1. Getting Started

■ CASIO Program-Link Package

The CASIO Program-Link package includes the following items:

> • Macintosh Program Disk
> • PC Program Disk
> • Communication cable (with Macintosh connector)
> • CASIO Program-Link User's Guide

■ Manual Conventions

• The terms "Program-Link" and "this software" as used in this manual refer to the Program-Link software that comes with the FA-123 Package.

• The term "calculator" as used in this manual refers to your CASIO Graphic Scientific Calculator.

• This manual explains only the procedures required to operate the Program-Link application software. It assumes that you are already familiar with the following computer operations.

> • Pull-down menu operations, clicking, double-clicking, and dragging with the mouse
> • Text input using the keyboard
> • Icon and window operations.

See the documentation that comes with your computer for full details on these operations.

• All of the operations in this manual are explained using the Windows operating system. What actually appears on the display of your computer may differ some-what if you are using a different operating system.

• Menu operations are notated within the text of this manual as hyphenated commands with the menu hierarchy progressing from left to right.

Example	Selecting the Open command from the File menu would be described as: "Select *File-Open*."

New	▶
Open...	Ctrl+O
CSV	▶
Close	
Save	Ctrl+S
Save As...	
Delete	
Print Setup...	
1 C:¥FA-123¥CATLG1.CAT	
2 C:¥FA-123¥CATLG2.CAT	
3 C:¥FA-123¥CATLG3.CAT	
4 C:¥FA-123¥CATLG4.CAT	
Exit	
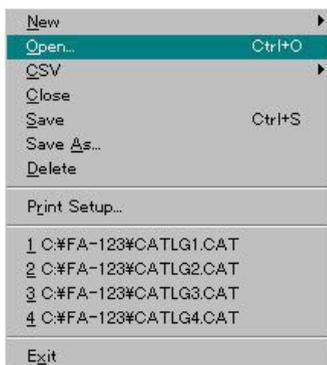
Menu (Windows)

• Any operation in this manual that is specifically identified as neither a computer nor calculator operation should be assumed to be a computer operation. All calculator operations are specifically identified as such.

■ System Requirements

FA-123 Program-Link requires either of the following minimum systems.

	Windows	Macintosh
Computer	IBM PC/AT or compatible	Macintosh (68030 CPU or newer)
Operating System	Windows 3.1 Windows 95 / Windows 98	System 7 or higher
Monitor	Color (256 colors or more)	Color or B&W
Minimum free space on hard drive	1MB on user specified drive 200KB on system drive	2.0MB 2.0MB
RAM	1MB free	2.5MB free
Floppy Disk Drive	3.5" 2HD	3.5" 2HD
Serial Port	1 port free	1 port free

■ CASIO Graphic Scientific Models

This software is designed for use with the following CASIO Graphic Scientific Models.

● **ALGEBRA FX Series**
  ALGEBRA FX 2.0
● **CFX-9850 Series**

CFX-9850G	CFX-9950G
fx-9750G	CFX-9970G
CFX-9850G PLUS	
CFX-9850Ga PLUS	
CFX-9850GB PLUS	CFX-9950GB PLUS

● **fx-7400 Series**
  fx-7450G
  fx-7400G PLUS

In addition, the following CASIO Graphic Scientific models can exchange data with the above models.

fx-7700GB	CFX-9800G
fx-8700GB	
fx-7700GE	
fx-7700GH	
fx-9700GE	
fx-9700GH	

■ File Configuration

Program-Link files are called "catalog files," which can be one of three different types.

Catalog Files ----+---- Text files
              |---- Back-up file
              └---- Image files

• Text files

This type of file consists of two parts: a group and the multiple items stored under it. Except for graphic data, all items can be displayed on a computer screen, and programs can be edited on the computer.

Text Files   ○ ... YES   × ... NO

Group	Item	ALGEBRA FX Series *(A)	CFX-9850/fx-7400 Series *(B)	Display	Editing	CSV Conversion	(A)-(B) Conversion
Program	Program name	○	○	○	○	×	○
Matrix	MatA~MatZ	○	○	○	×	○	○
List	List1~List20	○	○(1-6)	○	×	○	○
List File	File1~File6	○	○	○	×	○	○
Y=Data	Graph Function	○	○	○	×	×	○
	Recursion Function	○	○	○	×	×	○
	V-Window	○	○	○	×	×	×
	RightV-Window	○	×	○	×	×	×
	Graph Factor	○	○	○	×	×	×
	Table Range	○	○	○	×	×	○
	Recursion Range	○	○	○	×	×	○
Graph Memory	G-Mem1~G-Mem20	○	○(1-6)	×	×	×	×
V-Window Mem	V-Win1~V-Win6	○	○	○	×	×	×
Picture	Pict1~Pict20	○	○(1-6)	×	×	×	×
DynaMem		○	○	×	×	×	×
Equation	Simul Equation	○	○	○	×	×	×
	Poly Equation	○	○	○	×	×	×
Alpha Memory(A~Z,r,θ)		○	○	○	×	×	○
F-Mem n	f1~f20	○	○(1-6)	○	×	×	○
CAS(A~Z,r,θ)		○	×	×	×	×	×
Algebra	ANS	○	×	×	×	×	×
	InputReplay	○	×	×	×	×	×
	OutputReplay	○	×	×	×	×	×
	Equation	○	×	×	×	×	×

Data from an older model CASIO Graphic Scientific Calculator is converted to CFX-9850/fx-7400 Series format data.

• Back-up file

This file contains the data produced when you back up all of the data in calculator memory.

• Graphic files

This type of file contains the data produced when you use the screen capture function to create a bit pattern of the screen and save the bit pattern to your computer. Graphic data is saved using one of the two following file formats.

> • Windows: Bitmap
> • Macintosh: PICT

Graphic data can also be converted to one of the following file formats.

> • Windows: TIFF, PCX
> • Macintosh: TIFF

• Graphic files saved as one of the above file formats cannot be opened using Program-Link.

2. Installation: Windows

■ Installing CASIO Program-Link

1. Insert the Windows installation disk into your computer's floppy disk drive.

2. Double click on **setup.exe** to install Program-Link.

   • On the dialog box that appears, specify the installation path and then click **OK**.

3. A confirmation dialog box appears after installation is complete. Click **OK**.

If the procedure described above does not install Program-Link for you, do the following.

1. Change the names of the files on the installation disk as shown below and copy them to the directory where you want to install Program-Link.

From:

| FA123.EX_ |
| FA123.HL_ |
| FA123GRF.TT_ |
| FA123ALG.TT_ |

To:

| FA123.EXE |
| FA123.HLP |
| FA123GRF.TTF |
| FA123ALG.TTF |

2. Use the control panel to install the fonts.

■ Cable Connection

Connect the communication cable to your computer's COM1 or COM2 port.

■ Starting Program-Link

Double click the **FA-123.EXE** file to start Program-Link.

3. Installation: Macintosh

■ Installing CASIO Program-Link

1. Insert the Macintosh installation disk into your computer's floppy disk drive.
2. Double-click the FA123 icon.
   - This starts a process that uncompresses the program file.
3. In accordance with the instructions that appear on the display, specify the name of the folder where you want the uncompressed program file to be stored. Click **Save**.
4. Some of the other files on the installation disk have to be copied to the folders described below.
4-1. Drag **Serial Tool** to your **System Folder**.
   - A dialog box appears asking whether **Serial Tool** should be placed in the **Extensions** folder. Click **OK**.
4-2. Drag the **FA123GRF** font and **FA123ALG** font to your **System Folder**.
   - A dialog box appears asking whether **FA123GRF** font and **FA123ALG** font should be placed in the **Font** folder. Click **OK**.

■ Cable Connection

Connect the communication cable to your computer's modem port.
If the modem port is already being used, connect to the printer port.

- If you connect to the printer port, be sure to turn Apple Talk off.

■ Starting Program-Link

Double click the **Program-Link FA123** icon to start Program-Link.

4. File Transfer

The procedures described here can be used to upload calculator data to your computer, and to download programs and data from your computer to your calculator.

• For details on how to operate your calculator during file transfers, see the section of the calculator's User's Guide titled "Data Communications."

■ Types of Transfers

There are tow ways to transfer items.

- • Transfer of a single data item. Transferred data items can be individually opened and manipulated in the catalog window, and programs can be edited on the computer.
- • Transfer of all data to back up computer memory contents. Backed up data contents cannot be viewed or edited on the computer.

■ Before Transferring Data

●Setting computer communication parameters

1. Select **Link-Communications**.
2. Specify the communication port.
3. If you are using a Macintosh computer, set the following communication parameters.

BPS	9600
Parity	None
Data Bits	8
Stop Bits	1
Hand shake	None

●Specifying the calculator type

Select the type of calculator you are connecting from **Tool-Model Type** (**Link-Model Type** on the Macintosh) .

P5

●Setting calculator communication parameters

Use the communication parameter setting procedure described in the User's Guide of your calculator to set its parameters to the following.

BPS	9600
Parity	None

• ALGEBRA FX, CFX-9850, and fx-7400 Series communication parameters are set automatically.

■Transferring Files from Your Calculator to Your Computer

1. Select **Link-Receive** on the computer screen.
2. Select the calculator data you want and then send it.

Use the following procedure to send data from the ALGEBRA FX.

Select *Transmit* in the *LINK* mode.
Select *Select* and then select the data item you want to sent.
Select *Tran* and then select *YES*.

Data transfer starts at this time, with its progress indicated by a dialog box on the computer screen.

Sample screen

The message "Transmit ERROR!" appears if the computer is not set up to receive data.

3. When data transfer is complete, a new catalog window appears on the screen.
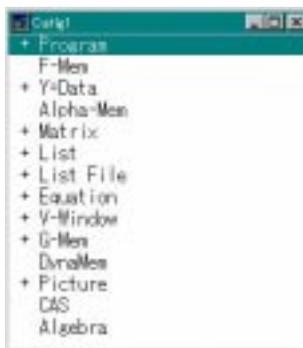
Sample screen

4. Save the data as a file.

Select *File-Save*.

Specify a file name and click *OK* (*Save* in the case of a Macintosh) to save it as a catalog file.
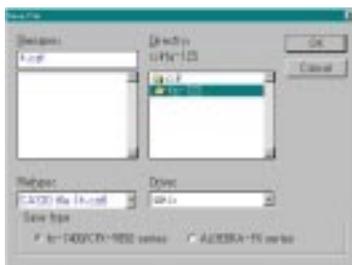
• Selecting *File-Save* displays a dialog box you can use to specify the file name, drive, and directory (folder on the Macintosh). You can also use the "Save type" box to specify the file format.

• Double check the following items whenever data transfer is not performed correctly.

• Check for proper connection of the communication cable.

• Check that the port was correctly selected using **Link-Communications**.

• Make sure the correct Tool-Model Type (Link-Model Type on the Macintosh) is selected.

■ Transferring Files from Your Computer to Your Calculator

1. Select **File-Open** and open the catalog file that you want to use for the transfer.

• Selecting **File-Open** causes a dialog box to appear. This dialog box can be used to specify a file name and also to specify a drive and directory (a folder in the case of a Macintosh).

2. Click on a group and item to select it for transfer.

   • To select all the contents of the catalog file, select **Edit-Select All**.

   • To select all the items in a group, double-click on the group (click on the arrow mark to the left of the group name in the case of a Macintosh).

   • To select multiple groups and items, hold down **control** (**command** in the case of a Macintosh) and click. Hold down **shift** while clicking on groups or items to select them.

3. Set up the calculator to receive data.

   Example   **Use the following procedure to receive data with the ALGEBRA FX.**
   Select *Receive* in the *LINK* mode.

4. Select **Link-Transmit**.

Double check to make sure that both units are set up correctly for data transfer and then click **OK**.

Data transfer starts at this time, with its progress indicated by a dialog box on the computer screen.

5. If a received file has a name of a file already stored in calculator memory, a dialog box appears asking if you want to overwrite the existing file. Select **Yes** or **No** in response to the dialog message.

The message "Transmit error" appears if the calculator is not set up to receive data.

6. When data transfer is complete, the dialog box closes.

• Double check the following items whenever data transfer is not performed correctly.

• Check for proper connection of the communication cable.

• Check that the port was correctly selected using **Link-Communications**.

• Make sure the correct Tool-Model Type (Link-Model Type on the Macintosh) is selected.

■ Back-up Data Transfer

●To back up calculator data

1. Select *Link-Receive* on the computer screen.

2. Select *Backup* in the calculator's *LINK* mode.

Example   **Use the following procedure to back up data from the ALGEBRA FX.**

Select *Transmit* in the *LINK* mode.
Select *Backup* and then select *Tran*.

3. Now proceed with step 3 under "Transferring Files from Your Calculator to Your Computer".

●To transfer backed up data to the calculator

1. Select *File-Open* and then select the back-up data file.

2. Now proceed with step 3 under "Transferring Files from Your Computer to Your Calculator".

• In the case of back-up data, no confirmation message appears to ask if you want to replace previously backed up data with new data if you assign a file name that is already assigned to back up data in memory.

5. Data Editing

■ Creating a New Catalog File

1. Select **File-New-Model Type,** and then on the sending unit select **Model Type**.
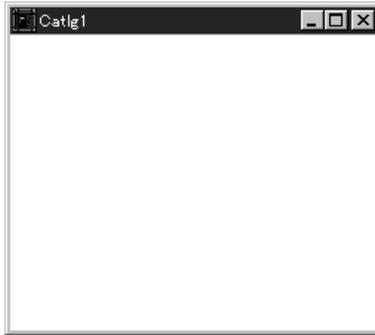
Sample screen

2. Input data to create a new program or copy (or move) data from another catalog window.
   - For details on creating a program, see "Creating a New Item (Program)".
   - For details on copying or moving data, see "Deleting, Copying, and Moving Groups and Items".

3. Select **File-Save As** to save the data.

■ Creating a New Item (Program)

- A program is the only type of item that can be newly created.

1. While a catalog file is open, select **Item-New**.
   - Input the item name (program name) in the dialog box that appears on the screen.
   - The following are the characters you can use in a file name:
     A through Z, *r*, θ, spaces, [,], {, }, ', ", ~, 0 through 9, ., +, −, ×, ÷
   - The above operation creates a program group and creates the item inside the program group.

- If a program group already exists, the item is created inside the existing program group.

2. Double-click on the item to launch the program editor.
   - In the case of a Macintosh, the program editor is launched automatically.

3. Input the contents of the program.
   - See "Program Editor" for details on inputting program contents.

4. Select **File-Close** to quit the program editor.

5. Select **File-Save** to save the catalog file.

- Program passwords are ignored by this software.
- When a program with password is transferred from the calculator to the computer, the password is ignored.
- You cannot edit a BASE program.

■ Displaying, Editing, and Printing Items

● Displaying and Editing an Item

1. While an item is selected, select ***Item-Open*** to display the contents of the item.
   - In addition to using ***Item-Open***, you can also double click on an item to display its contents.
   - If the item is a program, you can use the program editor to edit its contents.

- You cannot display the contents of G-Mem, Picture, or Dyna-Mem items.
- You can only edit RUN programs. You cannot edit BASE programs. Program passwords are ignored by the software.

● Printing

1. While an item is displayed, select ***File-Print***.
2. Specify the printer, print options, number of copies, and enlargement factors, and then start the printing.
   - You can use the preview function (not available in the case of a Macintosh) to display an image of the printout on the screen.

- You can print approximately 70 characters on an A4 size sheet of paper when the font size is 10. To print more data, reduce the size of the printout.

■ Deleting, Copying, and Moving Groups and Items

● Deleting a Group and Item

Select the group and item to be deleted and then select ***Edit-Delete*** (***Edit-Clear*** in the case of a Macintosh), or press the ***del*** key (***delete*** key in the case of a Macintosh).

● Copying a Group and Item to Another Catalog File

1. Select the group and item to be copied and then select ***Edit-Copy***.
2. Open the destination catalog file and then select ***Edit-Paste***.

- You could also drag the group and item to the designation window (while holding down the ***command*** key in the case of a Macintosh).
- Copying data between two catalog files that are different formats can cause some of the data to be lost.
- Available formats depend on graphic scientific calculator model.

●Moving a Group and Item to Another Catalog File

1. Select the group and item to be copied and then select *Edit-Cut*.
2. Open the destination catalog file and then select *Edit-Paste*.

• You could also drag the group and item to the destination window while holding down the *control* key (simply drag the group and item without holding down any key in the case of a Macintosh).

6. CSV Format Data File Conversion

You can convert List, File, and Matrix data to CSV format, which can then be imported into a spreadsheet. You can also convert CSV format data to List, File, and Matrix data.

■ Converting List, File, or Matrix Data to CSV Format

1. Select the catalog file list, file, or matrix data you want to convert, and then select **File-CSV-Save as CSV**.
2. On the dialog box that appears, select the destination directory.
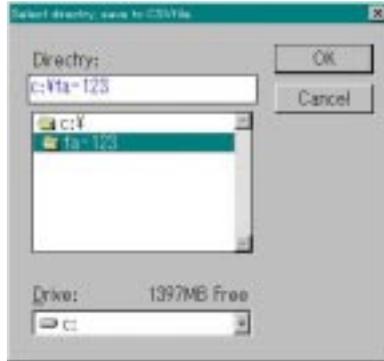
3. Click **OK** to convert the data to CSV format.
   • List, File, or Matrix data that contains complex numbers cannot be converted.

■ Converting CSV Format Data to List, File, or Matrix Data

1. Select **File-CSV-Load from CSV**.
2. Specify List, File, or Matrix and the type of data to which you want to convert.
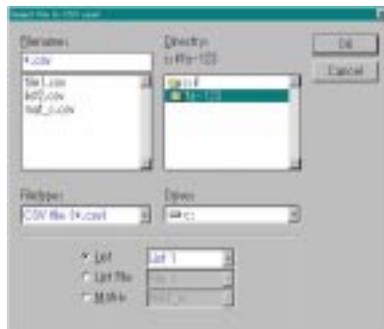
3. After the data is converted, the catalog file for the data type you select (List, File, Matrix) appears on the screen.
   • Conversion is not performed if the file type you select is not compatible with CSV data.

7. Screen Capture

The screen image of the calculator can be captured as a bit pattern and transferred to your computer.

• For details on how to operate your calculator for screen capture, see the section of the calculator's User's Guide titled "Data Communications."

■ Capturing a Screen to Your Computer

●ALGEBRA FX Series

1. Set up the calculator to send a screen shot to a computer.
   • Use the calculator's **LINK** Mode set up ([F3] (SET UP)) to specify **Direct** (direct send) for the **H-Copy** item.
2. On the calculator, display the screen you want to send to the computer.
3. On the FA-123 menu bar, select *Link-Screen Capture*.
4. On the calculator, press [F6] (H-COPY) to send the screen shot.

●CFX-9850/fx-7400 Series

1. Set up the calculator to send a screen shot to a computer.
   • On the calculator's **LINK** Mode, press [F6] (IMGE) and then turn on the **Image Set Mode**. In the case of a color calculator, you can select either **MONO** or **COLR** for the Image Set Mode.
2. On the calculator, display the screen you want to send to the computer.
3. On the FA-123 menu bar, select *Link-Screen Capture*.
4. On the calculator, press [F-D] to send the screen shot.
   • The screen shot is shown on the display of your computer after the transfer operation is complete.
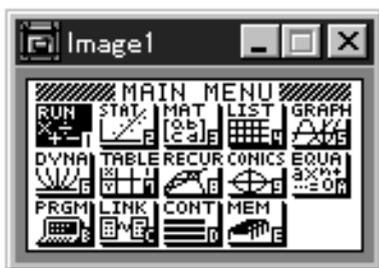
Sample screen

5. Save the data in a file.

   Select *File-Save As*.

   Specify a file name and save the file.

   To change the format of the image file, specify the file type and then save the file.

• Selecting *File-Save As* causes a dialog box to appear. This dialog box can be used to specify a file name and also to specify a drive and directory (a folder in the case of a Macintosh).

■ Displaying and Printing a Captured Screen Image

●Displaying a Captured Screen Image

Select *File-Open* and open the image file to display the image.

●Printing a Captured Screen Image

1. While the image is on the display, select *File-Print*.

2. Specify the printer, print options, number of copies, and enlargement factors, and then start the printing.

   • You can use the preview function (not available in the case of a Macintosh) to display an image of the printout on the screen.

8. Program Editor

The program editor lets you edit the contents of programs.

■ Launching the Program Editor

Create a new program or select an existing program to launch the program editor.

●Command Input

You can input commands using any one of the three following methods.

• Selecting command from one of the following menus: MENU, PRGM, VARS, OPTN, KEY, SET UP, CATALOG
• Inputting commands from the keyboard.
• Displaying the calculator window and using the mouse to click on its keys.

• To display the calculator window, select **View-Calculator**. Select **View-Calculator** again to clear the calculator from the display.
• The calculator independent font (i.e. $\sqrt[3]{}$) is included in the FA123GRF font and FA123ALG font, and cannot be input from the keyboard.
• Special characters will not appear normally on the display if the FA123GRF font and FA123ALG font is not installed correctly.
• The calculation window's **SHIFT** key and **ALPHA** key are disabled in the case of a Macintosh.

■ Saving Programs

Use the following procedure to save a program after inputting or editing it.

1. Select **File-Close** to quit the program editor.
2. Select **File-Save** to save the catalog file.

■ Changing Fonts (Macintosh Only)

You can use another font with the program editor besides the FA123GRF font and FA123ALG font.

• Special characters will not appear normally on the screen whenever you use a font other than FA123GRF and FA123ALG.

Select **Edit-Font-font name** to change the font.

9. Data Transfer with an Old Model Calculator

Using this software to transfer data to the computer from an older model calculator automatically converts the data to the format used by CFX-9850 / fx-7400 Series and then stores it on disk.

The following table shows how data is converted.

Statistics SD
    X-data → LIST1
    f-data → LIST2	

Statistics REG
    X-data → LIST3
    Y-data → LIST4
    f-data → LIST5	

Variable Mem Defm → disappear	
Range	→ View Window Mem1
Factor	→ Y=DATA
Table Function	→ Y=DATA , Graph Function , Table Range
Table Recursion	→ Y=DATA , Recursion Function , Recursion Range
Graph Function	→ Y=DATA , Graph Function
Dynamic Graph	→ Y=DATA , Graph Function
Editor	→ Program