear Costa, and is not shown for that device.

1.3.1.4 Linear Costa Device

BNYCVO03.C06 0000215466 B.2 A.4 A.6 1/2/20, 2:22 PM Released

For a Linear Costa device, batch data numbers are shown without names in an overview presentation, by default, to display the cake data for all positions. Across the bottom edge of the device box are eight small control buttons numbered **0** through **7**, and one larger control button labelled **Overview**, which allow the user to alternate between the overview and a detail view, with names, of any one cake position. The current display is identified by a label in the upper right corner of the device box.

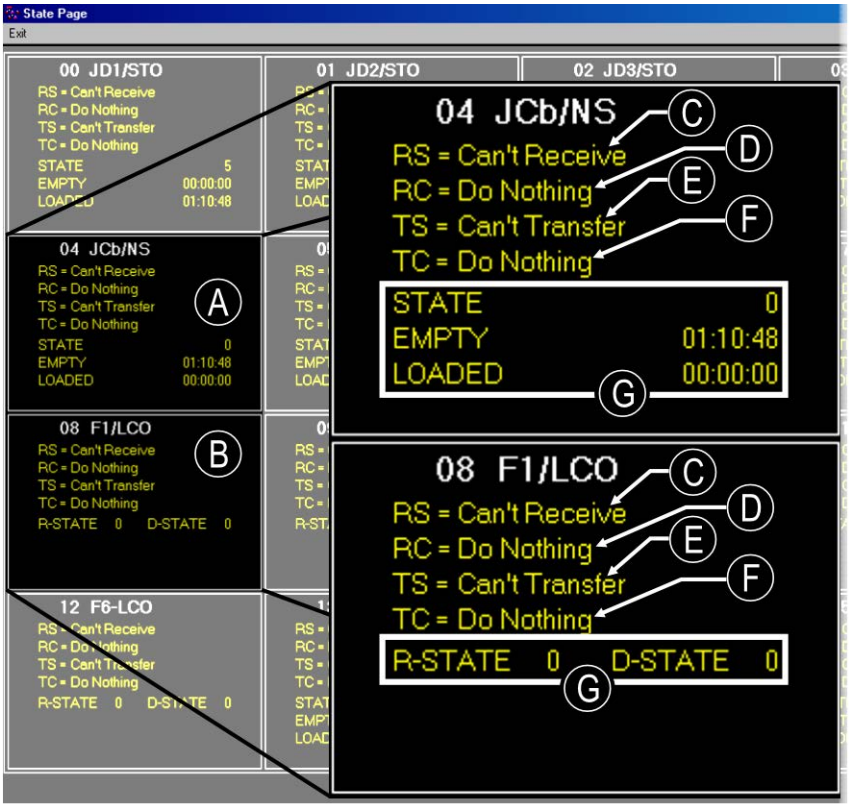
1.3.2 State Page Description

BNYCVO03.C07 0000215555 A.3 B.2 A.6 1/2/20, 2:22 PM Released

The **State Page**, shown in Figure 28: **Cake Page**, page 20 , displays the Miltrac™ communications for each Device Master-controlled device. This page is used to monitor Miltrac™ transfers involving devices controlled by Device Master. A typical **State Page** is shown in Figure 29, page 23, along with a detail of one Linear Costa device and one device other than a Linear Costa.

Figure 29. State Page

Overview and Detail



Legend

A . . . Typical standard device window
B . . . Typical Linear Costa device window
C . . . Receive state
D . . . Receive command
E . . . Transfer state
F . . . Transfer command
G . . . Device state and timers

1.3.2.1 Device Number and Name

BNYCVO03.C08 0000215553 B.2 A.4 A.6 1/2/20, 2:22 PM Released

The first Device Master device is designated **device number** 00, and subsequent devices are numbered sequentially to the maximum device number of 15 (16 devices).

An administrator for the Device Master controller can assign a descriptive **Device Name** to each device during configuration. Refer to Section 3.1.2.1 : Device Name, page 47 for information on configuring a device name. On the Device Master **State Page**, the device number and name appear in the center top of the box associated with the device.

1.3.2.2 Receive State

BNYCVO03.C09 0000215552 B.2 A.4 A.6 1/2/20, 2:22 PM Released

The *Receive State* field displays the loading status sent by the device to the Miltrac™ controller. This field applies to Miltrac™ systems only. These are the valid receive states:

- **Can't Receive**
- **Want to Receive**
- **Ready to Receive**
- **Done Receiving or Done Receiving ***

TIP: The * indicates that this device cannot accept another cake.

1.3.2.3 Receive Command

BNYCVO03.C10 0000215551 A.3 B.2 A.6 1/2/20, 2:22 PM Released

The *Receive Command* field displays the command issued by Miltrac™ to the device for the loading process. This field applies to Miltrac™ systems only. These receive commands are valid:

- **Do Nothing**
- **Get Ready, Get Ready Left, or Get Ready Right**—see below note
- **Start**
- **You're Finished or You're Finished ***

NOTE: The **Get Ready**, **Get Ready Left**, and **Get Ready Right** commands apply to moveable devices and depend on the X-Y coordinates of the device as configured in Miltrac™.

TIP: The * implies that no more cakes are available for transfer.

1.3.2.4 Transfer State

BNYCVO03.C11 0000215550 B.2 A.4 A.6 1/2/20, 2:22 PM Released

The *Transfer State* is the discharge status sent by the device to the Miltrac™ controller for discharging when configured for Miltrac™ discharge only. There are five valid discharge states:

- **Can't Transfer**
- **Want to Transfer**
- **Ready to Transfer**
- **Done Transferring or Done Transferring ***

TIP: The * implies that this device cannot discharge another cake.

1.3.2.5 Transfer Command

BNYCVO03.C12 0000215549 A.3 B.2 A.6 1/2/20, 2:22 PM Released

The *Transfer Command* field displays Miltrac™ commands to the device for the discharging process when configured for Miltrac™ discharge. Valid transfer commands are the same as the receive commands, listed in Section 1.3.2.3 : Receive Command, page 24.

1.3.2.6 Device State and Timers

BNYCVO03.C13 0000215548 A.3 B.2 A.6 1/2/20, 2:22 PM Released

1.3.2.6.1 State

BNYCVO03.C14 0000215547 A.3 B.2 A.6 1/2/20, 2:22 PM Released

The **State** displayed in the lower part of each device box is a diagnostic tool which identifies the software state of the device for use in troubleshooting. Each Device Master device has from five to nine valid states, depending on the device type. A Linear Costa device displays a sepatate receive state (R-State) and discharge state (D-State).

1.3.2.6.2 Empty Timer

BNYCVO03.C15 0000215546 A.3 B.2 A.6 1/2/20, 2:22 PM Released

The **Empty** timer in the lower part of each device box maintains a cumulative total of the time the device did not have a load. This timer displays the time spent waiting on the upstream device (s) for loading. The **Empty** timer is not applicable to the multiple-cake Linear Costa, and is not shown for that device.

1.3.2.6.3 Loaded Timer

BNYCVO03.C16 0000215578 A.3 B.2 A.6 1/2/20, 2:22 PM Released

The **Loaded** timer in the lower part of each device box maintains a cumulative total of the time the device was loaded. This timer displays the time spent waiting on the downstream device(s) for discharging. The **Loaded** timer is not applicable to the multiple-cake Linear Costa, and is not shown for that device.

BNYCVO04 / 2019033 BNYCVO04 0000215153 A.7 1/2/20, 2:22 PM Released

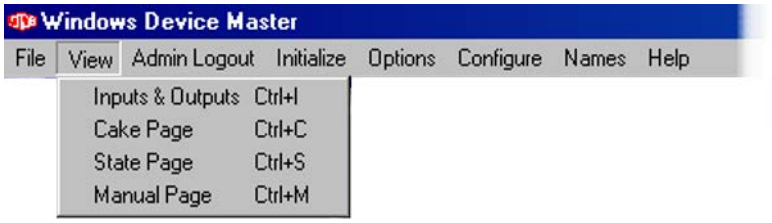
1.4 Viewing Electronic Inputs and Outputs

BNYCVO04.C01 0000215152 B.2 A.5 A.7 1/2/20, 2:22 PM Released

The **View/Inputs and Outputs** menu selection described here allows the operator to view inputs and outputs for each device while the system is **operating automatically**. The **View/Manual Page** menu selection described in Section 5.2 : Manual Operation, page 67 allows the operator to view inputs and turn on outputs for testing.

Display or Action	Explanation
Ctrl + I	from the Device Master main window, invokes the **Inputs and Outputs** display. This mode can also be accessed from the **View** menu, as shown in Figure 30, page 26.
Exit	closes the **Inputs and Outputs** screen and returns to the Device Master main window.

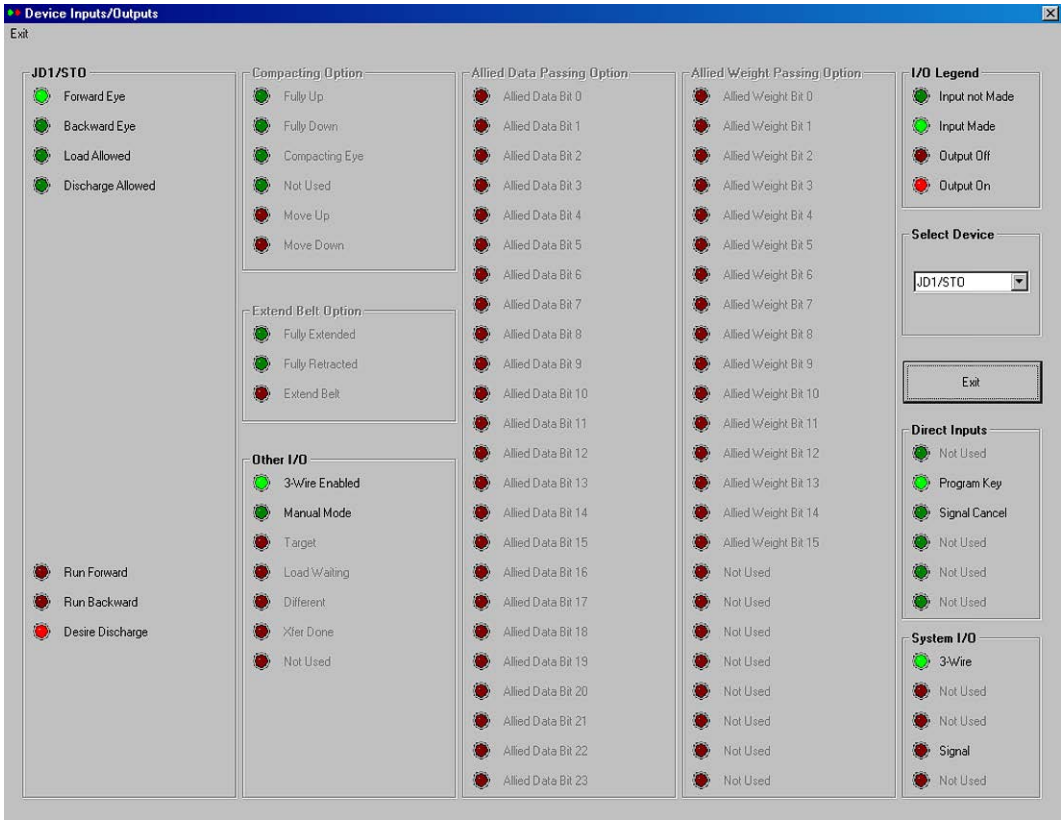
Figure 30. Menu Selection



A typical **Device Inputs and Outputs** screen is illustrated in Figure 31, page 26. On this screen, green lights indicate inputs and red lights indicate outputs. The light is illuminated (on) when its input is grounded, or when its output is actuated. Signals displayed are those that are applicable to the selected device. Signal names are grayed if the device has not been configured for that particular option or if the signal is not used.

TIP: When the mouse pointer is positioned over a valid input or output signal, the board address and connection are displayed.

Figure 31. Typical Inputs/Outputs Display



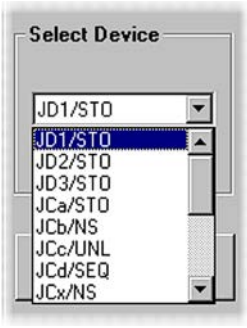
1.4.1 Selecting a Device to Test

BNYCVO04.C02 0000215653 A.3 B.2 A.7 1/2/20, 2:22 PM Released

Figure 32, page 27 shows an example of the **Select Device** drop-down list. Place the mouse cursor over the arrow and click the left button once to display a list of all devices configured on this

controller. Highlight the desired device and click the mouse again to display the screen for the device. To view another screen, select another device from the list.

Figure 32. Select Device Region of the Inputs and Outputs Screen



1.4.2 Direct Inputs

BNYCVO04.C03 0000215650 A.3 B.2 A.7 1/2/20, 2:22 PM Released

Direct inputs are signals to the Device Master controller which are connected directly to the processor board rather than a peripheral board (e.g., an 8-input/16-output board).

1.4.2.1 Program Key

BNYCVO04.C04 0000215649 A.3 B.2 A.7 1/2/20, 2:22 PM Released

The **Program Key** input on the Device Master processor board is permanently grounded (always made), to facilitate changes to program memory on the processor board from the Device Master computer.

1.4.2.2 Signal Cancel

BNYCVO04.C05 0000215648 A.3 B.2 A.7 1/2/20, 2:22 PM Released

The **Signal Cancel** input is made directly from the **Signal Cancel** button on the control panel to the Device Master processor board; the wire from the button attaches directly to a connector on the processor board. While there may be connectors in the wire where it passes through control box walls, etc., there are no electronic components (relays, fuses, etc.) along the way.

1.4.3 System I/O

BNYCVO04.C06 0000215647 A.3 B.2 A.7 1/2/20, 2:22 PM Released

System inputs and outputs are general inputs and outputs that apply to the Device Master system, rather than a particular device.

1.4.3.1 3-wire

BNYCVO04.C07 0000215646 A.3 B.2 A.7 1/2/20, 2:22 PM Released

The **three-wire** input is active when the three-wire circuit is energized to supply 120VAC control power to all Device Master-controlled devices. The three-wire circuit is energized by pressing the **Start** button (①) on the operator control panel.

1.4.3.2 Signal

BNYCVO04.C08 0000215645 A.3 B.2 A.7 1/2/20, 2:22 PM Released

The **signal** output controls the operator alarm. When the **signal** output is actuated, the alarm sounds and the signal light on the control panel illuminates.

1.4.4 Monitoring Inputs

BNYCVO04.C09 0000215676 B.2 A.4 A.7 1/2/20, 2:22 PM Released

When the **Inputs and Outputs** screen is displayed, all inputs that are grounded appear illuminated, and all inputs that are not grounded or are not used appear dark. The **I/O Legend** region in the upper right corner of the **Manual Operation** screen shows inputs in both states.

This screen is commonly used to verify that inputs to Device Master-controlled devices are functioning properly. As contacts and photoeyes actuate at the remote device, the appropriate light on the Device Master **Manual Operation** screen illuminates. For example (see Figure 31: Typical Inputs/Outputs Display, page 26), when the discharge end eye of the belt is blocked, the **Forward Eye** input light is normally on.

1.4.5 Monitoring Outputs

BNYCVO04.C10 0000215675 A.3 B.2 A.7 1/2/20, 2:22 PM Released

The **Inputs and Outputs** screen allows the user to observe the operation of outputs while the system is operating. Outputs that are actuated appear illuminated, while outputs that are turned off appear dark. The **I/O Legend** region in the upper right corner of this screen shows example outputs in both states.

2 Devices

2.1 Device Type 0: Dryer Unloader

The *Dryer Unloader* device is a Device Master-controlled conveyor belt which receives and stores goods discharged from one or more Milnor® dryers. The *Dryer Unloader c*an only receive goods from a Milnor® Miltrac™-controlled device, but can discharge to either a Miltrac™ or non-Miltrac™ (allied) device. Photoeyes on both ends of the Dryer Unloader belt allow it to run in either direction.

Dryer Unloader may be configured to pass allied data and/or allied weight. It may also be configured to extend if so equipped, and/or to work with a sequencing belt.

2.1.1 For Version 21106 and Later of Software WUDEVMASF

- When loading a Miltrac™-controlled device, the *Dryer Unloader* belt runs in the direction specified by the **Direction for Load Device** decision in the receiving device.
- When receiving from a Miltrac™-controlled device, the *Dryer Unloader* belt runs in the direction specified by the **Discharge Direction** decision in the loading device.

2.1.2 For Software Versions Before 21106

For Miltrac™ transfers, the *Dryer Unloader* uses the **Get Ready** command from Miltrac™ to determine which direction to run its belt. This command has three variations:

- The **Get Ready** command applies if *Dryer Unloader* has the **same** Y coordinate as the mating device.
- The **Get Ready Left** command applies if *Dryer Unloader* has a **lower** Y coordinate than the mating device.
- The **Get Ready Right** command applies if *Dryer Unloader* has a **higher** Y coordinate than the mating device.

Dryer Unloader must be configured in Miltrac™ as a movable device if its Y coordinate is different than the Y coordinate of either the device that discharges to it or the device that receives from it.

2.1.3 Receiving

The *Dryer Unloader* can only be loaded by a Miltrac™-controlled device.

1. Device Master waits for the **Load Allowed** input before telling Miltrac™ that the *Dryer Unloader* wants to receive a load.
2. This step depends on the software version:
   - For version 21106 and later of software WUDEVMASF, the belt direction is determined by the **Direction for Receiving Device** decision in the loading device.
   - For software versions before 21106, Miltrac™ tells the *Dryer Unloader* which direction to run the belt. The *Dryer Unloader* belt runs **forward** if Miltrac™ commands either **Get Ready** or **Get Ready Left**. The belt runs in **reverse** if Miltrac™ commands the *Dryer Unloader* to **Get Ready Right**.
3. When Miltrac™ issues the command to **Start Receiving**, *Dryer Unloader* waits for the time specified by **Delay Before Run** before running the belt.
4. The **Dryer Unloader** belt runs while the discharging dryer unloads, spreading the goods along the length of the belt.
5. The belt stops when the goods actuate the photoeye at the end of the belt.
6. If the photoeye is not actuated within the time specified by **Clear Belt Time**, the *Device Master* controller signals an error (01 NO TRANSFER).
7. If necessary, press **Signal Cancel** () on the switch panel to clear this error and initialize the belt.

2.1.4 Discharging

BNYCVF01.C05 0000215719 B.2 A.4 A.8 1/2/20, 2:22 PM Released

1. Once loaded, the belt is ready to discharge.
   - For Miltrac™ discharge, Device Master waits for the **Discharge Allowed** input before telling Miltrac™ that the *Dryer Unloader* wants to discharge a load. Miltrac™ tells the *Dryer Unloader* which direction to run the belt and when to start the discharge.
     – For version 21106 and later of software WUDEVMASF, the belt direction is determined by the **Direction for Load Device** decision in the device that will receive the load.
     – For software versions before 21106, the belt runs **forward** if Miltrac™ commands the *Dryer Unloader* to **Get Ready** or to **Get Ready Right**. The belt runs in **reverse** if Miltrac™ commands **Get Ready Left**.
   - For discharge to an allied device, discharge begins as soon as the *Dryer Unloader* sees the **Discharge Allowed** input. The *Dryer Unloader* belt runs in the direction specified by the **Discharge Direction** decision for this device in the **Configure/Devices** menu selection.
2. The belt stops and the system resets for another load after **Clear Belt Time** expires and the discharge end photoeye clears.

BNYCVF02 / 2019033 BNYCVF02 0000215294 A.7 1/2/20, 2:22 PM Released

2.2 Device Type 1: Storage Belt

BNYCVF02.C01 0000215293 B.2 A.5 A.7 1/2/20, 2:22 PM Released

The *Storage Belt* device is a Device Master-controlled conveyor belt which receives and stores goods discharged from a Milnor® device. A *Storage Belt* can only receive goods from a Milnor® Miltrac™-controlled device, but can discharge to either a Miltrac™ or non-Miltrac™ (allied) device. The *Storage Belt* has photoeyes on each end, but runs in only one direction whether receiving or discharging. It may be configured for allied data passing, allied weight passing, and/or allied compatibility. The *Storage Belt* may also be configured to extend and/or work with a compacting belt.

2.2.1 Receiving

BNYCVF02.C02 0000215718 A.3 B.2 A.7 1/2/20, 2:22 PM Released

1. Device Master waits for the **Load Allowed** input before telling Miltrac™ that the *Storage Belt* device wants to receive a load. Miltrac™ responds with the **Get Ready** command.
2. The belt waits for the Miltrac™ controller to command it to **Start Receiving**.
3. After the **Start Receiving** command, the *Storage Belt* waits for goods discharged from the loading device to block the load end photoeye.
4. The belt runs when goods from the loading device block the **load end** photoeye.
5. The belt stops when goods block the **discharge end** eye.
6. If the photoeye is not actuated within the time specified by the configured **Clear Belt Time**, the *Device Master* controller signals an error (01 NO TRANSFER).
7. If necessary, press **Signal Cancel** () on the switch panel to clear this error and initialize the belt.

TIP: In certain applications, the load end photoeye input is grounded so the belt runs immediately when the Miltrac™ controller commands it to start receiving.

2.2.2 Discharging

BNYCVF02.C03 0000215717 B.2 A.4 A.7 1/2/20, 2:22 PM Released

1. Once loaded, the belt waits to be discharged.
   - For Miltrac™ discharge, Device Master waits for the **Discharge Allowed** input before telling Miltrac™ that the *Storage Belt* device wants to discharge. Miltrac™ tells the *Storage Belt* when to start the discharge.
   - For discharge to an allied device, the belt runs when the *Storage Belt* device sees the **Discharge Allowed** input.
2. The belt stops and the system resets for another load after **Clear Belt Time** expires and the discharge end photoeye clears.

BNYCVF03 / 2019033 BNYCVF03 0000215304 A.8 1/2/20, 2:22 PM Released

2.3 Device Type 2: Non-storage Belt

BNYCVF03.C01 0000215303 B.2 A.5 A.8 1/2/20, 2:22 PM Released

The *Non-storage Belt* device is a Device Master-controlled conveyor belt which receives but does not store goods discharged from a Milnor® device. The *Non-storage Belt* is not required to be a physical device. As a "phantom" device, the *Non-storage Belt* is often used as a bridge between two transferring devices in a Miltrac™ system that are separated by one X-coordinate value. Because the *Non-storage Belt* device cannot store goods, it can only accept a load if it can immediately discharge that same load. *Non-storage Belts* can only receive goods from a Milnor® Miltrac™-controlled device, but can discharge to either a Miltrac™ or non-Miltrac™ (allied) device. The *Non-storage Belt* device has no photoeyes, but can run in either direction.

The *Non-storage Belt* device may be configured to pass allied data and/or allied weight. It may also be configured to extend, if so equipped, and/or to work with a sequencing belt.

2.3.1 For Version 21106 and Later of Software WUDEVMASF

BNYCVF03.C02 0000215716 A.3 B.2 A.8 1/2/20, 2:22 PM Released

For Miltrac™ discharge, the *Non-storage Belt* device runs in the direction specified by the **Direction for Load Device** decision in the receiving device.

2.3.2 For Software Versions Before 21106

BNYCVF03.C03 0000215715 A.3 B.2 A.8 1/2/20, 2:22 PM Released

For Miltrac™ discharge, the *Non-storage Belt* uses the discharge end **Get Ready** command from Miltrac™ to determine which direction to run its belt. (Refer to Section 2.1 : Device Type 0: Dryer Unloader, page 29 for more information on the **Get Ready** command.) This requires that the *Non-storage Belt* be configured in Miltrac™ as a movable device if its Y coordinate is different than the Y coordinate of the device that receives from it.

2.3.3 Receiving

BNYCVF03.C04 0000215714 A.3 B.2 A.8 1/2/20, 2:22 PM Released

A *Non-storage Belt* device is allowed to accept a load only if it is also allowed to discharge (i.e., both the loading device and the receiving device must be ready). Device Master waits for the **Load Allowed** input before telling Miltrac™ that the *Non-storage Belt* device wants to receive.

2.3.4 Discharging

BNYCVF03.C05 0000215713 B.2 A.4 A.8 1/2/20, 2:22 PM Released

1. The belt begins discharging when both the device from which it receives goods and the device to which it discharges are ready to transfer.
   - For discharge to a Miltrac™ device, Device Master waits for the **Discharge Allowed** input before telling Miltrac™ that the *Non-storage Belt* device wants to discharge. The belt starts when the Miltrac™ controller commands it to **Start Receiving** and to **Start Transferring**
     – For software versions 21106 and later, belt direction is determined by the **Direction for Load Device** decision in the device that will receive the load.

  - For software versions before 21106, belt direction is determined by the X-Y coordinates configured in the Miltrac™ controller. The belt runs **forward** if the Miltrac™ controller commands the *Non-storage Belt* to **Get Ready** or to **Get Ready Right**. The belt runs in **reverse** if Miltrac™ commands **Get Ready Left**.
- For discharge to an allied device, the belt starts when the **Discharge Allowed** input to the Device Master controller is grounded and Miltrac™ commands the *Non-storage Belt* to **Start Receiving**. Belt direction is determined by the **Discharge Direction** decision for this device in the **Configure/Devices** menu selection.

2. Because the *Non-storage Belt* device has no photoeyes, it depends on the loading and, for Miltrac™ discharge, the unloading device(s) to end the transfer. For Miltrac™ discharge, the belt stops and transfer is complete when Miltrac™ issues the **You're Finished (Discharging)** command. For allied discharge, the belt runs for **Clear Belt Time** after Miltrac™ issues the **You're Finished (Receiving)** command.

BNYCVF04 / 2019033 BNYCVF04 0000215442 A.8 1/2/20, 2:22 PM Released

2.4 Device Type 3: Allied Dryer (Dryer Handler)

BNYCVF04.C01 0000215441 B.2 A.4 A.8 1/2/20, 2:22 PM Released

2.4.1 Description

BNYCVF04.C06 0000217035 B.2 A.5 A.8 1/2/20, 2:22 PM Released

The *Allied Dryer* is a Device Master-controlled device which provides an interface to a non-Milnor® (allied) dryer in a Miltrac™ system. The *Allied Dryer* can be loaded manually, or it can receive goods from a Milnor® Miltrac™-controlled device, and it can discharge to either a Miltrac™ or non-Miltrac™ (allied) device. This device may be configured to pass allied data and/or allied weight.

2.4.2 Receiving

BNYCVF04.C02 0000215770 A.3 B.2 A.8 1/2/20, 2:22 PM Released

2.4.2.1 Miltrac™ Loading

BNYCVF04.C03 0000215769 B.2 A.5 A.8 1/2/20, 2:22 PM Released

For Miltrac™ loading, the Device Master controller provides for automated loading of the allied dryer through this process:

1. Device Master waits for the **Load Allowed** and **Load Desired** inputs before telling Miltrac™ that the dryer wants to receive a load.
2. The Miltrac™ controller sends a **Get Ready** command to the *Device Master* controller. Device Master turns on an output to signal the allied dryer that it is **Allowed to Load**. The dryer responds by opening its load door.
3. When the dryer load door is open, *Device Master* tells the Miltrac™ controller that the dryer is ready to receive a load. At the same time, *Device Master* locks in the data on the goods the dryer will receive.
4. Miltrac™ instructs the loading device to load the dryer.

5. When the loading device discharges the first cake into the dryer, *Device Master* turns on an output to signal that the **Dryer is Loaded**. The dryer receives additional cakes up to the maximum number of cakes as configured for **Number of Storage Positions**.
6. If the loading device delivered less than the maximum number of cakes to the dryer, *Device Master* turns on a **Partial Load** output to signal the dryer that it received less than a full load.
7. When the loading device finishes loading the dryer, *Device Master* turns off the **Allowed to Load** output, signalling the dryer to close the load door.

2.4.2.2 Allied Loading

BNYCVF04.C04 0000215781 A.3 B.2 A.8 1/2/20, 2:22 PM Released

For allied loading, the dryer is loaded manually. The Device Master controller receives an input that says the dryer is loaded.

2.4.3 Discharging

BNYCVF04.C05 0000215780 A.3 B.2 A.8 1/2/20, 2:22 PM Released

1. Device Master waits to see the **Discharge Allowed** and **Discharge Desired** inputs.
   - For a Miltrac™ discharge, *Device Master* signals the Miltrac™ controller that the dryer is ready to discharge, then waits for the **Start Discharging** command. When *Device Master* receives the **Start Discharging** command, it turns on an output to signal the allied dryer that it is **Allowed to Discharge**.
   - For an allied discharge, the *Device Master* controller turns on an output to signal the allied dryer that it is **Allowed to Discharge**.
2. *Device Master* waits for the dryer to open and close its discharge door, signalling that the discharge is finished.
   - For a Miltrac™ discharge, *Device Master* signals the Miltrac™ controller that the dryer has successfully discharged, then *Device Master* resets to wait for the next load.
   - For an allied discharge, *Device Master* simply resets when the dryer discharge door closes.

BNYCVF05 / 2019033 BNYCVF05 0000215452 A.5 1/2/20, 2:22 PM Released

2.5 Device Type 4: Allied Hand Loader

BNYCVF05.C01 0000215451 B.2 A.4 A.5 1/2/20, 2:22 PM Released

The *Allied Hand Loader* device is a Device Master-controlled manually loaded conveyor belt used to load a Milnor® device controlled by Miltrac™. The *Allied Hand Loader* provides 6 binary coded inputs for wash code (01 through 64), allowing the operator to enter a wash code to be passed to the washer-extractor via the Miltrac™ controller. The *Device Master* controller then receives two inputs: one to signal that the data is valid, and one to signal that the belt is loaded. The *Allied Hand Loader* is always loaded manually and discharges to a Miltrac™-controlled device. The belt runs in only one direction and is equipped with one photoeye at the discharge end. *Allied Hand Loader* may be configured to work with a compacting belt.

2.5.1 Receiving (Manual Loading)

BNYCVF05.C02 0000215779 A.3 B.2 A.5 1/2/20, 2:22 PM Released

1. The Device Master controller turns on an output to signal that the *Allied Hand Loader* belt desires a load.
2. The operator manually loads goods onto the belt. The belt controlled by the *Allied Hand Loader* does not move during loading unless it is configured to **jog while loading**.
3. The operator dials in a wash code from 1 to 64, then makes the **Data Valid** input to lock in the wash code.
4. The operator next makes an input to indicate that the **Belt is Loaded**. This turns off **the Belt Desires a Load** output.

2.5.2 Discharging to a Miltrac™ Device

BNYCVF05.C03 0000215778 A.3 B.2 A.5 1/2/20, 2:22 PM Released

1. The belt runs in the forward direction until the goods block the photoeye. If the photoeye is not actuated within the time specified by **Clear Belt** time, Device Master signals an error (03 NO GOODS). Press Signal Cancel () on the Device Master switch panel to clear this error.
2. If the **Discharge Allowed** input is grounded, the Device Master controller signals the Miltrac™ controller that the *Allied Hand Loader* belt wants to unload, then Device Master waits for Miltrac™ to respond.
3. When Miltrac™ responds to Device Master with the **Get Ready** command, Device Master drops a flag to stop the receiving device, responds to Miltrac™ that the belt is ready to discharge, and waits for Miltrac™ to respond.
4. When the receiving device is in position and Miltrac™ signals Device Master to begin unloading the belt, Device Master starts the belt. If Device Master is interrupted during the discharge sequence, it signals an error (01 NO TRANSFER). Press Signal Cancel () to clear this error.
5. The belt stops after the **Clear Belt** time expires and the photoeye is clear. Device Master signals **Belt Finished Unloading** for two seconds.
6. Five seconds later, Device Master checks to see that **Belt Loaded** and **Data Valid** have been reset; Device Master displays an error (02 NOT RESET) if they have not. Press Signal Cancel () to clear this error.
7. Normally the **Belt Loaded** and **Data Valid** switches reset and Device Master turns on the output to signal **Desires Load** to repeat the sequence.

BNYCVF06 / 2019033 BNYCVF06 0000215462 A.5 1/2/20, 2:22 PM Released

2.6 Device Type 5: Feeder Belt

BNYCVF06.C01 0000215461 B.2 A.4 A.5 1/2/20, 2:22 PM Released

The *Feeder Belt* device is a Device Master-controlled conveyor belt which receives and stores goods discharged from a Milnor® device for manual unloading by an operator. The *Feeder Belt*

has a photoeye on each end and runs in one direction. This device is always loaded by a Milnor® Miltrac™-controlled device and always discharges manually.

2.6.1 Operational Summary

BNYCVF06.C02 0000215924 A.3 B.2 A.5 1/2/20, 2:22 PM Released

If the load end photoeye (same as the backward photoeye or the feeder photoeye) is clear, then the *Feeder Belt* signals the Miltrac™ controller that it desires a load. If the discharge end photoeye (same as the forward photoeye) is clear, the *Feeder Belt* runs until the discharge end photoeye is blocked or clear belt time runs out, whichever occurs first.

2.6.2 Receiving

BNYCVF06.C03 0000215923 A.3 B.2 A.5 1/2/20, 2:22 PM Released

1. The *Feeder Belt* desires a load whenever the load end photoeye is not blocked.
2. When the Miltrac™ controller commands the *Feeder Belt* to start loading, the belt runs continuously until the discharge photoeye is blocked.
3. When the discharge photoeye is blocked, the *Feeder Belt* signals the Miltrac™ controller that the belt is loaded by sending a **Finished Loading** status to Miltrac™.

2.6.3 Manually Unloading

BNYCVF06.C04 0000215922 A.3 B.2 A.5 1/2/20, 2:22 PM Released

1. The *Feeder Belt* runs as necessary to keep the discharge end photoeye blocked as the operator manually removes goods from the discharge end of the belt.
2. If the belt runs continuously for **Clear Belt** time without blocking the discharge end photoeye, the *Feeder Belt* signals the Miltrac™ controller that the belt is empty and waiting for the next load.
3. If the belt runs for **Clear Belt** time without blocking the discharge end photoeye while the load end photoeye is blocked, the Device Master controller displays an error (Eye Blocked).

BNYCVF07 / 2019033 BNYCVF07 0000215514 A.7 1/2/20, 2:22 PM Released

2.7 Device Type 6: Sequencing Belt

BNYCVF07.C01 0000215513 B.2 A.4 A.7 1/2/20, 2:22 PM Released

The *Sequencing Belt* device is a Device Master-controlled conveyor belt which receives and stores goods discharged from another Device Master-controlled belt for manual unloading by an operator. The *Sequencing Belt* has a photoeye on each end and a third (sequencing) photoeye to work with other belts. The belt runs in one direction. The *Sequencing Belt* always uses Miltrac™ protocol for loading and allied protocol for discharging. This device wants to receive a load anytime the load end (backward or feeder) photoeye is clear. If the discharge end (forward) photoeye is clear, the belt runs until the photoeye is blocked or the **Clear Belt** time expires, whichever occurs first.

2.7.1 Description

BNYCVF07.C02 0000215921 A.3 B.2 A.7 1/2/20, 2:22 PM Released

The *Sequencing Belt* receives goods from a Device Master belt and is manually unloaded. Each Device Master system may have only one sequencing system for every eight devices, and each system may have up to two *Sequencing Belts*. For the first eight devices, the *Sequencing Belts* must be configured as Device Master devices number 5 or number 6. At least one other belt in this Device Master system—configured as either a *Dryer Unloader* or *Non-Storage Belt* and device number 0 through 7—must be configured to work with this/these *Sequencing Belt(s)*. For the second eight devices, the *Sequencing Belts* must be configured as Device Master devices number 13 or number 14. At least one other belt in this Device Master system—configured as either a *Dryer Unloader* or *Non-Storage Belt* and device number 8 through 15—must be configured to work with this/these *Sequencing Belt(s)*.

2.7.2 Receiving

BNYCVF07.C03 0000215920 B.2 A.5 A.7 1/2/20, 2:22 PM Released

1. The *Sequencing Belt* signals the Miltrac™ controller that it desires a load when the load end photoeye is clear and **Load Allowed** input is made.
2. When Miltrac™ commands the *Sequencing Belt* to start loading, the *Sequencing Belt* runs continuously until the discharge end eye is blocked or contact **Auto-Manual** is made.
3. The Device Master belt configured to work with the *Sequencing Belt* runs to discharge its load to the *Sequencing Belt* as it normally discharges to other devices.
4. After the sequencing photoeye is blocked, the loading belt controlled by Device Master runs for the time specified by **Sequencing On** time.
5. When the **Sequencing On** time expires, the belt stops for the time specified by **Sequencing Off** time. Once the sequencing eye clears, loading belt controlled by Device Master resumes running.
6. If the contact **Auto-Manual** is made, the loading belt controlled by Device Master stops until the contact **Auto-Manual** is cleared.
7. Once the *Sequencing Belt* discharge end photoeye is blocked, the *Sequencing Belt* signals the Miltrac™ controller that the belt is loaded by sending a **Finished Loading** status to Miltrac™.

2.7.3 Discharging

BNYCVF07.C04 0000215919 A.3 B.2 A.7 1/2/20, 2:22 PM Released

The *Sequencing Belt* runs to keep the discharge photoeye blocked while the operator removes goods from the discharge end of the belt. If the belt runs continuously for **Clear Belt** time without blocking the photoeye, the *Sequencing Belt* signals that it wants a load and waits for the next load.

If the *Sequencing Belt* runs for **Clear Belt Time** without blocking the discharge end photoeye and the load end eye is blocked, then Device Master signals an error (Eye Blocked).

BNYCVF08 / 2019033 BNYCVF08 0000215524 A.7 1/2/20, 2:22 PM Released

2.8 Device 7: Linear Costa

BNYCVF08.C01 0000215523 B.2 A.4 A.7 1/2/20, 2:22 PM Released

The *Linear Costa* device is a Device Master-controlled conveyor belt which can receive and store up to eight separate cakes. A *Linear Costa* belt can receive from either a Milnor® Miltrac™-controlled device or a non-Miltrac™ (allied) device, and can discharge to either a Miltrac™ or non-Miltrac™ (allied) device. The *Linear Costa* belt has photoeyes on both ends, runs forward to receive, and, when discharging to a Miltrac™-controlled device, runs in the direction specified by the **Direction For Load Device** decision in the receiving device. The *Linear Costa* device may be configured for allied data passing, allied weight passing, allied weight reading, and/or allied compatibility.

2.8.1 Receiving

BNYCVF08.C02 0000215918 A.3 B.2 A.7 1/2/20, 2:22 PM Released

2.8.1.1 Miltrac Loading

BNYCVF08.C03 0000215917 A.3 B.2 A.7 1/2/20, 2:22 PM Released

1. Device Master waits for the **In Load Position** input before telling Miltrac™ that the *Linear Costa* device wants to receive a load. Miltrac™ responds with the **Get Ready** command.
2. Device Master tells Miltrac™ that Linear Costa is ready to receive and waits for the Miltrac™ controller command to **Start Receiving**.
3. Following the **Start Receiving** command, the *Linear Costa* belt begins to run when goods from the loading device block the load end photoeye.
4. The belt stops when goods from the loading device have cleared the load end photoeye for the time specified by the configured value for **Time After Trailing Edge In 10ths**.
5. Device Master tells Miltrac™ that the *Linear Costa* is finished receiving. Since the *Linear Costa* is a multiple-cake storage device, this acknowledgement has two variations:
   - The receive status **Done Receiving** (without an asterisk) implies that the *Linear Costa* belt is finished receiving and can take another cake.
   - The receive status **Done Receiving *** (with an asterisk) implies that the *Linear Costa* belt is finished receiving and cannot take another cake (belt is full).
6. If the *Linear Costa* belt can take another cake and the loading device can pass another cake, then Miltrac™ issues the **Get Ready** command, and the loading process is repeated. Otherwise, Miltrac™ issues the **Do Nothing** command, and the loading process ends.
7. If *Linear Costa* is configured for **Discharge Eye Loading Error**, and the discharge end eye is blocked during the loading process, the Device Master controller signals an error (07 EYE LOADING ERROR). Press **Signal Cancel** on the control panel to clear this error and initialize the belt.

2.8.1.2 Allied Loading

BNYCVF08.C04 0000215916 A.3 B.2 A.7 1/2/20, 2:22 PM Released

1. When the **In Load Position** input is made, the **Want To Load** output turns on.
2. When the **Get Ready To Load** input is made, the **Ready To Load** output turns on.

3. When the **Start Loading** input is made, Device Master reads the cake data inputs. The *Linear Costa* belt begins to run when goods from the loading device block the load end photoeye.
4. The belt stops when goods from the loading device have cleared the load end photoeye for the time specified by the configured value for **Time After Trailing Edge In 10ths**.
5. The **Want To Load** and the **Ready To Load** outputs reset, and the **Finished Loading** output turns on for 4 seconds.
6. If the *Linear Costa* belt can take another cake, the **Want To Load** output turns on and the loading process repeats.
7. If *Linear Costa* is configured for **Discharge Eye Loading Error**, and the discharge end eye is blocked during the loading process, the Device Master controller signals an error (07 EYE LOADING ERROR). Press **Signal Cancel** on the control panel to clear this error and initialize the belt.

2.8.2 Discharging

BNYCVF08.C05 0000215915 A.3 B.2 A.7 1/2/20, 2:22 PM Released

2.8.2.1 Miltrac Discharge

BNYCVF08.C06 0000215975 B.2 A.5 A.7 1/2/20, 2:22 PM Released

1. With the **In Discharge Position** input made, Device Master waits until either the number of cakes loaded equals or exceeds the value configured for **Optimum Number Of Cakes To Unload**, or the time configured for **Wait To Unload Less Than Optimum** expires, before telling Miltrac™ that the Linear Costa device wants to discharge a load. Miltrac™ responds with the **Get Ready** command.
2. Device Master tells Miltrac™ that *Linear Costa* is ready to discharge and waits for the Miltrac™ controller command to **Start Transferring**.
3. Following the **Start Transferring** command, the *Linear Costa* belt begins to run in the direction specified by the **Direction For Load Device** setting in the receiving device.
4. If more than one cake is on the belt, the belt stops after the discharged cake clears the belt eye and the next cake blocks the eye. If only one cake is on the belt, the belt stops after the cake has cleared the photoeye for the time specified by the configured value for **Run Time After Discharge** if it's not zero, or **Clear Belt Time**, otherwise.
5. Device Master tells Miltrac™ that the *Linear Costa* is finished discharging. Since the *Linear Costa* is a multiple-cake stoarge device, this acknowledgement has two variations:
   - The transfer status **Done Transferring** (without an asterisk) implies that the *Linear Costa* belt is finished discharging and can pass another cake.
   - The transfer status **Done Transferring** (without an asterisk) implies that the *Linear Costa* belt is finished discharging and cannot pass another cake.
6. If the *Linear Costa* belt can pass another cake and the receiving device can take another cake, then Miltrac™ issues the **Get Ready** command, and the discharging process is repeated until either the *Linear Costa* belt is empty or, if the receiving device is full, the time configured for **Wait For Receive Device Time** expires.
7. If the discharging process ends before the *Linear Costa* belt is empty, the belt re-initializes its remaining cakes to the receive end in preparation for loading.

8. If the *Linear Costa* is configured for **Hold Receiving Device**, and the receiving device can take another cake but the *Linear Costa* belt is empty, Device Master will delay telling Miltrac™ that *Linear Costa* is finished discharging in order to hold the receiving device until *Linear Costa* can pass another cake.

2.8.2.2 Allied Discharge

BNYCVF08.C07 0000215974 A.3 B.2 A.7 1/2/20, 2:22 PM Released

1. With the **In Discharge Position** input made, Device Master waits until either the number of cakes loaded equals or exceeds the value configured for **Optimum Number Of Cakes To Unload**, or the time configured for **Wait To Unload Less Than Optimum** expires, before activating the **Want To Discharge** and allied data outputs.
2. When the **Get Ready To Discharge** input is made, the **Ready To Discharge** output turns on.
3. When the **Start Discharging** input is made, the *Linear Costa* belt begins to run forward.
4. If more than one cake is on the belt, the belt stops after the discharged cake clears the belt eye and the next cake blocks the eye. If only one cake is on the belt, the belt stops after the cake has cleared the photoeye for the time specified by the configured value for **Run Time After Discharge** if it's not zero, or **Clear Belt Time**, otherwise.
5. The discharge process repeats until the total number of cakes discharged is greater than or equal to the value configured for **Optimum Number Of Cakes To Unload**, or the *Linear Costa* belt is empty. At that time, the **Want To Discharge** and **Ready To Discharge** outputs reset, and the **Finished Discharging** output turns on for 4 seconds. The input **Allied Transfer Cancelled** may be used to end the discharge process before **Optimum Number of Cakes to Unload** is achieved.
6. If the discharging process ends before the *Linear Costa* belt is empty, the belt re-initializes its remaining cakes to the receive end in preparation for loading.

3 Configuration

3.1 Configuring the Device Master Controller

3.1.1 System Configuration

Access the **System Configuration** screen from the Device Master main display, as shown in Figure 33, page 41.

Figure 33. Displaying the System Configuration Screen

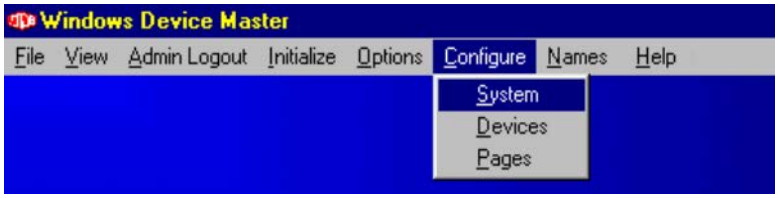
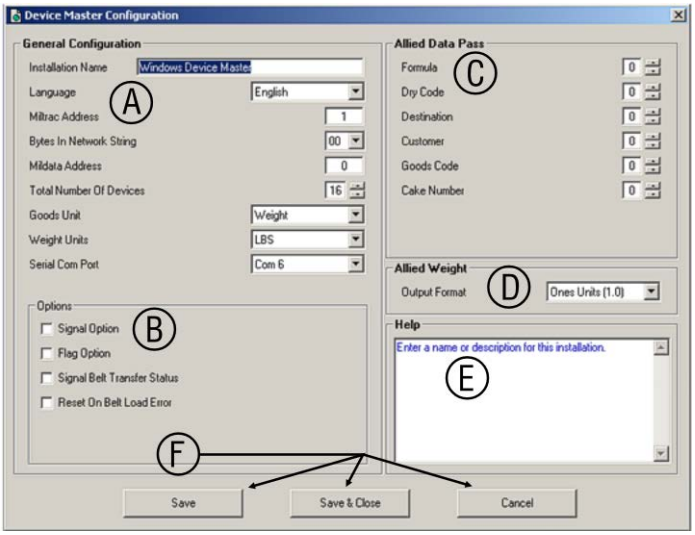


Figure 34. Device Master Configuration Screen

Typical Display



Legend

A . . . General configuration decisions
B . . . Options decisions
C . . . Allied data pass output assignments
D . . . Allied weight output format
E . . . Help text
F . . . Action buttons

3.1.1.1 General Decisions and Options

BNYCVP01.C03 0000216069 A.3 B.2 A.8 1/2/20, 2:22 PM Released

3.1.1.1.1 General Decisions

BNYCVP01.C04 0000216068 A.3 B.2 A.8 1/2/20, 2:22 PM Released

3.1.1.1.1.1 Language

BNYCVP01.C05 0000216067 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Select the desired language from the list. All pages, menus, and help screens will appear in this language the next time the Device Master software is started.

Display or Action	Explanation
	Typical language selection list. The appearance and content of this list may change.

3.1.1.1.1.2 Miltrac™ Address

BNYCVP01.C06 0000216065 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Enter the address for the first Device Master device on the Miltrac™ system. The address for the second device will be assigned one address location higher, and the address of each subsequent device increments by one.

TIP: If the Device Master address is 003 and two devices are enabled, then Device 0 = 003, and Device 1 = 004.

3.1.1.1.1.3 Bytes for Network String

BNYCVP01.C07 0000216099 B.2 A.4 A.8 1/2/20, 2:22 PM Released

Select the number of bytes used to communicate with Miltrac™. Select 24 or 30 for older Miltrac™ systems, or 00 for new Miltrac™. Use Table 4, page 42 and the version and date code of the Miltrac™ software to determine this setting. See Table 5, page 43 for PC-based Miltrac™ systems.

Table 4. Bytes in Miltrac™ Network String

Miltrac™ Processor Board	Protocol	Miltrac™ Software Version
8088	Old	before WUMILTRACB/89100
	New	WUMILTRACB/89100 and later
early 80186 (08BSPET)	Old	WUMILTCC/93xxx
	New	WUMILTCB/94xxx
current 80186 (08BSPE1T/2T)	Old	WUMILTCE/99xxx
	New	WUMILTCD/20xxx
PC-based	New	WUPCMILTRC/20xxx
	Expand	WUPCMILTRD/21xxx
Note: "xxx" represents last three digits of version number.		

For expanded Miltrac™, select the code from Table 5, page 43 that provides the fastest **reliable** baud rate. The fastest reliable baud rate may be limited by electronic noise in the facility, cable length and routing, and other factors.

Table 5. Baud Rates for Expanded Miltrac™ Protocol

Select this code	to communicate at this baud rate
96	9600
97	19200
98	38400
99	57600

3.1.1.1.1.4 Mildata® Address

BNYCVP01.C08 0000216098 A.3 B.2 A.8 1/2/20, 2:22 PM Released

For Device Master controllers with software dated 21103 and earlier, enter the address for the Device Master controller on the Mildata® network. The valid values for this decision are 0 to 255.

For Device Master controllers with software dated 21104 and later, the Mildata® address entered here corresponds to device 0, and the Mildata® address for all Device Master devices increments by 1 from the address of the Device Master controller. The valid values for the Device Master controller address are 0 to (255 minus the number of Device Master devices).

3.1.1.1.1.5 Total Number of Devices

BNYCVP01.C09 0000216097 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Enter the total number of devices controlled by this Device Master controller. Each Device Master can control from one to 16 devices.

3.1.1.1.1.6 Goods Unit

BNYCVP01.C10 0000216096 B.2 A.4 A.8 1/2/20, 2:22 PM Released

Enter the unit used to measure goods in this system, either **Weight** or **Pieces**.

3.1.1.1.1.7 Weight Units

BNYCVP01.C11 0000216095 A.3 B.2 A.8 1/2/20, 2:22 PM Released

This decision appears only if the **Goods Unit** for this system is **Weight**. Select either **LBS** to measure pounds, or **KGS** to measure kilograms.

3.1.1.1.2 Options

BNYCVP01.C12 0000216094 A.3 B.2 A.8 1/2/20, 2:22 PM Released

3.1.1.1.2.1 Signal Option

BNYCVP01.C13 0000216093 B.2 A.4 A.8 1/2/20, 2:22 PM Released

Enabling this option requires an additional output board set to address 11H for the first eight devices, or set to 91H for the second eight devices. This option provides two signals for each Device Master-controlled device.

- The **Load Waiting** signal is enabled when the device desires to discharge and cannot. This output applies to these devices: *Dryer Unloader*, *Storage Belt*, *Non-storage Belt*, and *Dryer Handler*.
- The **Goods Different from Last** signal is enabled when the goods on the device differ from the goods in the previous batch. This output applies to all devices except *Allied Hand Loader*.

3.1.1.1.2.2 Flag Option

BNYCVP01.C14 0000216092 B.2 A.5 A.8 1/2/20, 2:22 PM Released

If selected, this option requires an additional input/output board set to address 05H for the first eight devices, or to 85H for the second eight devices. The **Flag option** provides one **Flag Down** output for each Device Master-controlled device. This output is used to drop a target for shuttle transfers. This output may be configured for either load end or discharge end operation as described in Section 3.1.2.3.22.4 : Flag Down End, page 53, and works with both Miltrac™ and allied transfers.

The **Flag option** applies to all Device Master-controlled devices except *Allied Hand Loader*, which provides the **Flag Down** signal as a standard output.

3.1.1.1.2.3 Signal Belt Transfer Status

BNYCVP01.C15 0000216091 A.3 B.2 A.8 1/2/20, 2:22 PM Released

If selected, this option requires an additional output board set to address 1AH for the first eight devices, or to 9AH for the second eight devices, to provide a **Finished discharging** signal for use with allied discharge for each Device Master-controlled device. This option applies only to *Dryer Unloader*, *Storage Belt*, and *Non-storage Belt* devices.

In operation, the **Finished discharging** signal is enabled for 5 seconds beginning when the device completes its discharge.

3.1.1.1.2.4 Reset on Belt Load Error

BNYCVP01.C16 0000216090 A.3 B.2 A.8 1/2/20, 2:22 PM Released

This option applies only to *Allied Hand Loader* devices and requires no additional boards. If selected, this option allows the Device Master controller to automatically cancel a Miltrac™ transfer following an error condition.

3.1.1.2 Allied Weight

BNYCVP01.C17 0000216220 B.2 A.8 5/7/20, 4:10 PM Released

Under the **Allied Weight** configuration the user specifies whether the output format for passing allied weight will be in ones units (whole units) or tenths of units, where units are either pounds or kilograms. The actual cake weight can be determined by multiplying the binary output value by the appropriate multiplier: 0.1 for tenths of units, or 1.0 for ones units. For example, the binary output value for a cake weighing 102.3 pounds would be

1023 x 0.1 = 102.3 for tenths

or

102 x 1.0 = 102.0 for ones

NOTE: Fractional units are truncated when ones units are used.

Table 6. Example

Output Format	Binary Output from 24-output Board	Binary Output Value	Cake Weight
Tenths of Units	0000 0000 0000 0011 1111 1111	1023	1023 x 0.1 = 102.3
Ones Units	0000 0000 0000 0000 0110 0110	102	102 x 1.0 = 102.0

3.1.1.3 Allied Data Pass

BNYCVP01.C18 0000216255 B.2 A.4 A.8 1/2/20, 2:22 PM Released

Under the **Allied Data Pass** configuration, the user must specify, for each data value, how many outputs are needed to pass that value in binary format. The **Allied Data Pass** relay assignments specified here apply to all Device Master-controlled devices configured for **Allied Data Passing** as described in Section 3.1.2.4.4 : Allied Data Passing, page 54. Any data value may be assigned up to 16 outputs, with a maximum total of 24 outputs for all data values combined. Outputs are applied from highest to lowest order according to the following sequence:

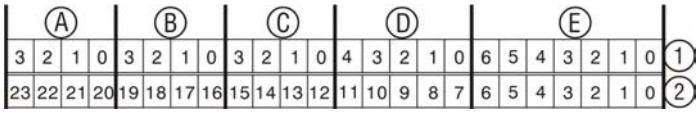
1. Formula
2. Dry code
3. Destination
4. Customer
5. Goods code
6. Cake number

Table 7. Example of Allied Data Pass Output Assignments

Batch Data Type	Desired Data Range	Outputs Required for Desired Range
Formula	00–15	4
Dry code	00–15	4
Destination	00–15	4
Customer	00–31	5
Goods code	000–127	7
Cake number	none	0

Figure 35. Data and Board Outputs for Allied Data Pass Example

Output Assignments (from Table 4)



Legend

A . . . Four outputs for 16 **formula. .** codes

B . . . Four outputs for 16 **dry codes. .**

C . . . Four outputs for 16 **destination. .** codes

D . . . Five outputs for 32 **customer. .** codes

E . . . Seven outputs for 128 **goods codes. .**

. . . . No outputs are assigned for **cake number. .**

1 . . . Data outputs (output relays corresponding to batch codes)

2 . . . Allied data (output relays corresponding to 24-output board)

3.1.2 Device Configuration

BNYCVP01.C19 0000216251 B.2 A.4 A.8 1/2/20, 2:22 PM Released

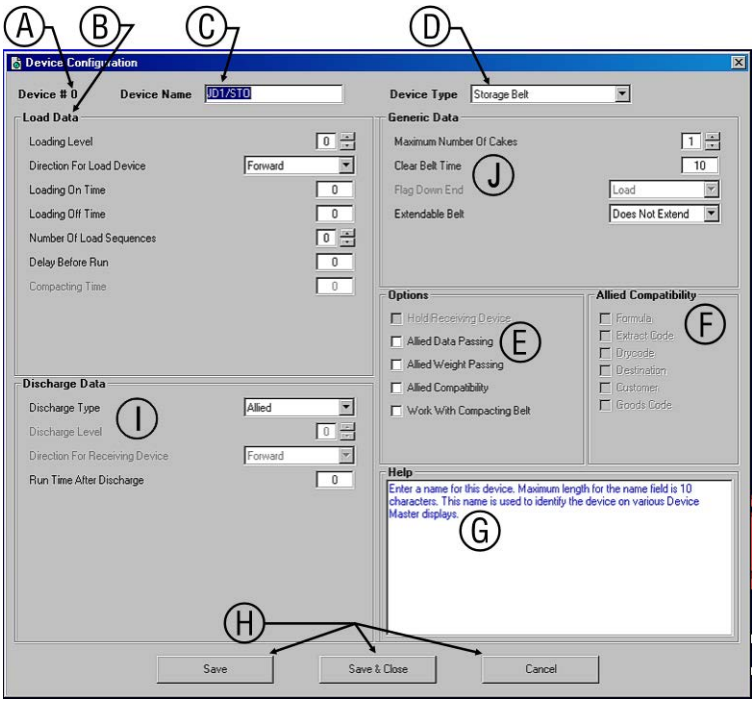
The **Device Selection Window** (Figure 36, page 46) is displayed when the **Configure/Devices** menu item is selected, as shown in Figure 33: Displaying the System Configuration Screen, page 41 .

Figure 36. Device Selection Window

To display the **Device Configuration** screen (Figure 37, page 46), click the mouse on the **Configure** button in the **Device Selection** window. To exit the **Device Selection** menu without making any changes, click on the **Exit** button.

Figure 37. Device Configuration Screen

Typical Display



Legend

- **A . . .** Device number
- **B . . .** Load data configuration
- **C . . .** Device name
- **D . . .** Device type
- **E . . .** Options configuration
- **F . . .** Allied compatibility data (applicable device types only)
- **G . . .** Help text
- **H . . .** Action buttons
- **I . . .** Discharge data configuration
- **J . . .** Generic data configuration

3.1.2.1 Device Name

BNYCVP01.C20 0000216250 A.3 B.2 A.8 1/2/20, 2:22 PM Released

This field allows the entry of 10 alphanumeric or symbol characters to identify the device on all other Device Master display screens. This name appears at the top of the box corresponding to the device on the Device Master **Cake page** and **State page**, and in the upper left corner of the **Manual page** and the **Inputs and Outputs page**.

3.1.2.2 Device Type

BNYCVP01.C21 0000216249 B.2 A.4 A.8 1/2/20, 2:22 PM Released

Each device operated by the Device Master controller is one of the eight types described in Section 2.1 : Device Type 0: Dryer Unloader, page 29 through Section 2.8 : Device 7: Linear Costa, page 38 of this manual. The Device Master controller uses this decision to determine the valid values of all device configuration decisions except **Device Name**.

Device Type 0: Dryer Unloader (see Section 2.1 : Device Type 0: Dryer Unloader, page 29) a conveyor belt used to receive and store goods discharged from one or more Milnor® dryers; always Miltrac™ loaded, Miltrac™ or allied discharge. The belt can run forward and backward; capable of passing allied data, allied weight, or both to an allied device; may extend to load or unload; may operate with a sequencing belt.

Device Type 1: Storage Belt (see Section 2.2 : Device Type 1: Storage Belt, page 31) a conveyor belt used to receive and store goods discharged from a Miltrac™-controlled device; always Miltrac™ loaded, Miltrac™ or allied discharge. The belt runs in only one direction; capable of passing allied data and/or allied weight, and configurable for allied compatibility; may extend to load or unload; may operate with a compacting belt.

Device Type 2: Non-storage Belt (see Section 2.3 : Device Type 2: Non-storage Belt, page 32) a conveyor belt used to receive, but not to store, goods discharged from a Miltrac™-controlled device; also used as a *phantom* device to bridge between two transferring devices in a Miltrac™ system that are separated by one X-coordinate value. This device is always Miltrac™ loaded; Miltrac™or allied discharge. Belt can run forward and backward; capable of passing allied data, allied weight, or both to an allied device; may extend to load or unload; may operate with a sequencing belt.

Device Type 3: Allied Dryer (see Section 2.4 : Device Type 3: Allied Dryer (Dryer Handler), page 33) Also know as *Dryer Handler*, this device provides a Miltrac™ interface for a non-Milnor® dryer; Miltrac™ or allied loading, Miltrac™ or allied discharge. Belt runs in one direction only; capable of passing allied data and allied weight.

Device Type 4: Allied Hand Loader (see Section 2.5 : Device Type 4: Allied Hand Loader, page 34) a manually loaded conveyor belt used to load a Miltrac™-controlled device; manually loaded, Miltrac™ discharge only. Belt runs in one direction only; capable of passing allied data and allied weight; may operate with a compacting belt.

Device Type 5: Feeder Belt (see Section 2.6 : Device Type 5: Feeder Belt, page 35) a conveyor belt used to receive goods from a Miltrac™-controlled device for manual unloading; always Miltrac™ loaded; manual discharge only. The belt runs in one direction only; cannot pass allied data or allied weight.

Device Type 6: Sequencing Belt (see Section 2.7 : Device Type 6: Sequencing Belt, page 36) a conveyor belt used to receive goods from a Device Master-controlled belt (either a *Dryer Unloader* or a *Non-storage belt*) for manual unloading; always Miltrac™ loaded, manual discharge only. The belt runs in one direction only; cannot pass allied data or allied weight.

Device Type 7: Linear Costa (see Section 2.8 : Device 7: Linear Costa, page 38) a conveyor belt used to receive and store up to eight separate cakes; Miltrac™ or allied loading, Miltrac™ or allied discharge. Belt can run forward and backward; capable of reading allied weight from an allied loading device, and passing allied data, allied weight, or both to an allied receiving device.

3.1.2.3 Load Data

BNYCVP01.C22 0000216248 A.3 B.2 A.8 1/2/20, 2:22 PM Released

The configure decisions under the **Load Data** section are used to specify the loading characteristics of the device. Only those data fields which apply to the specified device type are displayed. A data field which appears, but is not applicable based on one or more other configure decisions, is displayed as grayed out and inaccessible.

3.1.2.3.1 Load Type

BNYCVP01.C23 0000216247 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Enter the protocol used by this device for loading. This decision is configurable for *Allied Dryer* and *Linear Costa* devices only.

Display or Action	Explanation
Miltrac	loading operation controlled by Miltrac™
Allied	loading operation controlled via allied interfacing.

3.1.2.3.2 Loading Level

BNYCVP01.C24 0000216246 A.3 B.2 A.8 1/2/20, 2:22 PM Released

This decision specifies the vertical position for an elevating device to discharge to this device. It applies to Miltrac™ loading only, and is configurable for *Dryer Unloader*, *Storage Belt*, *Non-storage Belt*, *Linear Costa*, and *Allied Dryer* devices.

Display or Action	Explanation
0	default and minimum
7	maximum

3.1.2.3.3 Delay Before Run

BNYCVP01.C25 0000216292 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Enter the desired time (in seconds) between when the device begins receiving a load and when the belt begins running. A longer value here helps keep the goods bunched together rather than allowing them to distribute along the length of the belt. Configurable for *Dryer Unloader*, *Storage Belt*, and *Allied Hand Loader* devices.

Display or Action	Explanation
0	minimum and default value; belt begins running when loading starts
255	maximum value; belt begins running 255 seconds after loading starts.

3.1.2.3.4 Direction for Load Device

BNYCVP01.C26 0000216291 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Enter the direction for the loading device to run the belt when it transfers the cake to this device; applies to Miltrac™ loading only. Configurable for *Dryer Unloader*, *Storage Belt*, *Non-storage Belt*, *Linear Costa*, and *Allied Dryer* devices.

Display or Action	Explanation
Forward	the loading device runs in the same direction it runs to receive a load
Reverse	the loading device runs in the direction opposite the way it runs when receiving a load

3.1.2.3.5 Loading On Time

BNYCVP01.C27 0000216290 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Enter the load sequence jog **ON** time in seconds; configurable for *Dryer Unloader*, *Storage Belt*, and *Allied Hand Loader* devices.

Display or Action	Explanation
0	minimum and default value; belt does not run during loading
255	maximum value; belt runs continuously for 255 seconds while receiving a load, then pauses for the configured **Loading Off Time** (below).

3.1.2.3.6 Loading Off Time

BNYCVP01.C28 0000216289 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Enter the load sequence jog **OFF** time in seconds; configurable for *Dryer Unloader*, *Storage Belt*, and *Allied Hand Loader* devices.

Display or Action	Explanation
0	minimum and default value; belt runs continuously during loading
255	maximum value; after running for the configured **Belt On Time**, the belt pauses for 255 seconds while receiving a load. This sequence repeats according to the value for **Number of Load Sequences** (below).

3.1.2.3.7 Number of Load Sequences

BNYCVP01.C29 0000216288 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Enter the number of times the load sequence of on/off jogs should be performed; configurable for *Dryer Unloader*, *Storage Belt*, and *Allied Hand Loader* devices.

Display or Action	Explanation
0	default and minimum
99	maximum value

3.1.2.3.8 Time After Trailing Edge in 10ths

BNYCVP01.C30 0000216287 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Enter the desired time, in tenths of a second, for this device to continue running its belt during loading after the cake passes the load end photoeye. This decision is used to set the spacing between cakes on the belt. Configurable for *Linear Costa* only.

Display or Action	Explanation
0	default and minimum
99	maximum value

3.1.2.3.9 Hold Loader When Belt is Full

BNYCVP01.C31 0000216286 B.2 A.4 A.8 1/2/20, 2:22 PM Released

Enter the maximum time, in minutes, to hold the loading device if this device is full but the loading device still has more cakes to discharge. Applies to Miltrac™ loading. Configurable for *Linear Costa* only.

Display or Action	Explanation
0	default and minimum
99	maximum value

3.1.2.3.10 Discharge Data

BNYCVP01.C32 0000216285 A.3 B.2 A.8 1/2/20, 2:22 PM Released

The configure decisions under the **Discharge Data** section are used to specify the discharging characteristics of the device. Only those data fields which apply to the specified device type are displayed. A data field which appears, but is not applicable based on one or more other configure decisions, is displayed as grayed out and inaccessible.

3.1.2.3.11 Discharge Type

BNYCVP01.C33 0000216475 B.2 A.4 A.8 1/2/20, 2:22 PM Released

Enter the protocol used by this device for discharging; configurable for *Dryer Unloader*, *Storage Belt*, *Non-storage Belt*, *Linear Costa*, and *Allied Dryer* devices.

Display or Action	Explanation
Miltrac™	loading operation controlled by Miltrac™
Allied	loading operation controlled via allied interfacing.

3.1.2.3.12 Discharge Level

BNYCVP01.C34 0000216474 A.3 B.2 A.8 1/2/20, 2:22 PM Released

This decision specifies the vertical position for an elevating device to receive from this device; applies to Miltrac™ discharge only. Configurable for *Dryer Unloader*, *Storage Belt*, and *Non-storage Belt*, and *Linear Costa*.

Display or Action	Explanation
0	default and minimum
7	maximum

3.1.2.3.13 Discharge Direction

BNYCVP01.C35 0000216473 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Enter the direction for this device to run its belt when discharging a cake; applies to allied discharge only. Configurable for *Dryer Unloader* and *Non-storage Belt* devices.

Display or Action	Explanation
Forward	the loading device runs in the same direction it runs to receive a load
Reverse	the loading device runs in the direction opposite the way it runs when receiving a load

3.1.2.3.14 Direction for Receiving Device

BNYCVP01.C36 0000216472 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Enter the direction for the receiving device to run the belt when taking a cake from this device; applies to Miltrac™ discharge only. Configurable for *Dryer Unloader*, *Storage Belt*, *Linear Costa*, and *Non-Storage Belt* devices.

Display or Action	Explanation
Forward	the loading device runs in the same direction it runs to receive a load
Reverse	the loading device runs in the direction opposite the way it runs when receiving a load

3.1.2.3.15 Compacting Time

BNYCVP01.C37 0000216471 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Enter the time desired to run this belt in seconds after the goods clear the compacting eye. This decision applies only if this device is configured to work with a compacting belt; configurable for *Storage Belt* and *Allied Hand Loader* devices only.

Display or Action	Explanation
0	default and minimum
255	maximum value

3.1.2.3.16 Sequencing On Time

BNYCVP01.C38 0000216470 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Enter the desired time in seconds for this belt to continue running after the goods block the sequencing photoeye. Applies only if this device is configured to work with a sequencing belt; configurable for *Dryer Unloader* and *Non-storage Belt* devices only.

Display or Action	Explanation
0	default and minimum
255	maximum value

3.1.2.3.17 Sequencing Off Time

BNYCVP01.C39 0000216469 A.3 B.2 A.8 1/2/20, 2:22 PM Released

This is the number of seconds that this belt should pause after running for the sequencing **ON** time; applies only if this device is configured to work with a sequencing belt. This decision applies only to *Dryer Unloader* and *Non-storage Belt* devices.

Display or Action	Explanation
0	default and minimum
255	maximum value

3.1.2.3.18 Run Time after Discharge

BNYCVP01.C40 0000216468 A.3 B.2 A.8 1/2/20, 2:22 PM Released

This decision determines how long, in seconds, the belt runs after the discharge end photoeye is clear; configurable for *Dryer Unloader*, *Storage Belt*, *Linear Costa*, and *Allied Hand Loader* devices.

Display or Action	Explanation
0	minimum and default value; belt runs for configured **Clear Belt Time**
255	maximum value; timer counts down with belt running when discharge end photoeye clears. If goods block the belt before this timer counts down to 0, the timer restarts at the value configured here.

3.1.2.3.19 Optimum Number of Cakes to Unload

BNYCVP01.C41 0000216467 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Enter the optimum number of cakes for this device to discharge. The device will delay discharging its cake(s) until either the optimum number of cakes is achieved, or the time configured for **Wait To Unload Less Than Optimum** expires. Configurable for *Linear Costa* only.

Display or Action	Explanation
1	minimum and default value
Number of Storage Positions	maximum value

3.1.2.3.20 Wait to Unload Less Than Optimum

BNYCVP01.C42 0000216466 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Enter the maximum time, in minutes, to wait to discharge the cake(s) if **Optimum Number Of Cakes To Unload** is not met. Configurable for *Linear Costa* only.

Display or Action	Explanation
0	default and minimum
99	maximum value

3.1.2.3.21 Wait for Receive Device Time

BNYCVP01.C43 0000216501 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Enter the maximum time, in minutes, for this device to wait to discharge a cake when the receiving device is full. Applies to Miltrac™ discharge. Configurable for *Linear Costa* only.

Display or Action	Explanation
0	default and minimum
99	maximum value

3.1.2.3.22 Generic Data

BNYCVP01.C44 0000216500 A.3 B.2 A.8 1/2/20, 2:22 PM Released

The configure decisions under the **Generic Data** section are used to specify the generic characteristics of the device. Only those data fields which apply to the specified device type are displayed. A data field which appears, but is not applicable based on one or more other configure decisions, is displayed as grayed out and inaccessible.

3.1.2.3.22.1 Maximum Number of Cakes

BNYCVP01.C45 0000216499 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Enter the total number of like loads that can be assimilated by this device into a single load; configurable for *Allied Dryer* and *Storage Belt* devices.

Display or Action	Explanation
1	minimum and default value
8	maximum value

3.1.2.3.22.2 Number of Storage Positions

BNYCVP01.C46 0000216498 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Enter the maximum number of separate cakes that this device can load without having to discharge. Configurable for Linear Costa only.

Display or Action	Explanation
1	minimum and default value
8	maximum value

3.1.2.3.22.3 Clear Belt Time

BNYCVP01.C47 0000216497 A.3 B.2 A.8 1/2/20, 2:22 PM Released

This time (seconds) should be set to completely clear the belt. This decision is configurable for all devices except *Allied Dryer*.

Display or Action	Explanation
0	default and minimum
255	maximum value

3.1.2.3.22.4 Flag Down End

BNYCVP01.C48 0000216496 A.3 B.2 A.8 1/2/20, 2:22 PM Released

This decision applies only if Device Master is configured for the **Flag Down** option as explained in Section 3.1.1.1.2.2 : Flag Option, page 44 and specifies which end of this device will be used to drop the target. Configurable for *Dryer Unloader*, *Storage Belt*, *Linear Costa*, and *Non-storage Belt* devices.

Display or Action	Explanation
Load	the target drops at the **load** end of the device
Discharge	the target drops at the **discharge** end of the device

3.1.2.3.22.5 Extendable Belt

BNYCVP01.C49 0000216539 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Configurable for *Dryer Unloader*, *Storage Belt*, and *Non-storage Belt* devices, these devices may be equipped to extend during transfer. If selected, this option requires an additional 8-output/16-input board set to address 00H for the first eight devices, and to 80H for the second eight devices. Use this configure decision to specify how this belt is designed to extend.

Display or Action	Explanation
Does Not Extend	the belt does not extend
Extends to Load	the belt extends toward the **loading** device to receive a load
Extends to Unload	the belt extends toward the **receiving** device to discharge a load

3.1.2.4 Options

BNYCVP01.C50 0000216538 A.3 B.2 A.8 1/2/20, 2:22 PM Released

3.1.2.4.1 Allied Weight Reading

BNYCVP01.C51 0000216537 A.3 B.2 A.8 1/2/20, 2:22 PM Released

When this option is selected, an additional 8-output/16-input board is required which provides the allied data inputs for reading the weight from the loading device. The board address depends on the device number and equals 48H plus the device number for the first eight devices, or C8H plus the device number minus eight for the second eight devices. For example, set the board address to 48H for device 0, 49H for device 1, etc., up to 4FH for device 7. Set the board address to C8H for device 8, C9H for device 9, etc., up to CFH for device 15. This option is configurable for *Linear Costa* only.

3.1.2.4.2 Discharge Eye Loading Error

BNYCVP01.C52 0000216536 A.3 B.2 A.8 1/2/20, 2:22 PM Released

If this option is selected, the Device Master controller signals an error if the discharge eye is blocked during loading. This option is configurable for *Linear Costa* only.

3.1.2.4.3 Hold Receiving Device

BNYCVP01.C53 0000216535 A.3 B.2 A.8 1/2/20, 2:22 PM Released

If selected, this option allows this device, when empty, to take more cakes from its loading device while holding the receiving device until it is full. Otherwise, the receiving device will be released, even if it can take more cakes, when this device is empty. This option is configurable for *Dryer Unloader*, *Storage Belt*, *Linear Costa*, and *Non-storage Belt* devices.

3.1.2.4.4 Allied Data Passing

BNYCVP01.C54 0000216534 B.2 A.4 A.8 1/2/20, 2:22 PM Released

When this option, also known as **Expanded Data**, is selected, an additional output board is required to pass the allied data as specified by the allied data output assignments entered on the **System Configuration** display (see Section 3.1.1.3 : Allied Data Pass, page 45). The output board address depends on the device number and equals 12H plus the device number for the first eight devices, or 92H plus the device number minus eight for the second eight devices. For example, set the board address to 12H for device 0, 13H for device 1, etc., up to 19H for device 7. Set the board address to 92H for device 8, 93H for device 9, etc., up to 99H for device 15. This option is configurable for *Dryer Unloader*, Storage Belt, *Non-storage Belt*, *Linear Costa*, and *Allied Dryer* devices.

3.1.2.4.5 Allied Weight Passing

BNYCVP01.C55 0000216533 A.3 B.2 A.8 1/2/20, 2:22 PM Released

If selected, this option requires an additional output board to pass the allied weight as specified by the allied weight output format selected on the **System Configuration** display (see Section 3.1.1.2 : Allied Weight, page 44). The setting of the output board address depends on the device number and equals the sum of 52H plus the device number for the first eight devices (e.g., 52H for device 0, up to 59H for device 7), and D2H plus the device number minus eight for the second eight devices (e.g., D2H for device 8, up to D9H for device 15). This option is configurable for *Dryer Unloader*, *Storage Belt*, *Non-storage Belt*, *Linear Costa* and *Allied Dryer* devices.

3.1.2.4.6 Allied Compatibility

BNYCVP01.C56 0000216532 B.2 A.4 A.8 1/2/20, 2:22 PM Released

Configurable for *Storage Belt* and *Linear Costa* devices, this option applies to allied discharge only. See Section 3.1.2.5 : Allied Compatibility, page 56 for an explanation of how to configure **Allied Compatibility**.

Because a *Storage Belt* needs the **Finished Discharging** output to signal the allied receiving device when the discharge process is complete, the **Signal Belt Transfer Status** option must be enabled for the **Allied Compatibility** feature to work with a storage belt. Based on the **Allied Compatibility** data configuration, the storage belt will try to discharge two consecutive compatible loads to the allied receiving device before energizing the **Finished Discharging** output. After discharging the first cake from the storage belt, Device Master turns on the **Finished Discharging** output if, while loading the second cake onto the storage belt, the two cakes are determined to be incompatible.

The **Signal Belt Transfer Status** option is not applicable to *Linear Costa*, which uses its own **Finished Unloading** output in conjunction with the **Allied Compatibility** feature. Based on the **Allied Compatibility** data configuration, the *Linear Costa* belt will continue to pass consecutive compatible loads to the allied receiving device until either the belt is empty or the receiving device is full. *Linear Costa* uses the **Finished Unloading** output to signal the receiving device when the discharge process is complete.

3.1.2.4.7 Work with Compacting Belt

BNYCVP01.C57 0000216531 A.3 B.2 A.8 1/2/20, 2:22 PM Released

A compacting belt is usually a short belt installed vertically at the end of a Device Master-controlled belt, designed to bunch the goods together at the end of the belt. If selected, this option requires an additional 8-output/16-input board. Board address 0EH supports devices numbered 0 through 3; board address 0FH supports devices numbered 4 through 7; board address 8EH supports devices numbered 8 throught 11, board address 8FH supports devices numbered 12 through 15. The compacting belt option is configurable for *Storage Belt* and *Allied Hand Loader* devices.

3.1.2.4.8 Work with Sequencing Belt

BNYCVP01.C58 0000216530 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Select this option if this Device Master device discharges in conjuction with a sequencing belt. Configurable for *Dryer Unloader* and *Non-storage Belt* devices only; this option does not require additional boards.

3.1.2.5 Allied Compatibility

BNYCVP01.C59 0000216802 A.3 B.2 A.8 1/2/20, 2:22 PM Released

This configuration section is enabled when **Allied Compatibility** is selected under **Options**. Within the **Allied Compatibility** area, the user chooses which of the six data values will be used to determine compatibility. For two cakes to be compatible, each of the selected data values must be equivalent. See Section 3.1.1.3 : Allied Data Pass, page 45 for a complete description of each type of goods data.

3.1.3 Quick Reference to Configuration Decisions

BNYCVP01.C60 0000216800 A.3 B.2 A.8 1/2/20, 2:22 PM Released

Figure 38. Quick Reference to Configuration Decisions

Parameters and Values/Ranges

Configure Decision	0 Dryer Unloader Belt	1 Storage Belt	2 Non-storage Belt	3 Allied Dryer Controller	4 Allied Hand Loader	5 Feeder Belt	6 Sequencing Belt	7 Linear Costa Belt	Range	Applicability
Device Type	0	1	2	3	4	5	6	7	0 - 7	
Load Type	0	0	0	•	1	0	0	•	0=Miltrac; 1=Allied	
Loading Level	•	•	•	•	n/a	0	0	•	0 - 7	Miltrac Loading Only
Direction For Load Device	•	•	•	•	0	0	0	•	0=Forward; 1=Backward	Miltrac Loading Only
Time After Trailing Edge in 10ths	n/a	n/a	n/a	n/a	n/a	n/a	n/a	•	0 - 99 tenths of a second	Miltrac or Allied Loading
Hold Loader When Belt Is Full	n/a	n/a	n/a	n/a	n/a	n/a	n/a	•	0 - 99 minutes	Miltrac Loading Only
Loading On Time	•	•	n/a	n/a	•	0	0	n/a	0 - 255 seconds	
Loading Off Time	•	•	n/a	n/a	•	0	0	n/a	0 - 255 seconds	
Number Of Load Sequences	•	•	n/a	n/a	•	0	0	n/a	0 - 99	
Delay Before Run	•	•	n/a	n/a	•	0	0	n/a	0 - 255 seconds	
Compacting Time	n/a	•	n/a	n/a	•	n/a	n/a	n/a	0 - 255 seconds	Compacting Belt Option
Discharge Type	•	•	•	•	0	1	1	•	0=Miltrac; 1=Allied	
Discharge Level	•	•	•	0	0	n/a	n/a	•	0 - 7	Miltrac Discharge Only
Discharge Direction	•	0	•	0	n/a	0	0	n/a	0=Forward; 1=Backward	Allied Discharge Only
Direction For Receiving Device	•	•	•	0	0	n/a	n/a	•	0=Forward; 1=Backward	Miltrac Discharge Only
Run Time After Discharge	•	•	n/a	n/a	•	0	0	•	0 - 255 seconds	Miltrac or Allied Discharge
Sequencing On Time	•	n/a	•	n/a	n/a	n/a	n/a	n/a	0 - 255 seconds	Sequencing Belt Option
Sequencing Off Time	•	n/a	•	n/a	n/a	n/a	n/a	n/a	0 - 255 seconds	Sequencing Belt Option
Optimum Number Of Cakes To Unload	n/a	n/a	n/a	n/a	n/a	n/a	n/a	•	1 - (Total Storage)	Miltrac or Allied Discharge
Wait To Unload Less Than Optimum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	•	0 - 99 minutes	Miltrac or Allied Discharge
Wait For Receive Device Time	n/a	n/a	n/a	n/a	n/a	n/a	n/a	•	0 - 99 minutes	Miltrac Discharge Only
Maximum Number Of Cakes/ Number Of Storage Positions	1	•	1	•	1	1	1	•	1 - 8	
Clear Belt Time	•	•	•	0	•	•	•	•	0 - 255 seconds	Miltrac or Allied
Flag Down End	•	•	•	0	n/a	0	0	•	0=Load; 1=Discharge	Flag Option Only
Extendable Belt	•	•	•	0	0	0	0	n/a	0=No; 1=Load; 2=Disch	Miltrac or Allied
Allied Weight Reading	n/a	n/a	n/a	n/a	n/a	n/a	n/a	•	0=No; 1=Yes	Allied Loading only
Discharge Eye Loading Error	n/a	n/a	n/a	n/a	n/a	n/a	n/a	•	0=No; 1=Yes	Miltrac or Allied
Hold Receiving Device	•	•	•	0	0	0	0	•	0=No; 1=Yes	Miltrac Discharge Only
Allied Data Passing	•	•	•	•	0	0	0	•	0=No; 1=Yes	Miltrac or Allied Discharge
Allied Weight Passing	•	•	•	•	0	0	0	•	0=No; 1=Yes	Miltrac or Allied Discharge
Allied Compatibility	0	•	0	0	0	0	0	•	0=No; 1=Yes	Miltrac or Allied Discharge
Work With Compacting Belt	0	•	0	0	•	0	0	n/a	0=No; 1=Yes	Miltrac or Allied Discharge
Work With Sequencing Belt	•	0	•	0	0	0	0	n/a	0=No; 1=Yes	Miltrac Discharge Only

Legend

1. A bullet (•) indicates that this parameter is configurable.
2. A numeric entry indicates a fixed value for this parameter.
3. A “n/a” entry indicates that this parameter is not applicable.

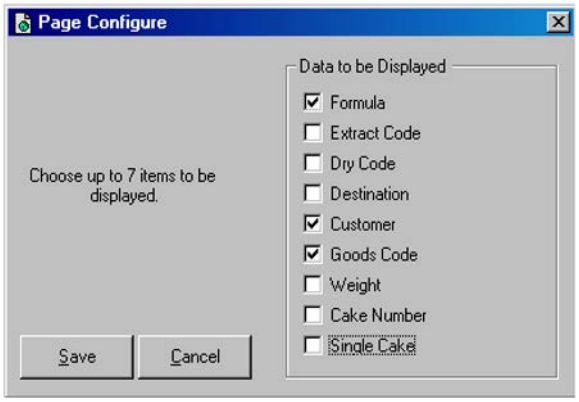
3.1.4 Pages Configuration

BNYCVP01.C61 0000216797 B.2 A.4 A.8 1/2/20, 2:22 PM Released

Access the **Pages Configuration** screen from the Device Master main display, as shown in Figure 33: Displaying the System Configuration Screen, page 41 . The **Pages** sub-menu (Figure 39,

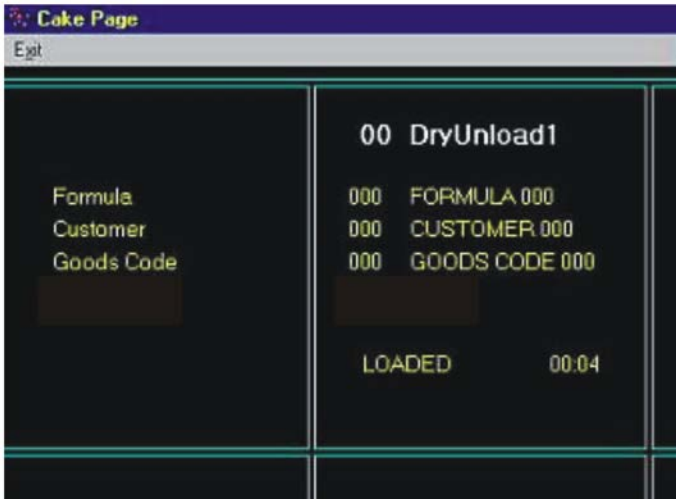
page 57) allows an authorized operator to select which of the nine available data fields will be displayed on the **Cake page**. Select each field to be displayed as shown in Figure 40, page 57.

Figure 39. Typical Pages Configuration



The **Cake Page** displays the selected data for the goods on each device, as specified by the **Pages** configuration.

Figure 40. Cake Page Display



4 Hardware

4.1 Component Descriptions

Table 8. Objective and Supported Communication Protocols

Device Name	Objective	Protocol for Loading (Receiving)	Protocol for Unloading (Discharging)
Dryer Unloader	receives and stores goods discharged from one or more Milnor® dryers	Miltrac™	Miltrac™ or allied
Storage Belt	receives and stores goods discharged from a Milnor® device	Miltrac™	Miltrac™ or allied
Non-storage Belt	receives, but does not store, goods discharged from a Milnor® device	Miltrac™	Miltrac™ or allied
Allied Dryer	provides a Miltrac™ interface for a non-Milnor® dryer	Miltrac™ or allied	Miltrac™ or allied
Allied Hand Loader	a manually loaded device which discharges to a Milnor® device	Operator	Miltrac™
Feeder Belt	receives and stores goods discharged from a Milnor® device for manual unloading	Miltrac™	Operator
Sequencing Belt	receives and stores goods discharged from a Device Master device for manual unloading	Miltrac™	Operator
Linear Costa	receives and stores up to eight separate cakes from a Milnor® or non-Milnor® device	Miltrac™ or allied	Miltrac™ or allied

Table 9. Run Direction and Photoeyes

Device Name	Runs One or Two Directions	Load End Photoeye	Discharge End Photoeye	Additional Photoeyes
Dryer Unloader	Two directions	Yes	Yes	No
Storage Belt	One direction	Yes	Yes	No
Non-storage Belt	Two directions	No	No	No
Dryer Handler	n/a	No	No	No
Allied Hand Loader	One direction	No	Yes	No
Feeder Belt	One direction	Yes	Yes	No

Table 9 Run Direction and Photoeyes (cont'd.)

Device Name	Runs One or Two Directions	Load End Photoeye	Discharge End Photoeye	Additional Photoeyes
Sequencing Belt	One direction	Yes	Yes	Yes
Linear Costa	Two directions	Yes	Yes	No

Table 10. Allied Communication and Associated Belts

Device Name	Passes Allied Batch Data	Passes Allied Weight Data	Compatible with Sequencing Belt	Optional Extend-able Belt	Optional Com-pacting Belt
Dryer Unloader	Yes	Yes	Yes	Yes	No
Storage Belt	Yes	Yes	No	Yes	Yes
Non-storage Belt	Yes	Yes	Yes	Yes	No
Dryer Handler	Yes	Yes	No	No	No
Allied Hand Loader	No	No	No	No	Yes
Feeder Belt	No	No	No	No	No
Sequencing Belt	No	No	No	No	No
Linear Costa	Yes	Yes	No	No	No

BNYCVF10 / 2019052 BNYCVF10 0000217268 A.8 1/2/20, 2:22 PM Released

4.2 Hardware Requirements

BNYCVF10.C01 0000217284 A.3 B.2 A.8 1/2/20, 2:22 PM Released

4.2.1 System Requirements

BNYCVF10.C02 0000217283 B.2 A.4 A.8 1/2/20, 2:22 PM Released

All Devices Every Device Master controller system must have one 8-output/16-input board at address 01h. Refer to Section 6.1.4 : Assigning Board Addresses, page 104.

NOTICE: In any Device Master system, containing up to 16 devices, only one board is allowed at any address. For example, if a Device Master system comprises five devices, there will be one board at address 01h. There may be additional boards, but each will occupy a unique address.

4.2.2 Additional Requirements for Certain Devices

BNYCVF10.C03 0000217282 B.2 A.4 A.8 1/2/20, 2:22 PM Released

1. A Device Master controller which is configured for one to 16 devices requires one 8-output/16-input board set to address 02h if at least one device numbered 0 through 3 is configured as a belt (*Dryer Unloader*, *Storage*, *Non-storage*, *Feeder*, *Linear Costa*, or *Sequencing*).
2. A Device Master controller which is configured for five to 16 devices requires one 8-output/16-input board set to address 03h if at least one device numbered 4 through 7 is configured as a belt (*Dryer Unloader*, *Storage*, *Non-storage*, *Feeder*, *Linear Costa*, or *Sequencing*).
3. A Device Master controller which is configured from one to 16 devices always requires one 8-output/16-input board set to address 04h.

4. A Device Master controller which is configured from nine to 16 devices requires one 8-output/16-input board set to address 81h if at least one device numbered 8 through 11 is configured as a *Dryer Unloader*, *Storage*, *Non-storage*, or *Linear Costa belt*, **and** configured for allied discharge, or if device 13 or 14 is configured as a *Sequencer.*
5. A Device Master controller which is configured from nine to 16 devices requires one 8-output/16-input board set to address 82h if at least one device numbered 8 through 11, is configured as a belt (*Dryer Unloader*, *Storage*, *Non-storage*, *Feeder*, *Sequencer*, or *Linear Costa*).
6. A Device Master controller which is configured from 13 to 16 devices requires one 8-output/16-input board set to address 83h if at least one device numbered 12 through 15 is configured as a belt (*Dryer Unloader*, *Storage*, *Non-storage*, *Feeder*, *Sequencer*, or *Linear Costa*).
7. A Device Master controller which is configured from nine to 16 devices always requires one 8-output/16-input board set to address 84h.
8. Each Device Master-controlled device which is configured as an *Allied Dryer* or as an *Allied Hand Loader* requires a separate 8-output/16-input board. The specific address of this board depends on its device number in the Device Master system, as shown in Table 11, page 60.
9. Each Device Master-controlled device which is configured as a *Linear Costa* with allied interface requires two separate 8-output/16-input board. The specific address of these boards depends on the device number in the Device Master system, as shown in Table 12, page 60.

Table 11. Addresses for Allied Dryer and Allied Hand Loader Devices

Device Type	Device Number															
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Allied Dryer Allied Hand Loader	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	86h	87h	88h	89h	8Ah	8Bh	8Ch	8Dh

Table 12. Addresses for Linear Costa Device with Allied Interface

Device Type	Device Number															
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Linear Costa	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	86h	87h	88h	89h	8Ah	8Bh	8Ch	8Dh
	40h	41h	42h	43h	44h	45h	46h	47h	C0h	C1h	C2h	C3h	C4h	C5h	C6h	C7h

4.2.3 Requirements for Options

BNYCVF10.C04 0000217281 B.2 A.4 A.8 1/2/20, 2:22 PM Released

Allied Data Passing option One 24-output board is required for each device employing the **Allied Data Passing** option. See Table 13, page 60 for the address of this board for each valid device number.

Table 13. Board Addresses for Allied Data and Allied Weight Passing

Option	Device Number															
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Allied Data Passing	12h	13h	14h	15h	16h	17h	18h	19h	92h	93h	94h	95h	96h	97h	98h	99h
Allied Weight Passing	52h	53h	54h	55h	56h	57h	58h	59h	D2h	D3h	D4h	D5h	D6h	D7h	D8h	D9h

Allied Weight Passing option One 24-output board is required for each device employing the **Allied Weight Passing** option. See Table 13, page 60 for the address of this board for each valid device number.

Allied Weight Reading option One 8-output/16-input board is required for each device employing the **Allied Weight Reading** option. This option is available for *Linear Costa* devices only. See Table 14, page 61 for the address of this board for each valid device number.

Table 14. Board Addresses for Allied Weight Reading

Device Type	Device Number															
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Allied Weight Reading	48h	49h	4Ah	4Bh	4Ch	4Dh	4Eh	4Fh	C8h	C9h	CAh	CBh	CCh	CDh	CEh	CFh

Compacting Belt option One 8-output/16-input board at address 0Eh is required if one or more devices numbered 0 through 3 are configured to use a compacting belt. One 8-output/16-input board at adderss 0Fh is required if one or more devices numbered 4 through 7 are configured to use a compacting belt. One 8-output/16-input board at address 8Eh is required if one or more devices numbered 8 through 11 are configured to use a compacting belt. One 8-output/16-input board at address 8Fh is required if one or more devices numbered 12 through 15 are configured to use a compacting belt. This option is available on *Storage belt* and *Allied Hand Loader* devices only.

Extendable Belt option One 8-output/16-input board at address 00h is required if one or more devices numbered 0 through 7 are configured as an extendable belt. One 8-output/16-input board at address 80h is required if one or more devices numbered 8 through 15 are configured as an extendable belt. This option is available on *Dryer Unloader*, *Storage belt* and *Non-storage belt* devices only.

Flag option A Device Master controller configured for the **Flag** option requires one 8-output/16-input board set to address 05h for devices numbered 0 through 7, and a second 8-output/16-input board set to address 85h for devices numbered 8 through 15. This board is not required for the *Allied Hand Loader* device, which provides its own **Flag Down** signal as a standard output.

Signal Belt Transfer Status option This option is configured on the **Configure/System** screen and applies only to *Dryer Unloader*, *Storage belt*, and *Non-storage belt* devices. One 24-output board at address 1Ah for devices numbered 0 through 7, and a second 24-output board at address 9Ah for devices numbered 8 through 15, is required if this option is enabled.

Signal option This option includes the **Load Waiting** signal and the **Goods Different from Last** signal. One 24-output board at address 11h for devices numbered 0 through 7, and a second 24-output board at address 91h for devices numbered 8 through 15, is required if the Device Master system is configured for the **Signal** option. This option is configured on the **Configure/System** screen and applies to all devices except *Allied Hand Loader* and *Linear Costa.*

4.2.4 Quick Reference Tables

BNYCVF10.R01 0000217315 B.2 A.6 A.8 1/2/20, 2:22 PM Released

Table 15. Features by Hardware Address

Board Address	Implementation
01h	all devices
02h	Dryer Unloader, Storage Belt, Non-storage Belt, Feeder Belt, Sequencing Belt, or Linear Costa with device number 0 through 3
03h	Dryer Unloader, Storage Belt, Non-storage Belt, Feeder Belt, Sequencing Belt, or Linear Costa with device number 4 through 7
04h	All devices numbered 0 through 7
05h	Flag option for devices numbered 0 through 7
06h through 0Dh	Allied Dryer, Allied Hand Loader, or Linear Costa with allied interface, for devices numbered 0 through 7
11h	Signal option (Load Waiting and Goods Different) for devices numbered 0 through 7
12h through 19h	Allied Data Pass option for devices numbered 0 through 7
1Ah	Signal Belt Transfer Status option (Finished Discharging) for device numbers 0 through 7
0Eh	Compacting Belt option on device number 0 through 3
0Fh	Compacting Belt option on device number 4 through 7
52h through 59h	Allied Weight Passing option for device numbers 0 through 7
40h through 47h	Linear Costa with allied interface for device numbers 0 through 7
48h through 4Fh	Allied Weight Reading option for device number 0 through 7
00h	Extendable Belt option for device number 0 through 7
81h	Dryer Unloader, Storage Belt, Non-storage Belt, or Linear Costa with device number 8 through 11 and allied discharge, or Sequencing belt with device number 13 or 14
82h	Dryer Unloader, Storage Belt, Non-storage Belt, Feeder Belt, Sequencing Belt, or Linear Costa with device number 8 through 11
83h	Dryer Unloader, Storage Belt, Non-storage Belt, Feeder Belt, Sequencing Belt, or Linear Costa with device number 12 through 15
84h	All devices numbered 8 through 15
85h	Flag option for device number 8 through 15
86h through 8Dh	Allied Dryer, Allied Hand Loader, or Linear Costa with allied interface, for device number 8 through 15
91h	Signal option (Load Waiting and Goods Different) for device number 8 through 15
92h through 99h	Allied Data Pass option for device number 8 through 15
9Ah	Signal Belt Transfer Status option (Finished Discharging) for device number 8 through 15

Table 15 Features by Hardware Address (cont'd.)

Board Address	Implementation
8Eh	Compacting Belt option for device number 8 through 11
8Fh	Compacting Belt option for device number 12 through 15
D2h through D9h	Allied Weight Passing option for device number 8 through 15
C0h through C7h	Linear Costa with allied interface for device number 8 through 15
C8h through CFh	Allied Weight Reading option for device number 8 through 15
80h	Extendable Belt option for device number 8 through 15

Table 16, page 63 and Table 17, page 64 list the hardware addresses for the features available on each type of device.

Table 16. Hardware Addresses for Features (Device Numbers 0 through 7)

Feature	Device Type								Device Number								Notes
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7	
Basic	*	*	*	*	*	*	*	*	01h								
Basic	*	*	*			*	*	*	02h				03h				
Allied Discharge	*	*	*					*	01h				04h				Discharge Desired
Basic	*	*	*	*	*	*	*	*	04h								
Flag Option	*	*	*	*		*	*		05h								
Special Application				*	*			*	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	
Compacting Belt		*			*				0Eh				0Fh				
Extendable Belt	*	*	*						00h								
Signal Option	*	*	*	*		*	*		11h								Load Waiting & Goods Different
Allied Data Passing	*	*	*	*				*	12h	13h	14h	15h	16h	17h	18h	19h	Expanded Data
Signal Belt Transfer Status	*	*	*						1Ah								Finished Discharging
Linear Costa Allied								*	40h	41h	42h	43h	44h	45h	46h	47h	
Allied Weight Reading								*	48h	49h	4Ah	4Bh	4Ch	4Dh	4Eh	4Fh	
Allied Weight Passing	*	*	*	*				*	52h	53h	54h	55h	56h	57h	58h	59h	
Legend				*	= requires board at this address for this feature in this device type												
(blank)					= feature not applicable to this device type												

Table 17. Hardware Addresses for Features (Device Numbers 8 through 15)

Feature	Device Type								Device Number								Notes
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Basic	*	*	*	*	*	*	*	*	01h								
Basic	*	*	*			*	*	*	82h				83h				
Allied Discharge	*	*	*					*	81h				84h				Discharge Desired
Basic	*	*	*	*	*	*	*	*	84h								
Flag Option	*	*	*	*		*	*		85h								
Special Application				*	*			*	86h	87h	88h	89h	8Ah	8Bh	8Ch	8Dh	
Compacting Belt		*			*				8Eh				0Fh				
Extendable Belt	*	*	*						80h								
Signal Option	*	*	*	*		*	*		91h								Load Waiting & Goods Different
Allied Data Passing	*	*	*	*				*	92h	93h	94h	95h	96h	97h	98h	99h	Expanded Data
Signal Belt Transfer Status	*	*	*						9Ah								Finished Discharging
Linear Costa Allied								*	C0h	C1h	C2h	C3h	C4h	C5h	C6h	C7h	
Allied Weight Reading								*	C8h	C9h	CAh	CBh	CCh	CDh	CEh	CFh	
Allied Weight Passing	*	*	*	*				*	D2h	D3h	D4h	D5h	D6h	D7h	D8h	D9h	
Legend				*	= requires board at this address for this feature in this device type												
(blank)					= feature not applicable to this device type												

5 Troubleshooting

5.1 Error Messages

Error messages inform the user when the Device Master controller detects a problem. Device-specific errors appear only on the **Cake Page** or the **State Page**, where they can be displayed in the appropriate device window. The system error **Three Wire Disabled** appears across the bottom of the **Cake Page**, **State Page**, or the Device Master main screen. The Manual page and Inputs and Outputs page are used to help in diagnosing input-related problems. Refer to Section 5.2 : Manual Operation, page 67 or Section 1.4 : Viewing Electronic Inputs and Outputs, page 25 for an explanation of these displays and how to use them.

5.1.1 Three-wire Disabled Error

This system error is displayed across the bottom of the **Cake Page**, the **State Page**, or the main page. The audible alarm sounds and the operator signal light is illuminated on the control panel. This error indicates that the three-wire input is not made, which means that all Device Master devices lost 120VAC control power. Loss of control power occurs when the **Stop** button is pressed or the three-wire circuit is interrupted in any way.

To correct this error, press the **Start** button to re-energize the three-wire circuit. All devices controlled by the Device Master controller will be initialized.

5.1.2 Device-specific Errors

The errors below may occur on individual devices controlled by Device Master, but do not affect the system as a whole. Device-specific errors appear only in the device window on the **Cake Page** or the **State Page**. The audible alarm sounds and the operator signal light on the control panel is illuminated. Press the **Signal Cancel** button () to clear the error and initialize only the device which reported the error.

5.1.2.1 01 No Transfer

During any transfer—whether loading or discharging—this error indicates that the photoeye did not detect a load where one was expected. Possible causes include a missing cake, a stationary belt, or a defective photoeye or photoeye input connection.

During a Miltrac™ transfer—loading or discharge—this error indicates that the mating device cancelled the transfer. Look for a missing cake, a stationary belt, problems with the photoeye, or problems with the mating device.

5.1.2.2 02 Not Reset

BNYCVT02.C05 0000216882 A.3 B.2 A.4 1/2/20, 2:22 PM Released

This error applies to *Allied Hand Loader* devices only, and indicates that the **Belt Loaded** and **Data Valid** inputs were still made after the belt finished discharging. Check these two inputs and the reset circuitry associated with them.

5.1.2.3 03 No Goods

BNYCVT02.C06 0000216881 A.3 B.2 A.4 1/2/20, 2:22 PM Released

This error applies to *Allied Hand Loader* devices only. It indicates that the photoeye did not detect a load on the belt after the device received the manual **Belt Loaded** signal (input). Possible causes include a missing cake, a stationary belt, or a defective photoeye or photoeye input connection.

5.1.2.4 04 Eye Blocked

BNYCVT02.C07 0000216880 A.3 B.2 A.4 1/2/20, 2:22 PM Released

This error indicates that the photoeye was still blocked after the belt finished discharging. Look for a blocked photoeye, a stationary belt, or a defective photoeye or photoeye input connection.

5.1.2.5 05 Transfer Aborted

BNYCVT02.C08 0000216902 A.3 B.2 A.4 1/2/20, 2:22 PM Released

This error applies to *Linear Costa* devices only, and indicates that a transfer was cancelled prior to completion of the loading or discharging process.

5.1.2.6 06 No Cake Passed

BNYCVT02.C09 0000216901 A.3 B.2 A.4 1/2/20, 2:22 PM Released

This error applies to *Linear Costa* devices only, and indicates that the photoeye failed to detect a cake while attempting to discharge.

5.1.2.7 07 Eye Loading Error

BNYCVT02.C10 0000216900 A.3 B.2 A.4 1/2/20, 2:22 PM Released

This error applies only to *Linear Costa* devices with the **Discharge Eye Loading Error** option enabled, and indicates that the discharge end photoeye was blocked during the loading process.

5.1.2.8 08 Cake Missing

BNYCVT02.C11 0000216899 A.3 B.2 A.4 1/2/20, 2:22 PM Released

This error applies to *Linear Costa* devices only, and indicates that after discharging a cake, the photoeye failed to detect the next cake on the belt when one was expected.

5.1.2.9 09 3-Wire Disabled

BNYCVT02.C12 0000216898 A.2 B.2 A.4 1/2/20, 2:22 PM Released

This error indicates a loss of control power to a specific device. This occurs whenever the three-wire circuit for this device is interrupted in any way. The device initializes when the three-wire circuit is reset.

5.1.2.10 10 Manual Mode Enabled

BNYCVT02.C13 0000216912 A.3 B.2 A.4 1/2/20, 2:22 PM Released

This message does not activate the audible alarm or operator signal, but serves to indicate when automatic operation is suspended for a specific device. The device initializes when the **Manual Mode** switch is returned to the **Automatic** position.

BNYCVT01 / 2019033 BNYCVT01 0000215259 A.5 1/2/20, 2:22 PM Released

5.2 Manual Operation

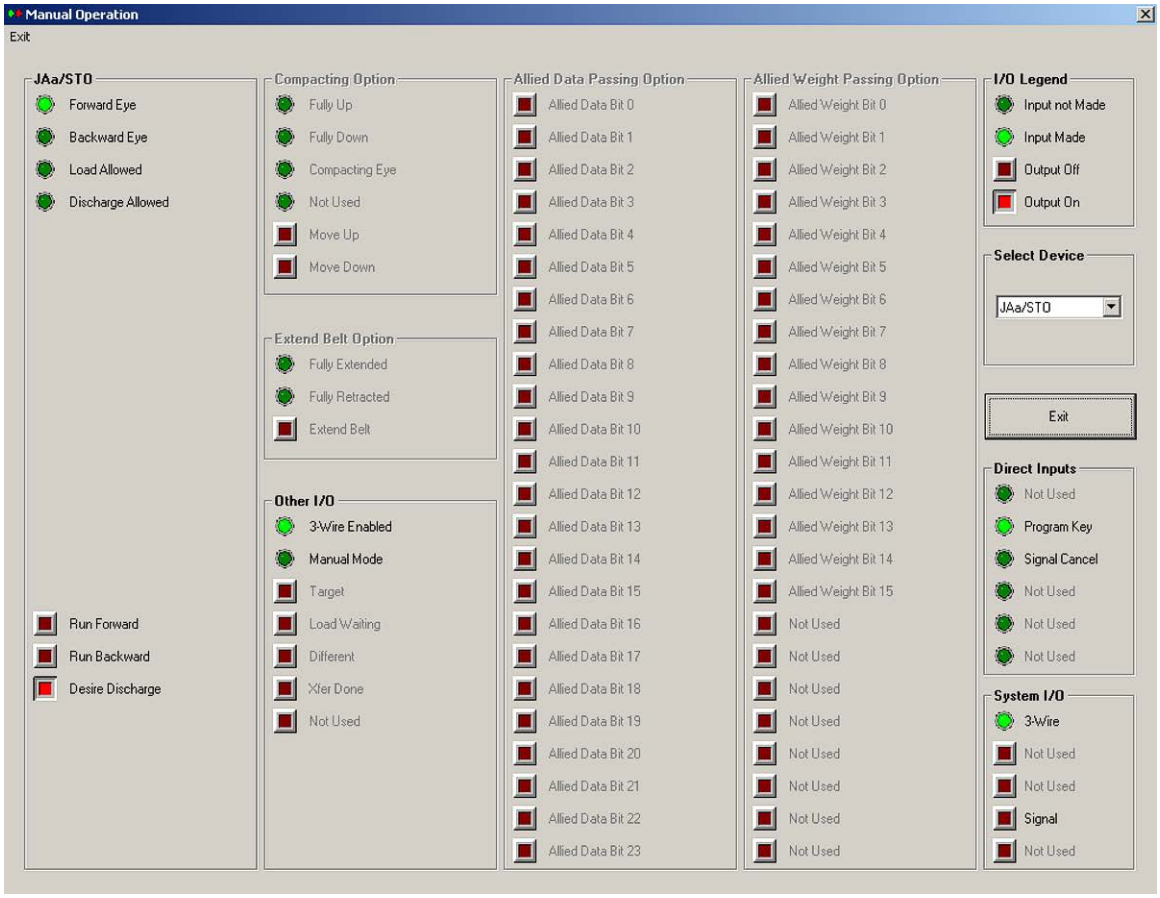
BNYCVT01.C01 0000215258 B.2 A.4 A.5 1/2/20, 2:22 PM Released

The Device Master software allows the operator to stop automatic operation and enter **manual mode** for testing and troubleshooting devices connected to the Device Master controller. With the controller software in **manual mode**, the status of individual inputs on each device can be verified through the display (see Section 5.2.4 : Monitoring Inputs, page 69), and outputs can be actuated individually while the operator observes the results. Details about manual actuation of outputs is in Section 5.2.5 : Actuating Outputs, page 70.

Display or Action	Explanation
Ctrl + M	stops automatic operation of the Device Master controller and accesses the **Manual Operation** screen (see Figure 41: Manual Operation Screen, page 68). This feature can also be accessed from the **View** menu, as shown in Figure 31: Typical Inputs/Outputs Display, page 26 .
	closes the **Manual Operation** screen and exits **Manual mode** to the main Device Master screen.

Figure 41: Manual Operation Screen, page 68 shows a typical **Manual Operation** screen. Green lights indicate input signals, and red buttons indicate output signals. Only those signals that apply to the selected device are displayed; if the device is not configured for a particular option or an option is not used, the signal name is grayed out. Positioning the mouse pointer over a valid input or output signal displays the board address and connection information.

Figure 41. Manual Operation Screen

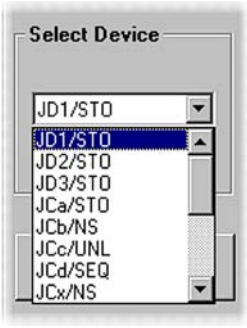


5.2.1 Selecting a Device to Test

BNYCVT01.C02 0000216834 A.3 B.2 A.5 1/2/20, 2:22 PM Released

Figure 42, page 68 shows an example of the **Select Device** drop-down list. Place the mouse cursor over the arrow and click the left button once to display a list of all devices configured on this controller. Highlight the desired device and click the mouse again to display the screen for the device. To view another screen, select another device from the list.

Figure 42. Select Device Region of Manual Operation Screen



5.2.2 Direct Inputs

BNYCVT01.C03 0000216832 A.3 B.2 A.5 1/2/20, 2:22 PM Released

Direct inputs are signals to the Device Master controller which are connected directly to the processor board rather than a peripheral board (e.g., an 8-input/16-output board).

5.2.2.1 Program Key

BNYCVT01.C04 0000216831 A.3 B.2 A.5 1/2/20, 2:22 PM Released

The **Program Key** input on the Device Master processor board is permanently grounded (always made), to facilitate changes to program memory on the processor board from the Device Master computer.

5.2.2.2 Signal Cancel

BNYCVT01.C05 0000216830 A.3 B.2 A.5 1/2/20, 2:22 PM Released

The **Signal Cancel** input is made directly from the **Signal Cancel** button on the control panel to the Device Master processor board; the wire from the button attaches directly to a connector on the processor board. While there may be connectors in the wire where it passes through control box walls, etc., there are no electronic components (relays, fuses, etc.) along the way.

5.2.3 System I/O

BNYCVT01.C06 0000216829 A.3 B.2 A.5 1/2/20, 2:22 PM Released

System inputs and outputs are general inputs and outputs that apply to the Device Master system, rather than a particular device.

5.2.3.1 3-wire

BNYCVT01.C07 0000216828 A.3 B.2 A.5 1/2/20, 2:22 PM Released

The **three-wire** input is active when the three-wire circuit is energized to supply 120VAC control power to all Device Master-controlled devices. The three-wire circuit is energized by pressing the **Start** button (①) on the operator control panel.

5.2.3.2 Signal

BNYCVT01.C08 0000216827 A.3 B.2 A.5 1/2/20, 2:22 PM Released

The **signal** output controls the operator alarm. When the **signal** output is actuated, the alarm sounds and the signal light on the control panel illuminates.

5.2.4 Monitoring Inputs

BNYCVT01.C09 0000216826 A.3 B.2 A.5 1/2/20, 2:22 PM Released

When the **Manual Operation** screen is displayed, all inputs that are grounded appear illuminated, and all inputs that are not grounded or are not used appear dark. The **I/O Legend** region in the upper right corner of the **Manual Operation** screen shows inputs in both states.

This screen is commonly used to verify that inputs to Device Master-controlled devices are functioning properly. As contacts and photoeyes are manually actuated at the remote device, the appropriate light on the Device Master **Manual Operation** screen illuminates. For example (see Figure 41: Manual Operation Screen, page 68), when the loading door of the dryer is closed, the **Load Door Closed** input light is normally on.

5.2.5 Actuating Outputs

BNYCVT01.C10 0000216845 A.3 B.2 A.5 1/2/20, 2:22 PM Released

The **Manual Operation** screen allows the user to turn outputs on and off while observing the system for proper operation. Outputs that are actuated appear depressed and illuminated, while outputs that are turned off appear raised and dark. The **I/O Legend** region in the upper right corner of the **Manual Operation** screen shows example outputs in both states.

BNYCVT03 / 2022362 BNYCVT03 0000216935 8/29/22, 9:40 AM Released

5.3 Electronic Inputs

BNYCVT03.C01 0000216934 A.3 B.2 1/2/20, 2:22 PM Released

5.3.1 Signal Cancel, Program Key, and Direct Inputs

BNYCVT03.C02 0000216933 A.3 B.2 1/2/20, 2:22 PM Released

Table 18. Microprocessor Board Inputs

MTA	Pin	Device	Function
MTA38	1	Direct inputs	Signal cancel
	2		Program key
	3		Program key
	4		Direct Input #4
	5		Direct Input #5
	6		Direct Input #6
MTA39	3		Direct Input #9
	4		Direct Input #8
	5		Direct Input #7
	6		Direct Input #12
	7		Direct Input #11
	8		Direct Input #10

5.3.2 Automatic/Manual, Sequencing Eye, and Three-wire

BNYCVT03.C03 0000216932 B.2 A.4 1/2/20, 2:22 PM Released

Table 19. 8-output/16-input Board at 01h Inputs

MTA	Pin	Light Number	Device	Function
01MTA4	1	0	not used	
	2	1		
	3	2		
	4	3		
	5	4		
	6	5	5	Auto/Manual
	7	6	6	Auto/Manual
	8	7	not used	

Table 19 8-output/16-input Board at 01h Inputs (cont'd.)

MTA	Pin	Light Number	Device	Function
	11	8		
	12	9		
	13	10		
	14	11		
	15	12		
	16	13	5	Sequencing Eye
	17	14	6	Sequencing Eye
	18	15	System Three-wire	

Table 20. 8-output/16-input Board at 81h Inputs

MTA	Pin	Light Number	Device	Function
81MTA4	1	0	not used	
	2	1		
	3	2		
	4	3		
	5	4		
	6	5	5	Auto/Manual
	7	6	6	Auto/Manual
	8	7	not used	
	11	8		
	12	9		
	13	10		
	14	11		
	15	12		
	16	13	5	Sequencing Eye
	17	14	6	Sequencing Eye
	18	15	not used	

5.3.3 Photo-eyes, Loading, and Discharging

BNYCVT03.C04 0000216931 A.3 B.2 1/2/20, 2:22 PM Released

Table 21. 8-output/16-input Board at 02h Inputs

MTA	Pin	Light Number	Device	Functions	
				Device Master Belt	Linear Costa Belt
02MTA4	1	0	0	Forward eye	Discharge end eye
	2	1		Backward eye	Load end eye
	3	2		Load allowed	In load position
	4	3		Discharge allowed	In discharge position

Table 21 8-output/16-input Board at 02h Inputs (cont'd.)

MTA	Pin	Light Number	Device	Functions	
				Device Master Belt	Linear Costa Belt
	5	4	1	Forward eye	Discharge end eye
	6	5		Backward eye	Load end eye
	7	6		Load allowed	In load position
	8	7		Discharge allowed	In discharge position
	11	8	2	Forward eye	Discharge end eye
	12	9		Backward eye	Load end eye
	13	10		Load allowed	In load position
	14	11		Discharge allowed	In discharge position
	15	12	3	Forward eye	Discharge end eye
	16	13		Backward eye	Load end eye
	17	14		Load allowed	In load position
	18	15		Discharge allowed	In discharge position

Table 22. 8-output/16-input Board at 03h Inputs

MTA	Pin	Light Number	Device	Functions	
				Device Master Belt	Linear Costa Belt
03MTA4	1	0	4	Forward eye	Discharge end eye
	2	1		Backward eye	Load end eye
	3	2		Load allowed	In load position
	4	3		Discharge allowed	In discharge position
	5	4	5	Forward eye	Discharge end eye
	6	5		Backward eye	Load end eye
	7	6		Load allowed	In load position
	8	7		Discharge allowed	In discharge position
	11	8	6	Forward eye	Discharge end eye
	12	9		Backward eye	Load end eye
	13	10		Load allowed	In load position
	14	11		Discharge allowed	In discharge position
	15	12	7	Forward eye	Discharge end eye
	16	13		Backward eye	Load end eye
	17	14		Load allowed	In load position
	18	15		Discharge allowed	In discharge position

Table 23. 8-output/16-input Board at 82h Inputs

MTA	Pin	Light Number	Device	Functions	
				Device Master Belt	Linear Costa Belt
82MTA4	1	0	8	Forward eye	Discharge end eye
	2	1		Backward eye	Load end eye
	3	2		Load allowed	In load position
	4	3		Discharge allowed	In discharge position
	5	4	9	Forward eye	Discharge end eye
	6	5		Backward eye	Load end eye
	7	6		Load allowed	In load position
	8	7		Discharge allowed	In discharge position
	11	8	10	Forward eye	Discharge end eye
	12	9		Backward eye	Load end eye
	13	10		Load allowed	In load position
	14	11		Discharge allowed	In discharge position
	15	12	11	Forward eye	Discharge end eye
	16	13		Backward eye	Load end eye
	17	14		Load allowed	In load position
	18	15		Discharge allowed	In discharge position

Table 24. 8-output/16-input Board at 83h Inputs

MTA	Pin	Light Number	Device	Functions	
				Device Master Belt	Linear Costa Belt
83MTA4	1	0	12	Forward eye	Discharge end eye
	2	1		Backward eye	Load end eye
	3	2		Load allowed	In load position
	4	3		Discharge allowed	In discharge position
	5	4	13	Forward eye	Discharge end eye
	6	5		Backward eye	Load end eye
	7	6		Load allowed	In load position
	8	7		Discharge allowed	In discharge position
	11	8	14	Forward eye	Discharge end eye
	12	9		Backward eye	Load end eye
	13	10		Load allowed	In load position
	14	11		Discharge allowed	In discharge position
	15	12	15	Forward eye	Discharge end eye
	16	13		Backward eye	Load end eye

Table 24 8-output/16-input Board at 83h Inputs (cont'd.)

MTA	Pin	Light Number	Device	Functions	
				Device Master Belt	Linear Costa Belt
	17	14		Load allowed	In load position
	18	15		Discharge allowed	In discharge position

5.3.4 Three-wire and Manual Mode

BNYCVT03.C05 0000216930 B.2 A.4 1/2/20, 2:22 PM Released

Table 25. 8-output/16-input Board at 04h Inputs

MTA	Pin	Light Number	Device	Function
04MTA4	1	0	0	Three-wire enabled
	2	1	1	
	3	2	2	
	4	3	3	
	5	4	4	
	6	5	5	
	7	6	6	
	8	7	7	
	11	8	0	Manual mode enabled
	12	9	1	
	13	10	2	
	14	11	3	
	15	12	4	
	16	13	5	
	17	14	6	
	18	15	7	

Table 26. 8-output/16-input Board at 84h Inputs

MTA	Pin	Light Number	Device	Function
84MTA4	1	0	8	Three-wire enabled
	2	1	9	
	3	2	10	
	4	3	11	
	5	4	12	
	6	5	13	
	7	6	14	
	8	7	15	
	11	8	8	Manual mode enabled
	12	9	9	
	13	10	10	

Table 26 8-output/16-input Board at 84h Inputs (cont'd.)

MTA	Pin	Light Number	Device	Function
	14	11	11	
	15	12	12	
	16	13	13	
	17	14	14	
	18	15	15	

5.3.5 Unused Inputs

BNYCVT03.C06 0000216989 A.3 B.2 1/2/20, 2:22 PM Released

Table 27. 8-output/16-input Board at 05h Inputs

MTA	Pin	Light Number	Device	Function
05MTA4	1	0	Inputs on this board are not used.	
	2	1		
	3	2		
	4	3		
	5	4		
	6	5		
	7	6		
	8	7		
	11	8		
	12	9		
	13	10		
	14	11		
	15	12		
	16	13		
	17	14		
	18	15		

Table 28. 8-output/16-input Board at 85h Inputs

MTA	Pin	Light Number	Device	Function
85MTA4	1	0	Inputs on this board are not used.	
	2	1		
	3	2		
	4	3		
	5	4		
	6	5		
	7	6		
	8	7		

Table 28 8-output/16-input Board at 85h Inputs (cont'd.)

MTA	Pin	Light Number	Device	Function
	11	8		
	12	9		
	13	10		
	14	11		
	15	12		
	16	13		
	17	14		
	18	15		

5.3.6 Device-specific Inputs

BNYCVT03.C07 0000216988 B.2 A.4 1/2/20, 2:22 PM Released

Table 29. Board Addresses for Dryer Handler, Allied Hand Loader, and Linear Costa Devices

Device Number	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Board Address	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	86h	87h	88h	89h	8Ah	8Bh	8Ch	8Dh

NOTE: Note 1: For inputs described in Table 30, page 76, the address selected for the board must correlate to the device number for the specific device in the Device Master system. The board address for each possible device number is shown in Table 29, page 76. In Table 30, page 76, the asterisk (*) preceding the MTA number represents the board address.

Table 30. 8-output/16-input Board at *h for Dryer Handler, Allied Hand Loader, and Linear Costa Devices

MTA	Pin	Light Number	Device	Function		
				Dryer Handler	Allied Hand Loader	Linear Costa
*MTA4	1	0	See Previous Note	Manual mode	Discharge eye	Goods code bit 0
	2	1		Load desired		Goods code bit 1
	3	2		Load door open		Goods code bit 2
	4	3		Load door closed	Discharge allowed	Goods code bit 3
	5	4		Discharge desired	Belt is loaded	Goods code bit 4
	6	5		Discharge door open	Data valid	Goods code bit 5
	7	6		Discharge door closed	Manual enable	Goods code bit 6
	8	7		Load allowed	Start jog	Goods code bit 7
	11	8		Discharge allowed	Wash code 0	Customer code bit 0
	12	9		Dryer is loaded	Wash code 1	Customer code bit 1
	13	10			Wash code 2	Customer code bit 2
	14	11			Wash code 3	Customer code bit 3
	15	12			Wash code 4	Customer code bit 4

Table 30 8-output/16-input Board at *h for Dryer Handler, Allied Hand Loader, and Linear Costa Devices (cont'd.)

MTA	Pin	Light Number	Device	Function		
				Dryer Handler	Allied Hand Loader	Linear Costa
	16	13			Wash code 5	Customer code bit 5
	17	14			Wash code 6	Customer code bit 6
	18	15			Wash code 7	Customer code bit 7

5.3.7 Positioning and Compacting

BNYCVT03.C08 0000216987 A.3 B.2 1/2/20, 2:22 PM Released

Table 31. 8-output/16-input Board at 0Eh Inputs

MTA	Pin	Light Number	Device	Function
0EMTA4	1	0	0	Fully up
	2	1		Fully down
	3	2		Compacting eye
	4	3	not used	
	5	4	1	Fully up
	6	5		Fully down
	7	6		Compacting eye
	8	7	not used	
	11	8	2	Fully up
	12	9		Fully down
	13	10		Compacting eye
	14	11	not used	
	15	12	3	Fully up
	16	13		Fully down
	17	14		Compacting eye
	18	15	not used	

Table 32. 8-output/16-input Board at 0Fh Inputs

MTA	Pin	Light Number	Device	Function
0FMTA4	1	0	4	Fully up
	2	1		Fully down
	3	2		Compacting eye
	4	3	not used	
	5	4	5	Fully up

Table 32 8-output/16-input Board at 0Fh Inputs (cont'd.)

MTA	Pin	Light Number	Device	Function
	6	5		Fully down
	7	6		Compacting eye
	8	7	not used	
	11	8		Fully up
	12	9	6	Fully down
	13	10		Compacting eye
	14	11	not used	
	15	12		Fully up
	16	13	7	Fully down
	17	14		Compacting eye
	18	15	not used	

Table 33. 8-output/16-input Board at 8Eh Inputs

MTA	Pin	Light Number	Device	Function
8EMTA4	1	0		Fully up
	2	1	8	Fully down
	3	2		Compacting eye
	4	3	not used	
	5	4		Fully up
	6	5	9	Fully down
	7	6		Compacting eye
	8	7	not used	
	11	8		Fully up
	12	9	10	Fully down
	13	10		Compacting eye
	14	11	not used	
	15	12		Fully up
	16	13	11	Fully down
	17	14		Compacting eye
	18	15	not used	

Table 34. 8-output/16-input Board at 8Fh Inputs

MTA	Pin	Light Number	Device	Function
8FMTA4	1	0	12	Fully up
	2	1		Fully down
	3	2		Compacting eye
	4	3	not used	
	5	4	13	Fully up
	6	5		Fully down
	7	6		Compacting eye
	8	7	not used	
	11	8	14	Fully up
	12	9		Fully down
	13	10		Compacting eye
	14	11	not used	
	15	12	15	Fully up
	16	13		Fully down
	17	14		Compacting eye
	18	15	not used	

5.3.8 Extend and Retract

BNYCVT03.C09 0000216986 B.2 A.4 1/2/20, 2:22 PM Released

Table 35. 8-output/16-input Board at 00h Inputs

MTA	Pin	Light Number	Device	Function
00MTA4	1	0	0	Fully extended
	2	1		Fully retracted
	3	2	1	Fully extended
	4	3		Fully retracted
	5	4	2	Fully extended
	6	5		Fully retracted
	7	6	3	Fully extended
	8	7		Fully retracted
	11	8	4	Fully extended
	12	9		Fully retracted
	13	10	5	Fully extended
	14	11		Fully retracted
	15	12	6	Fully extended

Table 35 8-output/16-input Board at 00h Inputs (cont'd.)

MTA	Pin	Light Number	Device	Function
	16	13		Fully retracted
	17	14	7	Fully extended
	18	15		Fully retracted

Table 36. 8-output/16-input Board at 80h Inputs

MTA	Pin	Light Number	Device	Function
80MTA4	1	0	8	Fully extended
	2	1		Fully retracted
	3	2	9	Fully extended
	4	3		Fully retracted
	5	4	10	Fully extended
	6	5		Fully retracted
	7	6	11	Fully extended
	8	7		Fully retracted
	11	8	12	Fully extended
	12	9		Fully retracted
	13	10	13	Fully extended
	14	11		Fully retracted
	15	12	14	Fully extended
	16	13		Fully retracted
	17	14	15	Fully extended
	18	15		Fully retracted

5.3.9 Allied Interface Boards for Linear Costa Devices

BNYCVT03.C10 0000216985 B.2 8/25/22, 4:18 PM Released

Table 37. Allied Interface Board Addresses for Linear Costa Devices

Device Number	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Board Address	40h	41h	42h	43h	44h	45h	46h	47h	C0h	C1h	C2h	C3h	C4h	C5h	C6h	C7h

NOTE: For inputs described in Table 38, page 81 and Table 39, page 81, the address selected for the board must correlate to the device number for the specific device in the Device Master system. The board address for each possible device number is shown in Table 37, page 80. In Table 38, page 81 and Table 39, page 81, the asterisk (*) preceding the MTA number represents the board address.

Table 38. Linear Costa Inputs: 8-output/16-input Boards at 40h through 47h

MTA	Pin	Light Number	Device	Function
*MTA4	1	0	See Previous Note	Goods code bit 0
	2	1		Goods code bit 1
	3	2		Goods code bit 2
	4	3		Goods code bit 3
	5	4		Goods code bit 4
	6	5		Goods code bit 5
	7	6		Goods code bit 6
	8	7		Goods code bit 7
	11	8		Customer code bit 0
	12	9		Customer code bit 1
	13	10		Customer code bit 2
	14	11		Customer code bit 3
	15	12		Customer code bit 4
	16	13		Customer code bit 5
	17	14		Customer code bit 6
	18	15		Customer code bit 7

Table 39. Linear Costa Inputs: 8-output/16-input Boards at C0h through C7h

MTA	Pin	Light Number	Device	Function
*MTA4	1	0	See Previous Note	Dry code bit 0
	2	1		Dry code bit 1
	3	2		Dry code bit 2
	4	3		Dry code bit 3
	5	4		Destination bit 0
	6	5		Destination bit 1
	7	6		Destination bit 2
	8	7		Destination bit 3
	11	8		Get ready to Load
	12	9		Start loading
	13	10		Get ready to discharge
	14	11		Start discharge
	15	12		Single cake
	16	13		—
	17	14		—
	18	15		Allied transfer cancelled

5.3.10 Weight Reading Inputs for Linear Costa Devices

BNYCVT03.C11 0000216984 B.2 A.4 1/2/20, 2:22 PM Released

Table 40. Board Addresses for Passing Weight Data to Linear Costa Devices Device Number

Device Number	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Board Address	48h	49h	4Ah	4Bh	4Ch	4Dh	4Eh	4Fh	C8h	C9h	CAh	CBh	CCh	CDh	CEh	CFh

NOTE: For inputs described in Table 41, page 82 and Table 42, page 82, the address selected for the board must correlate to the device number for the specific Linear Costa device in the Device Master system. The board address for each possible device number is shown in Table 40, page 82. In Table 41, page 82 and Table 42, page 82, the asterisk (*) preceding the MTA number represents the board address.

Table 41. Linear Costa Weight Reading Inputs: 8-output/16-input Boards at 48h through 4Fh

MTA	Pin	Light Number	Device	Function
*MTA4	1	0	See Previous Note	Weight bit 0
	2	1		Weight bit 1
	3	2		Weight bit 2
	4	3		Weight bit 3
	5	4		Weight bit 4
	6	5		Weight bit 5
	7	6		Weight bit 6
	8	7		Weight bit 7
	11	8		Weight bit 8
	12	9		Weight bit 9
	13	10		Weight bit 10
	14	11		Weight bit 11
	15	12		Weight bit 12
	16	13		Weight bit 13
	17	14		Weight bit 14
	18	15		Weight bit 15

Table 42. Linear Costa Weight Reading Inputs: 8-output/16-input Boards at C8h through CFh

MTA	Pin	Light Number	Device	Function
*MTA4	1	0	See Previous Note	Weight bit 0
	2	1		Weight bit 1
	3	2		Weight bit 2
	4	3		Weight bit 3
	5	4		Weight bit 4

Table 42 Linear Costa Weight Reading Inputs: 8-output/16-input Boards at C8h through CFh (cont'd.)

MTA	Pin	Light Number	Device	Function
	6	5		Weight bit 5
	7	6		Weight bit 6
	8	7		Weight bit 7
	11	8		Weight bit 8
	12	9		Weight bit 9
	13	10		Weight bit 10
	14	11		Weight bit 11
	15	12		Weight bit 12
	16	13		Weight bit 13
	17	14		Weight bit 14
	18	15		Weight bit 15

BNYCVT04 / 2019052 BNYCVT04 0000217387 A.5 1/2/20, 2:22 PM Released

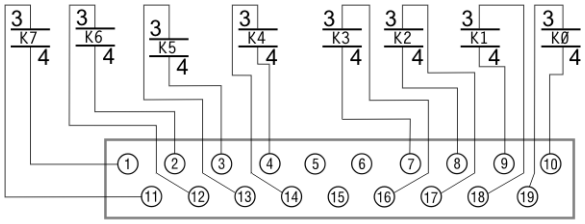
5.4 Electronic Outputs

BNYCVT04.C02 0000217414 A.3 B.2 A.5 1/2/20, 2:22 PM Released

5.4.1 Outputs on 8-output/16-input Boards

BNYCVT04.C01 0000217386 A.3 B.2 A.5 1/2/20, 2:22 PM Released

Figure 43. Circuit Diagram of Outputs on 8-output/16-input Board



MTA5

5.4.1.1 System Status and Discharge

BNYCVT04.C03 0000217413 A.3 B.2 A.5 1/2/20, 2:22 PM Released

Table 43. 8-output/16-input Board at 01h Outputs

MTA	Common Pin	Normally Open Pin	Output Light	Device Number	Device Master Belt	Linear Costa Belt
01MTA5	10	19	0	all	not used	
	9	18	1			
	8	17	2		System signal	
	7	16	3		not used	
	4	14	4	0	Discharge Desired	Discharge Flag Down

Table 43 8-output/16-input Board at 01h Outputs (cont'd.)

MTA	Common Pin	Normally Open Pin	Output Light	Device Number	Device Master Belt	Linear Costa Belt
	3	13	5	1	Discharge Desired	Discharge Flag Down
	2	12	6	2	Discharge Desired	Discharge Flag Down
	1	11	7	3	Discharge Desired	Discharge Flag Down

5.4.1.2 Run and Move Belts

BNYCVT04.C04 0000217412 A.3 B.2 A.5 1/2/20, 2:22 PM Released

Table 44. 8-output/16-input Board at 02h Outputs

MTA	Common Pin	Normally Open Pin	Output Light	Device Number	Device Master Belt	Linear Costa Belt
02MTA5	10	19	0	0	Run forward	Move belt forward
	9	18	1		Run reverse	Move belt rearward
	8	17	2	1	Run forward	Move belt forward
	7	16	3		Run reverse	Move belt rearward
	4	14	4	2	Run forward	Move belt forward
	3	13	5		Run reverse	Move belt rearward
	2	12	6	3	Run forward	Move belt forward
	1	11	7		Run reverse	Move belt rearward

Table 45. 8-output/16-input Board at 03h Outputs

MTA	Common Pin	Normally Open Pin	Output Light	Device Number	Device Master Belt	Linear Costa Belt
03MTA5	10	19	0	4	Run forward	Move belt forward
	9	18	1		Run reverse	Move belt rearward
	8	17	2	5	Run forward	Move belt forward
	7	16	3		Run reverse	Move belt rearward
	4	14	4	6	Run forward	Move belt forward
	3	13	5		Run reverse	Move belt rearward
	2	12	6	7	Run forward	Move belt forward
	1	11	7		Run reverse	Move belt rearward

Table 46. 8-output/16-input Board at 82h Outputs

MTA	Common Pin	Normally Open Pin	Output Light	Device Number	Device Master Belt	Linear Costa Belt
82MTA5	10	19	0	8	Run forward	Move belt forward
	9	18	1		Run reverse	Move belt rearward
	8	17	2	9	Run forward	Move belt forward
	7	16	3		Run reverse	Move belt rearward
	4	14	4	10	Run forward	Move belt forward
	3	13	5		Run reverse	Move belt rearward
	2	12	6	11	Run forward	Move belt forward
	1	11	7		Run reverse	Move belt rearward

Table 47. 8-output/16-input Board at 83h Outputs

MTA	Common Pin	Normally Open Pin	Output Light	Device Number	Device Master Belt	Linear Costa Belt
83MTA5	10	19	0	12	Run forward	Move belt forward
	9	18	1		Run reverse	Move belt rearward
	8	17	2	13	Run forward	Move belt forward
	7	16	3		Run reverse	Move belt rearward
	4	14	4	14	Run forward	Move belt forward
	3	13	5		Run reverse	Move belt rearward
	2	12	6	15	Run forward	Move belt forward
	1	11	7		Run reverse	Move belt rearward

5.4.1.3 Discharge Desired and Flag Down

BNYCVT04.C05 0000217411 A.3 B.2 A.5 1/2/20, 2:22 PM Released

Table 48. 8-output/16-input Board at 04h Outputs

MTA	Common Pin	Normally Open Pin	Output Light	Device Number	Device Master Belt	Linear Costa Belt
04MTA5	10	19	0	4	Discharge desired	Discharge flag down
	9	18	1	5	Discharge desired	Discharge flag down
	8	17	2	6	Discharge desired	Discharge flag down
	7	16	3	7	Discharge desired	Discharge flag down
	4	14	4	all	not used	
	3	13	5			
	2	12	6			
	1	11	7			

Table 49. 8-output/16-input Board at 05h Outputs

MTA	Common Pin	Normally Open Pin	Output Light	Device Number	Device Master Belt	Linear Costa Belt
05MTA5	10	19	0	0	Flag down	
	9	18	1	1	Flag down	
	8	17	2	2	Flag down	
	7	16	3	3	Flag down	
	4	14	4	4	Flag down	
	3	13	5	5	Flag down	
	2	12	6	6	Flag down	
	1	11	7	7	Flag down	

Table 50. 8-output/16-input Board at 81h Outputs

MTA	Common Pin	Normally Open Pin	Output Light	Device Number	Device Master Belt	Linear Costa Belt
81MTA5	10	19	0	all	not used	
	9	18	1			

Table 50 8-output/16-input Board at 81h Outputs (cont'd.)

MTA	Common Pin	Normally Open Pin	Output Light	Device Number	Device Master Belt	Linear Costa Belt
	8	17	2			
	7	16	3			
	4	14	4	8	Discharge desired	Discharge flag down
	3	13	5	9	Discharge desired	Discharge flag down
	2	12	6	10	Discharge desired	Discharge flag down
	1	11	7	11	Discharge desired	Discharge flag down

Table 51. 8-output/16-input Board at 84h Outputs

MTA	Common Pin	Normally Open Pin	Output Light	Device Number	Device Master Belt	Linear Costa Belt
84MTA5	10	19	0	12	Discharge desired	Discharge flag down
	9	18	1	13	Discharge desired	Discharge flag down
	8	17	2	14	Discharge desired	Discharge flag down
	7	16	3	15	Discharge desired	Discharge flag down
	4	14	4	all	not used	
	3	13	5			
	2	12	6			
	1	11	7			

Table 52. 8-output/16-input Board at 85h Outputs

MTA	Common Pin	Normally Open Pin	Output Light	Device Number	Device Master Belt	Linear Costa Belt
85MTA5	10	19	0	8	Flag down	
	9	18	1	9	Flag down	
	8	17	2	10	Flag down	
	7	16	3	11	Flag down	
	4	14	4	12	Flag down	
	3	13	5	13	Flag down	
	2	12	6	14	Flag down	
	1	11	7	15	Flag down	

5.4.1.4 Device-specific Outputs

BNYCVT04.C06 0000217506 A.3 B.2 A.5 1/2/20, 2:22 PM Released

NOTE: For outputs described in Table 54, page 87, Table 55, page 87, and Table 56, page 87, the address selected for the board must correlate to the device number for the specific device in the Device Master system. The board address for each possible device number is shown in Table 53, page 87. In Table 54, page 87, Table 55, page 87, and Table 56, page 87, the asterisk (*) preceding the MTA number represents the board address.

Table 53. Board Addresses for Dryer Handler, Linear Costa, and Allied Hand Loader Devices

Device Number	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Board Address	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	86h	87h	88h	89h	8Ah	8Bh	8Ch	8Dh

Table 54. 8-output/16-input Board at *h Outputs for Dryer Handler

MTA	Common Pin	Normally Open Pin	Output Light	Device	Function
*MTA5	10	19	0	See previous note	Allowed to load
	9	18	1		Dryer loaded
	8	17	2		Allowed to discharge
	7	16	3		Dry code 0
	4	14	4		Dry code 1
	3	13	5		Dry code 2
	2	12	6		Dry code 3
	1	11	7		Partial load

Table 55. 8-output/16-input Board at *h Outputs for Linear Costa Belt

MTA	Common Pin	Normally Open Pin	Output Light	Device	Function
*MTA5	10	19	0	See previous note	not used
	9	18	1		Want to load
	8	17	2		Ready to load
	7	16	3		Finished loading
	4	14	4		not used
	3	13	5		Want to discharge
	2	12	6		Ready to discharge
	1	11	7		Finished discharging

Table 56. 8-output/16-input Board at *h Outputs for Allied Hand Loader

MTA	Common Pin	Normally Open Pin	Output Light	Device	Function
*MTA5	10	19	0	See previous note	Finished loading
	9	18	1		not used
	8	17	2		Run reverse
	7	16	3		Run forward
	4	14	4		Load desired
	3	13	5		Flag down
	2	12	6		not used
	1	11	7		not used

5.4.1.5 Move Up and Move Down

BNYCVT04.C07 0000217575 A.3 B.2 A.5 1/2/20, 2:22 PM Released

Table 57. 8-output/16-input Board at 0Eh Outputs

MTA	Common Pin	Normally Open Pin	Output Light	Device	Function
0EMTA5	10	19	0	0	Move Up
	9	18	1		Move down
	8	17	2	1	Move Up
	7	16	3		Move down
	4	14	4	2	Move Up
	3	13	5		Move down
	2	12	6	3	Move Up
	1	11	7		Move down

Table 58. 8-output/16-input Board at 0Fh Outputs

MTA	Common Pin	Normally Open Pin	Output Light	Device	Function
0FMTA5	10	19	0	4	Move Up
	9	18	1		Move down
	8	17	2	5	Move Up
	7	16	3		Move down
	4	14	4	6	Move Up
	3	13	5		Move down
	2	12	6	7	Move Up
	1	11	7		Move down

Table 59. 8-output/16-input Board at 8Eh Outputs

MTA	Common Pin	Normally Open Pin	Output Light	Device	Function
8EMTA5	10	19	0	8	Move Up
	9	18	1		Move down
	8	17	2	9	Move Up
	7	16	3		Move down
	4	14	4	10	Move Up
	3	13	5		Move down
	2	12	6	11	Move Up
	1	11	7		Move down

Table 60. 8-output/16-input Board at 8Fh Outputs

MTA	Common Pin	Normally Open Pin	Output Light	Device	Function
8FMTA5	10	19	0	12	Move Up
	9	18	1		Move down
	8	17	2	13	Move Up

Table 60 8-output/16-input Board at 8Fh Outputs (cont'd.)

MTA	Common Pin	Normally Open Pin	Output Light	Device	Function
	7	16	3		Move down
	4	14	4	14	Move Up
	3	13	5		Move down
	2	12	6	15	Move Up
	1	11	7		Move down

5.4.1.6 Extend Belt

BNYCVT04.C08 0000217574 A.3 B.2 A.5 1/2/20, 2:22 PM Released

Table 61. 8-output/16-input Board at 00h Outputs

MTA	Common Pin	Normally Open Pin	Output Light	Device	Function
00MTA5	10	19	0	0	Extend belt
	9	18	1	1	
	8	17	2	2	
	7	16	3	3	
	4	14	4	4	
	3	13	5	5	
	2	12	6	6	
	1	11	7	7	

Table 62. 8-output/16-input Board at 80h Outputs

MTA	Common Pin	Normally Open Pin	Output Light	Device	Function
80MTA5	10	19	0	8	Extend belt
	9	18	1	9	
	8	17	2	10	
	7	16	3	11	
	4	14	4	12	
	3	13	5	13	
	2	12	6	14	
	1	11	7	15	

5.4.1.7 Dry Code and Destination Code for Linear Costa

BNYCVT04.C09 0000217573 B.2 A.4 A.5 1/2/20, 2:22 PM Released

NOTE: For outputs described in Table 64, page 90, the address selected for the board must correlate to the device number for the specific device in the Device Master system. The board address for each possible device number is shown in Table 63, page 90. In Table 64, page 90the asterisk (*) preceding the MTA number represents the board address.

Table 63. Board Addresses for Dry Code and Destination Code Data for Linear Costa Devices

Device Number	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Board Address	40h	41h	42h	43h	44h	45h	46h	47h	C0h	C1h	C2h	C3h	C4h	C5h	C6h	C7h

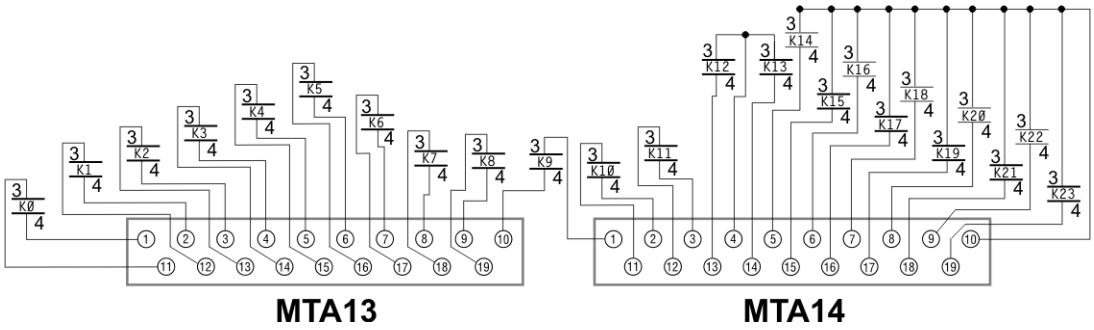
Table 64. 8-output/16-input Board at *h Outputs for Linear Costa Devices

MTA	Common Pin	Normally Open Pin	Output Light	Device	Function
*MTA5	10	19	0	See previous note	Dry code bit 0
	9	18	1		Dry code bit 1
	8	17	2		Dry code bit 2
	7	16	3		Dry code bit 3
	4	14	4		Destination code bit 0
	3	13	5		Destination code bit 1
	2	12	6		Destination code bit 2
	1	11	7		Destination code bit 3

5.4.2 Outputs on 24-output Boards

BNYCVT04.C10 0000217571 A.3 B.2 A.5 1/2/20, 2:22 PM Released

Figure 44. Circuit Diagram of Outputs on 24-Output Board



5.4.2.1 Load Waiting and Load Different

BNYCVT04.C11 0000217570 A.3 B.2 A.5 1/2/20, 2:22 PM Released

Table 65. 24-output Board at 11h Outputs

Common MTA and Pin		Normally Open MTA and Pin		Output Light	Device	Function
11MTA13	1	11MTA13	11	0	0	Load waiting
	2		12	1		Load different
	3		13	2	1	Load waiting
	4		14	3		Load different
	5		15	4	2	Load waiting
	6		16	5		Load different
	7		17	6	3	Load waiting
	8		18	7		Load different

Table 65 24-output Board at 11h Outputs (cont'd.)

Common MTA and Pin		Normally Open MTA and Pin		Output Light	Device	Function
	9		19	8	4	Load waiting
	10		1	9		Load different
	11		2	10	5	Load waiting
	12		3	11		Load different
	4		13	12	6	Load waiting
	4		14	13		Load different
	10		5	14	7	Load waiting
			15	15		Load different
11MTA14		11MTA14	6	16	not used	
			16	17		
			7	18		
			17	19		
			8	20		
			18	21		
			9	22		
			19	23		

Table 66. 24-output Board at 91h Outputs

Common MTA and Pin		Normally Open MTA and Pin		Output Light	Device	Function
	1		11	0	8	Load waiting
	2		12	1		Load different
	3		13	2	9	Load waiting
	4		14	3		Load different
	5	91MTA13	15	4	10	Load waiting
91MTA13	6		16	5		Load different
	7		17	6	11	Load waiting
	8		18	7		Load different
	9		19	8	12	Load waiting
	10		1	9		Load different
	11		2	10	13	Load waiting
	12		3	11		Load different
	4		13	12	14	Load waiting
	4	91MTA14	14	13		Load different
91MTA14	10		5	14	15	Load waiting
			15	15		Load different
			6	16	not used	
			16	17		
			7	18		

Table 66 24-output Board at 91h Outputs (cont'd.)

Common MTA and Pin		Normally Open MTA and Pin		Output Light	Device	Function
			17	19		
			8	20		
			18	21		
			9	22		
			19	23		

5.4.2.2 Done Unloading

BNYCVT04.C12 0000217609 B.2 A.4 A.5 1/2/20, 2:22 PM Released

Table 67. 24-output Board at 1Ah Outputs

Common MTA and Pin		Normally Open MTA and Pin		Output Light	Device	Function
1AMTA13	1	1AMTA13	11	0	0	Done unloading
	2		12	1	not used	
	3		13	2	1	Done unloading
	4		14	3	not used	
	5		15	4	2	Done unloading
	6		16	5	not used	
	7		17	6	3	Done unloading
	8		18	7	not used	
	9		19	8	4	Done unloading
	10	1AMTA14	1	9	not used	
1AMTA14	11		2	10	5	Done unloading
	12		3	11	not used	
	4		13	12	6	Done unloading
	4		14	13	not used	
	10		5	14	7	Done unloading
			15	15	not used	
			6	16		
			16	17		
			7	18		
			17	19		
			8	20		
			18	21		
			9	22		
			19	23		

Table 68. 24-output Board at 9Ah Outputs

Common MTA and Pin		Normally Open MTA and Pin		Output Light	Device	Function
9AMTA13	1	9AMTA13	11	0	8	Done unloading
	2		12	1	not used	
	3		13	2	9	Done unloading
	4		14	3	not used	
	5		15	4	10	Done unloading
	6		16	5	not used	
	7		17	6	11	Done unloading
	8		18	7	not used	
	9		19	8	12	Done unloading
	10	9AMTA14	1	9	not used	
9AMTA14	11		2	10	13	Done unloading
	12		3	11	not used	
	4		13	12	14	Done unloading
	4		14	13	not used	
	10		5	14	15	Done unloading
			15	15	not used	
			6	16		
			16	17		
			7	18		
			17	19		
			8	20		
			18	21		
			9	22		
			19	23		

5.4.2.3 Allied Data and Allied Weight

BNYCVT04.C13 0000217608 B.2 A.4 A.5 1/2/20, 2:22 PM Released

NOTE: For outputs described in Table 70, page 94 and Table 71, page 94, the address selected for the board must correlate to the device number for the specific device in the Device Master system. The board address for each possible device number is shown in Table 69, page 94. In Table 70, page 94 and Table 71, page 94 the asterisk (*) preceding the MTA number represents the board address.

Table 69. Board Addresses for Allied Data Passing and Allied Weight Passing

Device Number	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Allied Data Passing	12h	13h	14h	15h	16h	17h	18h	19h	92h	93h	94h	95h	96h	97h	98h	99h
Allied Weight Passing	52h	53h	54h	55h	56h	57h	58h	59h	D2h	D3h	D4h	D5h	D6h	D7h	D8h	D9h

Table 70. 24-output Board at *h Outputs for Allied Data Passing

Common MTA and Pin		Normally Open MTA and Pin		Output Light	Device	Function
*MTA13	1	*MTA13	11	0	See previous note	Allied Data Bit0
	2		12	1		Allied Data Bit1
	3		13	2		Allied Data Bit2
	4		14	3		Allied Data Bit3
	5		15	4		Allied Data Bit4
	6		16	5		Allied Data Bit5
	7		17	6		Allied Data Bit6
	8		18	7		Allied Data Bit7
	9		19	8		Allied Data Bit8
	10	*MTA14	1	9		Allied Data Bit9
*MTA14	11		2	10		Allied Data Bit10
	12		3	11		Allied Data Bit11
	4		13	12		Allied Data Bit12
	4		14	13		Allied Data Bit13
	10		5	14		Allied Data Bit14
			15	15		Allied Data Bit15
			6	16		Allied Data Bit16
			16	17		Allied Data Bit17
			7	18		Allied Data Bit18
			17	19		Allied Data Bit19
			8	20		Allied Data Bit20
			18	21		Allied Data Bit21
			9	22		Allied Data Bit22
			19	23		Allied Data Bit23

Table 71. 24-output Board at *h Outputs for Allied Weight Passing

Common MTA and Pin		Normally Open MTA and Pin		Output Light	Device	Function
*MTA13	1	*MTA13	11	0	See previous note	Weight Bit0
	2		12	1		Weight Bit1
	3		13	2		Weight Bit2

Table 71 24-output Board at *h Outputs for Allied Weight Passing (cont'd.)

Common MTA and Pin		Normally Open MTA and Pin		Output Light	Device	Function
	4		14	3		Weight Bit3
	5		15	4		Weight Bit4
	6		16	5		Weight Bit5
	7		17	6		Weight Bit6
	8		18	7		Weight Bit7
	9		19	8		Weight Bit8
	10		1	9		Weight Bit9
	11		2	10		Weight Bit10
	12		3	11		Weight Bit11
	4		13	12		Weight Bit12
	4		14	13		Weight Bit13
			5	14		Weight Bit14
			15	15		Weight Bit15
*MTA14		*MTA14	6	16		
			16	17		
			7	18		
	10		17	19		
			8	20		
			18	21		
			9	22		
			19	23		

6 Supplemental Information

6.1 Hardware Components of Serial Microprocessor Controllers

BNCEUF01.C01 0000217706 A.3 B.2 A.8 1/2/20, 1:12 PM Released

6.1.1 General

BNCEUF01.C02 0000217705 A.3 B.2 A.8 1/2/20, 1:12 PM Released

Milnor® serial microprocessor controls are designed specifically for Milnor® machines and systems. Along with certain external electromechanical relay logic and sensing devices, they control all machine and system functions. **Not every microprocessor controller includes all the components described in this section.**

6.1.2 Microprocessor Components

BNCEUF01.C03 0000217704 A.3 B.2 A.8 1/2/20, 1:12 PM Released

NOTE: This is a list of all components for Milnor® microprocessor controllers. Not every Milnor® microprocessor controller includes all of the following components.

6.1.2.1 Keypad or Keyboard

BNCEUF01.C04 0000217703 A.3 B.2 A.8 1/2/20, 1:12 PM Released

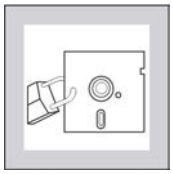
Depending upon the model and type of machine, the keypad may have 12, 30, or 58 buttons. The different keypads are not interchangeable.

6.1.2.2 Keyswitch

BNCEUF01.C05 0000217702 B.2 A.4 A.8 8/28/22, 2:22 PM Released

Selects run/program modes. The key may be removed only when the switch is set to the **Run** position.

CAUTION: **Prevent Unauthorized Programming —** To prevent unauthorized programming, store the programming key so that it is not available to unauthorized personnel. Improper programming can damage equipment and goods.



6.1.2.3 Display

BNCEUF01.C06 0000217701 B.2 A.4 A.8 1/2/20, 1:12 PM Released

Depending upon the type and model of machine, the display may be either liquid crystal, vacuum fluorescent, or cathode ray tube (CRT), which is a typical computer monitor. Different types of displays are not interchangeable.

Liquid Crystal Display This type of display is identified by dark green characters on a lighter gray background.

Vacuum fluorescent display The bright green characters on a black background make this display highly visible. This is the most common display for Milnor® washer-extractors, textile machines, and dryers.

Cathode ray tube (CRT) The CRT display resembles a television screen in appearance and function. This type of display is most commonly used in Miltrac™ and Mildata® systems, which require the display of graphics such as boxes and lines. It is also used on Milnor® CBW® tunnel washers.

6.1.2.4 Power Supply

BNCEUF01.C07 0000217700 B.2 A.5 A.8 1/2/20, 1:12 PM Released

The power supply converts the alternating current at the control circuit voltage to direct current voltages of 12 volts positive and negative, and 5 volts positive. One or more of these values are adjustable, depending on the specific power supply used in each application.

- The 12 volts positive is used to power all boards other than the microprocessor board. This value is not adjustable.
- The 12 volts negative is used by the analog to digital (A/D) board. This value is not adjustable.
- The 5 volts output powers the microprocessor. This value is adjustable and very sensitive. For devices using microprocessors other than the 80186, the power supply must be adjusted to provide actual voltage of 4.95VDC to 5.10VDC at the microprocessor board. Use an accurate digital voltmeter to measure this value. For devices with 80186 microprocessors, the power supply voltage should be 5.10VDC at the processor board.

A wire of at least 14AWG (2.5 sq mm) must be connected between the ground points on the microprocessor and the peripheral boards. This ground wire is installed at the factory if both enclosures are mounted on the same machine (e.g., washer-extractors). The ground wire must be provided during installation if the microprocessor enclosure and its associated peripheral board enclosures are remote from one another (e.g., dryers).

Some machines, including Milnor® dryers, employ a second identical power supply to provide power for the peripheral boards, which are mounted in an enclosure separate from the microprocessor enclosure.

6.1.2.5 Central Processing Unit (CPU) Board

BNCEUF01.C08 0000217699 B.2 A.5 A.8 1/2/20, 1:12 PM Released

Also referred to as the microprocessor, the central processing unit processes data received from the various inputs, stores information, and responds to each keypad entry with the appropriate action. It may be mounted in an enclosure separate from its peripheral boards. The CPU board contains EPROMs programmed by the Milnor® factory with fixed instructions (software) that

determine how the machine functions. Depending upon machine model/type, the processor chip may be one of three Intel models: the 8085, the 8088, or the 80186.

Although the EPROMs do not require battery backup, the CPU board utilizes a battery which normally provides power to retain the user-programmable memory for two to three months without external power.

6.1.2.6 Memory Expansion Board

BNCEUF01.C09 0000217698 A.3 B.2 A.8 1/2/20, 1:12 PM Released

Increases memory space available to the processor. This board is used with 8088 CPU boards in some applications.

6.1.2.7 Battery

BNCEUF01.C10 0000217743 A.3 B.2 A.8 1/2/20, 1:12 PM Released

Provides memory retention backup when power is off. The battery is mounted directly on 8085 CPU boards, and mounted separately for 8088 and 80186 CPU boards. A capacitor on the 8088 and 80186 CPU boards provides enough power to retain memory for several hours after the battery has been disconnected. Once fully charged, the battery backup is reliable for two to three months with no power applied.

6.1.2.8 Opto-Isolator Board

BNCEUF01.C11 0000217742 A.3 B.2 A.8 1/2/20, 1:12 PM Released

Optically isolates inputs to the microprocessor for electronic noise immunity. Opto-isolators are incorporated into the 8088 and 80186 CPU board; thus this separate board is only required for machines employing Intel 8085 CPUs.

6.1.2.9 Input/Output Board

BNCEUF01.C12 0000217741 B.2 A.4 A.8 1/2/20, 1:12 PM Released

The 16/8 input-output board contains 16 solid-state signal input devices and eight output relays. The input devices are capable of faithfully conducting a low VA 12VDC ground signal to the microprocessor. The output relays are socket-mounted SPDT, 12VDC electromechanical relays with contacts capable of faithfully conducting a maximum of 25VA at 110/120VAC (0.2 ampere or 200 milliamperes at 110/120VAC) or 12.5 VA at 24VAC (0.5 ampere or 500 milliamperes at 24VAC). The output will be either 24VAC or 110/120VAC, depending on the machine model/type.

These outputs and their power source are intended only to drive another relay with higher contact ratings, that in turn may drive a pump, valve, solenoid, etc., from a separate power source. Never use these outputs to directly drive a pump, valve, or solenoid unless the maximum current required never exceeds the above values. Higher ampere or VA loads will burn out traces on the printed circuit board or possibly overload and damage the control circuit transformer.

This board has 25 status lights. The amber light flashes when the board is communicating. Each of the 24 remaining lights represent an input (green lights) or output (red lights) on that board, and illuminates when the corresponding input or output is made. This board has two rotary dials which must be adjusted to set the board's address (see Section 6.1.4 : Assigning Board Addresses, page 104 in this document). This board also has convenient test points that can be used to test voltage to the board.

Standard input/output board used in all devices requiring input/output boards, except those listed below.

High-speed input/output board used only in the following devices and configurations: E6N, J6N, and T6N washer-extractors equipped with and configured for both variable basket speed and electronic balancing; Milrail configured for high-speed boards, and all configurations of the M7E centrifugal extractor.

6.1.2.10 Output Board

BNCEUF01.C13 0000217740 A.3 B.2 A.8 1/2/20, 1:12 PM Released

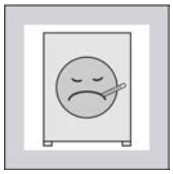
A 24-output board contains 24 output relays identical to those described in Section 6.1.2.9 : Input/Output Board, page 98.

6.1.2.11 CRT (Video Display) Board

BNCEUF01.C14 0000217739 B.2 A.5 A.8 8/28/22, 2:34 PM Released

Receives display instructions from the processor and generates the signals to the video monitor to create the desired displays; used in controllers such as the Miltron and Miltrac™ controllers and Device Master systems.

CAUTION: **Avoid Component Damage —** The CRT board can be installed backwards, even though the cabinet and bracketry makes this difficult, and labelling on the parent board states the proper orientation. Use care to orient the board correctly, otherwise microprocessor components may be damaged.



CBW® systems with the Mentor® controller use a standard computer video display adapter, housed within the Mentor® computer, to transmit signals from the Mentor® computer to the video monitor. Thus, Mentor® systems do not have a separate video display board as described here.

6.1.2.12 Resistor Boards

BNCEUF01.C15 0000217738 A.3 B.2 A.8 1/2/20, 1:12 PM Released

Although visually similar, resistor boards vary according to the application. The different types are clearly marked with part numbers, which are mentioned in the electrical schematic diagrams and are not interchangeable.

6.1.2.13 Temperature Probe

BNCEUF01.C16 0000217737 B.2 A.4 A.8 1/2/20, 1:12 PM Released

Thermistor temperature probes are temperature-sensitive resistors through which the resistance value changes with respect to the temperature of the surrounding medium (usually bath liquor). This type of device is used in washer-extractors, textile machines, and tunnel washers.

6.1.2.14 8 Output/16 Input Chemical Flow Meter Board

BNCEUF01.C17 0000217736 A.3 B.2 A.8 1/2/20, 1:12 PM Released

This board is used with the metered chemical injection option on textile machines. Eight outputs and eight counters respectively are assigned to chemical valves and chemical flow meters. Two

of the counters are non-isolated direct inputs to the microprocessor on this board and are capable of counting pulses of 0 to 5VDC at a frequency of up to 10kHz. The remaining six counters are optically isolated from the peripheral board microprocessor and are capable of counting pulses from 0 to 12VDC at a frequency up to 150 Hz.

6.1.3 Serial Communications Port

BNCEUF01.C18 0000217735 B.2 A.5 A.8 1/2/20, 1:12 PM Released

All Milnor® serial microprocessors have a serial port with a nine-pin receptacle and plug to communicate with other devices via one of several special serial cables. If supported by the software, downloading and printing of data is accomplished through this port. These actions are described in the programming section of this manual.

For more information on the various separate serial cables required for these functions, see Section 6.2 : Construction of External Serial Link Cables, page 106, if applicable.

Table 72. Board Application by Device (Part A)

Device		Board Name: CPU	Input/Output	Output	Analog to Digital	Digital to Analog	CRT	Opto-isolator	Temperature Sensing Resistor	Gas Valve Resistor	Steam Valve (4–20mA)	Thermocouple Signal Conditioner	Chemical Flow Meter	Rotation Safety	Weight Scale Interface
CBW® system*	Number	1	2		1		1								1
	Note(s)		+	1	9										5
Device Master*	Number	1	2				1								
	Note(s)		1	1											
Miltrac™*	Number	1					1								

Table 72 Board Application by Device (Part A) (cont'd.)

Device		CPU	Input/Output	Output	Analog to Digital	Digital to Analog	CRT	Opto-isolator	Temperature Sensing Resistor	Gas Valve Resistor	Steam Valve (4–20mA)	Thermocouple Signal Conditioner	Chemical Flow Meter	Rotation Safety	Weight Scale Interface
	Note(s)														
VERTSTO	Number	1	2				1								
	Note(s)														
Linear COSTA	Number	1	1												
	Note(s)		1												
Link Master	Number	1													
	Note(s)														
Textile*	Number	1	1	2	1	1			1		1				
	Note(s)				4								1		

Notes:

*	Intel 80186 central processing unit
1	Boards can be added for options
2	Used on steam dryers with temperature control, and all gas dryers
3	Used on washer-extractors with temperature option
4	Analog to digital boards vary according to application. See the descriptions of these boards elsewhere in this section
5	Required for weighing conveyors on tunnel washing systems

Table 72 Board Application by Device (Part A) (cont'd.)

Device	Board Name														
	CPU	Input/Output	Output	Analog to Digital	Digital to Analog	CRT	Opto-isolator	Temperature Sensing Resistor	Gas Valve Resistor	Steam Valve (4–20mA)	Thermocouple Signal Conditioner	Chemical Flow Meter	Rotation Safety	Weight Scale Interface
	•	•	•	•	•	•	•	•	•	•	•	•	•	•

6	Required for reuse/cooldown and/or overhead fill tanks on tunnel washing systems
7	Mark I washer-extractor control used Intel 8085 central processing unit
8	Notes 3 and 4 apply
9	One board required per each 8 modules (see also Notes 1, 4, 5, and 6)
10	Two boards required, plus one additional board per module

Table 73. Board Application by Device (Part B)

Device		Board Name													
		CPU	Input/Output	Output	Analog to Digital	Digital to Analog	CRT	Opto-isolator	Temperature Sensing Resistor	Gas Valve Resistor	Steam Valve (4–20mA)	Thermocouple Signal Conditioner	Chemical Flow Meter	Rotation Safety	Weight Scale Interface
COBUC	Number	1	2												
	Note(s)		1	1											
COSHA	Number	1	2												
	Note(s)		1												
Dryer	Number	1	2	1	1	1				1		1		1	
	Note(s)				4	2				2	2				
Extractor	Number	1	2	1											
	Note(s)		1	1											
Press	Number	1	2	1	1										
	Note(s)		1	1											
W/E (Mark I)	Number	1	1	1	1			1	1						
	Note(s)	7	1	1	8	1									
W/E (Mark II-VI)	Number	1	1	1	1	1			1					1	
	Note(s)		1	1	8	1									

Notes:

* Intel 80186 central processing unit

1 Boards can be added for options

Table 73 Board Application by Device (Part B) (cont'd.)

Device	CPU	Input/Output	Output	Analog to Digital	Digital to Analog	CRT	Opto-isolator	Temperature Sensing Resistor	Gas Valve Resistor	Steam Valve (4–20mA)	Thermocouple Signal Conditioner	Chemical Flow Meter	Rotation Safety	Weight Scale Interface
2														
3														
4														
5														
6														
7														
8														
9														
10														

Used on steam dryers with temperature control, and all gas dryers

Used on washer-extractors with temperature option

Analog to digital boards vary according to application. See the descriptions of these boards elsewhere in this section

Required for weighing conveyors on tunnel washing systems

Required for reuse/cooldown and/or overhead fill tanks on tunnel washing systems

Mark I washer-extractor control used Intel 8085 central processing unit

Notes 3 and 4 apply

One board required per each 8 modules (see also Notes 1, 4, 5, and 6)

Two boards required, plus one additional board per module

6.1.4 Assigning Board Addresses

BNCEUF01.C19 0000217781 B.2 A.4 A.8 1/2/20, 1:12 PM Released

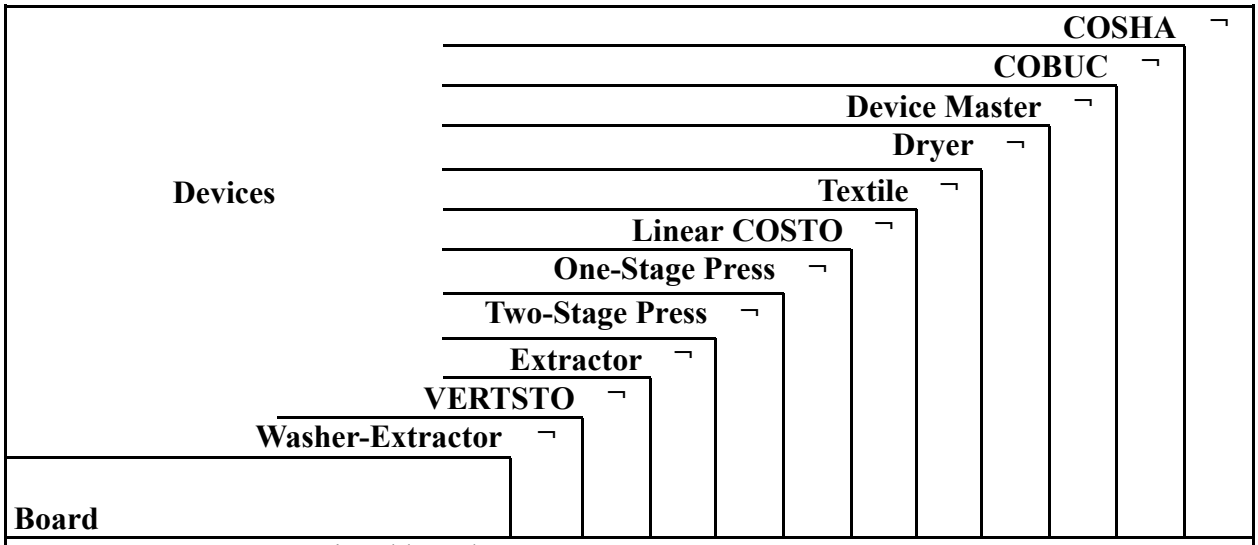
The input/output board, output board, analog to digital board, and digital to analog board each have two rotary switches which establish the address for each board. This allows each board to communicate serially with the microprocessor in its device while sending and receiving its own

messages. In a battery of machines, the rotary switches are identical for each identical peripheral board in each identical machine (e.g., the first input/output board (I/O-1) in each washer-extractor has identical rotary switch settings). When a microprocessor must communicate with a higher level control (e.g., when all dryers communicate with the Mildata® system), the higher level control must know the address of each microprocessor. For 8088 microprocessors, the high level control knows the address of each device because that information was established during configuration (e.g., see **Miltrac Address** configure decision in the programming manual for any device that communicates with Miltrac™).

Table 74. Rotary Switch Settings

Board		Devices: Washer-Extractor	VERTSTO	Extractor	Two-Stage Press	One-Stage Press	Linear COSTO	Textile	Dryer	Device Master	COBUC	COSHA
Analog to Digital	SW2	2*			2	2		2	2			
	SW1	1*			1	1		1	1			
Digital to Analog	SW2	3*				3		3	3			
	SW1	1*				1		1	1			
Input/Output #1	SW2	0	0	0	0	0	0	0	0	0		
	SW1	1	1	1	1	1	1	1	1	1		
Input/Output #2	SW2	0*	0	0*	0	0	0*	0*	0	0	0	0
	SW1	2*	2	2*	2	2	2*	2*	2	2	2	2
Input/Output #3	SW2			0*	0*	0*				0*	0*	0*
	SW1			3*	3*	3*				3*	3*	3*
Input/Output #4	SW2			0	0*					0*	0*	0*
	SW1			4	4*					4*	4*	4*
Output #1	SW2	1		1	1	1		1	1	1*		
	SW1	1		1	1	1		1	1	1*		
Output #2	SW2	1*		1*	1*			1		1*		
	SW1	2*		2*	2*			2		2*		
Output #3	SW2	1						1*		1*		
	SW1	3						3*		3*		
Notes:												

Table 74 Rotary Switch Settings (cont'd.)



*	Optional boards
1	See schematics for rotary switch positions on tunnel washer system devices.

BNCUUP02 / 2018303 BNCUUP02 0000196987 A.9 1/2/20, 1:30 PM Released

6.2 Construction of External Serial Link Cables

BNCUUP02.C01 0000196986 B.2 A.9 1/2/20, 1:30 PM Released

This document provides information for on-site fabrication of certain types of serial communication cables. Programmable data can be transferred between compatible machines or between a machine and a Milnor® *serial memory storage device* (see related note below), using the download cables described in Section 6.2.2.2 : Connecting Two or More Machines for Machine-to-machine Transfer, page 108 and Section 6.2.2.3 : Connecting a Machine to a Serial Memory Storage Device, page 109 respectively. These cable(s) connect to the cabinet-mounted 9-pin DIN type receptacle shown in Figure 45: 9-Pin DIN Connector Pin Identification (from wire entry side of connectors), page 107 and may be installed temporarily or permanently, as appropriate.

NOTE: The currently approved printers and printer configuration settings are provided in Section 6.3 : Printer Requirements and Settings, page 110. A pre-assembled machine-to-printer cable similar to the cable described here, is available from Milnor (P/N 10YMK2PNTR).

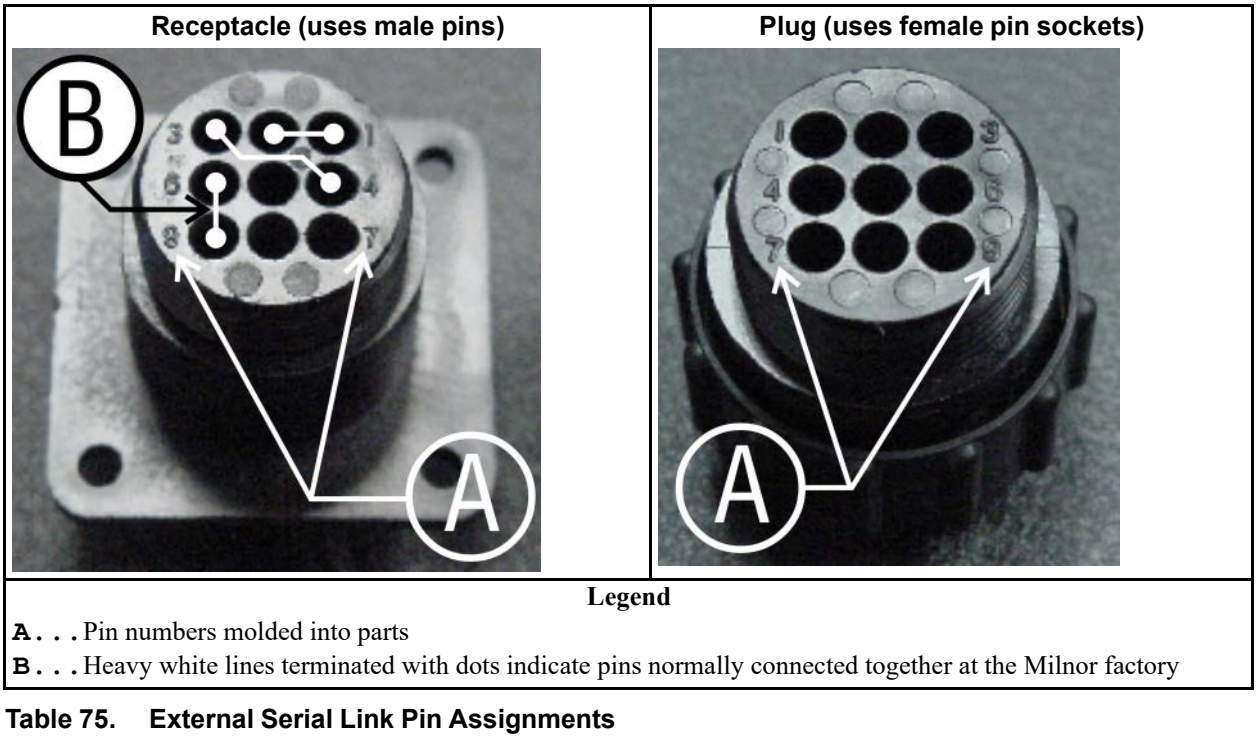
NOTE: The Milnor *serial memory storage device* (also known as a *download box*) contains nonvolatile memory to hold a back-up copy of the programming and configuration data for **one machine**. This data is transferred between the machine and the memory storage device via the DIN receptacle on the machine. Two models are currently available: KXMIC00507 and KXMIC00508. The already wired cable and DIN connector are included as part of the memory storage device. Consult the Milnor Service department to determine the correct device for a particular application.

6.2.1 Pin Identification

BNCUUP02.C02 0000196983 A.10 B.2 A.9 8/28/22, 2:48 PM Released

Figure 45: 9-Pin DIN Connector Pin Identification (from wire entry side of connectors), page 107 illustrates the DIN receptacle (which uses male pins) and the mating plug (which uses female pin sockets), each viewed from the **wire entry** side. The receptacle is normally installed and wired at the Milnor factory. The plug and female pin sockets for customer use are provided in a bag inside the electric box. Table 75: External Serial Link Pin Assignments, page 107 shows the function of each pin.

Figure 45. 9-Pin DIN Connector Pin Identification (from wire entry side of connectors)



Legend

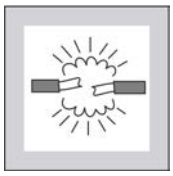
A . . . Pin numbers molded into parts

B . . . Heavy white lines terminated with dots indicate pins normally connected together at the Milnor factory

Table 75. External Serial Link Pin Assignments

Pin Number	Function	Receptacle Wiring (inside electrical enclosure)	
		Wire Number	Color Code
1	Serial low	DLL	Blue and black
2			
3	Serial high	DLH	Blue and red
4			
5	Clear to send (not used on these models)	CTS	Blue and orange
6	Electronic ground	2G	Blue and white
9			
7	Transmit data (not used on these models)	TXD	Blue and orange
8	+5 volts DC (used for serial memory storage device only)	V1	Blue

CAUTION:



Risk of damage to electronic components — Pin 8 is only used to supply +5VDC power to the download box and will damage components in both devices if not properly connected

▶ Never connect pin 8 to any other pin in the connector, a printer, or another machine.

6.2.2 How to Wire the Cables

BNCUUP02.C03 0000196982 B.2 A.9 1/2/20, 1:30 PM Released

Because the DIN receptacle is wired to support different functions and because the data transferred across these cables can be corrupted by electrical noise, follow these instructions carefully.

6.2.2.1 Cable Specifications

BNCUUP02.C04 0000196981 B.2 A.8 A.9 1/2/20, 1:30 PM Released

Multi-conductor shielded cable that meets the following minimum requirements must be used in the applications covered herein. Conforming cable may be purchased from Milnor (P/N 09V300A04S) or purchased from another source:

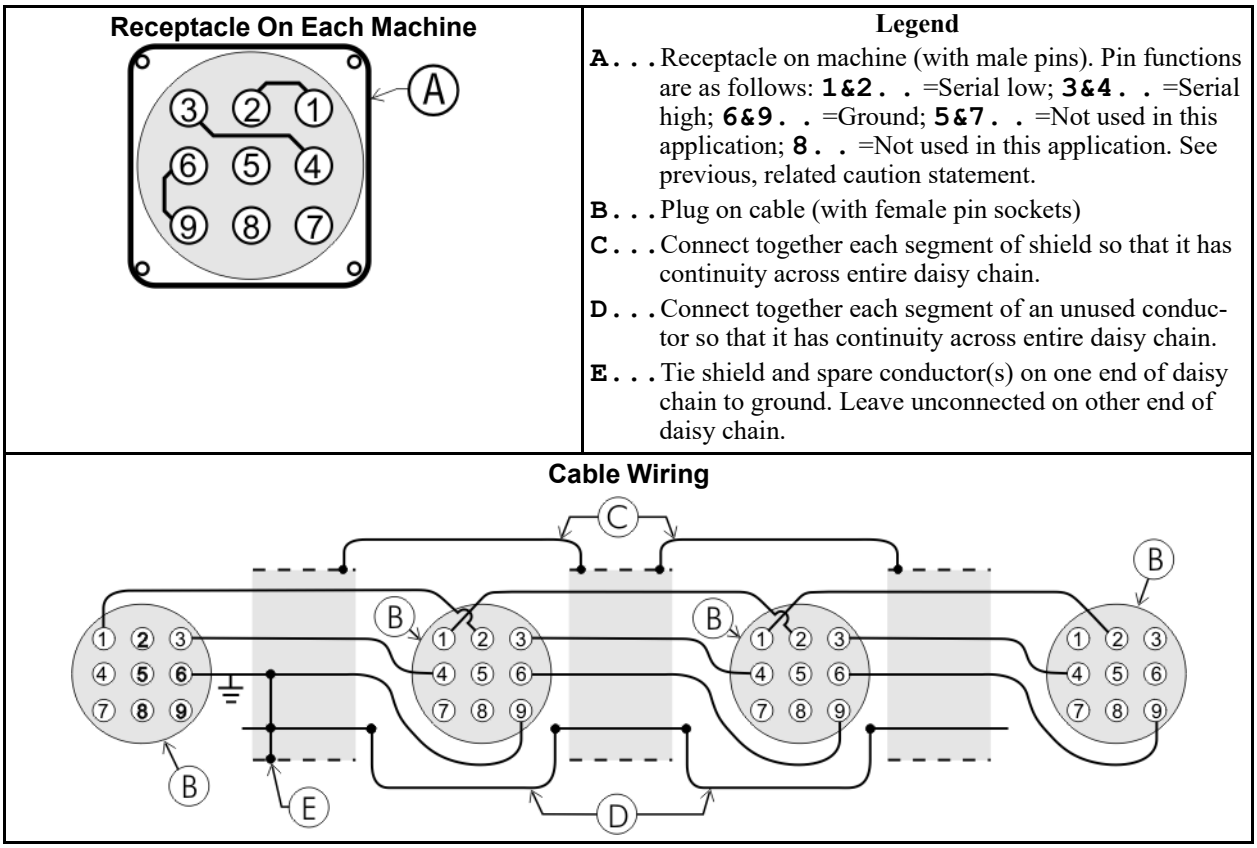
- Jacket: 600VAC insulation
- Shielding: braided, tinned copper, minimum 85 percent coverage
- Four conductors with these specifications:
  - Conductive material: Tinned copper, 20 AWG
  - Insulation: 300VAC, color coded
  - Preferred colors: red, black, green and white

6.2.2.2 Connecting Two or More Machines for Machine-to-machine Transfer

BNCUUP02.C05 0000196980 B.2 A.9 1/2/20, 1:30 PM Released

Figure 46: Wiring Diagram for Cable to Connect Two or More Machines, page 109 shows how to wire a cable to connect a bank of identical machines (the Figure 46: Wiring Diagram for Cable to Connect Two or More Machines, page 109 example shows connections for four machines) so that data programmed on one machine in the group can be downloaded to all other machines simultaneously. This cable is referred to as a daisy chain because it runs in segments from machine to machine, connecting all machines in the group.

Figure 46. Wiring Diagram for Cable to Connect Two or More Machines



The internal connections on each receptacle (machine) between pins 1 and 2, 3 and 4, and 6 and 9 make it easier to wire the cable because it is not necessary to jumper these pins together on the cable. However, this also means that every plug on the daisy chain must be plugged into a receptacle. Otherwise, the serial low, serial high, and ground conductors will not have continuity across the entire daisy chain and some machines will not receive data.

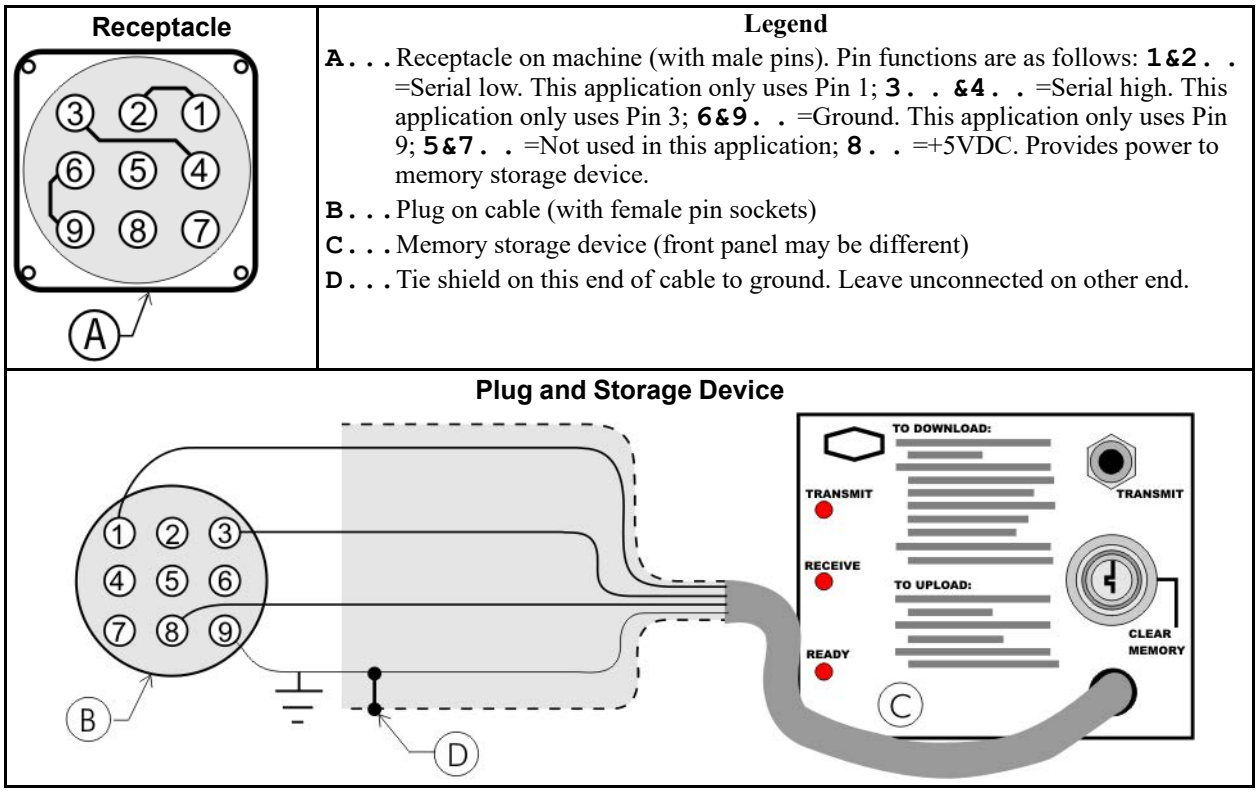
Rules and details about downloading among machines are fully described in the programming section of the reference manual.

6.2.2.3 Connecting a Machine to a Serial Memory Storage Device

BNCUUP02.C06 0000197240 B.2 A.9 1/2/20, 1:30 PM Released

The cable used with the serial memory storage device (download box) available from Milnor, see related note in Section 6.2 : Construction of External Serial Link Cables, page 106, is permanently attached to the storage device. Cable fabrication, as shown in Figure 47: Wiring Diagram for Cable to Connect a Machine to a Serial Memory Storage Device, page 110 , is not required except for replacing a damaged cable. The memory storage device is the only application in which the power conductor (Pin 8) is used.

Figure 47. Wiring Diagram for Cable to Connect a Machine to a Serial Memory Storage Device



BNCUUI01 / 2018303 BNCUUI01 0000196633 A.6 1/2/20, 1:30 PM Released

6.3 Printer Requirements and Settings

BNCUUI01.C01 0000196632 B.2 A.6 1/2/20, 1:30 PM Released

NOTICE: Because of the many differences among printer makes and models, Milnor® cannot ensure suitability or troubleshoot printers other than those described in this document (or certain older approved models), with the required interface cable.

6.3.1 Cable Requirements

BNCUUI01.R01 0000196631 B.2 A.6 1/2/20, 1:30 PM Released

The printer must be connected to the printer port on the machine using the appropriate one of the following Milnor interface cables:

Table 76. Milnor Printer Cables

Printer Cable Part Number	Description
10YMK2PNTR	100-formula washer-extractor, dryer, extractor, and Miltron (CBW®) controllers
10YCBWPNTR	Non-serial Miltron (CBW) controller
08MPSERCBL	Mentor® (CBW) and Mildata® controllers

6.3.2 Configuring the Citizen GSX-190 Printer

BNCUUI01.R02 0000196630 B.2 A.6 A.7 1/2/20, 1:30 PM Released

Table 77: Required Settings for Citizen GSX-190 Printer, page 111 lists the required settings for this printer model to work properly with Milnor equipment. To print the current settings stored in your printer, move the **Menu** slide switch on the printer to the **VuePrint** position, then hold the **Print** button for three seconds. Hold the **Menu** button for three seconds to enter the **VuePrint** menu system to make changes.

Table 77. Required Settings for Citizen GSX-190 Printer

Menu	Data Field	Value	Menu	Data Field	Value
Install 1	Ribbon	Normal	Character	Slash zero	Off
	A.S.F.	Off		Character set	Graphics
	Emulation	Epson		Intl character set	U.S.A.
Print Style	Font	Draft		Code page	U.S.A.
	Emphasized	Off	Install 2	Tear off	Off
	Pitch	10 characters inch		Paper out	Enable
	Front lock	Off		Auto linefeed	Off
Page Layout	Line spacing	6 lines per inch		Copy mode	Off
	Form length	Letter		Envelope	Off
	Page skip	Off	Serial I/F	Baud rate	9600
Print Mode	NLQ Dir	Uni-directional		Parity	Even
	Graphic Dir	Uni-directional		Data bits	8 bits
				Stop bits	1 bit
				Protocol	DTR

6.3.3 Configuring the Epson LX300 Printer

BNCUUI01.R03 0000196629 B.2 A.6 1/2/20, 1:30 PM Released

The Epson model LX300 printer was supplied by Milnor prior to March 2001 to print data from microprocessor controllers with printing functions. When shipped from Milnor, this printer was configured to operate correctly with Milnor equipment. If the printer is replaced or must be reconfigured for any reason, refer to the user's guide and the following table.

Table 78. Required Settings for Epson LX300 Printer

Data Field	Value	Data Field	Value
Character spacing	10 characters per inch	Tractor	Single
Shape of zero	0	Interface	Serial
Skip over perforation	Off	Bit rate	9600 bps
Character table	PC 437	Parity	Even
Auto line feed	Off	Data length	8 bits
Page length	11 inches	ETX/ACT	On
Auto tear off	Off		

6.3.4 Previous Printer Models

BNCUUI01.C02 0000196628 B.2 A.6 1/2/20, 1:30 PM Released

The Epson LX300 printer replaced the Epson LX-810, which replaced the Epson LX-800. For information on these older printer models, request document MSSM0251AE from the Milnor factory.