TI-SmartView™ Emulator Software for the TI-84 Plus Family (Windows®)

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Getting Started

What's new in version 3.1

- **Key Press History**— Review recently pressed keys from the key press history pane or on the large screen pane.
- **Additional Color Capabilities**— Change the TI-84 Plus image to use a different face plate option. The variety lets you create a custom look, or increase visibility for the visually challenged.
- **Adjustable Screen Size**— Use the small, medium, and large screen sizes or customize the screen size. When you size the screen by dragging the window border, the size of the freely scalable TI-84 Plus device image is sized automatically.

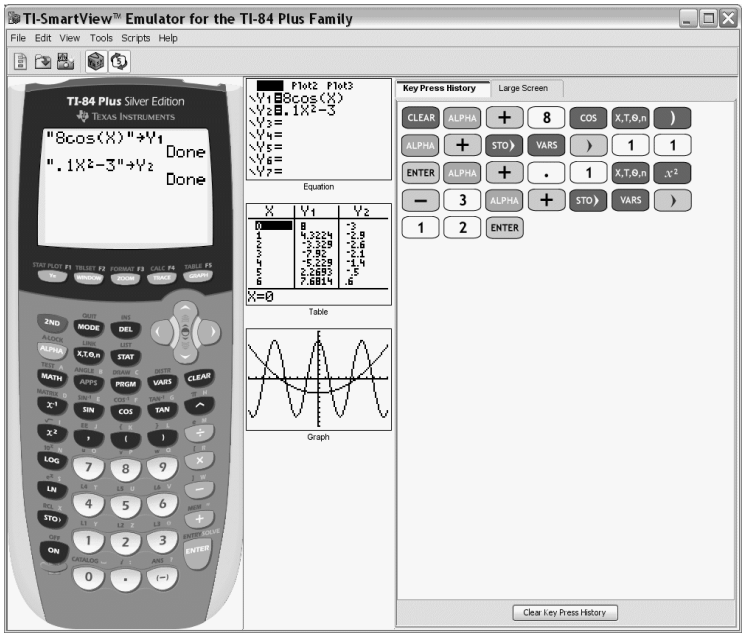
Overview of the TI-SmartView™ software

The TI-SmartView™ software gives you a TI-84 Plus calculator on your computer. The entire functionality of the TI-84 Plus is at your disposal, including the ability to load and use calculator files such as applications (Apps), lists, matrices, programs, and so on. The Apps that come already loaded on the TI-84 Plus Silver Edition are also included with the TI-SmartView™ software.

TI-SmartView™ software lets you show the TI-84 Plus to an audience without using calculator-specific projection equipment and gives you additional functionality that aids in presentations and demonstrations.

- Control the TI-SmartView™ software using a connected calculator. You can connect a TI-84 Plus or TI-84 Plus Silver Edition graphing calculator to the computer. When you press keys and perform calculations on the calculator, those actions are repeated automatically on the emulator in the TI-SmartView™ software. The connected calculator acts as a remote keypad.
- Supplement the current TI-84 Plus screen by using the View^3™ pane to show three extra screens simultaneously. You can select any three of the following calculator screens: Y= editor, table, graph, stat plot, list, and window.
- Repeat demonstrations quickly and easily by using scripts to play back a series of keystrokes.
- View the history of your calculator entries as well as a large version of the current calculator screen, and open scripts by displaying the key press history window.

- Capture screen images that you can save and use in other documents.



Emulator (Pane 1) | View3™ (Pane 2) | Key Press History tab (Pane 3)

System requirements

The computer that you use to run the TI-SmartView™ software must meet the following hardware and software requirements.

- Windows Vista® (Home Premium/Ultimate/Business), Windows® XP (Home or Professional edition) with Service Pack 2; or Windows® 2000 Professional edition with Service Pack 4.
- 900 MHz Pentium-compatible CPU
- 512 MB RAM
- 125 MB of available hard-disk space
- CD-ROM drive or active Internet connection for installation
- Microsoft Internet Explorer 6.0 or later
  Netscape® 5.0 or later
  Opera 7.0 or later
  Mozilla™ Firefox 1.0

Installing the TI-SmartView software

If you are installing a full version of the TI-SmartView™ software (as opposed to a trial version), find the CD key located on the CD case or CD. You need to enter the CD key during a full-version installation.

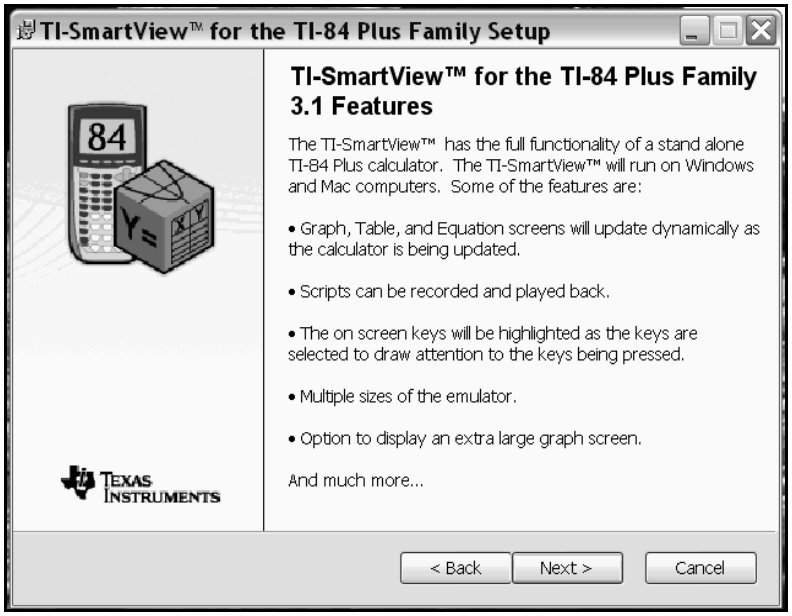
Before you begin

To install the software on your computer, you must have the appropriate privileges. You will need Administrator privileges on Windows®. If you do not have the necessary privileges, contact your network administrator.

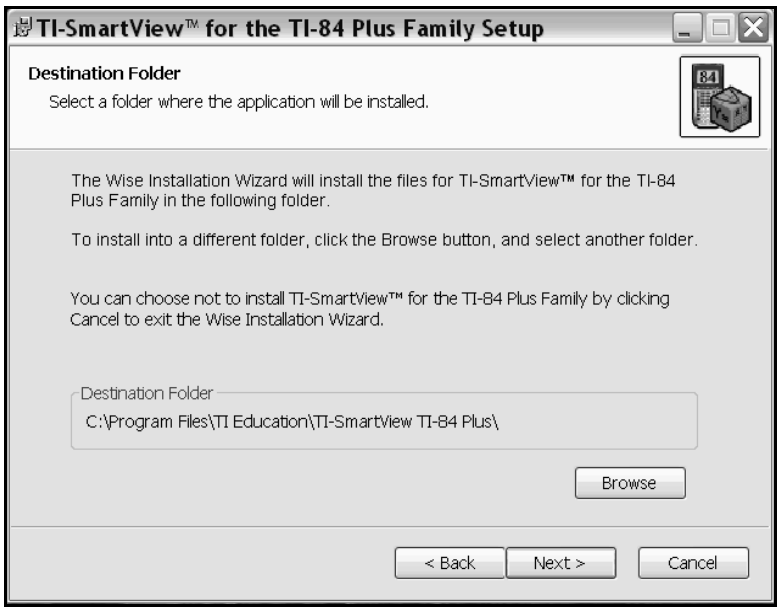
Installing the software

1. Close any applications that are open.
2. Insert the TI-SmartView™ CD into the CD-ROM drive.

   The CD should launch automatically. If the CD does not launch, double-click the appropriate launch file on the CD.
3. Click **Next** at the bottom of the Welcome screen, and click **Next** again on the Features screen.



   The Destination screen displays.



4. Click **Next** on the Destination screen to accept the default installation location, or click **Browse** to navigate to a different folder for application installation.

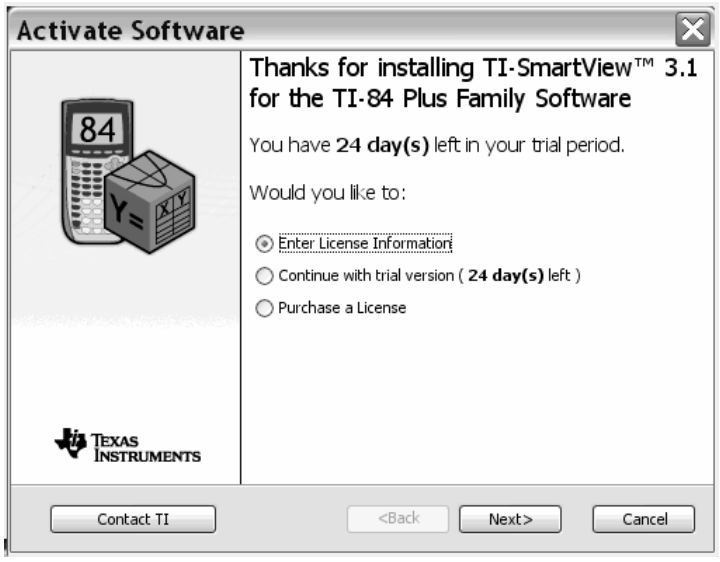
   A progress bar displays during installation.

5. Click **Finish** on the screen that confirms successful installation. Double-click the TI-SmartView icon to start the application and activate the software.

   If you have already purchased the software, you should activate it. Activating the software allows to you continue using it past the 30-day evaluation period. It prevents unauthorized copying of the product onto more computers than the license agreement allows.

Activating the software

1. To begin the activation process, start the TI-SmartView™ program by double-clicking the icon. On the Activate Software screen, click **Activate this software**, and then click **Next**.



2. Review the options displayed to determine which activation method you should use. Regardless of which activation method you prefer, you will need to supply the Serial Number and License Number included with the installation CD.

- **Internet**— This method uses your Internet connection to activate your software. You provide the Serial Number and License Number.
- **Web Portal**— This alternative method takes you to a Web page where you can retrieve an Activation ID. The ID is displayed on the Web page. If you provide your e-mail address, the ID is also sent to you by e-mail.
- **Phone**— You provide a TI representative with the Serial Number and License Number as well as an Installation ID displayed on your screen. The representative then provides an Activation ID.
- **I already have an Activation ID** — After accepting a license agreement, you fill out a screen with the Serial Number, License Number, and the Activation ID.

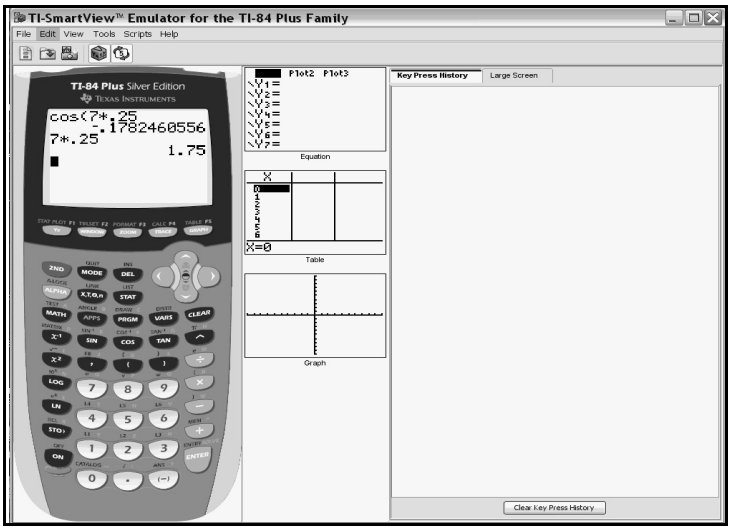
3. Click an activation method, then click **Next** and follow the instructions to type the Serial Number, License Number, and Activation ID.

   Note: When entering the CD key, be careful to not enter a zero for the letter O or a letter O for a zero. Similarly, do not confuse the number one with a lowercase letter L.

4. Type contact information and click **Next**.
5. Provide information to create a user profile (optional), and then click **Next** to complete software activation.

Opening the software on your computer

► Double-click the TI-SmartView™ icon. The application starts.



Things you need to know

The mouse pointer takes the place of your finger pressing keys on the calculator.

When you use the mouse, remember that the pointer takes the place of your finger. You must click the keys on the TI-SmartView™ emulator as you would press the keys on the TI-84 Plus. The calculator image in the TI-SmartView™ software is *not* fully interactive. For example, when you change mode settings, you might be tempted to click the mode setting on the calculator screen to select it. However, clicking on the screen does nothing. You must click the arrow keys to move the cursor to the desired setting and then click [ENTER] to select it.

Typing text using the computer keyboard doesn't work unless you first place the keyboard in its alpha typing mode.

By default, the TI-84 Plus keyboard is in its normal shortcut mode, in which keys are simply shortcuts to calculator keys. For example, pressing **[A]** is the same as clicking [MATH] on the calculator. In this mode, you cannot directly type the letters A through Z.

To type a letter or other alpha character, click [ALPHA] or press **[F7]** first. For example, **[F7] [A]** gives you an A, not the [MATH] key and not a B (the alpha character associated with [APPS]). After you type the character, the keyboard returns to its normal shortcut mode.

To lock the alpha key so you can type more than one character at a time, click 2nd [A-LOCK] or press **[F6] [F7]**. To return to the normal shortcut mode, click ALPHA or press **[F7]**.

In alpha typing mode, **[0]** through **[9]** still act as shortcuts. Pressing **[1]** types Y (the alpha character associated with 1). To type a number, be sure the keyboard is not in the alpha typing mode. These keys do type the digits 0 through 9 in the normal shortcut mode.

Hold down an arrow key to scroll the cursor continuously.

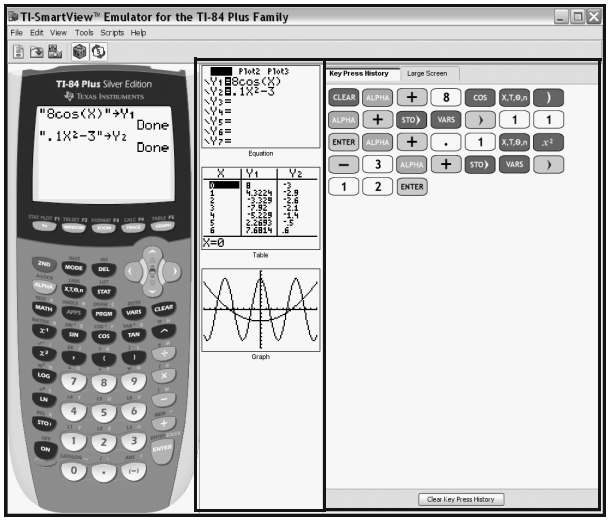
When you use an arrow key to move the cursor, you can hold down the key to scroll the cursor continuously, instead of having to press the key repeatedly. In the key press history and in a script, the icon for a repeating arrow key has a clock symbol attached to it. For example:

When you record a script, you record only calculator key presses. These key presses can be difficult to interpret, viewed by themselves.

Because you record key presses, editing a script can be a little tricky. For example, if you change the mode to parametric, the script records MODE ▼▼▼▶ ENTER. The script doesn't overtly tell you that you changed the mode to parametric. For this reason, it can be quite helpful to step through a script one key press at a time, or to play the script back at a slower speed so that you can see exactly where an edit needs to be made.

Choosing a display option

By default, the TI-SmartView™ software displays the calculator and two optional panes of additional information. You can show or hide these optional panes, or change the type of information displayed in each one.



The View^3™ pane initially shows the Y= editor, table, and graph screens. However, you can select which calculator screen you want to show for each of the three displays. (The stat plot, list, and window screens are also available.) The screens are updated each time you press one of the graphing keys (WINDOW, ZOOM, TRACE, GRAPH), change the Window or Zoom settings, or press ENTER.

The third pane includes tabs that you can click to see either the key press history, a large screen display of what the device image is displaying, or any open scripts. When you display the large screen in the third pane, you can hide or show the key press history information at the bottom of the pane.

Display Option	**Click:**
View^3™ pane	**View > Show/Hide View^3** or  to show or hide the pane. **View > View^3 Options** to select a calculator screen for each display.

Display Option	Click:
Key press history, large screen, and script pane	**View > Show/Hide Key Press History** or  to show or hide the pane.
Scripts	**File > Open** or  to open an existing script. **File > New Script** or  to open a new, blank script. The close button on the script's tab  to close a script.

Notes:

- Hiding the key press history does not clear it.
- Hiding the key press history does not delete or close open scripts.
- You can record a script without displaying the key press history.

Changing the size of the TI-SmartView screen

When you first use the TI-SmartView™ software, a full-screen image for 1024 x 768 screen resolution is displayed. You can use whichever size you want, but the small, medium, and large versions are optimized for the following screen resolutions.

If your screen resolution is:	Click:
800 x 600	**View > Size > Small Emulator**
1024 x 768	**View > Size > Medium Emulator**
1280 x 1024	**View > Size > Large Emulator**

The TI-84 Plus image in the TI-SmartView™ program is freely scalable. In addition to choosing small, medium, and large emulator sizes, you can click and drag the TI-SmartView™ window borders to display the application in a window that is a custom size.

Changing the color of the face plate

Just like with the TI-84 Plus graphing calculator, you can change the color of the face plate on the TI-SmartView™ calculator. You can choose from six face plate options. The default face plate color is silver.

► Click **View > Color** and then click a color.

Saving and loading an emulator state

When you save the emulator state, a file is created that stores the calculator with all of the changes that you have made to its setup. Think of the emulator state file as representing a single TI-84 Plus that you have used and then set aside. When you load an emulator state, you pick up that same TI-84 Plus to use again. All of the changes that you made to the calculator are intact.

For example, you might want to set up a class demonstration by entering functions in the Y= editor and changing Window and Zoom settings. When you save your changes in an emulator state file, you simply load the file to show your demonstration. If you want to create different demonstrations for different classes, you can create multiple emulator state files. There is no limit on the number of emulator states that you can save.

Note: The key press history, screen capture images, open scripts, and the face plate color are *not* saved in the emulator state file.

Saving the emulator state

1. Click **File > Save Emulator State**.
2. In the dialog box:
    a) Navigate to the folder in which you want to store the emulator state file.
    b) Type a file name. Use a name that describes the emulator state.
    c) Click **Save**.

Loading an emulator state

1. Click **File > Load File**.
2. In the dialog box:
    a) Navigate to the folder that contains the emulator state file.
    b) Click the emulator state name to highlight it.
    c) Click **Open**.

Resetting the emulator state

Resetting the emulator state returns the TI-SmartView™ software to the TI-84 Plus Silver Edition factory-default settings. The optional View^{3}™ pane (center) and the right pane are shown. The key press history is cleared. Any open scripts are stopped, but remain open.

1. Click **Tools > Restore Default State**.
2. In the dialog box, click **Yes** to confirm that you want to reset the emulator state.

Saving calculator data to the computer

By saving data (lists, matrices, programs, etc.) from the TI-SmartView™ emulator to files on the computer, you can make backup copies of that data. If you delete the data from the TI-SmartView™ emulator, you can load the calculator files from the computer at any time.

1. Click **File > Save Calculator File**.

   The Device Contents dialog box lists the data items on the TI-SmartView™ calculator, which may take several seconds.
2. Click an item to highlight it.
   - To select multiple items, hold down **Ctrl** on the computer keyboard as you click each additional item.
   - To select a range of items, click the first item in the range. Then hold down **Shift** and click the last item in the range.
3. Click **Save Selected Item(s)**.
4. In the dialog box, navigate to the folder in which you want to store the files.
   - Be sure to either open the folder or click the folder to highlight it. The folder name must be shown in the **File name** box at the bottom of the dialog box.
   - If necessary, click  **New Folder** to create a new folder.
5. Click **Save**.

   Each selected item is saved as a separate file on the computer. File names are assigned automatically. The file name's extension identifies the data type.

   If the folder already contains a file with the assigned name, you're prompted whether to overwrite the existing file.

   The Device Contents dialog box stays open so you can select and save additional data items.
6. When you're finished, click **Close**.

Note: In the Device Contents dialog box, you can sort the list by clicking a heading. For example, click **Name** to sort by name and switch between ascending (a-z) and descending (z-a) order.

Name	Type	Size	Ram/Archive
Y_2_	Equation	6	RAM
Y_1_	Equation	4	RAM
Y	Real	9	RAM
X	Real	9	RAM

Transferring files to supported graphing calculators

You can transfer files to the following calculators: TI-83 Plus, TI-83 Plus Silver Edition, TI-84 Plus, and TI-84 Plus Silver Edition.

To transfer calculator files from the computer, use TI Connect™ software and an appropriate TI Connectivity Cable available from education.ti.com. Some calculators come with a TI Connectivity Cable, which lets you connect the calculator to the computer.

You can also transfer data directly between the TI-SmartView™ program and a connected calculator, much the same way you can connect two calculators and transfer data between them.

Loading a calculator file from the computer

If you previously stored calculator files containing lists, programs, applications, etc., on your computer, you can load them into the TI-SmartView™ software. The files may be backups saved by the TI-SmartView™ program or files transferred to the computer from a calculator. See “Transferring files from supported graphing calculators.

1. Click **File > Load File**.
2. In the dialog box:
    a) Navigate to the folder that contains the file you want to load.
    b) Click the file name to highlight it.
    c) Click **Open**.

    If the TI-SmartView™ program already contains a data item with that name, you’re prompted whether to overwrite the existing item.

Calculator file names on the computer

Calculator file names have the form:

filename.8x*?*

where *filename* is as close as possible to the data item's name on the calculator, 8x indicates the file was created by the TI-SmartView™ program or a supported graphing calculator, and *?* is a letter that identifies the type of data. Common data types are:

If ? is:	Type of data
c	complex variable
d	GDB (graph database)
e	equation
f	function
g	group
i	picture
k	Flash application
l	list (real or complex)
m	matrix
n	real number
p	program
s	string variable
t	table setup
v	application variable
w	window range
z	user zoom window

Note: If you load a Flash application file, the TI-SmartView™ program automatically installs the application.

Transferring files from supported graphing calculators

The TI-SmartView™ program can load files transferred to your computer from the following calculators: TI-83 Plus, TI-83 Plus Silver Edition, TI-84 Plus, and TI-84 Plus Silver Edition.

To transfer files from a calculator to the computer, use TI Connect™ software and an appropriate TI Connectivity Cable available from education.ti.com. Some calculators come with a TI Connectivity Cable, which lets you connect the calculator to the computer.

You can also transfer data directly between the TI-SmartView™ program and a connected calculator, much the same way you can connect two calculators and transfer data between them.

Updating the software from the Internet

Visit education.ti.com for free software updates that are periodically available for downloading.

Working with images

Capturing calculator screens

You can capture the current calculator screen image using the TI-SmartView™ screen capture tool. When you capture a screen, the Screen Capture window is displayed. In this window, you can view, manipulate, and save screen images.

▶ Click **Tools > Take Screenshot** or click  .

With a border, the image size is 100 pixels wide by 68 pixels high. Without a border, the image size is 96 pixels wide by 64 pixels high. A border is automatically added to each image when you capture it, but you can remove it.

The number of screen images you can capture is limited only by the available memory on your computer. Each unsaved screen image is stored in memory until you close the main TI-SmartView™ window. Closing the Screen Capture window does not discard unsaved screen images.

Adding or removing a border

The toolbar button for adding or removing a border toggles between add  and remove  depending on whether or not the selected image contains a border.

Adding or removing a border on a single screen image

1. Click the screen capture image to select it.

2. Click **Edit > Remove Border** or click  to remove the border.

   —or—

   Click **Edit > Add Border** or click  to add a border.

Adding or removing a border from a group of screen images

1. Switch to thumbnail view.
2. Select the group of images. You can either:
   - Click the first image you want to select, and then hold down **Ctrl** on the computer keyboard as you click each additional image.

- Select a range of images by clicking the first image in the range, holding down **Shift**, and clicking the last image in the range.

3. Click **Edit > Remove Border** or click  to remove the border

   —or—

   Click **Edit > Add Border** or click  to add a border.

Note: To select all of the images, click **Edit > Select All**.

Saving a screen image

You can save screen images in TIF, GIF, or JPEG formats. The images are saved in your My Documents folder unless you specify a different location to save them. All images are saved at the size they are currently displayed.

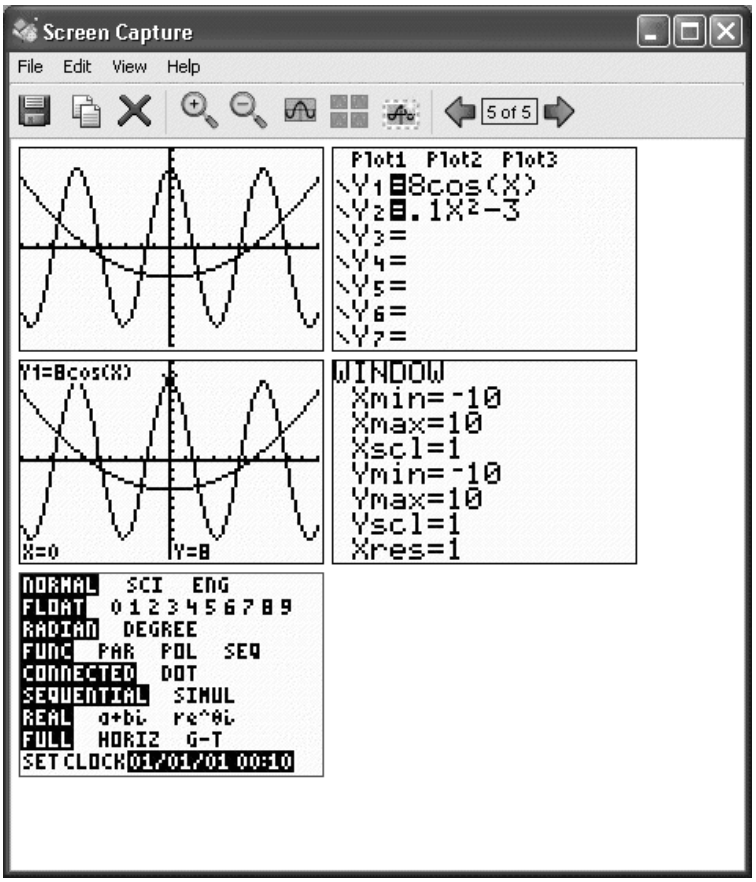
1. Click the screen image you want to save.
2. Click **File > Save Screen** or click  .
3. In the dialog box:
   a) Navigate to the folder in which you want to store the screen image file.
   b) Select the file type for the appropriate image format.
   c) Type a file name. Use a name that describes the screen image.
   d) Click **Save**.

Note:

- If you have previously saved the selected screen image, clicking **File > Save Screen** or  overwrites the previous file. To save the file in a different location, with a different name, or as a different file format, you must click **File > Save Screen As**.
- To save all the images at once, click **File > Save All Screens**. When you do this, you select the location to save the files in the Save All window, but do not specify file names. Each screen image is saved with its default file name. If that name already exists, you're prompted whether to overwrite the existing file.

Viewing screen images

When you capture a screen image, that image opens in the Screen Capture window. You can view the images individually or as a group of images, called thumbnails. A reference name is displayed under each image.



- To view screen image thumbnails, click **View > Thumbnails** or click  .
- To view individual screen images, click **View > Single Screen** or click  .

Navigating among screen images

- To view the previous screen image, click **View > Previous Screen** or click  .
- To view the next screen image, click **View > Next Screen** or click  .

Zooming in or zooming out

You can zoom in or out on any single image to view a larger or smaller version of it.

You can save a larger or smaller version of a screen image by zooming in or out before you save it. For example, to save an image that is larger than the standard 96 x 64 size, zoom in until the image is the size you want and then save it.

- To display a larger screen image, click **View > Zoom In** or click  .
- To display a smaller screen image, click **View > Zoom Out** or click  .

Dragging and dropping an image to another application

You can drag and drop any TI-SmartView™ screen image to paste it into another application. These images include the following:

- Saved or unsaved screen capture images
- View^{3}™ pane screens
- The Large Screen image

Note: In the Screen Capture window, the selected image has a red border. However, the borders on the Large Screen image and the View^{3}™ screens do not change color when you select them.

To drag and drop a screen image into another application:

1. Adjust the sizes of the windows of the two applications so that both of them fit on the computer screen.
2. To drag-and-drop the image:

a) Click the screen image to select it.

b) Drag the screen image from the TI-SmartView™ program and then drop it into the other application.

Using the key press history

What is the key press history?

Each key you click on the calculator is recorded automatically in the key press history. You can see the key press history from the key press history pane and the large screen pane. Using the key press history to see a listing of all the keys you've used has several benefits, including:

- If a calculation gives unexpected results, you can view the key press history to see if you entered the correct data.
- If you perform a calculation and then find you need to perform it repeatedly, you can copy those keys from the key press history and paste them into a script. When you need to repeat the calculation, you can play the script instead of re-entering all the key presses.

The key press history shows some key sequences in a different form than they're shown in the user's guide for the TI-84 Plus calculator. For example, suppose you display the calculator's **MEMORY** menu.

- The user's guide shows the key sequence as [2nd] [MEM], where [MEM] is the 2nd function of the [+] key.
- The key press history shows the key sequence as 

because those are the actual keys you click.

Similarly, suppose you select the **round(** function from the **MATH NUM** menu.

- The user's guide shows the function as **round(**.
- The key press history shows 

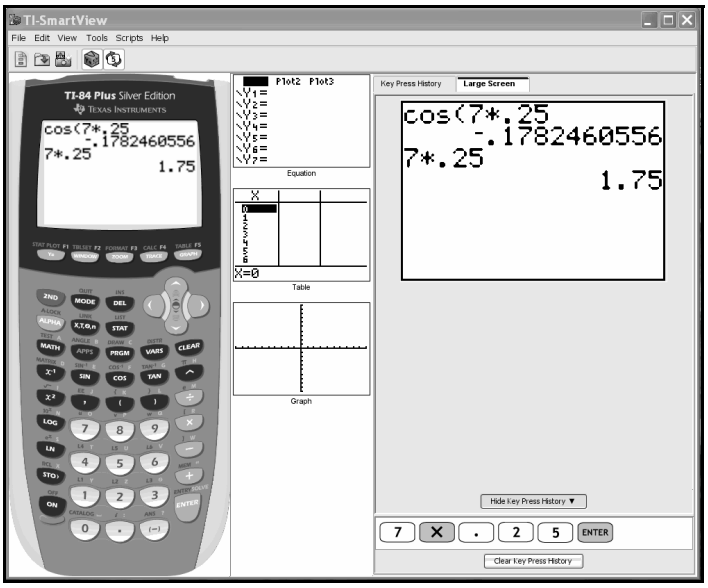
because those are the keys you click.

Showing or hiding the key press history

▶ Click **View > Show/Hide Key Press History** or click  .

When the TI-SmartView™ right pane is showing, you may need to click the Key Press History tab to activate it. The right pane also shows tabs for Large Screen and any open scripts. The active tab has a colored line across its top.

You can also view and clear the key press history from the large screen pane. Click **Show Key Press History** or **Hide Key Press History** to show or hide the list of keys pressed.



When the key press history is shown on the large screen pane, you can click **Clear Key Press History** to clear the list of keys pressed.

Hiding the right pane does not clear the contents of the key press history or any open scripts.

Clearing the key press history

- Click **Edit > Clear Key Press History**, or click **Clear Key Press History** on the key press history or large screen pane.

Clearing the key press history does not affect the contents of any open scripts in the TI-SmartView™ right pane.

Copying the key press history to another application

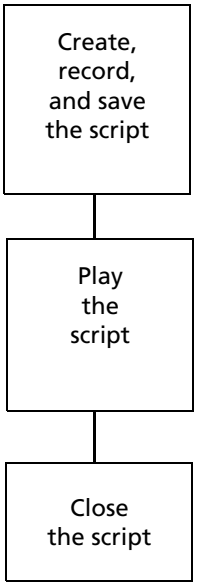
You can copy all or only a selected portion of the key press history to another application such as a word processor. The procedure is the same as used to copy scripts.

Using scripts

What is a script?

A script is a series of calculator key presses that can be stored and played repeatedly. By saving the script, you can open it at a later time and play it again without having to re-enter all the key presses.

Overview of using a script



You can also:

- Insert text points.
- Insert pauses and delays.
- Insert a Go To Home command.

You can:

- Play the script normally.
- Step-through one key at a time.
- Manually pause the script.

Suppose, after performing one or more calculations on the calculator, you decide to create a script that performs those same calculations. Instead of repeating the key presses while recording a new script, you can:

- Copy keys from the key press history and paste them into the script.
- Edit the script as necessary so the keys work properly in the context of that script.

Showing or hiding the script pane

Any open scripts are shown in the TI-SmartView™ right pane, which is also used to show the key press history. To toggle the right pane on and off:

► Click **View > Show/Hide Key Press History** or click  .

The right pane shows tabs for the Key Press History, Large Screen, and any open scripts. The active tab has a colored line across its top. Click the appropriate tab to show its contents.

Hiding the right pane does not clear the contents of any open scripts or the key press history.

Recording a new script

You can begin recording a new script at any time.

1. Click **File > New Script** or click  .

   The TI-SmartView™ right pane opens automatically if it's not already open, and a new blank script appears in the pane. The new script has a tab at the top of the pane, with a colored line across its top to indicate it's active. The tab shows the script's default name, which is Script 1, Script 2, etc.

2. Click **Scripts > Record** or click  on the script's toolbar.
3. Click the keys on the calculator to record the key presses for your script.

4. When you're finished, click **Scripts > Stop** or click  .

Note:

- You can also insert Go To Home commands, text points, delays, and pauses in a script.
- You can help ensure that your script plays properly under various conditions by following a few simple guidelines. (See "Tips for recording a script" on page 27.)
- You can reuse key sequences that you previously entered in the calculator. Copy the keys from the key press history and paste them into the script. The procedure is the same as used to copy scripts. (See "Copying a script to another application" on page 37.)

Tips for recording a script

If you record a script assuming the calculator will always have its current settings, you may have problems later if you play the script with different calculator settings. Therefore, it's a good practice to add the necessary settings directly into the script. The following tips can help you create scripts that play correctly in a variety of situations.

At the beginning of a script:

- Insert a Go To Home command to ensure the script starts on the calculator's home screen. This lets your script begin at a known starting point, regardless of what screen is shown on the calculator when you play the script.
- Press 2nd [MEM] **7 2 2** to reset the memory to its defaults.

When graphing:

- Press CLEAR before entering an equation into the Y= editor.
- Insert a Pause command after graphing a function.

When using variables, lists, and statistical data:

- Clear a variable before storing to it.
- Press 2nd [MEM] **4** ENTER to clear all lists before storing to them.
- Press STAT **5** ENTER to execute **SetUpEditor**, which clears the stat editor. This command removes all list names from the stat editor and then restores list names **L1** through **L6** to columns **1** through **6**.

When selecting an item from a menu:

- Press the number or letter for that item. Suppose you need **fMax(** from the MATH menu. The script runs faster if you use MATH **7** (two key presses) instead of MATH ▼ ▼ ▼ ▼ ▼ ▼ ENTER (eight key presses).

When starting an application from within a script:

- If you share the script with other people using TI-SmartView™ software on different computers, remember that their APPLICATIONS menus may not list the same applications in the same order. Pressing APPS **4** to start an application on your TI-SmartView™ may not start the same application on theirs.
- Instead, have your script press APPS to display the APPLICATIONS menu and then use a text point telling the user to select the appropriate application from the list.

At the end of a script:

- Insert a Pause command. This is particularly useful if a script displays text points that you want the user to see after the script finishes. Otherwise, text points are closed automatically at the end of a script.

Note: When resetting the memory, clear only the applicable portion of the memory. Using 2nd [MEM] **7 1 2** to reset all RAM is not required in most situations.

Playing a script

After recording a new script or opening an existing one, you can play it. You cannot play a script while you're recording it.

1. Select the tab for the appropriate script. The active tab has a colored line across its top.
2. Click **Scripts > Play** or click  .

Adjusting the script speed

You can vary the speed at which each key press in a script is executed, from Slow (approximately one key press every 5 seconds) to Fast (approximately one every 1/2 second).

1. Click **Scripts > Adjust Script Speed**.
2. In the submenu, click a speed in the displayed range.

Note:

- You can also use the slider in the script's toolbar. Drag the slider to the appropriate position.

- The speed setting affects every key press in the script, which may not be what you want. Suppose the script enters numbers such as 425,237,234. Setting the speed to one key press every 2 seconds takes 18 seconds to enter the number. Instead, you may want to use a faster speed and insert pauses or delays at certain points in the script.

Saving a script

After recording a new script or editing an existing one, save the script so you can use it again later.

1. Select the tab for the appropriate script. The active tab has a colored line across its top.
2. Click **File > Save Script** or click  .

   For an existing script that was saved previously, the new version automatically overwrites the existing one. For a new script, the Save As dialog box opens.
3. If you see the dialog box:
   a) Navigate to the folder in which you want to store the script file.
   b) Type a file name. Use a name that indicates the purpose of the script.
   c) Click **Save**.

Note: If you do not want to save the changes you made to an existing script, close the script instead of saving it. Click the **X** in the script tab to close the script. When prompted whether to save the changes, click **No**.

Saving a copy of a script

Sometimes you may need a script that is similar to an existing one but with some changes. Instead of recording a new script, it may be easier to copy the existing script and edit it.

1. Open the script you want to copy, and select its tab. The active tab has a colored line across its top.
2. Click **File > Save Script As**.

   Note: Do not click  .
3. In the dialog box:
   a) Navigate to the folder in which you want to store the copy.
   b) Type a file name. Use a name that indicates the purpose of the script.
   c) Click **Save**.

Note: If you change a script and want to keep those changes in the existing script, click **File > Save Script** or  before selecting **Save Script As**. Otherwise, the changes are saved in the copy but not in the original script.

Opening an existing script

After a script is recorded and saved, you can open it later and play the script again, edit it, or save a copy of it.

1. Click **File > Open Script** or click  .
2. In the dialog box:
    a) Navigate to the folder that contains the script file.
    b) Click the script name to highlight it.
    c) Click **Open**.

The script opens in the TI-SmartView™ right pane. A tab with that script name appears at the top of the pane along with tabs for Key Press History, Large Screen, and any other open scripts. You can click any of those tabs to jump from one to the other. The active tab has a colored line across its top.

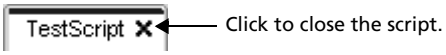
Note:

- The most recently used scripts are listed at the bottom of the **File** menu. Click a script name to open it.
- When several scripts are open at the same time, there may be too many tabs to fit across the right pane. If so, left and right arrows appear on the right of the tab area. Click these arrows to scroll left and right along the available tabs. You may also want to close scripts when you're not using them.

Closing a script

When you're finished using a script, you may want to close it. This removes the script tab from the right pane. If the script is not saved, you are prompted whether to save it.

▶ Click **File > Close Script** or click the **X** on the script tab.



Stepping through a script

You can step through a script one key press at a time. This is the same effect as if you had used pause commands to halt the script between every key press. Depending on the length of the script, you may want to step through all or only parts of it.

Stepping through a script from the beginning

In the script pane, instead of playing the script:

1. Click **Scripts > Step Through** or click  to start the script.

   Note: Do not click **Scripts > Play** or  .

   The script pauses automatically after every key press.

2. Click  repeatedly to step through each key press.

3. After stepping through a series of key presses, you can click  to play the remaining key presses continuously.

Stepping through part of a script

In the script pane:

1. Click **Scripts > Play** or click  .

2. Click **Scripts > Pause** or click  to pause at a location before you want to start stepping through.

3. Click **Scripts > Step Through** or click  repeatedly to step through each key press.

4. After stepping through a series of key presses, you can click  to play the remaining key presses continuously.

You can repeat steps 2 - 4 as often as necessary to step through different parts of the script.

Stopping a script while stepping through it

While you are stepping through a script, **Scripts > Stop** or  may not be available. If not, you can:

1. Click  to play the script.

2. Then click  .

Stopping a script

When you finish recording a script, you need to stop recording. When you play a script, you may want to stop the script manually at some time before it would normally end.

- Click **Scripts > Stop** or click  .

Unlike when you pause a script, you cannot continue playing the script from the location where it stopped. You can only replay the script from the beginning.

Pausing a script

At various times while a script is running, you may want to halt it temporarily. For example, you may want to view an intermediate result or graph before continuing with another operation that changes the calculator screen or graph. You can either pause the script manually or insert a pause command directly into the script.

Pausing the script manually

In the script pane, while the script is playing:

- Click **Scripts > Pause** or click  .

The **Play**  button changes to **Pause**  when you play the script. After you pause the script, the button changes back to **Play**. Click **Play** again when you're ready to continue the script.

Inserting a pause command in the script

In the script pane:

1. Click the location where you want to insert the pause.

   The cursor appears at that position.

2. Click **Scripts > Insert Pause** or click  at the bottom of the script pane.

 appears in the script to mark the location of the pause. When you play the script, it always halts at this pause command.

To continue, click **Scripts > Play** or click  .

Deleting an existing pause command

Delete the  icon the same way you would delete any other key press in the script.

Inserting a delay into a script

In some cases, you may want to delay the script a specified period of time before it continues to the next key press. For example, you may want to display a result or graph for a few extra seconds before the script executes the next key press.

Inserting a delay

In the script pane:

1. Click the location where you want to insert the delay.

   The cursor appears at that position.

2. Click **Scripts > Insert Delay** or click  at the bottom of the script pane.

 appears in the script to mark the delay.

A delay has the same effect as a blank key press. It lasts as long as a single key press (as determined by the script's speed setting) and has no other effect on the script.

For a longer delay, insert more than one. For example, suppose the script speed is set for one key press every second. To delay five seconds, insert five delays.

Note: If you don't know how long to delay the script, consider inserting a pause instead. After the script pauses, it does not start again until you click **Scripts > Play** or click  to continue.

Deleting an existing delay

Delete the  icon the same way you would delete any other key press in the script.

Inserting a text point into a script

If you use a script to show a presentation, you may want to display a text screen at certain locations to explain a result or describe what the script will be doing next.

Inserting a new text point

In the script pane:

1. Click the location where you want to insert the text point.

   The cursor appears at that position.

2. Click **Scripts > Insert Text** or click  at the bottom of the script pane.
3. In the dialog box:
   a) Type the text using your computer's keyboard. You cannot use the calculator to enter text in this dialog box.
   b) Click **Enter**.

 appears in the script to mark the text point.

Note:

- When you run the script, the text is displayed in a separate text pane that opens below the script. That text pane closes automatically when the script stops. To leave the text pane open for a longer time, insert a pause or delay immediately after the text point or at an appropriate location before the end of the script.
- The text from all text points in the script is placed one after another in the text pane. As necessary, you may need to scroll to see all the text.
- You can change the size of the displayed text by dragging the slider located in the area between the script pane and the text pane.

Editing an existing text point

In the script pane:

1. Double-click the  marker.

   The Text Point Dialog box opens.

2. Edit the text as necessary.
3. Click **Enter**.

Deleting an existing text point

Delete the T marker the same way you would delete any other key press in the script.

Inserting a Go to Home command

A script executes each key press in sequence. However, these key presses may have different effects depending on what screen (Home, Graph, Table, etc.) is shown on the calculator when you play the script. By using a Go To Home command at the beginning of a script, you can ensure that it begins on the Home screen.

Inserting a new Go To Home

In the script pane:

1. Place the cursor at the beginning of the script.
2. Click **Scripts > Insert Go To Home Screen** or click  at the bottom of the script pane.

 appears in the script to mark the location of the command.

Note: You can insert a Go To Home command at any location in your script. While you're recording key presses inside a script, however, it's usually better to record the actual key presses used to display the Home screen.

Deleting an existing Go To Home command

Delete the  icon the same way you would delete any other key press in the script.

Editing a script

Editing a script is similar to editing a text document. For example, you can drag the mouse to highlight a series of keys the same as you would drag to highlight text in a word processor. (You can also hold down **Shift** and use the arrow keys on your computer keyboard.)

Inserting key presses or script elements (pauses, delays, etc.)

With the script shown in the right pane:

1. Click **Scripts > Record** or click  .
2. Click the location where you want to insert the keys or script elements.

   Note: Be sure to position the cursor after you start recording. If you position the cursor first, it automatically jumps to the beginning of the script when you start recording.
3. You can:
   - Click the calculator keys you want to insert.

     – or –
   - Use the buttons at the bottom of the script pane to insert a text point, delay, pause, or Go To Home command.
4. When you're finished, click **Scripts > Stop** or click  .

Deleting key presses or script elements

With the script shown in the right pane, either:

- Place the cursor immediately to the left of the items you want to delete. Then press **Delete** on your computer keyboard.

  – or –
- Place the cursor immediately to the right of the items you want to delete. Then press **Backspace** on your computer keyboard.

  – or –
- To delete multiple items at one time, highlight the items. Then click **Edit > Cut** or click  on the script's toolbar.

Moving items to a different location

With the script shown in the right pane:

1. Highlight the items you want to move.
2. Click **Edit > Cut** or click  .
3. Click the location where you want to insert the items.

4. Click **Edit > Paste** or click  .

Note: You can also use the mouse to drag the highlighted items to the new location.

Copying items to a different location

With the script shown in the right pane:

1. Highlight the items you want to copy.
2. Click **Edit > Copy** or click  .
3. Click the location where you want to insert the copy.
4. Click **Edit > Paste** or click  .

Note: You can also hold down **Ctrl** on your computer keyboard and use the mouse to drag a copy of the highlighted items to the new location.

Copying a script to another application

You can copy all or only a selected portion of a script to another application such as a word processor. You can copy the key graphics as they are shown in the script pane, or you can copy the key presses as font text characters.

Note: When you copy as font text characters, those characters use the TI84EmuKeys font. This font is installed on your computer automatically when you install the TI-SmartView™ software.

Copying keys as graphics

1. Open the appropriate script.
2. Select the keys you want to copy. To select all the keys, click **Edit > Select All**.
3. Click **Edit > Copy**, switch to the other application, and paste the keys at the appropriate location.

Note: You can also drag the selected keys to the new application.

Copying keys as font text characters

1. Open the appropriate script.
2. Select the keys you want to copy. To select all the keys, click **Edit > Select All**.
3. Click **Edit > Copy As Font**.

4. Switch to the other application, and paste the characters at the appropriate location.

   In some applications, the pasted characters may be shown in the font that is in effect at that location. So they may not look anything like calculator keys.

5. If necessary, apply the TI84EmuKeys font to the characters.

Note: The script icons for text points, delays, pauses, and Go To Home commands cannot be copied as font text characters. They are ignored when you paste the copied characters into the other application.

Locating common scripts

If you have access to scripts written by other people, you can open and play those scripts on your own computer. Texas Instruments provides a number of scripts that perform commonly used operations.

- Run the TI-SmartView™ installation CD, which runs automatically when you insert it into the CD drive. Click the **activities and tutorials** tab on the displayed screen. Most of the listed items are scripts that you can save to your computer.
- Check the Texas Instruments web site at education.ti.com.

By using available scripts and viewing their content, you can get ideas about how to create additional scripts for automating your own operations.

Connecting a calculator or CBL 2/CBR 2

Using a connected calculator to control Dissimilarities

You can connect a TI-84 Plus or TI-84 Plus Silver Edition graphing calculator to your computer and use it as a remote keyboard for the TI-SmartView™ software. If you press a series of keys on the calculator, those same key presses are repeated on the calculator image in the TI-SmartView™ program. This is useful if you feel more comfortable pressing real keys on a calculator but want to see the results on the computer.

Note: The calculator must have a supported operating system. (See "Checking the calculator's operating system" on page 41.) Also, the SmartPad™ application must be installed on the calculator.

Controlling TI-SmartView

1. Connect the calculator (See "Connecting the calculator to the computer" on page 39.) and start the TI-SmartView™ program.
2. On the connected calculator, press [APPS] and run the SmartPad™ application. (The application will not run if the calculator is not connected.)

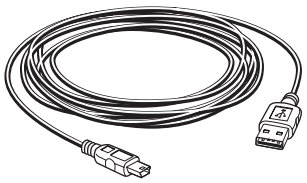
   The SmartPad™ title screen appears.

   Note: The calculator shows this title screen as long as SmartPad™ is running. All key presses and results appear on the computer only.
3. Press keys on the connected calculator to control TI-SmartView™.
4. When you're finished, either:
   - Press [2nd] [OFF] on the connected calculator.

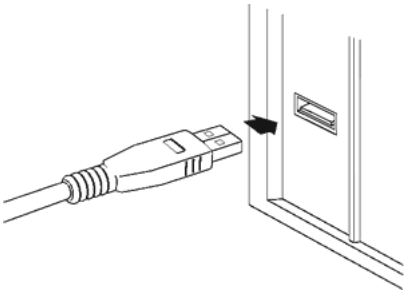
     – or –
   - Disconnect the USB cable.

Connecting the calculator to the computer

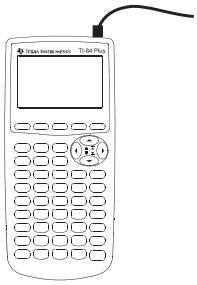
You must use the Standard-A to Mini-B USB Cable that comes with your TI-84 Plus calculator. Other TI Connectivity Cables are not supported. If you need to purchase a cable, go to education.ti.com.



1. Firmly insert the cable's standard USB connector into a USB port on the computer.



2. Insert the cable's mini USB connector into the calculator's USB port. The TI-84 Plus port is at the top right edge of the calculator.



3. Turn on the calculator.

   The first time you turn on the calculator, the computer may detect it as new hardware and display a wizard or dialog box that prompts you to install a driver for the calculator.

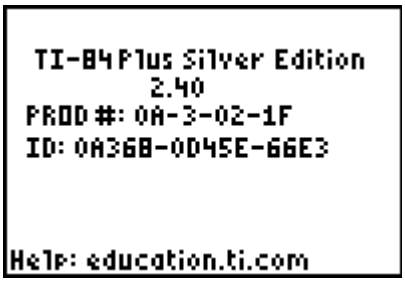
4. If you're prompted for a driver, cancel the wizard or dialog box and return to the desktop. The calculator will use the computer's default USB driver.

Checking the calculator's operating system

Not all TI-84 Plus or TI-84 Plus Silver Edition graphing calculators have an operating system that can control TI-SmartView™. To check your calculator:

▶ Press [2nd] [MEM] and then select **1:About**.

The operating system number, immediately below the calculator name, must be 2.40 or later. For example:



If you need to upgrade your operating system, go to education.ti.com.

Note

- While a calculator is connected, you can continue to perform operations by clicking keys on TI-SmartView™. You can also run applications (such as Cabri® Jr., Inequality Graphing, or Transformation Graphing) or any programs stored on TI-SmartView™.
- All calculations use the TI-SmartView™ emulator state, not the connected calculator's. If the connected calculator contains data, applications, or programs that are not on TI-SmartView™, you cannot access those items.
  - Suppose the variable **a** equals 20 on the calculator but is not defined on TI-SmartView™. If you calculate **5a**, the answer will not be **100** as you may expect.
  - Even if TI-SmartView™ contains the same application or program as the calculator, it may be in a different location on the menu. For example, an application may be item 3 on the APPLICATIONS menu on TI-SmartView™ and item 2 on the connected calculator. So pressing [APPS] **2** may give unexpected results.
- The connected calculator turns off automatically if not used for about five minutes. To continue using it, turn the calculator on.

- You do not need TI Connect™ software on your computer to control TI-SmartView™.

Transferring data to and from a connected calculator

With a TI-84 Plus calculator, you can connect it to another compatible calculator and transfer data between them. Likewise, you can transfer data between TI-SmartView™ software and a connected calculator. Compatible calculators are the TI-83 Plus, TI-83 Plus Silver Edition, TI-84 Plus, and TI-84 Plus Silver Edition.

Note: To connect the calculator, you must use the USB Silver Edition cable available from education.ti.com. Other TI Connectivity Cables are not supported for this type of connection.

1. Plug the cable's USB connector into any USB port on the computer, and plug the other end of the cable into the calculator's I/O link port.
2. Click **Tools > Establish Connection**.

   A dialog box lists all devices connected to the computer with a USB Silver Edition cable, such as a CBL 2™or CBR 2™data collection device and a calculator.

   If the device is not listed, check both ends of the cable and make sure they're connected properly. Then click **Refresh** to update the list.
3. Click the applicable device to highlight it, and then click **Select**.

   the TI-SmartView™ program connects the device and displays **Device Connected** on the title bar. Also, the **Establish Connection** menu item changes to **Disconnect**.
4. Use [2nd] [LINK] to transfer the data by using the detailed instructions given in the Communication Link chapter of the TI-84 Plus Guidebook. The general steps are:

   a) Set the receiving unit to receive.

   b) On the sending unit, select the applicable data items and transmit them.

   The TI-84 Plus Guidebook is available on the TI-SmartView™ installation CD, or you can download it from education.ti.com/guides.
5. When you're finished transferring data, click **Tools > Disconnect**.

You can use the TI-SmartView™ program when the calculator is connected, but it's a good practice to use the disconnect tool when you're done. Do not just unplug the cable.

Note: If you unplug the USB connector from the computer while the calculator connection is active, the computer may lock up and need to be rebooted.

Using a connected CBL 2 or CBR 2 device

You can connect a Calculator-Based Laboratory™ 2 (CBL 2™) or Calculator-Based Ranger™ 2 (CBR 2™) data collection device to your computer. By using one of the following applications on the TI-SmartView™ emulator, you can then collect and analyze real-world data.

- **DataMate™** — Used for a CBL 2 device. This application comes with the CBL 2 device and needs to be transferred to the TI-SmartView™ application before you can use it.
- **EasyData®** — Used for both the CBL 2 and CBR 2 devices. This application is standard on TI-84 Plus calculators and is included with the TI-SmartView™ program. (On a TI-84 Plus, EasyData® launches automatically when you plug in a USB sensor. With the TI-SmartView™ program, however, EasyData® does not autolaunch.)
- **CBL/CBR** — Used for both CBL 2 and CBR 2 devices. This application is standard on TI-83 Plus calculators and is included with the TI-SmartView™ program.

Note: To connect a CBL 2 or CBR 2 device, you must use the USB Silver Edition cable available from education.ti.com. Other TI Connectivity Cables are not supported for this type of connection.

Connecting the device and running the application

If you want to use the DataMate application, check that the application is already installed on the TI-SmartView™ program. (See "Transferring DataMate to TI-SmartView" on page 44.) Then:

1. Plug the cable's USB connector into any USB port on the computer, and plug the other end of the cable into the device's I/O port.
2. Click **Tools > Establish Connection**.

   A dialog box lists all devices connected to the computer with a USB Silver Edition cable, such as a CBL 2 or CBR 2 device and a calculator.

   If the device is not listed, check both ends of the cable and make sure they're connected properly. Then click **Refresh** to update the list.
3. Click the applicable device to highlight it, and then click **Select**.

   The TI-SmartView™ program connects the device and displays **Device Connected** on the title bar. Also, the **Establish Connection** menu item changes to **Disconnect**.

4. Click [APPS], and then run DataMate, EasyData, or CBL/CBR.
5. Use the application to collect data. For information about using:
   - DataMate™application, refer to the guidebook that came with the CBL 2™ device.
   - EasyData® application, refer to the Applications chapter of the TI-84 Plus Guidebook, available on the TI-SmartView™ program installation CD or at education.ti.com/guides.
   - CBL/CBR application, refer to the Applications chapter of the TI-83 Plus Guidebook, available at education.ti.com/guides.
6. When you're finished, click **Tools > Disconnect**.

You can use the TI-SmartView™ program when the CBL 2 or CBR 2 device is connected, but it's a good practice to disconnect it when you're done. Don't simply unplug the cable.

Note:

- If you unplug the USB connector from the computer while the connection is active, the computer may lock up and need to be rebooted.
- After a device is connected, you can switch the cable's plug to another device without reconnecting. Suppose you first use a CBR 2 device and then want to switch to a CBL 2 device. Unplug the cable from the CBR 2 device and plug it into the CBL 2 device.
- Other than a CBR 2 device, you can only use probes connected to a CBL 2 device. The TI-SmartView™ program does not use direct-connect probes.
- You can also collect data with a CBR 2 device separately, and then transfer that data to the TI-SmartView™ program for analysis.
- For complete information about using the CBL 2 or CBR 2 devices, refer to the guidebook that comes with the device.

Transferring DataMate to TI-SmartView

If you use a CBL 2 device, you should use the DataMate™ application that comes with the device. You only need to transfer it once.

1. Attach the CBL 2 to the computer using the USB Silver Edition cable, and then establish a connection as previously described.
2. Click [2nd] [LINK] [▶] [ENTER] to put the TI-SmartView™ program in Receive mode.
3. Push **TRANSFER** on the CBL 2 device.

   The application and any supporting programs are transferred.

4. When the transfer is complete, press [2nd] [QUIT] on the TI-SmartView™ program.

DataMate™ is now available from the TI-SmartView™ APPLICATIONS menu.

FAQs and keyboard shortcuts

Frequently asked questions

I clicked on the calculator screen to select an option, but nothing happened. Why?

On the TI-SmartView™ calculator, use the mouse to click keys the same as you would use your finger to press keys on a real TI-84 Plus calculator. And just like on a real calculator, you can't press the screen to select an option, even though it's very tempting on a computer. You must click the same keys you would press on the calculator.

I typed a name and got an error message. Why?

You probably typed the name on your computer keyboard. By default, the keyboard is in its normal shortcut mode, where **[A]** is a shortcut to MATH. To put the keyboard in its alpha typing mode, click ALPHA or press **[F7]**. After you type the alpha character, the keyboard returns to its normal shortcut mode.

To lock the alpha key, click 2nd A-LOCK or press **[F6] [F7]**. To return to the normal shortcut mode, click ALPHA or press **[F7]**.

I'm having trouble editing a script. How do I figure out where I need to be in the script to make a change?

Because scripts record key presses, it might be easier to step through the script by clicking  on the script toolbar or to change the script's playback speed so that you can see exactly where you need to make the change.

The TI-SmartView™ calculator is too big for my computer screen. How do I change the size?

Click **View > Size** and then select a smaller size. In addition to choosing small, medium, and large sizes, you can click and drag the TI-SmartView™ window borders to display the application in a window that is a custom size.

Some keys show a 🕒 in the key press history or in a script. What does that mean?

When you hold down an arrow key for more than a certain amount of time, the cursor begins to scroll. The key that starts this scrolling feature has a clock icon attached to it. For example:

The amount of scrolling represented by this single key icon is equivalent to clicking the key multiple times. If you run a script that contains one of these keys, TI-SmartView™ reproduces the equivalent number of key presses.

Using the computer keyboard

You can use the computer keyboard to enter data into the TI-SmartView™ software. However, the keyboard *does not* work the same as using the TI Keyboard with a calculator. You cannot simply use the keys like a QWERTY keyboard to type A through Z. By default, the keys are shortcuts to a corresponding key on the calculator.

Note: You can use the keyboard to access second functions and alpha characters, but you must use 2nd and ALPHA the same as you would on the calculator.

Where possible, shortcut keys correspond to alpha characters on the calculator. For example, the calculator has keys such as:

where labels above the keys indicate second functions and alpha characters.

On the keyboard, press:	To do this:
[A]	Shortcut to MATH.
[F6] A, where **[F6]** is the shortcut to 2nd	Show the TEST menu.
[F7] A, where **[F7]** is the shortcut to ALPHA	Type the letter A.

Keys such as VARS and CLEAR do not have associated alpha characters. Refer to the table later in this topic to find the shortcut to those keys. For example, **[Shift]**+**[V]** is the shortcut to VARS.

Normal shortcut mode

The calculator keys have the following shortcuts.

Y= [F1]	WINDOW [F2]	ZOOM [F3]	TRACE [F4]	GRAPH [F5]
2ND [F6]	MODE [Shift]+[M]	DEL [Delete]	[←]	[↑]
ALPHA [F7]	X,T,Θ,n [Shift]+[X]	STAT [Shift]+[S]	[↓]	[→]
MATH [A]	APPS [B]	PRGM [C]	VARS [Shift]+[V]	CLEAR [Backspace]
x^{-1} [D]	SIN [E]	COS [F]	TAN [G]	[Shift]+[^]
x^2 [I]	, [,]	([Shift]+[( ]	) [Shift]+[ )]	÷ [/]
LOG [N]	7 [7]	8 [8]	9 [9]	× [Shift]+[*]
LN [S]	4 [4]	5 [5]	6 [6]	− [-]
STO› [X]	1 [1]	2 [2]	3 [3]	+ [Shift]+[+]
ON [Shift]+[~]	0 [0]	▪ [.]	(−) [Shift]+[-]	ENTER [Enter]

Note: Some calculators keys have more than one shortcut, but the table shows only the most straightforward ones. For example, you can also type 1 by pressing **[Y]** (because Y is the alpha character for 1 on the calculator). However, it's much easier to press **[1]**.

Alpha typing mode for A through Z and other characters

When you use ALPHA, the keyboard switches automatically to its alpha typing mode, where pressing **[A]** gives you an A, not the MATH key.

1. Click ALPHA on the TI-SmartView™ screen or press **[F7]** on the keyboard.

   The cursor changes to A.

2. Press the applicable key.

To type:	Press:
A through Z	**[A]** through **[Z]**
space	**[** space bar **]**
: (colon)	**[Shift]**+**[:]**
" (double quote)	**[Shift]**+**["]**
? (question mark)	**[Shift]**+**[?]**
θ (theta)	**[3]**

Keys without an associated alpha character act the same as they do in the normal shortcut mode. For example, **[F1]** is still a shortcut to Y=.

After you type the alpha character, the keyboard returns to its normal shortcut mode.

Note:

- To lock the alpha key so you can type multiple alpha characters, click 2nd [A-LOCK] or press **[F6] [F7]**. To unlock the alpha key, click ALPHA or press **[F7]**.
- In alpha typing mode, **[0]** through **[9]** act the same as 0 through 9 on the calculator. Pressing **[1]** types Y (the alpha character for 1), not 1. To type a number, be sure the keyboard is not in the alpha typing mode. For example, to type TEST1, press either:
  - **[F7] [T] [F7] [E] [F7] [S] [F7] [T] [1]**
  - or **[F6] [F7] [T] [E] [S] [T] [F7] [1]**.
- When you are prompted to enter a name for a program or group, the calculator locks the alpha key automatically.

- Alpha characters are used to enter text characters only. You cannot use alpha characters to enter function names. For example, typing COS or FMIN does not calculate that function. You must press the appropriate function key or select the function from a menu.

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