English

FlashPAK ™
Operator's Guide

Data I/O endeavors to ensure that the information in this document is accurate.

Data I/O assumes no liability for errors, or for any incidental, consequential, indirect, or special damages, including, without limitation, loss of use, loss or alteration of data, delays, or lost profits or savings, arising from the use of this document or the product which it accompanies.

No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without written permission from Data I/O.

Data I/O is a registered trademark of Data I/O Corporation. TaskLink is a trademark of Data I/O Corporation. FlashPAK is a trademark of Data I/O Corporation.

Data I/O Corporation acknowledges the trademarks of other organizations for their respective products or services mentioned in this document.

Chapter 1

Overview

Warnings and Cautions

|		
⚠️	**Electrostatic Discharge**	**Electrostatic Discharge (ESD) may cause damage. Discharge static electricity to a common ground.**
⚠️	**Compressed Air**	**Point air hoses away from body. Always wear eye protection.**
⚠️	**High Voltage**	**Do not remove covers. No user serviceable parts.**
⚠️	**Radio Interference**	**This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.**

FlashPAK™ and TaskLink™

Programming Job
(including algorithms)

**Programming Job
plus Statistics**
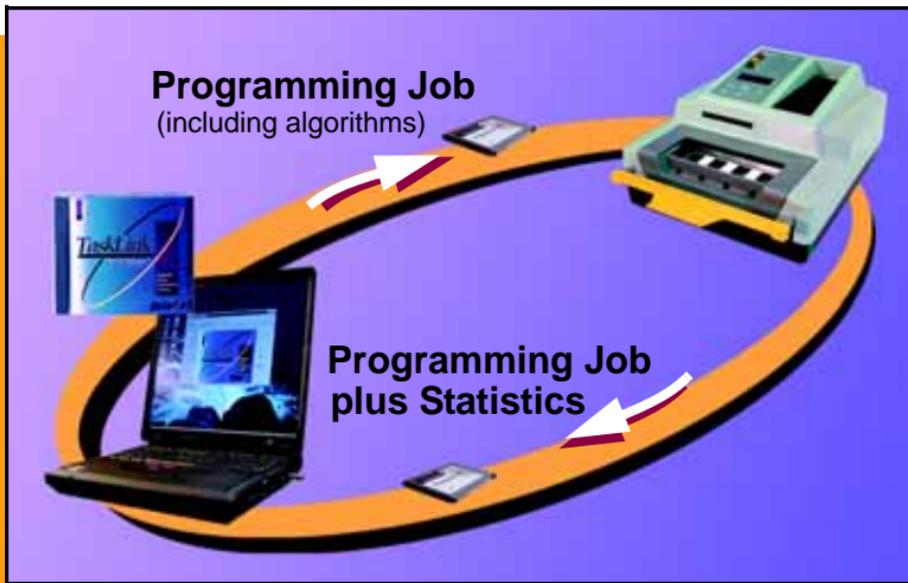
Data I/O FlashPAK is a scalable desktop solution for engineering and manual production programming of FLASH memory devices. TaskLink™ for FlashPAK® (included) is software required to create and manage jobs. A job is all the information required to program a specified number of devices.

PC cards (or network) are used to transfer software between TaskLink and FlashPAK. PC cards also store jobs, algorithms, and statistics which do not reside in FlashPAK.
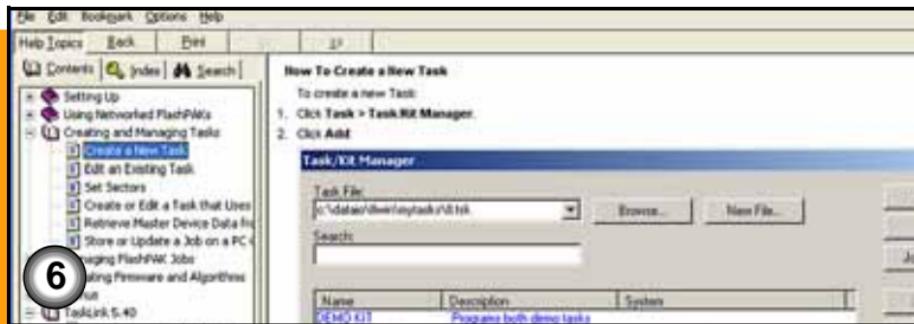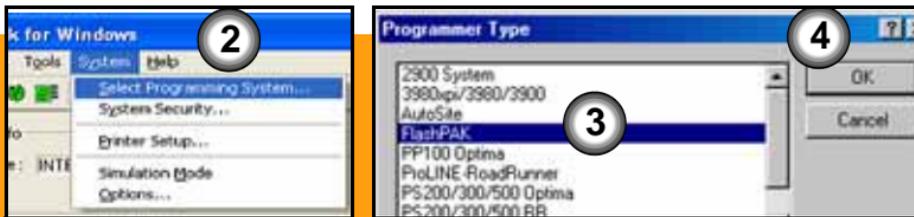
A job card is a PC card with a job written to it, and may contain supervisor authorization or not. ∎

Use TaskLink to Create a Job

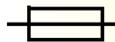**Within TaskLink is a Help file to assist you in creating a job. After TaskLink is installed on your PC:**

1. **Double-click the TaskLink icon.**

2. **Under the System Menu click "Select Programming System."**

3. **Select FlashPAK.**

4. **Click OK.**

5. **Under the Help Menu select "Help Topics."**

6. **In the list of help topics select "Creating and Managing Tasks" > "Create a New Task."** ∎

Feature Locator

Back

1. Power Switch ⏻
2. Power Connection ⟿
3. Fuses ▭
4. Network Connector ⌘
5. Ground Strap Connection ⏚
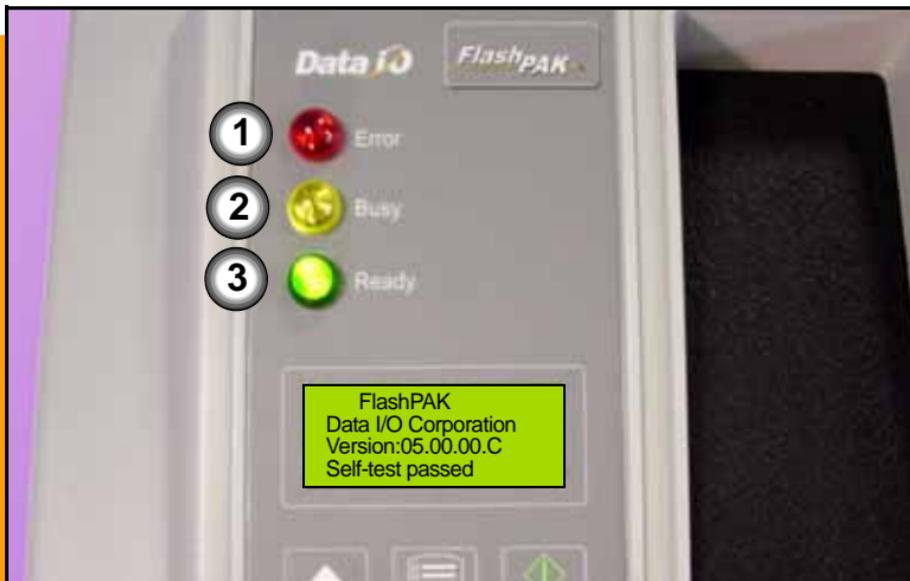
(For a key to symbols see page 52.)
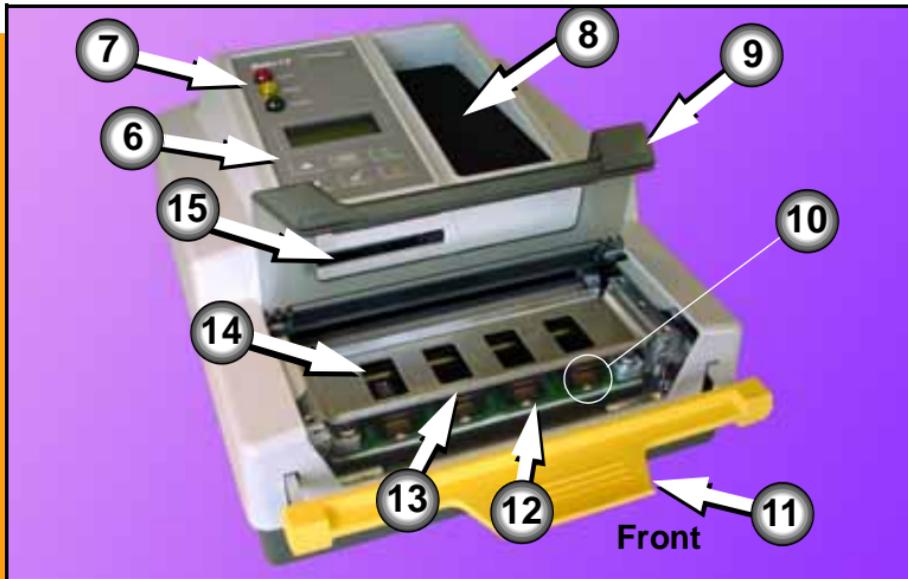
6. **Control Panel with LCD display**
7. **Status Lamps**
8. **Reject Area**
9. **Actuator Cover**
10. **Socket LED -light emitting diode**
11. **Actuating Bar**
12. **Socket Adapter**
13. **Actuator Plate**
14. **Socket number 1**
15. **Card Slot & Eject Button** ■
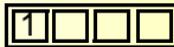
FlashPAK Operator's Guide

Control Panel Lamp Interpretations

1. <u>Red</u> - One or more devices currently loaded has failed programming; or the Self-test failed; or any other errors.

2. <u>Yellow</u> - (blinking) Programming in progress or the memory card is being accessed. Do not open sockets. Do not eject the card. Button presses are not recorded when blinking.

3. <u>Green</u> - Programmer is ready for input; or Programming is complete and successful in all usable sockets (see page 28). Okay to open sockets. Okay to eject memory card. ■

Control Panel Buttons

FlashPAK
Data I/O Corporation
Version:05.00.00.C
Self-test passed
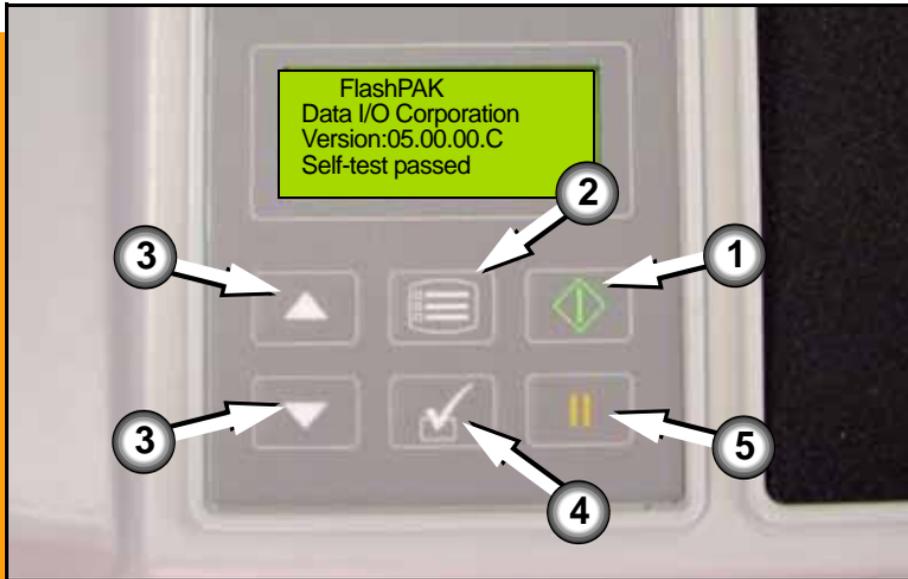
1. <u>Start</u> - **Starts or resumes a job. If Auto Start (page 38) has been disabled, Start programs the next block (set of four devices).**

2. <u>Menu</u> - **Displays the main menu —or Exits to the previous menu —or Shows next error message —or Deselects an item.**

3. <u>Up and Down Arrows</u> - **Navigates through menu items. A triangular pointer indicates scrollable menus.**

4. <u>Select</u> - **Selects menu items.**

5. <u>Pause</u> - **Pauses the job and displays results. Pressing it twice ends a job. ∎**

Operator Menus

Job

Job
Socket

Job
View
Results
End

Socket
Socket 1:Disabled
Socket 2: Enabled
Socket 3: Enabled
Socket 4: Enabled
Adapter Statistics

View
JOB U8 REVA ID27
Device: TE28F800B3T
Checksum: FEE1F695
Mfg: Intel
Adapter: PA-T003
Act: T003

Results
Passed: 1002
Failed: 9
Prgrmr Yld: 99.1
Parts/Hour: 422
Skt1 Yield: 99.1
Skt2 Yield: 100
Skt3 Yield: 100
Skt4 Yield: 100
Skt Cycles: 253

Adapter Statistics
Reset Clean Count
Clean Count: 340
Clean Alert: 800
No: 487655
Mfg: 12/24/01
Actuations: 400
Adptr. Life:10000
Insertions: 1600
Pass: 1596
Fail: 4
Yld: 99.7
Socket 1
Socket 2
Socket 3
Socket 4

Skt X Yield
Insertions: 400
Pass: 400
Fail: 0
Yield: 100

**Version 05.13.00.C
Menus shown.**

☐ Main Menu

Operator Menus are visible on FlashPAK's control panel, and can be navigated by pressing the Up or Down Arrow buttons.

Pressing the Menu button displays the menu, or moves up one menu.

If you are at the main menu, pressing Menu will have no effect.

The Clean Alert in the Socket > Adapter Statistics menu can be changed so the popup message to clean the adapter is after an appropriate number of insertions. After using the Up or Down Arrow buttons for adjustment, press the Menu button. ∎
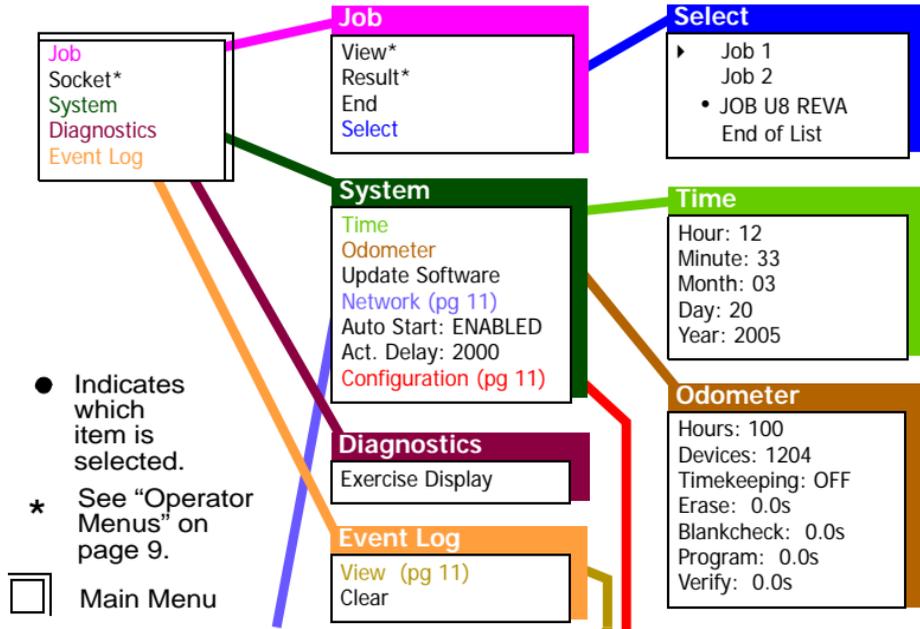
Supervisor Menus

To view the Supervisor Menus insert a job card that has supervisor authority. Supervisor (Administrator) authorization is set in TaskLink: refer to TaskLink Help.

Main Menu
- Job
- Socket*
- System
- Diagnostics
- Event Log

Job
- View*
- Result*
- End
- Select

Select
- ▸ Job 1
-   Job 2
- • JOB U8 REVA
-   End of List

System
- Time
- Odometer
- Update Software
- Network (pg 11)
- Auto Start: ENABLED
- Act. Delay: 2000
- Configuration (pg 11)

Time
- Hour: 12
- Minute: 33
- Month: 03
- Day: 20
- Year: 2005

Odometer
- Hours: 100
- Devices: 1204
- Timekeeping: OFF
- Erase: 0.0s
- Blankcheck: 0.0s
- Program: 0.0s
- Verify: 0.0s

Diagnostics
- Exercise Display

Event Log
- View (pg 11)
- Clear

● Indicates which item is selected.

* See "Operator Menus" on page 9.

☐ Main Menu

Network

Network Parm: NVRAM
Status: Enabled
PGM Bob's FP
IP 888.888.88.888
Prog Port: 8800
SUB: 888.888.888.8
GTW: 888.888.88.8
SNS: 0.0.0.0
SNS Port: 7500
HST: [host name]
DOM: [domain name]
DNS: 888.888.888.888
DTS: 888.888.88.88
EAddr 010EC00111E
Clear NetParms

Configuration

Firmware Version
Installed Boards
Hardware Config

Firmware Version

Version 05.13.00.C

Installed Boards

Bkpln Brd ID: 2
Cntrl Brd ID: 2
Wvfrm Brd ID: 17
Adptr Brd ID: 9

Hardware Config

HwCfgIds: 1, 2, 3, 4,
5, 6

View

▸ 03/20/05 12:33:00
BoardAdapter; Total
Adapter Insertions =
1524

▸ 03/20/05 12:33:00
BoardAdapter; Total
Adapter Actuations =
381

▸ 03/20/05 12:33:00
.......FlashPAK
Data I/O Corporation

Network Menu Abbreviations:

PGM = Programmer name
SUB = Subnet mask
GTW = Gateway
SNS = Serial Number Server IP
SNS Port = Serial Number Server Port No.
HST = Host name
DOM = Domain name
DNS = Domain name server
DTS = Date and time server
EAdder = Ethernet address (not editable).

**Your FlashPAK firmware version is
listed at System > Configuration
> Firmware Version.**

Supervisor Menus continued

Hardware Configuration IDs (listed at **System** > **Configuration** > **Hardware Config**) are useful for determining whether a new device algorithm is supported on your current FlashPAK configuration. (Configuration IDs represent different programmer features.)

The HwCfgIds are listed with the Data I/O Web site Device Search results. ∎

Chapter 2

Installation
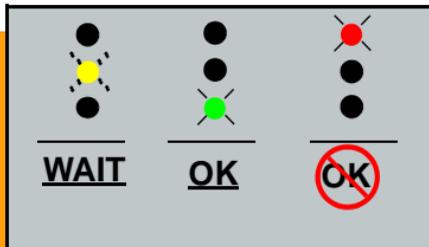
Connecting Power

To connect power:

1. **Turn FlashPAK power switch to the Off (0) position.**

2. **Connect to a grounded power source using a cable with a standard IEC 320 plug (supplied).**

FlashPAK accepts power between 100 and 240 VAC, 50/60 Hz.

When the power is switched On (I) the Self-test runs. If the keypad display is blank, check the fuse in the back of the unit. ■

Running the Self-Test

To run the Self-test:

1. **End the job. See "Ending a Job" on page 31.**

2. **Remove any devices from the sockets.**

3. **Toggle the power switch Off (0) and then back On (I) to initiate the Self-test.**

4. **When the Self-test finishes successfully the green lamp lights and the system software version number displays.** ∎

FlashPAK
Data I/O Corporation
Version:05.13.00.C
Self-test passed

WAIT   OK   OK

If the Red Lamp Lights

FlashPAK
Data I/O Corporation
Version:05.13.00.C
Self-test failed

Job
▸ Socket

If the red lamp lights after switching the power on, an error has occurred and "Self-test failed" displays.
A lighted socket LED indicates that the socket is unusable. Do not load devices into unusable sockets.

1. To view socket status, at the main menu scroll to and select **Sockets**.

2. To see if the problem is the Socket Adapter or the programmer, remove the Socket Adapter (see page 18) and rerun the Self-test without it by toggling the power switch. If the red lamp still lights, contact Data I/O Support (page 55). ■
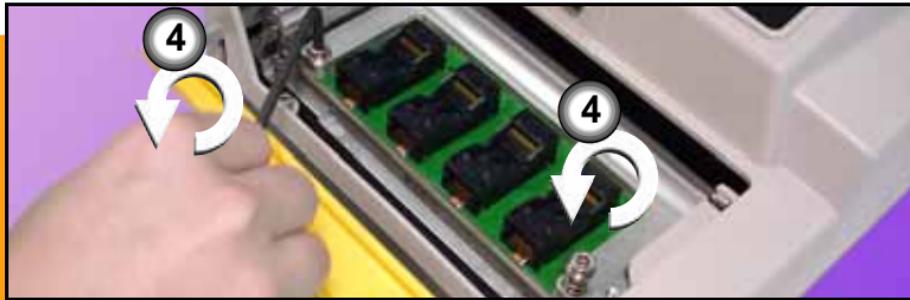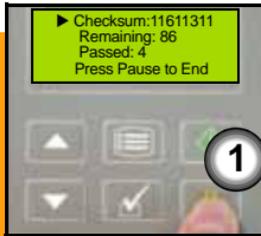
Job Setup

Changing the Socket Adapter

To change the Socket Adapter and Actuator Plate:

> *NOTE: Plug your operator ESD strap into the back of FlashPAK to prevent electrostatic discharge.*

1. End the job (see page 31).

2. Open (or Lift off) the Cover.

3. Slide the Actuator Plate out of the grooved bracket. The Actuating Bar must be up.

4. Unscrew the two captive screws and lift the Adapter Bracket.

FlashPAK Operator's Guide

⚠ Caution

Electrostatic Discharge May Cause Damage. Discharge Static Against Common Ground.
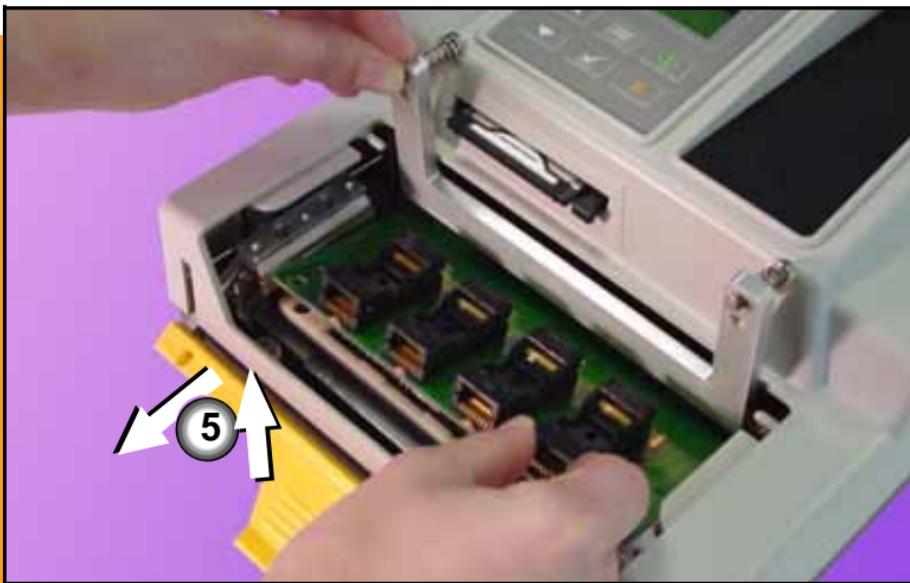
5. Without touching the gold contact surfaces on the bottom of the Socket Adapter, lift it up off the dowel pins, and out.

6. Insert the correct Socket Adapter, making sure that it seats on the dowel pins.

7. Tighten the screws.

8. Insert the correct Actuator Plate with the flanges up and part number facing front.

9. Replace the Actuator Cover. ∎
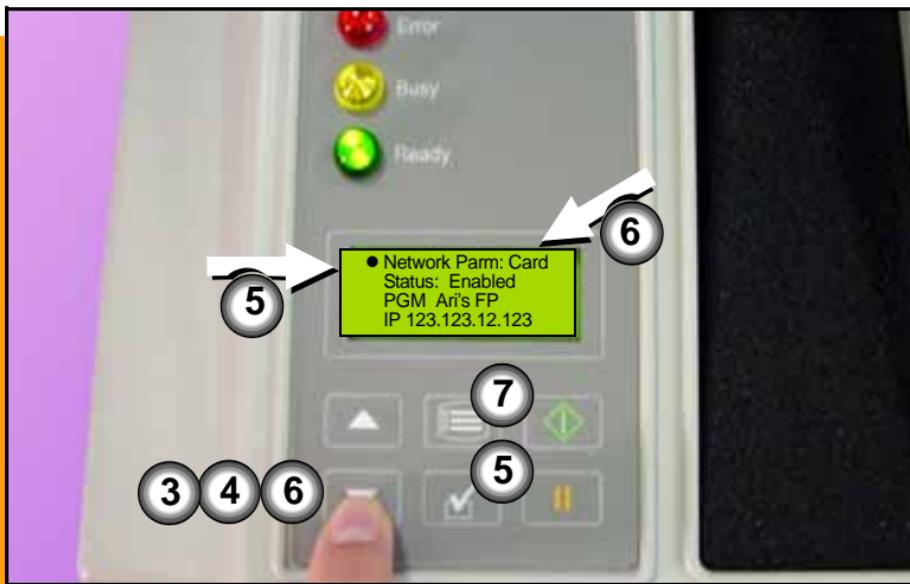
First Time Network Connection (optional)

To make your FlashPAK Network accessible (for the first time):

1. Insert a blank PC card into a reader. Then in TaskLink, create a Network Configuration card.

2. Remove the PC card and put it into FlashPAK.

3. Plug your network cable into FlashPAK.

4. Cycle the power OFF and then ON. ∎

## Subsequent Network Connection (optional)
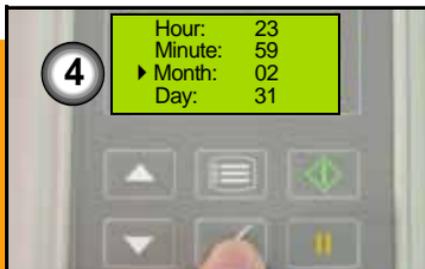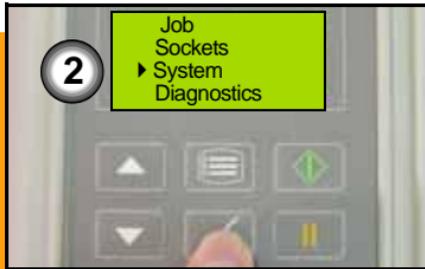

To Network your FlashPAK (after it has previously been Network configured):

1. Put the PC Network Card into FlashPAK and switch power ON.

2. Press Menu until you see the top level menu.

3. Scroll to and select **System**.

4. Scroll to and select **Network**.

5. Press Select again to edit.

6. Press the Down Arrow to change the setting to **Card**.

7. Press Menu to save. ∎

Setting the Date and Time
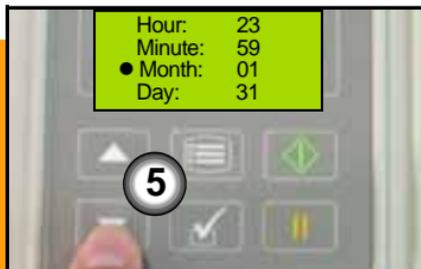
The time can only be set using a job card with Supervisor authority. To set the time:

1. End the job (see page 31).

2. Scroll to and select **System**.

3. Select **Time**.

4. Scroll to and select the desired parameter. A round dot appears next to the parameter.

5. Press the Up Arrow or Down Arrow to adjust the parameter.

6. Press Menu to finish.

Select and set other date/time parameters as desired. ■

FlashPAK Operator's Guide

Operation

Running a Job

FlashPAK
Data I/O Corporation
Version:05.13.00.C
Self-test passed

Press START to run
Mfg: Intel
Adapter: PA-T003
▸ Act: T003

To run a job:

NOTE: Connect operator ESD strap into the back of FlashPAK.

1. Insert a job card into the card slot. (Switch the power On (I) if it is not, and wait for the Self-test to complete.)

2. Press Start. While the job is loading the yellow lamp blinks—Do NOT remove the card or power.

3. Verify that your setup matches the parts listed. Change parts that do not.

4. Press Start to run. Follow instructions in the display.

Push to open the sockets

Lift to program

To run a job (with Auto Start on) push the Actuating Bar down, load the sockets, lift the Bar to program. When the yellow lamp stops blinking, push the Bar down and remove devices. Continue until the job is done.

> *NOTE: The Actuating Bar must be down (sockets open) to insert devices into the sockets.*
>
> *Lifting the Bar automatically starts the programming phase (unless Auto Start is disabled, page 38).*
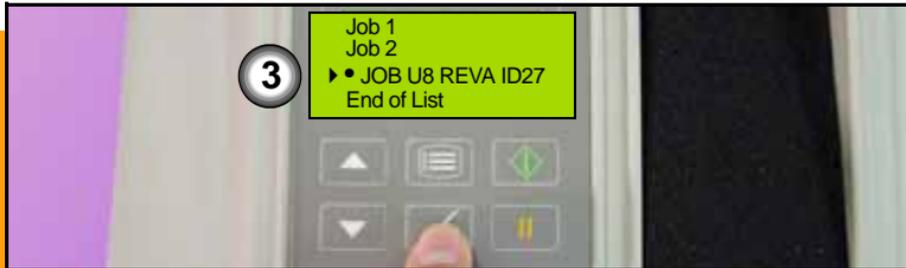
For Device Orientation see page 27.

To create a job on a memory card use TaskLink; see its Help menu. ∎

Selecting a Job

1.
```
▶ Job
  Socket
  System
  Diagnostics
```

2.
```
  View
  Results
  End
▶ Select
```

3.
```
  Job 1
  Job 2
▶ ● JOB U8 REVA ID27
  End of List
```

If more than one job is loaded onto a card, a card with Supervisor Authority allows for job selection.
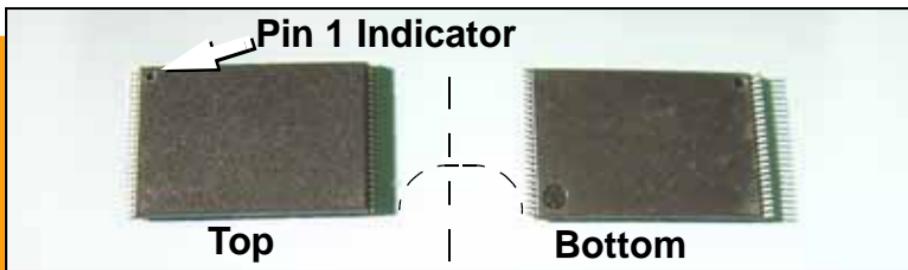
To change the selected job:

1. Select **Job**.

2. Select **Select**.

3. Scroll to and select a job. A round dot appears next to the job selected to run.

A job card without Supervisor Authority runs the job previously selected by a supervisor.

For more help see the TaskLink Help Menu. ∎

Device Orientation

Top   **Bottom**

Pin 1 Indicator

Checksum:11611311
Insert new devices
Pin1: Upper Right
Remaining: 2000
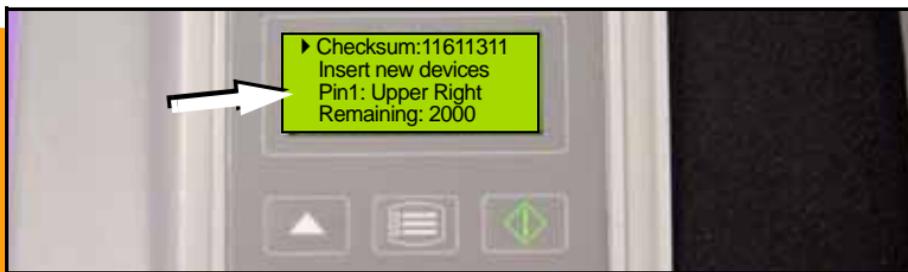
Most devices have a dimple located at pin 1. See manufacturers specifications.

The four possible pin 1 device orientations in a socket are:

> Upper right
> Upper left
> top center
> Lower left

When FlashPAK is ready for devices, see the pin 1 orientation in the display.

> *NOTE: Use a tool such as a vacuum tweezer for inserting devices into and removing them from sockets.* ■

Interpreting Block Programming Results

After each block programming operation the lamps indicate the following:

1. 🟢 **Green lamp = All present devices were successfully programmed as defined by the job.**

   1a. 🔴 **A blinking red Light Emitting Diode (LED) indicates an empty socket or a device oriented incorrectly. (Empty sockets are not included in the statistics computation.)**

2. ● **Red lamp = At least one device in the current block failed to program.**

   2a. ● **An evenly lit LED indicates a device that failed program-ming. Place those devices into the reject area.**

   2b. ● **A blinking LED indicates a continuity error or an empty socket.**

The display indicates devices remaining to program and socket status (scroll down to see). "Passed" is *total* devices passed for the job. ∎

Accessing the Menu
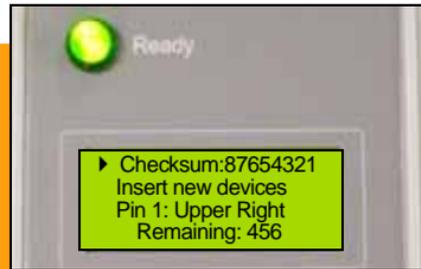
Access the menu to view information or to change settings. When the menu is accessed, job statistics are written to the job card.

To access the menu:

- **Press Menu any time that the yellow lamp is not blinking.**

To continue programming:

- **Press Start. The job resumes. Follow the instructions in the display.** ∎

Ending a Job

To end a job (before it finishes):

1. **Press Pause any time that the yellow lamp is not blinking.**

2. **Programming results display. Remove devices. Press Pause.**

   (To cancel the End sequence, press Start to resume the job or press Menu instead of Pause.)

   NOTE: Programming of the current block of devices is always completed.

   NOTE: Some menu parameters require ending a job before they can be changed. ■

1
Checksum:11611311
Insert new devices
Pin 1: Upper Right
Remaining: 908

2
▸ Job
Sockets

3
▸ View
Results
End

▸ INT28F800B3T
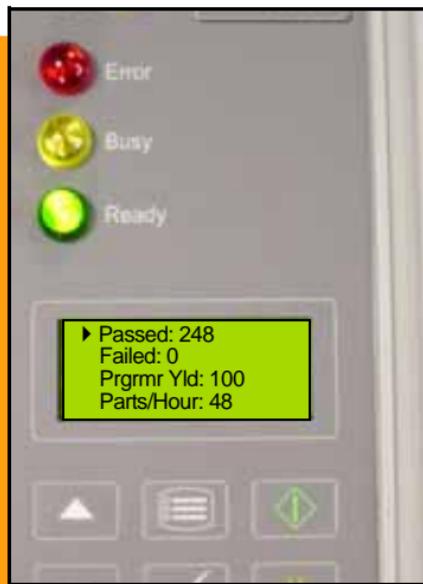Device: TE8F800B3T.
Checksum: 11611311
Mfg: Intel

To view job information:

1. **Press Menu any time that the yellow lamp is not blinking.**

2. **Select Job.**

3. **Scroll to and select View.**

Scroll down to see more information; Actuator Plate and Socket Adapter numbers are also displayed for the current job. Press Menu to back up one level, or press Start to program devices.

To view yield calculations:

1. **Press Menu any time that the yellow lamp is not blinking.**

2. **Select Job.**

3. **Scroll to and select Results.**

Press Menu to back up one level, or press Start to program devices. ∎

FlashPAK Operator's Guide

Viewing the Event Log

The event log provides unit history useful to support personnel for troubleshooting.

To view the event log (Supervisor Menu only):

1. Press Menu any time that the yellow lamp is not blinking.

2. Scroll to and select **Event Log**.

3. Select **View**.

To clear the event log select **Clear**. ∎

FlashPAK Operator's Guide

Viewing Adapter Statistics

To view adapter statistics:

1. **Press Menu any time that the yellow lamp is not blinking.**

2. **Scroll to and select Socket.**

3. **Scroll to and select Adapter Statistics.**

   To view individual socket yields scroll down and select the desired socket.

To start or resume a job press Start. ∎

About Adapter Statistics

No: 487655
Mfg: 02/14/02
Actuations: 60
Insertions: 240

Pass: 257
Fail: 3
Yld: 98.8
▶ Socket 1

Socket 1
Socket 2
Socket 3
▶ Socket 4

▶ Ins: 60
Pass: 59
Fail: 1
Yield: 98.334

No. - unique Socket Adapter ID number.

Mfg - date that the Socket Adapter was first used.

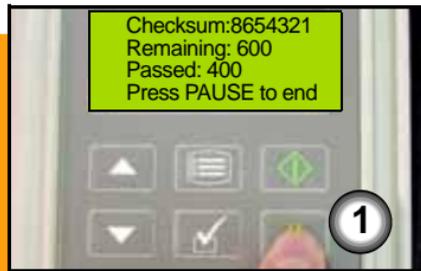**Actuations** - the number of times the Socket Adapter has been actuated during its life.

Insertions - the number of device insertions for the life of the Socket Adapter.

Pass, Fail, and Yld. - total statistics for that Socket Adapter.

Socket X - press select for statistics for socket X on that adapter. ■

Shutting Off

Checksum:87654321
Insert new devices
Pin 1: Upper Right
Press Start to run

1

Checksum:8654321
Remaining: 600
Passed: 400
Press PAUSE to end

1

2 Error
Busy **wait**
Ready

2

To shut off FlashPAK:

1. **End the job (See "Ending a Job" on page 31).**

2. **Wait for the yellow lamp to stop blinking and switch the power Off (0).**

    —*CAUTION—Do not switch power off when the yellow lamp is blinking. Damage to files on the memory card might occur.* ■

Disabling & Re-enabling Auto Start

Auto Start is the feature which allows FlashPAK to begin programming simply by lifting the Actuating Bar (it also closes the sockets). When Auto Start is disabled, you must press Start after closing the sockets to begin programming each block of devices.

> *NOTE: The job must be Ended before changing this setting. See page 31 for Ending a Job.*

To disable Auto Start:

1. Eject the job card and insert one with Supervisor Authority.
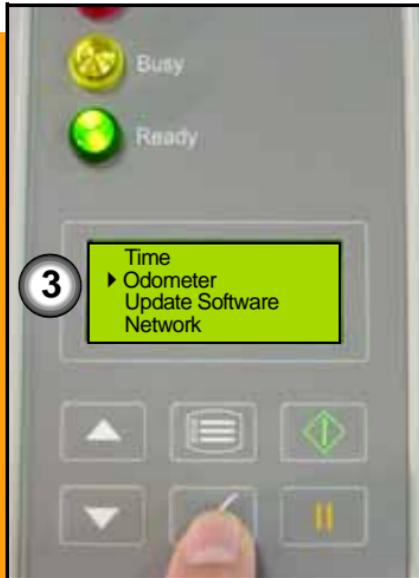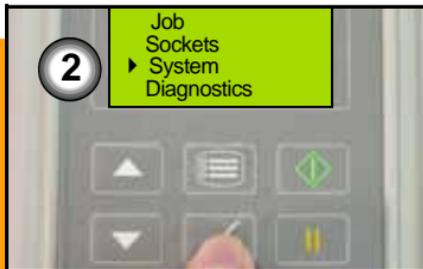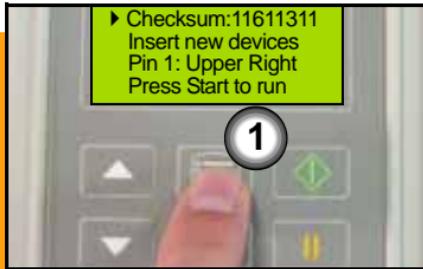
2. Scroll to and select **System**.
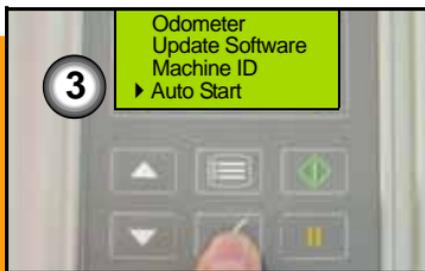
3. Scroll to and select **Auto Start**. A round dot appears next to the selected item.

4. Press the Down Arrow to disable Auto Start.
(Use the Up Arrow to re-enable it.)

5. Press Menu to finish.

FlashPAK retains the setting even after you turn the power off. ∎

FlashPAK Operator's Guide

Viewing the Odometer

The odometer displays the total hours that FlashPAK has been switched on, and total devices that PASSED programming. These settings cannot be altered.
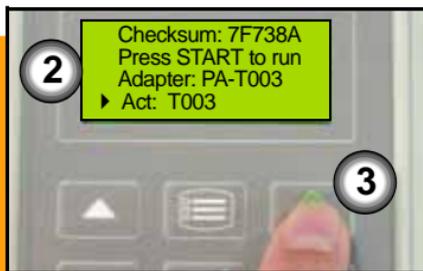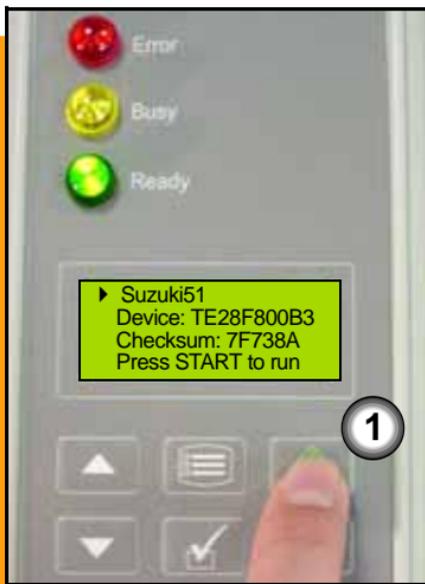
To view the odometer with a card with Supervisor Authority:

1. Press Menu any time that the yellow lamp is not blinking.

2. Scroll to and select **System**.

3. Scroll to and select **Odometer**.

The Timekeeping feature is also in the Odometer menu. When set to ON, it records (and displays) programming times. ∎

Load Data from a Master Device

With TaskLink, FlashPAK has the option to load source data from a master device rather than a computer file.

To Load from Master Device:

1. Using a job card in which the **Load from Master** option was selected, press **Start**.

2. Verify that your setup matches the parts listed. Change parts that do not.

3. Press **Start** again. The Display reads "Insert MASTER dev." and shows device orientation.

4. Push the Actuating Bar down.

FlashPAK Operator's Guide
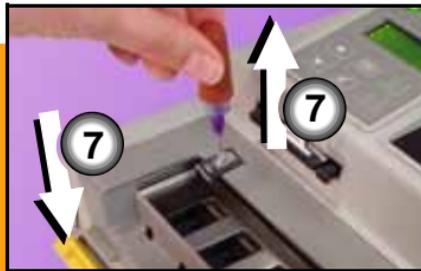
5. Put your master device into any socket. Ensure that the other three sockets are empty.

6. Lift the Actuating Bar to read data from the master device. The master device checksum is compared to the job checksum (if one was entered at job creation). If they do not match an error message will display.

7. When the Control Panel Display reads "Remove master device," push the Actuating Bar down and remove the device.

8. Your data is now in FlashPAK. Press Start to program devices. Follow screen instructions. ∎

Chapter 5

Maintenance

Daily Cleaning

Use compressed air to prevent dust accumulation in the sockets.

1. Inject compressed air into the sockets.

    The sockets should be opened and closed while air is injected into them.

    NOTE: Use compressed, dry, clean air only; 90 PSI maximum. A spray can of clean, dry air may be used. See socket manufacturers for other cleaning methods. ■

> ⚠ **Warning**
>
> Point Air Hoses Away From Body.
> Wear Approved Eye Protection.

Quarterly Cleaning


```
▶ Reset Clean Count
  Clean Count: 388
  Clean Alert: 500
  No: 487655
```

FlashPAK Case:
Clean the case and Control Panel every 3 months with a damp lint-free cloth.

Socket Adapters:
FlashPAK will display a message to clean the Socket Adapter when the current Adapter has performed a specified number of socket insertions. Press **Menu** to remove the message.
To reset the number to **0**:

1. Select **Socket**.

2. Scroll to and select **Adapter Statistics**.

3. Select **Reset Clean Count**. ■

Yearly Programmer Diagnostics

To ensure that your FlashPAK continues to meet performance specifications, Data I/O recommends that you return it to an authorized Service Center every year for a complete diagnostic verification. Diagnostics used by the factory are not available in the field.

For more information contact Technical Support; see page 55. ■

System Updates
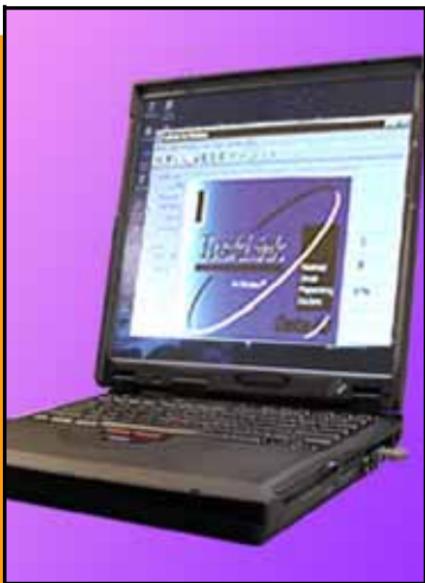
Periodically, updates to FlashPAK's internal operating system will be available. An update is loaded from a memory card or via an internet. Use TaskLink to copy the update onto the memory card (an "Update Card"), or to select the networked programmer.

NOTE: See "Updating FlashPAK Firmware," in the TaskLink Help Topics.

The version of your FlashPAK operating system is displayed on the keypad at **System > Configuration > Firmware Version**, and also at start-up; turn the power Off (0) and then On (I) again to see it.

Error
Busy
Ready

Job
Sockets
▶ System
Diagnostics

Time
Odometer
▶ Update Software

wait

Busy
Ready

Update in progress. **Do not remove power until complete**.
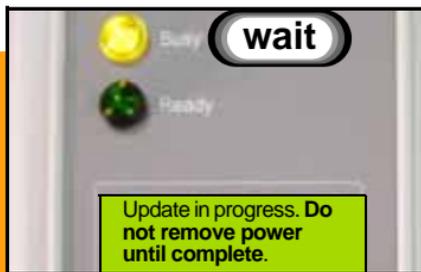
NOTE: The job must be Ended before updating software. For Ending a Job see page 31.

Scroll to and select System > Update Software. Press Start.

—CAUTION—Do not turn the power off while the update is in progress. FlashPAK could be damaged and require servicing if the power is interrupted during an update.
If the red lamp lights, contact Data I/O technical support.

NOTE: Algorithm updates are not performed using the Update Software menu item. See TaskLink help for algorithm updates. ■

Chapter 6

Troubleshooting

Viewing System Errors
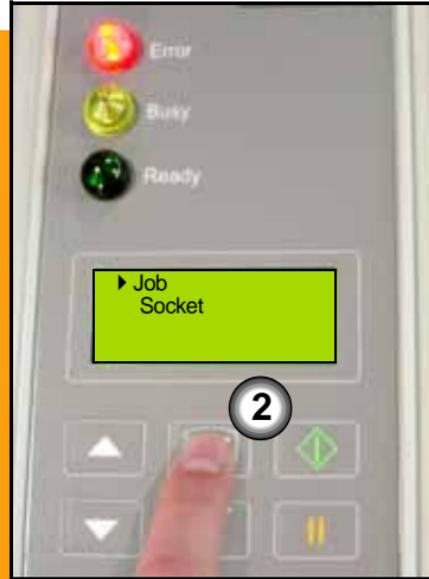
If error messages appear in the keypad display, the red lamp lights.

To view and correct errors:

1. **Check the condition indicated by the message— for example:** *No job selected.*

   If you cannot correct the error condition, contact Data I/O Technical Support.

2. **Press Menu to remove the message.**

   If there are other error messages the next one appears. ∎

Some Typical Errors

Programming Error Message	Resolution
Skt X: Continuity	Check that you have the correct device, and for bent pins. Reinsert or reject the device.
Skt X: Empty	If device is present, check pin orientation.
Skt X: Program Error	Reject device or retry programming it.
Skt X: Verify error	Reject device or retry the device.
Skt X: Erase error	Reject device or retry the device.
Skt X: Blank check error	Reject device or retry the device.
Skt X: EE ID error	Check that you have the correct device for the job. (Press Menu. Select **Job** and then **View**).

Non-Programming Error Message	Resolution
No job selected.	Press Menu, and then insert a job card; or, select a job. See page 26.
Skipped some Self-tests due to presence of devices in the sockets.	To run the Self-test fully, remove all devices from sockets and toggle the power switch Off and then On.
Disk full. Remove obsolete statistics files.	Use a card with larger memory. End the job. Eject the card. Recreate the job on a larger card using TaskLink; **or**, delete statistic files using TaskLink. They are listed as dates for Job Sessions.
Adapter board not supported by software. Update software.	Update the system software (page 47) or contact Data I/O Technical Support.

For more information see www.dataio.com/support.

Key to Symbols

⚠	Attention. Used for Cautions and Warnings.
⚠ (ESD)	ESD warning. Electrostatic discharges might cause damage.
⚠ (air)	Air pressure warning. Compressed air might cause damage.
⚠ (voltage)	High voltage warning. Electrical volts might cause damage.
✕•	An LED that is lit.
✕•	An LED that is blinking.
🗑	Dispose in a separately managed collection for electronic equipment (per Directive 2002/96/EC)

⎓⊏	Power cord plug.
▭	Fuse.
⏻	Power switch.
⏚	Earth (ground)
⏛	Protective Earth (Static ground)
🖧	Network connection.
1▭▭▭	Socket Adapter with socket 1 labeled.
⊘OK	Fail; not okay.

Glossary

Auto Start -the feature that allows programming devices without pressing Start after closing the sockets.

block -the four devices loaded into the Socket Adapter that get programmed as a group.

DCA -Dry, clean air

ESD -electrostatic discharge

job card -a memory card with a job loaded onto it. It includes algorithms and may include statistic files. It may be assigned supervisor authority.

LED -light emitting diode.

Supervisor card -a PC card with Supervisor authority set in TaskLink.

TaskLink -a software package created by Data I/O for creating programming jobs and managing statistics.

update card -a PC card (memory card) with system software for updating FlashPAK.

Correspondences

Many questions can be answered by visiting the Knowledge Base on our Web site. In your browser address line enter: www.dataio.com/support then click Knowledge Base.

Register and log in, or log in anonymously.

If you wish to contact Data I/O Technical Support or a service center see the next page. Please remember to include the following:

- **FlashPAK Serial Number. It is printed on the back of your unit.**

- **The error message text if there is one.**

- **Device manufacturer and part number if device related.**

For the lastes version of this guide, see Support > Manuals on our Web site.

Technical Support

Contact your local Data I/O representative.

To find your local representative, visit
 http://www.dataio.com/contact/repsearch.asp

Worldwide
Data I/O Corporation

Shipping address:
10525 Willows Road N.E.
Redmond, WA USA 98052

Mailing address:
P.O. Box 97046
Redmond, WA USA 98073-9746

Telephone: 425-867-6870   USA only: 800-332-8246
Fax: 425-867-6898
E-mail: Support@dataio.com

You can also find answers by visiting our Knowledge Base on our Web site at **www.dataio.com**, then click **Support**, then **Knowledge Base Search**.