SUMMAGRAPHICS® ADB INTERFACE USER'S GUIDE

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Overview

This manual is your guide to using the Summagraphics ADB interface with a large format Summagraphics tablet. Included is information on the Microgrid III, Summagrid III, Summagraphics LCL and Microgrid II tablets.

Parts Checklist

If you have a Summagrid III, Summagraphics LCL or Microgrid II, your ADB kit will contain the following:

- ✓ ADB adapter box
- ✓ Tablet cable
- ✓ ADB cable

- ✓ Summagraphics ADB Utilities diskette
- ✓ User's guide
- ✓ Software change request form (available with user's guide)

If you have a Microgrid III, your ADB kit will contain the following:

- ✓ ADB interface cable
- ✓ Summagraphics ADB Utilities diskette
- ✓ User's guide

If you are missing a part, please contact GTCO CalComp by Turning Technologies at 1.866.746.3015 or email to gtco.sales@gtcocalcomp.com.

ADB Interface for Microgrid III

Below are the steps for installing and configuring Microgrid III for use with the ADB interface.

1. Install and configure Microgrid III as described in the user's guide. Make sure the Microgrid is set up to the default tablet settings.

	1	2	3	4	5	6	7	8
SET 1	ON	OFF	OFF	ON	ON	ON	OFF	OFF
SET 2	ON	OFF	OFF	OFF	OFF	ON	OFF	OFF
SET 3	ON	ON	OFF	OFF	OFF	ON	ON	OFF

2. Connect the Microgrid III to the computer. The ADB kit comes with a ten foot ADB cable. Plug either end of the cable into an ADB port on the Microgrid III controller. The controller has two ADB ports: plug the cable into either of the ADB ports.
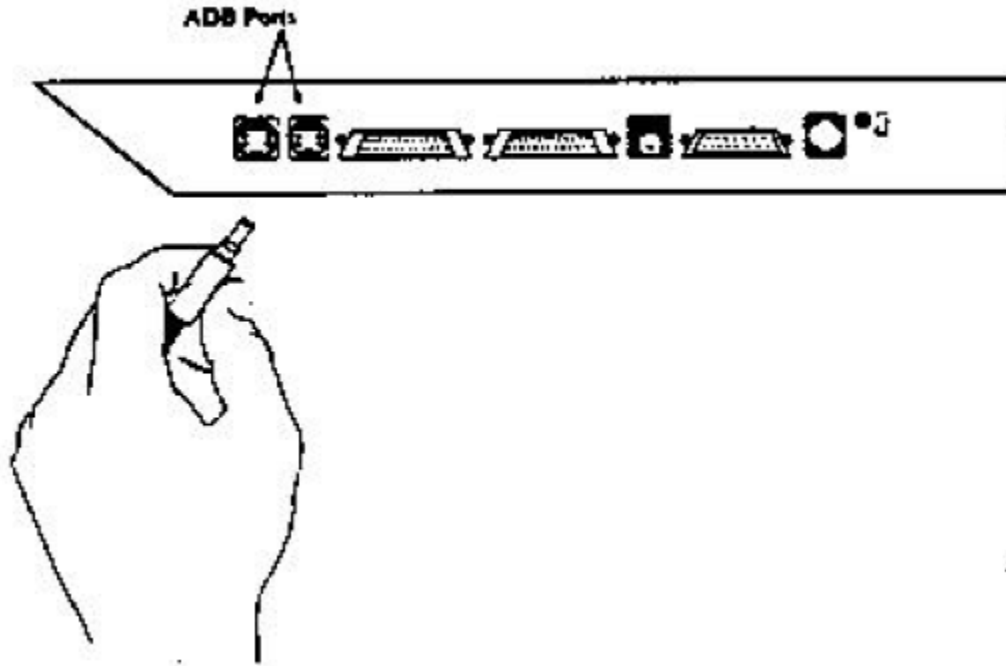

Plug the other end of the cable into one of the computer's ADB ports.

3. Power up the Microgrid III

4. Turn on the computer. Your tablet is now up and running with the ADB interface. Note that the tablet comes up in mouse mode. For the Microgrid to be in tablet mode, you must install the Summagraphics ADB tablet driver.

ADB Interface for the Summagrid III

Assemble the tablet as described in its installation guide, except as noted below.

1. Configure Summagrid III.
Using the instructions in the Summagrid III user's guide, configure the tablet as follows:
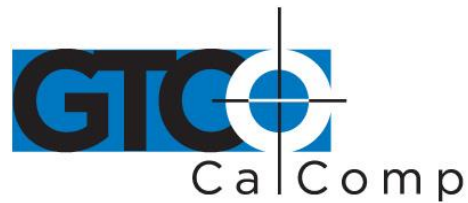
- 9600 baud
- Even or odd parity
- Two stop bits
- Echo off
- Proximity Transmission on, "always transmit"
- 1000 lpi fixed resolution
- Binary format
- Stream Mode on
- UIOF format

Summagrid III DIP Switch Settings

|	1	2	3	4	5	6	7	8
Set A	ON	OFF	OFF	ON	ON	ON	OFF	OFF
Set B	OFF	ON	ON	OFF	OFF	ON	OFF	OFF
Set C	ON	ON	OFF	ON	*	*	*	*

*factory set

2. **Connect the tablet to the ADB adapter box.**
   The ADB kit contains a PC cable with a 25-pin D connector and a phone connector. Plug the 25-pin D connector of the PC cable into the RS-232 port on the Summagrid III controller.
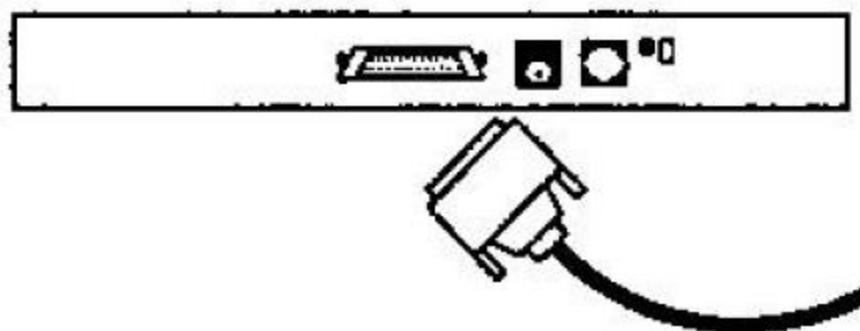
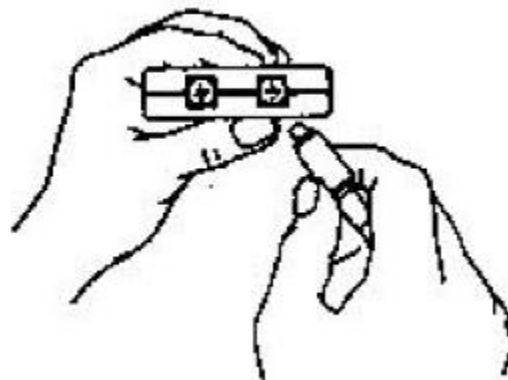Plug the phone connector into the tablet socket on the ADB adapter box.
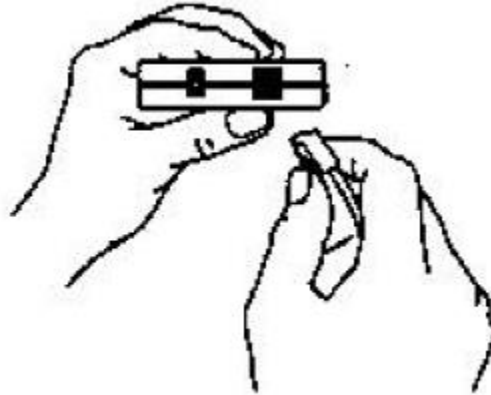
3. **Connect the ADB adapter box to the computer.**
   The adapter box has two ports, labeled with the ADB icon:

Plug either end of the ADB cable into one of the two ports.

Plug the other end of the cable into one of the system's ADB ports. There are two ports on the keyboard and two ports on the computer.

4. **Start the tablet.**

5. **Start the computer.**
   Turn on the computer. The light on the ADB adapter box will be lit, indicating that it's receiving power from the computer. (Although the ADB adapter box contains a power port, it receives power from the computer directly. The tablet receives power from the external power supply.)

   At this time, the tablet is working with your computer, but it is in mouse mode. For it to be in tablet mode, install the tablet driver.

ADB Interface for the Summagraphics LCL

Assemble the tablet as described in its installation guide, except as noted below.

1. **Configure Summagraphics LCL.**
   Using the instructions in the Summagraphics LCL user's guide, configure the tablet as follows:

   - 9600 baud
   - Even or odd parity
   - Two stop bits
   - Echo off
   - Proximity Transmission on, "always transmit"
   - 1000 lpi fixed resolution
   - Binary format
   - Stream Mode on
   - UIOF format
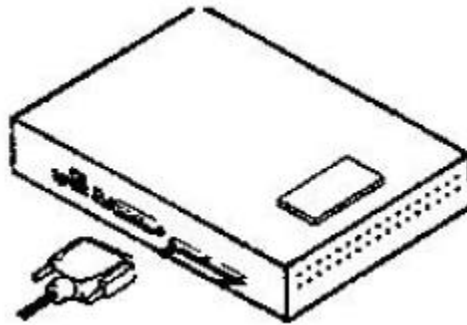
Summagraphics LCL DIP Switch Settings

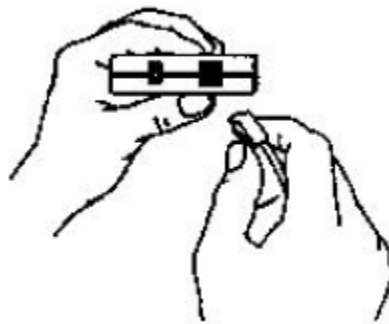|	1	2	3	4	5	6	7	8
Set A	ON	OFF	OFF	ON	ON	ON	OFF	OFF
Set B	OFF	ON	ON	OFF	OFF	ON	OFF	OFF
Set C	ON	ON	OFF	ON	*	*	*	*

*factory set

2. **Connect the tablet to the ADB adapter box.**
   The ADB kit contains a PC cable with a 25-pin D connector and a phone connector.
   Plug the 25-pin D connector of the PC cable into the RS-232 port on the
   Summagraphics LCL controller.

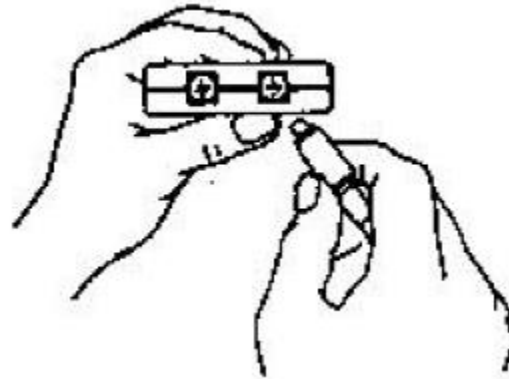Plug the phone connector into the tablet socket on the ADB adapter box.

3. **Attach the ADB adapter box to the computer.**
   The adapter box has two ports, labeled with the ADB icon:

Plug either end of the ADB cable into one of the two ports.

Plug the other end of the cable into one of the system's ADB ports. There are two ports on the keyboard and two ports on the computer.

4. **Start the tablet.**
   Start the tablet as described in its installation guide.

5. **Start the computer.**
   Turn on the computer. The light on the ADB adapter box is lit, indicating that it is receiving power from the computer. (Although the ADB adapter box contains a power port, it receives power from the computer directly. The tablet receives its power from the external power supply.)

   At this time, the tablet is working with your computer, but it is in mouse mode. For it to be in tablet mode, install the tablet driver.
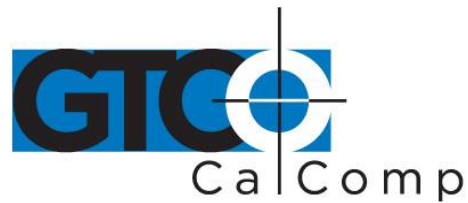
ADB Interface for the Microgrid II

Assemble the tablet as described in its installation guide, except as noted below.

1. **Configure Microgrid II.**
   Using the instructions in the Microgrid II Technical Reference and Installation Guide, configure the tablet as follows:

   - 9600 baud
   - Even or odd parity
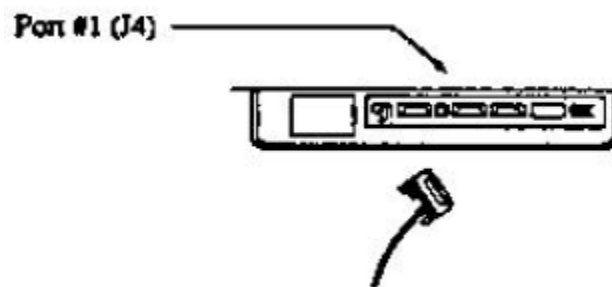   - Two stop bits
   - Echo off

- Proximity Transmission, on "always transmit"
- Grid Diagnostics off, "no prompts to host"
- 1000 lpi fixed resolution
- Binary format
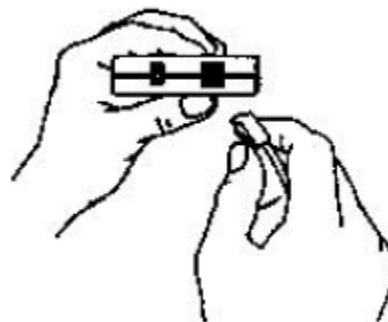- Stream Mode on

Microgrid DIP Switch Settings

	1	2	3	4	5	6	7	8
DIP Switch 1 (SW1)	ON	OFF	OFF	ON	ON	OFF	ON	OFF
DIP Switch 2 (SW2)	OFF	ON	OFF	ON	ON	ON	ON	ON

2. **Connect the tablet to the ADB adapter box.**
   The ADB kit contains a cable with a 25-pin D connector and a phone connector. Plug the D connector into Port 1 (J4) on the Microgrid controller.

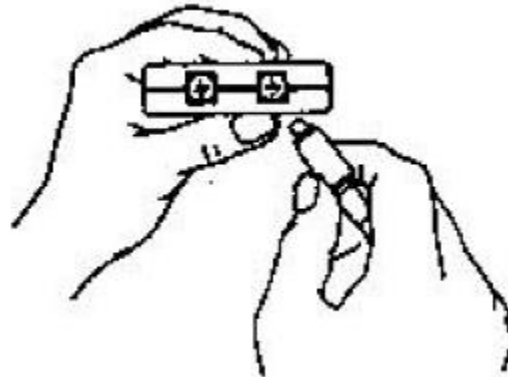   Plug the phone connector into the tablet socket on the ADB adapter box.

3. Attach the ADB adapter box to the computer.

The adapter box has two ports, labeled with the ADB icon:

Plug either end of the ADB cable into one of the two ports.

Plug the other end of the cable into one of the system's ADB ports. There are two ports on the keyboard and two ports on the computer.

4. Start the tablet.

Start the tablet as described in its installation guide.

5. Start the computer.

Turn on the computer. The light on the ADB adapter box is lit, indicating that it is receiving power from the computer. (Although the ADB adapter box contains a power port, it receives power from the computer directly. The tablet receives its power from the external power supply.)

At this time, the tablet is working with your computer, but it is in mouse mode. For it to be in tablet mode, install the tablet driver.
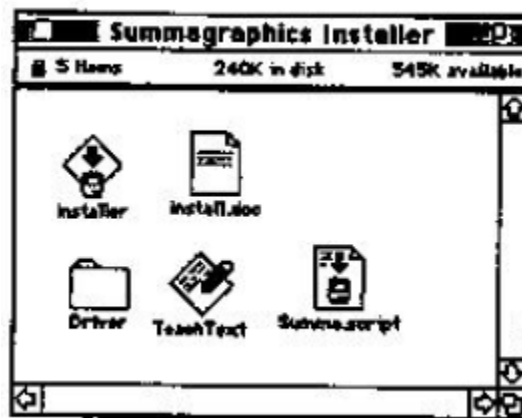
Installing the Tablet Driver

In order for the SummaSketch tablet to communicate with the software application, the system must contain a driver. A driver is a program that collects tablet data and converts it into information that can be read, understood and used by the application. The Summagraphics ADB driver is found on the Summagraphics ADB Utilities diskette that comes with the tablet.

Before installing the software, remove all old versions of Summagraphics drivers, installers and utilities from the startup disks. To remove an old driver, locate the SummaTablet control panel file in the **System folder** or the **Control Panel folder** located within the **System folder** and drag the SummaTablet control panel to the **Recycle Bin**.
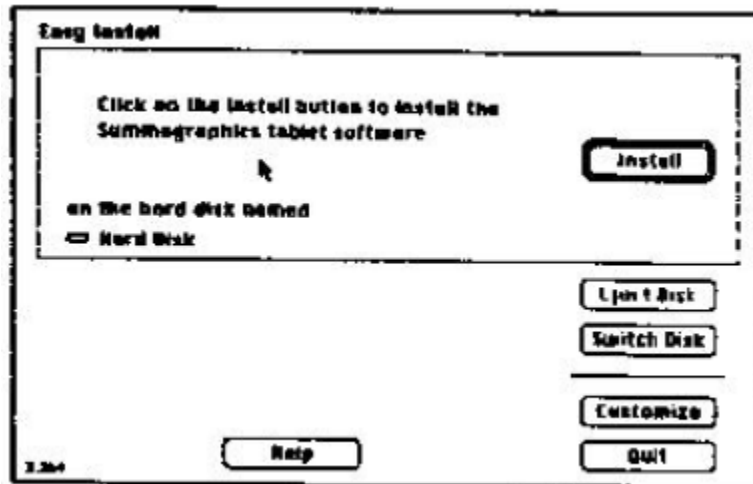
NOTE: Driver removal or installation involves changes system resources. Some virus protection programs may try to prevent this; therefore it is recommended that you temporarily turn off any virus protection software before installation or removal of the driver.
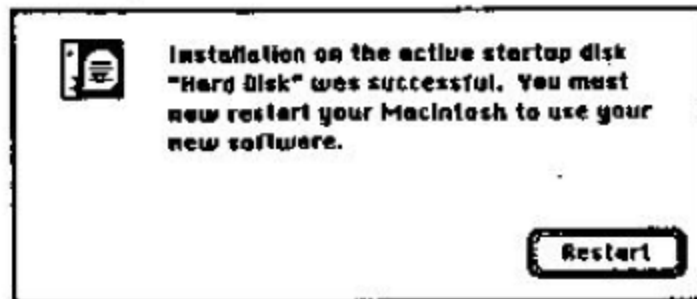
To install the driver:
1. Insert the Summagraphics ADB Utilities diskette into your disk drive. The following window opens:

2. Double click on the **Installer** icon. The **Easy Install** dialog box appears.

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```
Easy Install

  Click on the Install button to install the
  Summagraphics tablet software
                                          [ Install ]

  on the hard disk named
  ⊑ Hard Disk

                                          [ Eject Disk ]
                                          [ Switch Disk ]
                                          _____
                                          [ Customize ]
              [ Help ]                    [ Quit ]
```

3. Click on **Install** to set up the driver. If you wish to install the driver on a disk other than a startup disk, select **Switch Disk** first to choose the appropriate disk drive and then click on **Install**.

4. When the driver installation is complete, the below screen appears:

```
  Installation on the active startup disk
  "Hard Disk" was successful. You must
  now restart your Macintosh to use your
  new software.

                                    [ Restart ]
```

5. Confirm that the tablet is turn on and click on **Restart** to restart the system.

   The tablet is now running under the driver. You install the driver only once. Thereafter, when you start the computer, it automatically comes up in tablet mode. (You can still switch between tablet and mouse mode with the SummaTablet Control Panel utility.)
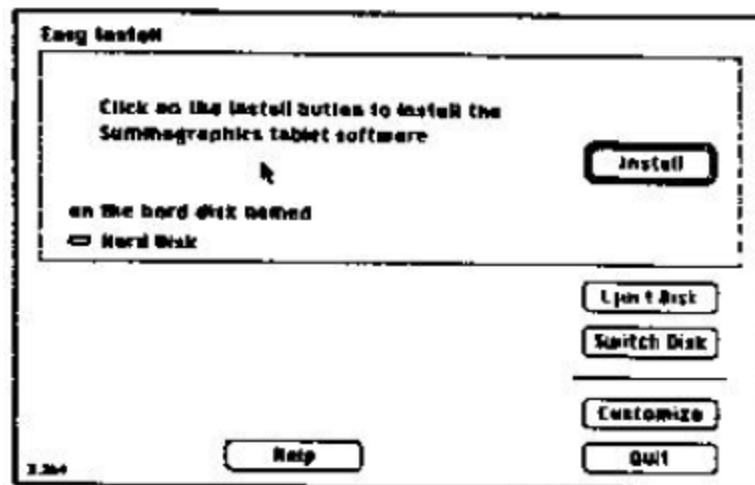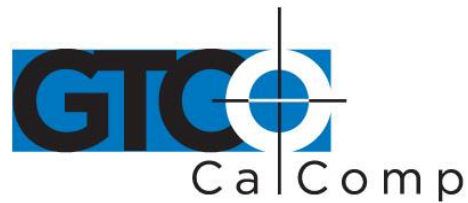
Removing the Tablet Driver

If you need to remove the driver from your system, follow the steps listed below.

1. Insert the Summagraphics ADB Utilities diskette into your disk drive. The following window opens:
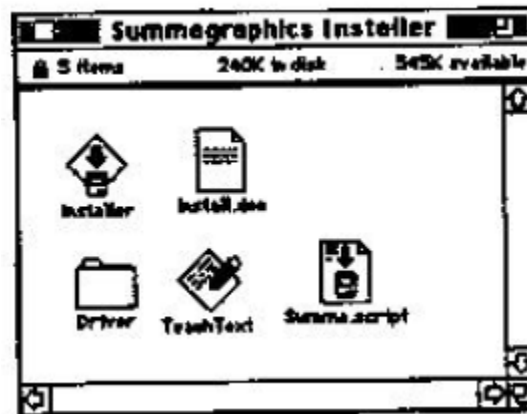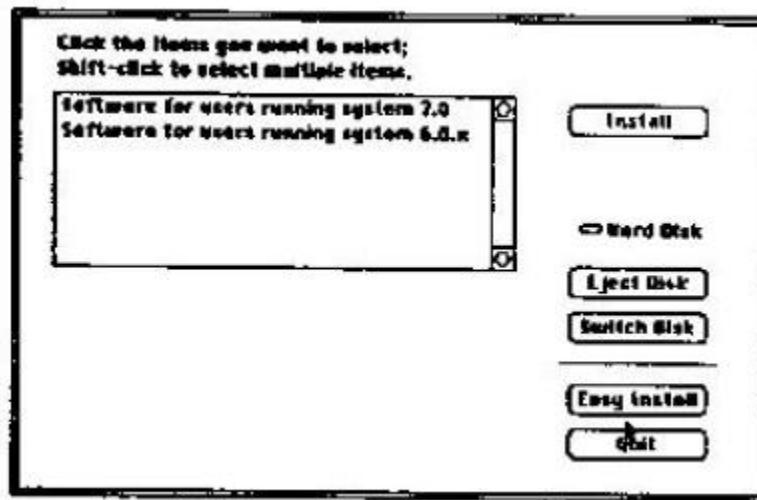

2. Double click on the **Installer** icon. The **Easy Install** dialog box appears.
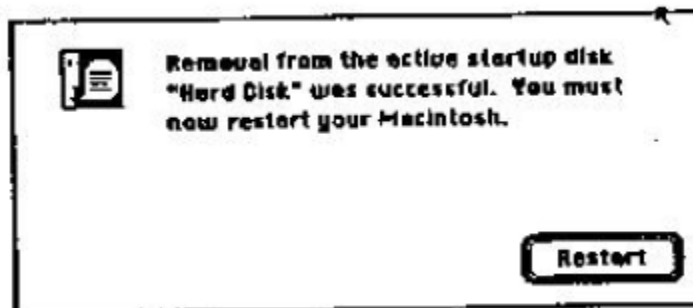
3. Select **Customize**. The below screen will appear.

> Highlight the items that you wish to remove by clicking on them.

4. Press **Option** on your keyboard. Notice that the **Install** button changes to read **Remove**.

5. While holding down the option key, select **Remove**. When the driver removal is complete, the below screen appears:

6. Click on **Restart** to restart the system.

Changing the Tablet Setup

The tablet is shipped in the following default setup:

Mode:	Tablet
Orientation:	Landscape (applicable only for users with rectangular tablets)
Mouse Button:	Button 1
Units:	Inches
Offset:	X = 1 inch, Y = 1 inch
PixScale:	X = 72, y = 72 pixels per inch
Screen:	1 (applicable only for users using multiple monitors)

You may change the default setup options. All changes are saved and each time you restart the system, the tablet will automatically return to these operating characteristics until you change them again. To change the tablet setup options:

Select the **Control Panel** option from the menu. The Control Panel screen is displayed. Click on the **SummaTablet** icon. The tablet setup options are now displayed.

| **Tablet Mode (or Absolute Mode)**	Coordinates are measured from the tablet's origin. Each point on the tablet maps to its unique counterpart on the screen. Since there is a direct correlation between the tablet and screen, tablet mode is ideal for tracing and drawing.
Mouse Mode (or Relative Mode)	Tablet tracks like a mouse. The screen pointer only tracks when the stylus/cursor is moving. The main uses of mouse mode are pointer steering, clicking, dragging, etc. (Refer to your computer manual for details about mouse functions.)
Orientation	Orientation only applies to tablets with rectangular active areas. Landscape is a horizontal orientation. Portrait is a vertical orientation. The default orientation is landscape.
Units	You can choose the units of measure to be inches or millimeters. The default is inches.
Viewport	Area of the tablet that is directly correlated or mapped to the computer screen. Viewport only applies when the tablet is in tablet mode.
Offset	The offset is the location of the viewport's upper left corner. It is measured from the upper left corner of the tablet active area. Offset is expressed in the selected unit of measure, inches or millimeters.
PixScale	Number of screen pixels the pointer moves for each inch (mm) or stylus/cursor movement on the tablet. When the tablet is in mouse mode, PixScale controls the pointer speed. When the tablet is in tablet mode, PixScale controls the viewport size.
Mouse Button	Mouse button lets you select which switch on the pointing device you wish to use as your mouse button. If you're using the two-button stylus, you may select the tip switch (button 1), the barrel switch (button 2) or both.

**Barrel Switch
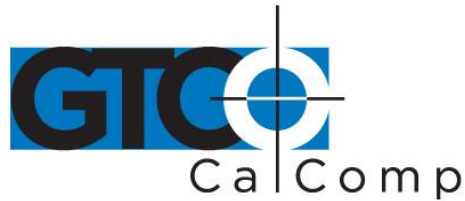(Button 2)**

**Tip Switch
(Button 1)**
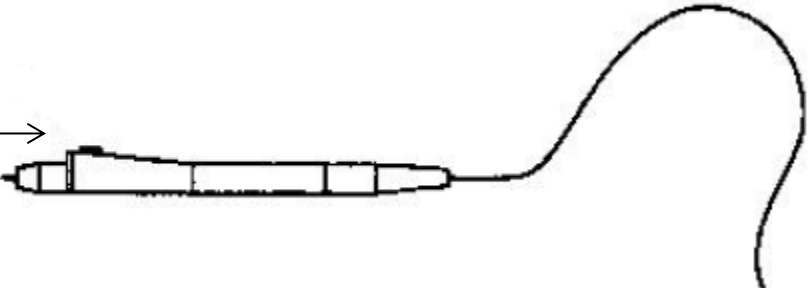
Button 1

Button 2

If you are using the 16-button cursor, you may select cursor switch 1 (button 1), cursor switch 2 (button 2) or both.

Button 1

Button 2

OK

When you're finished making selections, click **OK**. OK implements and saves the changes. If you do not wish to implement the changes, select the **close box** in the upper left hand corner of the Control Panel window. The close box closes the utility, leaving the setup unaltered.

Origin on Screen #

This set up option is for Macintosh II systems with two or more monitors. It allows you to select the screen on which the tablet origin will be located. Screen numbering is obtained from another Control Panel utility called **Monitors**. (This utility is supplied by Apple; refer to your Apple user's manual for further information on using multiple monitors.)

When using multiple monitors, the first step is to position the multiple screens within the Monitors utility and restart the system. Next, you must enter the SummaTablet Control Panel utility and select **OK**. This updates your Control Panel utility and implements any changes made while in the Monitors utility. Finally, map your tablet to the screen using the PixScale and Offset options.

NOTE: You must update the SummaTablet Control Panel utility after making changes in the Monitors utility. Simply click on **OK** while in the SummaTablet Control Panel utility to update this set up option.

Mapping the Screen to the Tablet – the Viewport

Viewport only applies when the tablet is in tablet mode. The viewport is in the area of the tablet that is directly correlated or mapped to the computer screen. This direct mapping of the tablet and screen is what gives you the ability to trace or draw with precision.
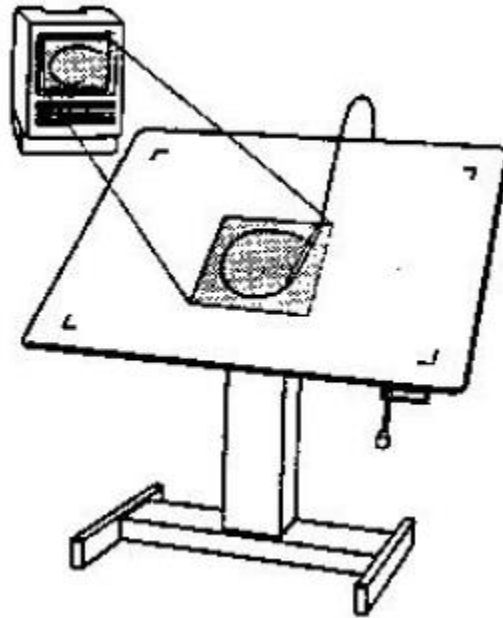
When moving the stylus/cursor inside the viewport, the pointer tracks with it. However, when you maneuver the stylus/cursor out of the viewport, the pointer stops at the screen edge.

The Default Viewport

The default viewport is:

PixScale: X = 72 screen pixels per tablet inch
                        Y = 72 screen pixels per tablet inch

Offset: X = 1.0 inch from left edge of tablet active area
   Y = 1.0 inch from top edge of tablet active area

How to Change the Viewport

You can define the viewport size and shape with the PixScale function. You define the viewport location with the Offset function. Both of these options are available in the Control Panel under the SummaTablet icon. The Control Panel can be accessed at any time and change the tablet setup options without closing the application currently being used.

PixScale

PixScale is the number of screen pixels the pointer moves for each inch (mm) of stylus/cursor movement on the tablet. For example, an X PixScale of 72 is:
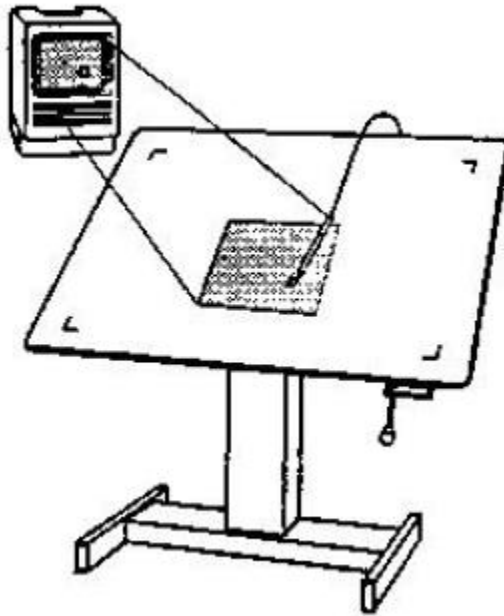
PixScale lets you:

- Accommodate a wide variety of computer screen resolutions
- Enlarge or reduce screen images relative to the tablet. For example, one inch on the tablet can equal two inches on the screen. One inch on the tablet can equal ½ inch on the screen.

PixScale is measured in the selected unit of measure, inches or millimeters. The defaults are X = 72 ppi, Y = 72 ppi (pixels per inch).

PixScale (pixels per inch)

X = 72

Y = 72

Two scroll bars control PixScale. Each click on an arrow changes the PixScale by 1 pixel. Each click in the gray area changes the PixScale by 5 pixels. To make large changes, drag the scroll box.

The minimum PixScale is 1 ppi. The maximum PixScale is 1000 ppi. These are extremes and it would be unlikely that you would use them. A PixScale of one means that moving the stylus/cursor one inch on the tablet would only move the pointer one pixel. A PixScale of 1000 means that moving the stylus/cursor one inch on the tablet would move the pointer 1000 pixels.

The best way of learning about PixScale is to experiment with it. Six scenarios appear below that demonstrate the most common situations. But first, here are some hints:

- If the screen resolution is specified as the total number of pixels along the axis, then you need to convert it to pixels per inch (mm). For example, if the screen resolution is:

  X resolution = 512 pixels
  Y resolution = 342 pixels

  And, the screen axes are:

  X axis is 7 1/8 inches long
  Y axis is 4 ¾ inches long

  Then, the conversion is:

  512 pixels + 7 1/8 inches = 72 pixels per inch
 342 pixels + 4 ¾ inches = 72 pixels per inch

- In the case where the screen resolution is specified as the total pixel count along an axis, there is something else to be careful of. Are the pixel counts for the maximum screen dimensions or for only the active portion of the screen? For example, the standard Macintosh screen has a resolution of 512 pixels along the X axis; 342 pixels

along the Y axis. These resolutions do not correspond to the maximum screen dimensions, but only to the active area of the screen – the desktop.

- For tablet and screen images to have the same relative appearance, the viewport must have the same aspect ratio as the screen active area. Aspect ratio is the relationship of height to width or Y axis to X axis. If the ratio is different, the screen images are distorted. For example:
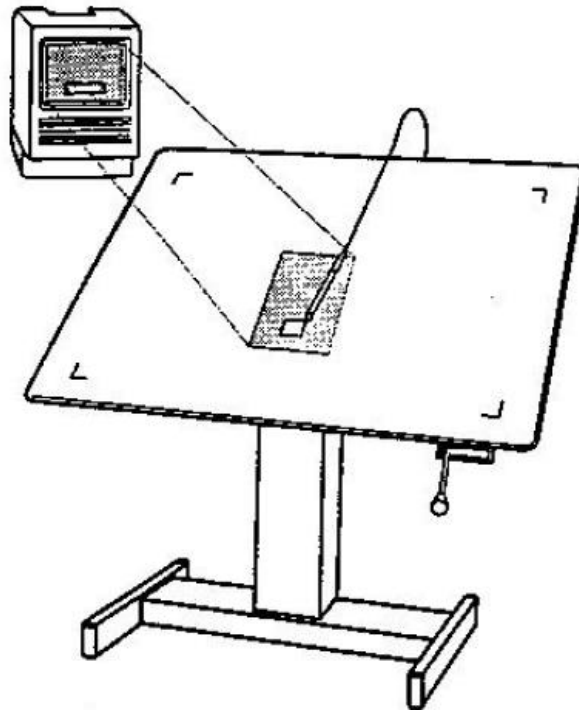
Scenario 1: You want the standard Macintosh screen (72 pixels per inch) mapped one-to-one with the tablet viewport.

Use the setup defaults: X PixScale = 72, Y PixScale = 72.

Scenario 2: The X and Y screen resolutions are 68 pixels per inch. You want a one-to-one mapping of the screen and tablet.

Use X PixScale = 68, Y PixScale = 68

Scenario 3: The screen resolutions are X = 80 ppi, Y = 90 ppi. You want a one-to-one mapping of the screen and tablet.

Use X PixScale = 80, Y PixScale = 90

Scenario 4: Enlarging a tablet image – you want the screen image to be twice the size of the tablet image.

If the screen resolutions were X = 72 ppi, Y = 72 ppi, use X PixScale = 144, Y PixScale = 144.

Scenario 5: Reducing a tablet image – you want the screen image to be half the size of the tablet image.

If the screen resolutions were X = 72 ppi, Y – 72 ppi, use X PixScale = 36, Y PixScale = 36.

Scenario 6: You want the entire tablet active area mapped to the screen. In other words, the viewport covers the entire tablet active area.

Be aware that any time you map two dissimilar objects with each other; the screen image will be distorted. An example of this is mapping the screen (a rectangle) to a square tablet. If, however, this is what you want to do, here is how:

Example: Total Pixels of Screen Active Area + Length of Tablet Active Area = PixScale Value

X Axis   512 pixels + 12 inches = 42,666
   Round to the next higher whole number = 43 ppi

Y Axis   342 pixels + 12 inches = 28.5
            Round to the next higher whole number = 43 ppi

If your screen resolution is specified in pixels per inch (mm): first, multiply the number of pixels per inch by the screen axis length; then do the above computation.

Offset

The offset is the location of the viewport's upper left corner. It is measured from the upper left corner of the tablet active area.

Offset is measured in the selected unit of measure, inches or millimeters. The defaults are X = 1 inch, Y = 1 inch.
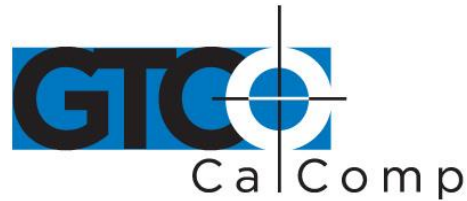
Two scroll bars control the offset. Each click on an arrow changes the offset by 0.1 inch (mm). Each click in the gray area changes the offset by 0.5 inch (mm). To make large changes, drag the scroll box.


You Can Define the Viewport Right Off the Tablet

The maximum offset is the lower right corner of the tablet. The maximum offset places the viewport off the tablet entirely. To get out of this predicament, use the mouse to readjust the offset. PixScale and Offset give you total flexibility, which is enough to let you define parts or all of the viewport off the tablet. For example:
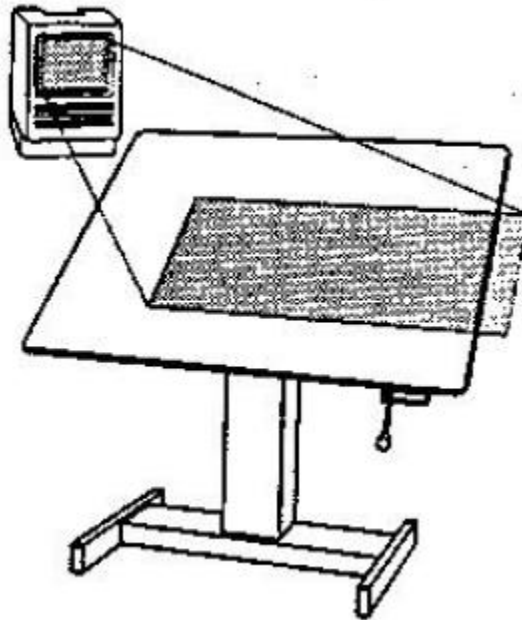
In this case, the part of the screen corresponding to the overhang is not accessible with the stylus/cursor. One or more of the following remedies fixes the problem:

- Reduce the size of the viewport by increasing the PixScale value.
- Cut the offset value with the Offset function.

Screen Pointing vs. Application Control

The Summagraphics ADB interface box and driver conform to the Apple ADB digitizing tablet specifications and Tablet Memory Structure.

These ADB specifications allow application software to utilize additional operating parameters that are different from the standard Control Panel setup options.

Many applications require these additional parameters, and take direct control of the tablet including modification of PixScale and Offset and control of the mouse screen pointer. Therefore, you do not need to modify these options through the Control Panel. If the application controls the operating parameters and you can them through the Control Panel, unexpected results may occur.

Most applications will restore the parameters to those in effect before it began. However, if you notice unexpected behavior after leaving an application, simply open the Control Panel and adjust the setup options.

Solving Problems

GTCO CalComp by Turning Technologies wants your experience with Summagraphics to be a successful one. If you ever encounter a problem, please follow the steps below.

1. Review this *User's Guide* to verify you have performed the correct steps.
2. Read the topics below to check for a solution to your problem. Assess the checklists, as well as the Troubleshooting Chart. Keep in mind that the problem could be your computer, display or software, instead of the digitizer.
3. If you still experience an issue, call GTCO CalComp by Turning Technologies Technical Support at 1-866-746-3015 (in the U.S. or Canada) or email us at gtco.support@gtcocalcomp.com. Outside the U.S. or Canada, contact your local GTCO CalComp by Turning Technologies office or dealer. Please have the following information available when you call:
     • Description of the problem
     • Name and version of software package
     • Type of computer being used
     • Summagrid VI model and serial number (see bottom of tablet)
     • Type of pointing tool that's being used
4. Be at your computer when you call.