

SummaSketch[®] II *Plus* **User's Guide**

**for IBM[®] versions of the SummaSketch II *Plus*
and SummaSketch II Professional *Plus*
Graphics Tablets**

1. Re-orient the radio or TV antenna.
2. Move your computer equipment away from the radio or TV.
3. Plug your equipment and the radio or TV into separate outlets, so that they're on different branch circuits.

If necessary, consult a radio or television dealer or technician. You may also find the booklet *How to Identify and Resolve Radio-TV Interference Problems* helpful. It was prepared by the FCC and is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock No. 004-000-00345-4.

LE PRESENT APPAREIL NUMERIQUE N'EMET PAS DE BRUITS RADIOELECTRIQUES DEPASSANT LES LIMITES APPLICABLES AUX APPAREILS NUMERIQUES DE CLASSE B PRESCRITES DANS LE RECLEMENT SUR LE BROUILLAGE RADIOELECTRIQUE EDICTE PAR LE MINISTERE DES COMMUNICATIONS DU CANADA.

Other Certifications

The SummaSketch II *Plus* and SummaSketch II Professional *Plus* are certified by UL, CSA, and TUV. German EMI Compliance, Class B, General Permit: The SummaSketch II *Plus* and SummaSketch II Professional *Plus* are shielded against radio interference in accordance with the provisions of Vfg 1046/1984. The German Postal Service has been advised that this equipment is being put on the market and that they have been given the right to inspect the series for compliance with the regulations. This equipment has been tested concerning compliance with the relevant RFI protection requirements both individually and on the system level (to simulate normal operating conditions). However, its possible that these RFI requirements are not met under certain unfavorable conditions in other installations. It is the user who is responsible for compliance of his or her particular installation.

WARNING: COMPLIANCE WITH APPLICABLE REGULATIONS DEPENDS ON THE USE OF SHIELDED CABLES. IT IS THE USER WHO IS RESPONSIBLE FOR PROCURING THE APPROPRIATE CABLES.

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Radio Frequency Interference (RFI)

The SummaSketch II *Plus* and SummaSketch II Professional *Plus*, hereafter referred to collectively as 'the Equipment', generate and use radio frequencies. If not installed and used in strict accordance with Summagraphics' instructions, the Equipment could interfere with your radio or television reception.

The Equipment has been tested and found to perform within the Class B limits for a computing device according to the specifications in Subpart J, Part 15 of the Federal Communications Commission (FCC) Rules. The Equipment design provides reasonable protection against RFI in a residential installation. However, keep the following in mind:

- Only Summagraphics accessories and options sold for use with the equipment may be used.
- Summagraphics Corporation is not responsible for radio or television interference caused by unauthorized modification of the equipment.
- Compliance with Class B specifications does not guarantee that interference will not occur in a particular installation. So, if a problem arises, try one or more of the following measures:

workmanship for the life of the product. This warranty is made only to the original purchaser/owner (the "Purchaser") and only if the purchase is made from an authorized Summagraphics dealer and the purchaser completes and returns the attached warranty registration card within fifteen (15) days after the date of purchase. Completion and return of the warranty registration are conditions precedent to the effectiveness of this warranty.

This warranty does not extend to cursors, styli, accessories, cables or software. Summagraphics warrants cursors, styli, cables, and accessories for a period of two (2) years from date of purchase subject to the warranty registration requirements described above.

If the product is sent prepaid to Summagraphics, and if Summagraphics determines that the product is defective in either materials or workmanship, it will, at its option, repair or replace the product without charge for parts or labor.

A minimum fee of \$25 will be charged for handling. Payment must be included with the equipment sent for repair or replacement and can be in the form of a check or money order. This handling fee will be waived for the initial six (6) months, calculated from the date of purchase by the original owner.

This warranty applies only to equipment purchased in the United States and Canada. For equipment purchased outside of the United States and Canada contact your local dealer or distributor.

This warranty is void if the product has been damaged by accident, abuse, misuse, negligence, or misapplication, or has been modified or repaired by others without the written permission of Summagraphics.

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Contents

- 1 About This Book
- 1 Did You Get Everything?
- 2 What Is The SummaSketch?
- 2 How Does It Work?
- 4 Preparation
- 4 Is Your Computer Set Up Correctly?
- 4 UIOF And MM Configurations
- 5 A Word About Software
- 5 Installing The SummaSketch
- 8 Using The SummaSketch
- 9 Caring For The SummaSketch
- 10 Stylus Refills
- 11 Troubleshooting And Service
- 12 Appendix A: Interface/Power Cable Pin Assignments
- 12 Appendix B: 9-pin-to-25-pin Serial Adapter Wiring Diagram
- 13 Appendix C: Communication Parameters

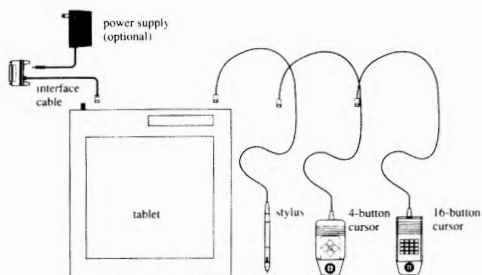
About This Book

Did You Get Everything?

This book provides the information you need to install, use, and care for your SummaSketch II *Plus* (12x12) and SummaSketch II Professional *Plus* (18x12). (To simplify, we refer to both models collectively as 'SummaSketch'.)

The package should contain the following:

- tablet
- four-button cursor or sixteen-button cursor
- PC compatible interface cable
- 25-to-9 pin serial adapter
- power supply
- software (documented separately)
- two-button stylus (optional)



If something was missing from the package, contact the dealer where you purchased the unit.

What is the SummaSketch?

The SummaSketch is a graphics tablet. A graphics tablet is an input device that lets you translate two-dimensional information, such as a drawing, into a computer readable format. Its many uses include:

- tracing pictures, drawings, and photos
- freehand drawing
- steering the pointer on a computer screen
- picking locations on a menu or template

The SummaSketch is a sophisticated device. It uses the latest advances in electronics and electromagnetic technology, which make it accurate and reliable.

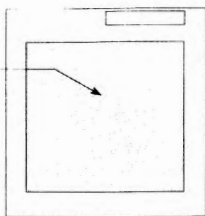
How Does it Work?

The SummaSketch has two main parts, the tablet and the pointing device. The pointing device can be either the stylus or cursor. The cursor/stylus emits a low-intensity signal. A grid within the tablet picks up the signal to 'read' the cursor/stylus location. Therefore, for the SummaSketch to do its job, the cursor/stylus must be over the grid and close enough to it to sense the signal. Two terms describe this. They are 'active area' and 'proximity', which are defined on the next page.

How Does it Work? (cont.)

- The area of the tablet where the grid is located is called the tablet active area. Unless you have X-ray vision, you can't see the active area. So we etched a groove in the tablet surrounding it.

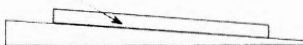
active area



The SummaSketch II active area is 11.7" x 11.7" (shown above). The SummaSketch II Professional active area is 18" x 12".

- Proximity is the maximum distance above the active area that the cursor/stylus can be held and still be read by the tablet.

proximity = 1/2"



The proximity of the cursor/stylus is 1/2-inch. The cursor/stylus does function at greater heights, but performance, such as accuracy, begins to suffer.

The advantage of proximity is that the cursor/stylus and tablet need not be in direct contact with each other to work. You can draw and trace through layers of materials, e.g. drawings and photos, up to the proximity limit - - 1/2-inch.

Preparation

For the tablet to function with your computer, the computer hardware must be set up correctly, and the computer software must support the SummaSketch.

Is Your Computer Set Up Correctly?

The computer must have an RS-232-C port. This is an asynchronous, serial, communications port. The port must be configured as DTE (Data Terminal Equipment), which specifies that the port transmit data on Pin 2 and receive data on Pin 3. The port can have either a 25-pin male D connector or a 9-pin male D connector.

Additional configuration information appears in the appendices. If you are unsure whether your computer is set up correctly, refer to the computer owner's guide or call your dealer.

UIOF and MM Configurations

The tablet operates in either the UIOF (Universal Input Output Format) or MM configuration. Each configuration has its own unique set of operating characteristics and report formats. When you turn on or reset the tablet, it defaults to one of these configurations. It defaults to the MM configuration when the stylus or four-button cursor is attached. It defaults to the UIOF configuration when the sixteen-button cursor is attached.

Software is available to override the defaults and let you mix and match configurations and pointing devices. Refer to the *SummaSketch Drivers/Utilities User's Guide* for details.

A Word About Software

For the tablet to act as an input device, your application must include a driver for the tablet model you are using. The driver allows your tablet and the application to communicate with each other. It converts the tablet output into information that the application can understand and use. Most programs have Summagraphics drivers built right in. (To be sure, refer to the software manual or contact the software manufacturer.) Below is a listing of drivers required by the SummaSketch II *Plus* tablets. If you are using a

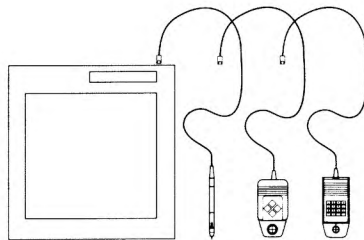
SummaSketch II *Plus* (or SummaSketch II Professional *Plus*) with a four-button cursor or stylus, you must select the SummaSketch (or MM series) driver within the application.

SummaSketch II *Plus* (or SummaSketch II Professional *Plus*) with a 16-button cursor, you must select the Microgrid (or UIOF) driver within the application.

Installing the SummaSketch

Below are the steps to installing your SummaSketch.

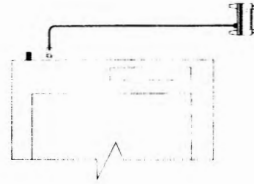
1. Plug the cursor or stylus into the top right socket.



The cursor and stylus are interchangeable. However, when changing from one to the other, turn off the tablet. (This allows the tablet's internal firmware to fine tune for each device.)

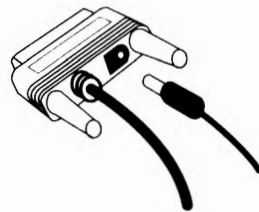
Installing the SummaSketch (cont.)

2. Connect the tablet to the computer by plugging the phone-type connector of the interface cable into the top left socket.



Next, plug the 25-pin connector of the interface cable into the host communications port. If your computer has a 9-pin port, use the 9-pin-to-25-pin adapter between the tablet cable and the computer.

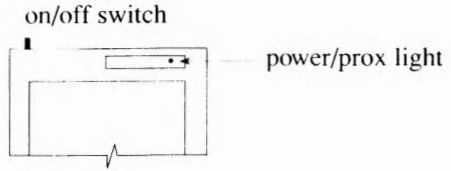
3. Connect the power supply by plugging its barrel connector into the interface cable's D connector.



Now, plug the power supply into a standard electrical outlet. Use only a SummaSketch power supply. A substitute could damage the tablet and would void the FCC certification and warranty.

**Installing the
SummaSketch
(cont.)**

4. Power up the tablet by pressing the on/off switch. (Pressing it again turns the tablet off).



The tablet is now up and running!

The power/prox light serves two purposes. First, it lets you know that the tablet is on and receiving power. Second, it is a proximity indicator. The light remains lit when the cursor/stylus is in-prox (in proximity). It blinks when the cursor/stylus is out-of-prox (out of proximity). If the light blinks when the cursor/stylus is in-prox, two possible problems exist. Either the cursor or stylus is not connected to the tablet, or the tablet is malfunctioning. Turn off the tablet, then turn it on. If it fails again, contact your local dealer for service.

Using the SummaSketch

Using the SummaSketch is easy. However, you'll get the most from your tablet if you follow these guidelines:

- The cursor/stylus must be in the tablet active area and in proximity (within 1/2-inch of the tablet surface) for the tablet to work as a pointing device. Note: The tablet power light is also a proximity indicator. When the cursor/stylus is in proximity, the tablet power light is on. When the cursor/stylus is out of proximity, the power light blinks.
- You can tape things down to the tablet, like pictures and drawings. Tape doesn't bother the tablet. You can even stack materials up to 1/2-inch high between the tablet and the cursor/stylus.
- The cursor and stylus have the same functionality. You can use them to draw, trace, etc. Which one should you use? The stylus is more natural to the hand, so it is better for freehand drawing. The cursor has the cross-hair for precisely sighting points, so it is better for tracing and menu picking.
- The cursor and stylus are interchangeable. However, when changing from one to the other, turn off the tablet. (This allows the tablet's internal firmware to fine tune for each device.)
- The cursor is most accurate when held parallel with the tablet surface. To activate a cursor button, press it. When tracing, use the cross hair to precisely sight information.

Using the SummaSketch (cont.)

- The stylus has two buttons, the barrel button and the refill tip. To activate, press gently.
- The unit is affected by conductive materials. Don't trace through metal or metallized paper. Don't use metal objects, such as rulers on the tablet. With the cursor, however, you can trace through some conductive materials, such as X-rays or drawings in pencil or conductive ink.
- When you turn off the computer, also turn off the tablet.

Caring for the SummaSketch

Below are some basic guidelines for the care and maintenance of your SummaSketch.

The Environment

Operating Temperature:

45 degrees to 110 degrees Fahrenheit
(7 degrees to 43 degrees Celsius)

Storage Temperature:

-45 degrees to 145 degrees Fahrenheit
(-43 degrees to 63 degrees Celsius)

Be careful. Extreme temperatures can occur in some rather surprising places - - the top of a TV set, in direct sunlight, or in the car on a hot or cold day.

Humidity:

8 to 80 percent relative humidity,
non-condensing

Care and Cleaning

The SummaSketch requires minimal care and cleaning. However, these guidelines are important:

- Turn the tablet and computer off and unplug them before cleaning. Unplug the power supply from the electrical outlet.
- Using a soft, damp (not wet), lint-free cloth, wipe the case clean with a mild detergent solution.
- Cursor: The transparent part of the cursor that encases the cross-hair is called the paddle. Protect the paddle. Do not scratch, mar, or separate. To clean, wipe with a lint-free cloth dampened with water. Do not use spray cleaner or any other type of cleaner or solvent.
- Never disassemble the SummaSketch.
- Never immerse in liquid.
- Never bang it around or drop it.
- Never scratch or mar the tablet.

Stylus Refills

You can obtain stylus refills from your SummaSketch dealer. To change the refill, unscrew the cap and pull the refill straight out.



Insert the new refill and screw on the the cap.

Troubleshooting and Service

You should have no problems with your SummaSketch. However, if a problem arises, try one or more of the following:

- Check the hardware connections and ensure that the tablet is turned on. The power/prox light should be lit.
- Ensure that the computer is working.
- Turn off the computer and tablet. Turn them on again.
- Reread this booklet to ensure that you have installed and are using the unit properly.
- Run the MMTEST utility, described in the *Drivers/Utilities User's Guide*.

If the problem persists, contact the dealer where you purchased your SummaSketch. If your dealer instructs you to return the unit to Summagraphics, contact our Customer Service Department at (203) 881-5400 for instructions and a Return Authorization Number.

Do not return a unit without first obtaining a Return Authorization Number and instructions from our Customer Service Department.

Appendix A

Interface/Power Cable Pin Assignments

For those of you who want to use an extension or adapter cable between our interface cable and the computer, the table below may be helpful. It identifies the pin assignments of the 25-pin D connector terminating our interface/power cable:

Pin	Wire Name	Description
1	ground	protective ground
2	RXD	receives data from host
3	TXD	transmits RS-232-C data to host
4	RTS	Request To Send
5	CTS	Clear To Send
6	DSR	Data Set Ready
7	ground	signal ground
20	DTR	Data Terminal Ready

Appendix B

9-pin-to-25-pin Serial Adapter Wiring Diagram

The table below identifies the wiring of the Summagraphics 9-pin-to-25-pin serial adapter. If you're using an adapter other than the one we supply, ensure that it has the same specifications.

9-Pin Female Connector	25-Pin Male Connector
1	8
2	3
3	2
4	20
5	7
6	6
7	4
8	5
9	22

Appendix C Communication Parameters

SummaSketch (MM) Format

Format: RS-232-C

Baud rate: 9600

Number of data bits: eight

Parity bit: odd

Number of stop bits: one

Data format:

MSB							LSB	Transmit
7	6	5	4	3	2	1	0	Sequence
PH	PR	T	Sx	Sy	Fc	Fb	Fa	1st byte
0	X6	X5	X4	X3	X2	X1	X0	2nd byte
0	X13	X12	X11	X10	X9	X8	X7	3rd byte
0	Y6	Y5	Y4	Y3	Y2	Y1	Y0	4th byte
0	Y13	Y12	Y11	Y10	Y9	Y8	Y7	5th byte

Key:

- LSB is the least significant bit. MSB is the most significant bit.
- Fa, Fb, and Fc are the flag bits. They identify the status of the stylus and cursor buttons.

Stylus	Cursor Buttons	Fc	Fb	Fa
none pressed	none pressed	0	0	0
tip button	1	0	0	1
barrel button	2	0	1	0
tip and barrel	3	0	1	1
	4	1	0	0
	1+2	0	1	1
	1+3	1	0	0
	1+4	1	0	1
	2+3	1	0	1
	2+4	1	1	0
	1+2+3	1	1	0
	1+2+4	1	1	1
	2+3+4	1	1	1
	1+2+3+4	1	1	1

- Sx and Sy are the X and Y coordinate signs. 1 is positive. 0 is negative. In absolute coordinates, the sign is always positive. In relative coordinates, the sign can be positive or negative.
- T is the Tablet Identifier. Your choice of 1 or 0. Command controlled.
- PR is the proximity bit. 0 is in-prox. 1 is out-of-prox.
- PH is the phasing bit, which is always 1.
- X0, X1, etc. and Y0, Y1, etc. are the X and Y coordinate bits.

UIOF Format

Format: RS-232-C

Baud rate: 9600

Number of data bits: seven

Parity bit: even

Number of stop bits: two

Data format:

MSB						LSB	Transmit
6	5	4	3	2	1	0	Sequence
PH	0	0	Mb	Ma	T	PR	1st byte
0	0	Fe	Fd	Fc	Fb	Fa	2nd byte
0	X5	X4	X3	X2	X1	X0	3rd byte
0	X11	X10	X9	X8	X7	X6	4th byte
0	0	Sx	X15	X14	X13	X12	5th byte
0	Y5	Y4	Y3	Y2	Y1	Y0	6th byte
0	Y11	Y10	Y9	Y8	Y7	Y6	7th byte
0	0	Sy	Y15	Y14	Y13	Y12	8th byte

- LSB is the least significant bit. MSB is the most significant bit.
- PR is the proximity bit. 0 is in-prox. 1 is out-of-prox.

- T is the Tablet Identifier.
- Ma and Mb are the model identifiers:

Mb	Ma	Model
0	0	Microgrid
0	1	MM 1812
1	0	SummaMouse
1	1	unassigned

- Ph is the phasing bit, which is always 1.
- Fa through Fe are the flag bits. They identify the status of the cursor buttons:

16-Button Cursor	4-Button Cursor	Fe	Fd	Fc	Fb	Fa
none	none	0	0	0	0	0
1	1	0	0	0	0	1
2	2	0	0	0	1	0
3	3	0	0	0	1	1
C	4	0	0	1	0	0
4		0	0	1	0	1
5		0	0	1	1	0
6		0	0	1	1	1
D		0	1	0	0	0
7		0	1	0	0	1
8		0	1	0	1	0
9		0	1	0	1	1
E		0	1	1	0	0
A		0	1	1	0	1
0		0	1	1	1	0
B		0	1	1	1	1
F		1	0	0	0	0

- X0, X1, etc., and Y0, Y1, etc., are the X and Y coordinate bits. The coordinates are in counts of resolution, not inches or millimeters.
- Sx and Sy are the X and Y coordinate signs. 1 is negative, 0 is positive.

Lifetime Limited Warranty

Limited Warranty on Media, Manuals, and Software

If you discover physical defects in the software media or in the manuals distributed with the software, Summagraphics Corporation will replace the media or manuals at no charge to you, provided you return the item to be replaced with proof of purchase to Summagraphics or an authorized Summagraphics dealer during the 90-day period after you purchased the software. In some countries the replacement period may be different; check with your authorized Summagraphics dealer.

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Limited Warranty on Hardware

This warranty applies only to hardware products. Summagraphics software, media, and manuals are warranted pursuant to a separate written statement.

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gives you specific legal rights, and you may also have other rights which vary from state to state or country to country.

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No action arising out of any claimed breach of this warranty or transactions under this warranty may be brought more than two (2) years after the cause of action has accrued, or more than four (4) years after the date of the Summagraphics Corporation sales document for the product, whichever first occurs.

