

WACOM



**PC Installation
and
Utilities Manual**



PC INSTALLATION AND UTILITIES MANUAL

DRAFT: November 17, 1989
Appendices: June 12, 1990
Title Page: January 21, 1991

WACOM Inc.

West 115 Century Road, Paramus, New Jersey 07652, U.S.A.
Telephone 201-265-4226
FAX 201-265-4722
BBS 201-265-4758

WACOM Computer Systems GmbH:

Hellersbergstrasse 4, D-4040 Neuss 1, Germany
Telephone 49-2101-166001
FAX 49-2101-101760

WACOM Co., Ltd.

4-1-12, Ikebukuro, Toshima-ku, Tokyo, 171 Japan
Telephone 81-3-3985-0097
FAX 81-3-3985-8636

WACOM Korea Co., Ltd.

371-36, Karibong-dong, Kuro-ku, Seoul, Korea
Telephone 82-2-869-5595
FAX 82-2-869-1241

© 1991 WACOM Inc.

All rights reserved. No part of this manual may be reproduced in any form or by any means without the prior written consent of WACOM Inc.

WACOM Inc. reserves the right to revise this publication without obligation to provide notification of such changes.

In no event will WACOM be liable for direct, indirect, special, incidental, or consequential damages resulting from any defect in the software, the hardware, or documentation.

Trademarks

Bit Pad Two®, MM 961®, and MM 1201® are registered trademarks of Summagraphics Corporation. Lumen® is a trademark of Time Arts Inc. Dr. Halo® is a registered trademark of Media Cybernetics. Microsoft® is a registered trademark of Microsoft Corporation. IBM® and PS/2® are registered trademarks of International Business Machines Corporation. ADL and AutoCAD® are trademarks of

Contents

INTRODUCTION	1-1
DIGITIZER INSTALLATION	2-1
All Aboard	2-1
Express	2-1
Local	2-2
Custom	2-2
The Express Line	2-4
The Local Line	2-7
Unpack	2-7
Cables and Adapter	2-7
Software	2-8
Factory DIP Switch Settings	2-9
Tablet Connections	2-10
Power Up and Test Indicator Lights	2-12
Connect Digitizer to Host	2-14
Verify Communication	2-15
Environments	2-18
Single Application Installation Procedure	2-18
Multiple Applications: One Command Set	2-20
Multiple Applications: Multiple Command Sets ...	2-21
Using WMODE.COM	2-21

1
2
3

A
B

UTILITIES INSTALLATION

Introduction	3-1
How to Install the WACOM Pointing Devices as a Microsoft Mouse (WMOUSE.COM)	3-2
Cautions	3-2
Procedure	3-4
Enabling and Disabling the MS Mouse Emulator (WSET.COM)	3-5
How to Use the WACOM Pressure Stylus as a Microsoft Mouse (WSET.COM)	3-6
Absolute and Relative Mode (WSET.COM)	3-7
How to Use the WACOM Digitizer with Microsoft Windows (WMS286.DRV)	3-8
How to Change Emulation Mode from the DOS Prompt (WMODE.COM)	3-13
How to Use WACOM's Microsoft Mouse Emulation with GEM (Bus Mouse)	3-15
How to Use the WACOM Digitizer with Autodesk Products (WADI.EXE)	3-16
Cautions	3-17
Procedure	3-18

APPENDICES

Appendix A. DIP Switches

WACOM II (Factory) DIP Switch Defaults	A-0
WACOM II DIP Switch Options	A-1
WACOM II DIP Switch Definitions	A-2
Bit Pad Two DIP Switch Defaults	A-6
Bit Pad Two DIP Switch Options	A-7
MM 1201 DIP Switch Defaults	A-8
MM 1201 DIP Switch Options	A-9
User DIP Switch Settings	A-10

Appendix B. RS-232C Cable Configurations

RS232C Cable Configurations for IBM/PC and PS/2	B-1
RS232C Cable Configurations for IBM/PC and XT	B-2

FIGURES

2-A WACOM Transit	2-3
2-B Factory Default DIP Switch Settings	2-9
2-C Digitizer Rear View (left side)	2-10
2-C Digitizer Rear View (right side)	2-11
2-D Indicator Lights	2-12
2-E WTEST.COM "I Am Fine" Screen	2-16
2-F Error Screen	2-16

Introduction

Introduction

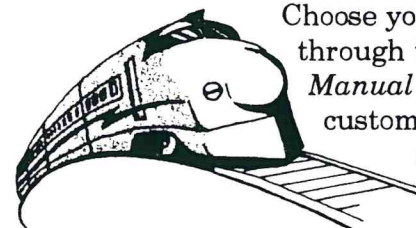
The *PC Installation and Utilities Manual* presents procedures and information for installing any of the Wacom digitizers on a PC or PC-compatible host. The manual is divided into two main sections.

- **Digitizer Installation** presents both a quick start ("The Express Line") and a detailed procedure ("The Local Line").
- **Utilities Installation** presents documentation for using the WACOM SD-Series digitizers in the following application environments:
 - Microsoft mouse-compatible applications
 - Microsoft Windows/286-compatible applications
 - DRI GEM-compatible applications
 - ADI driver-compatible applications

This section also presents information on using two additional utilities: one that tests tablet communication and one that allows emulation switching from the DOS command line level.

Digitizer Installation

Digitizer Installation



Choose your own route through the *WACOM User's Manual* — express, local, or custom. The express line stops only at major points. The local line makes all

stops. And the custom line is for software developers. Sit back, relax, and enjoy the ride.

The express line speeds you to the final destination. Follow "The Express Line" in this section if you are a sophisticated traveler and want the fastest route to the end of the line.

Riding the express line has configuration requirements. To obtain an express ticket, you need: (1) an IBM PC or compatible with a 5¹/₄" disk drive and a free serial port, or (2) any host configuration for which you have a cable and setup instructions. If you plan to use different command sets, use the local line.



All Aboard

Express

Local

The local line is a guided tour that makes all stops — from unpacking to verifying DIP switch settings — as shown in Figure 2-A. Follow the local line if you are new to this route or wish to sightsee.

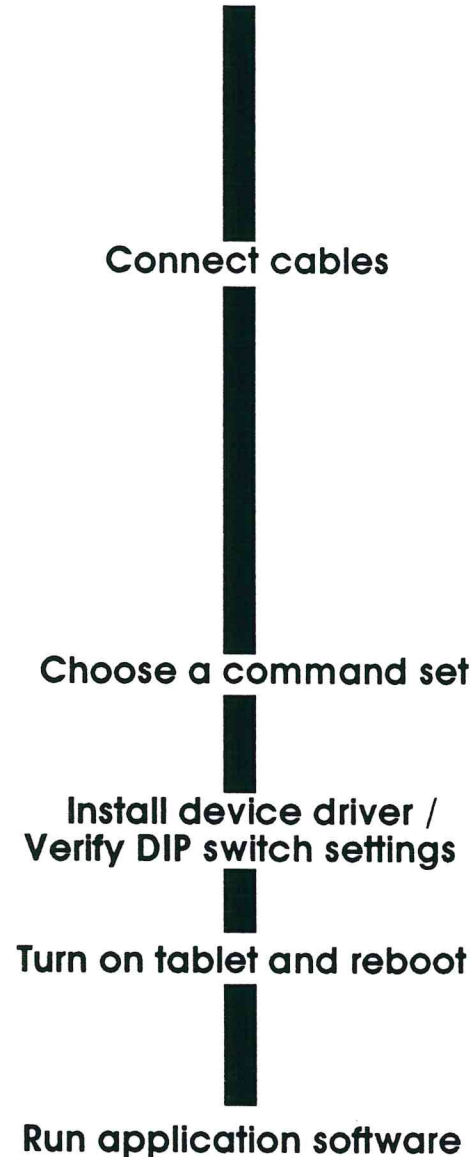
Custom

Software developers may prefer custom travel. For writing custom drivers or applications, consult the *WACOM Programmer's Manual* which documents the functions in the WACOM II command set.

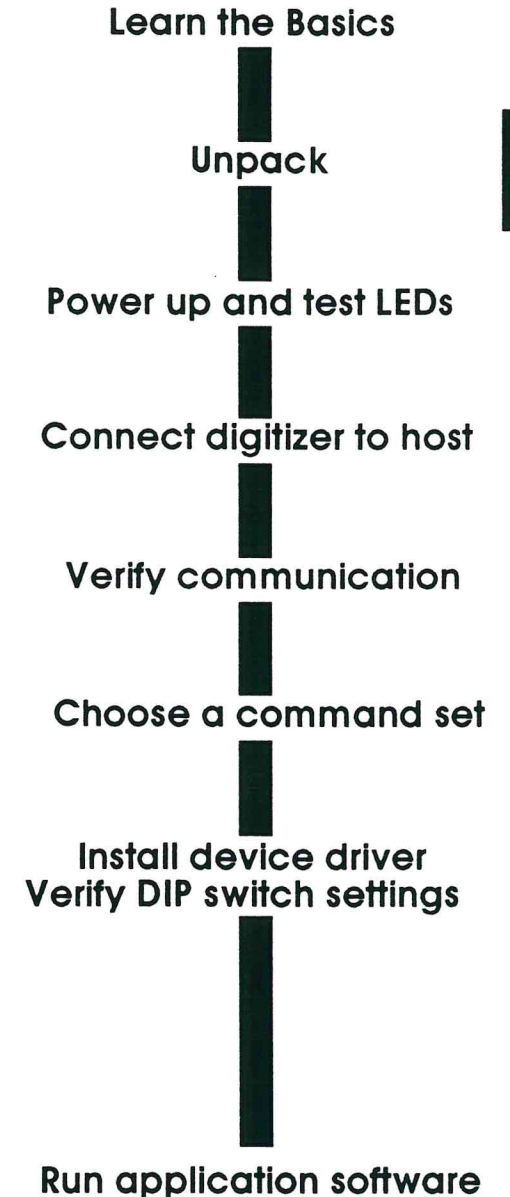
Figure 2-A

WACOM TRANSIT

EXPRESS LINE



LOCAL LINE



**THE
EXPRESS LINE**

Listed below are the "stops" in the express line. If you need more information, transfer to the local line later in this chapter. Follow any special instructions for device installation in your application software documentation.

1. CONNECT CABLES

- a. Check that power switches to the digitizer and host are set to OFF.
- b. Attach the male connector of the WACOM interface cable to the RS-232C port on the back of the digitizer.

Note: The configuration in the interface cable supplied with your digitizer is custom-made for WACOM digitizers and will not work with other devices.

- c. Attach the female end of the interface cable to the serial port (or adapter) on the host.
- d. Attach the power cable to the tablet and plug it into the power source.

2. CHOOSE A COMMAND SET.

Check the documentation for your application software for the best way to provide communication to the tablet. Your software may provide communication directly through its own internal drivers (e.g., Dr. Halo, Lumena, etc.) for WACOM II, MM 1201, or Bit Pad Two. If not, see Step 3.

3. INSTALL A DEVICE DRIVER (if needed)

If your software does not provide communication directly, you can install one of the memory-resident device drivers packaged with the digitizer.

For details, see Chapter 3 of this manual.

4. SET DIP SWITCHES.

- a. See Appendix A for DIP switch defaults for WACOM II, MM 1201, or Bit Pad Two. Unless you are writing your own driver, use the defaults for the appropriate command set.
- b. Use the WACOM II (factory default) DIP switch settings if you are installing one of the following:
 - A device driver that came with the digitizer, or
 - A driver that supports WACOM II

5. TURN ON THE TABLET.

6. REBOOT.

7. RUN YOUR APPLICATION SOFTWARE.

This section provides a detailed guide through the installation procedure. The first step is to unpack the digitizer and its components.

Open the box containing the digitizer and components. Remove and save packing materials and set the tablet on a flat surface.

For a list of tablet models and pointing devices, see the *User's Manual*.

Check to make sure you received the following:

- Interface cable for 25-pin serial port
- Power cable
- Adapter (25 to 9-pin) for a 9-pin PC AT-type serial port

**THE
LOCAL LINE**

Unpack

*Cables
and
Adapter*

Software

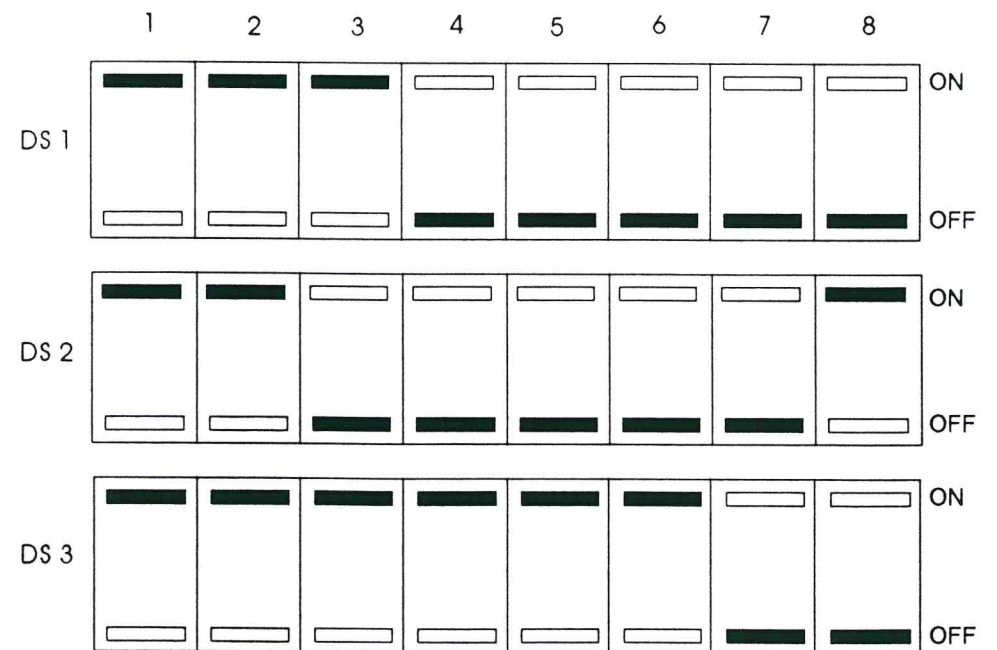
The 5¹/₄" diskette included with the digitizer should contain the following files:

- **WTEST.COM** Utility to test digitizer to host communication
- **WMOUSE.COM** Microsoft Mouse Emulation Driver
- **WSET.COM** Utility to configure WMOUSE parameters including scaling, absolute or relative mode, and use of the pressure stylus
- **WMS286.DRV** Driver to allow use of WMOUSE.COM with MS Windows/286.
- **WADI.EXE** ADI Driver
- **WMODE.COM** Implements command set change from the command line level of DOS
- **READ.ME** Instructions and update information on the Utility Diskette

**Factory
DIP Switch
Settings**

Check that the DIP switches are set to the factory defaults shown in Figure 2-B below:

Figure 2-B
Factory Default DIP Switch Settings

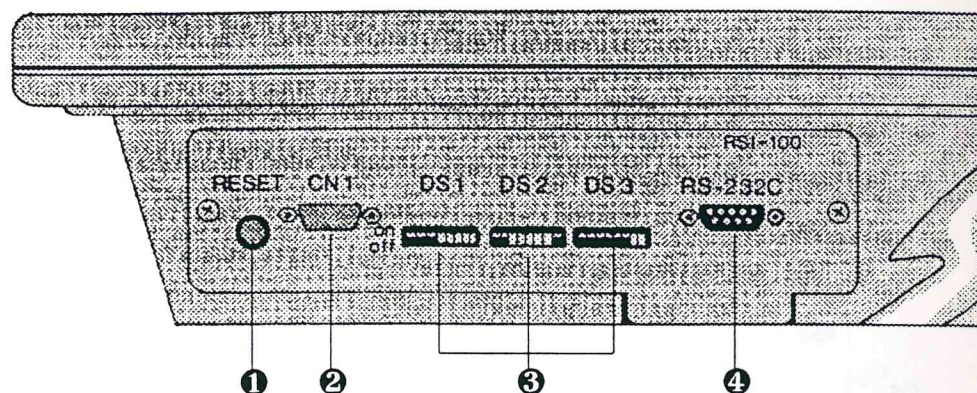


■ = switch position

**Tablet
Connections**

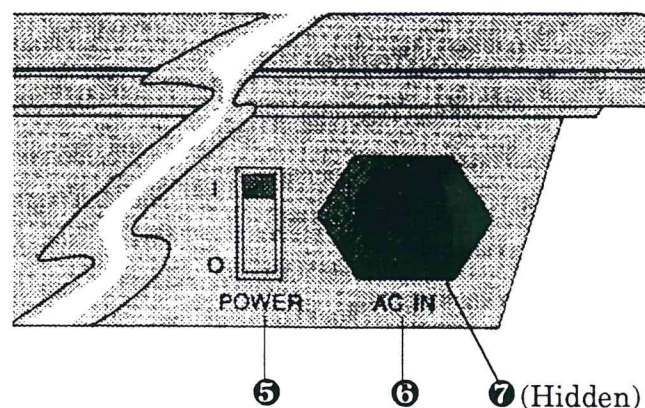
Figure 2-C shows the switches and connections on the back of the digitizer. (Note: Some models do not have the factory test port – CN 1.)

Figure 2-C
Digitizer Rear View (left side)



- ① RESET Forces the tablet to read the DIP switch settings
- ② CN 1 Factory test port
- ③ DS 1 DIP Switch Bank 1
DS 2 DIP Switch Bank 2
DS 3 DIP Switch Bank 3
- ④ RS-232C Connection that takes the male end of the interface cable

Figure 2-C
Digitizer Rear View (right side)



- ⑤ POWER ON / OFF switch
- ⑥ AC IN Connection that takes the female end of the power cable
- ⑦ FUSE HOLDER Fuse holder with spare fuse, located below the AC IN plug

**Power Up
and
Test Indicator
Lights**

1. Attach the female end of the power cable to AC IN on the back of the tablet; plug the male end into a standard grounded AC wall outlet.
2. Turn the power switch on the back of the digitizer to the ON position. The digitizer has three indicators (light-emitting diodes) in the upper left corner of the tablet as shown in Figure 2-D. Check that the red POWER indicator lights up.

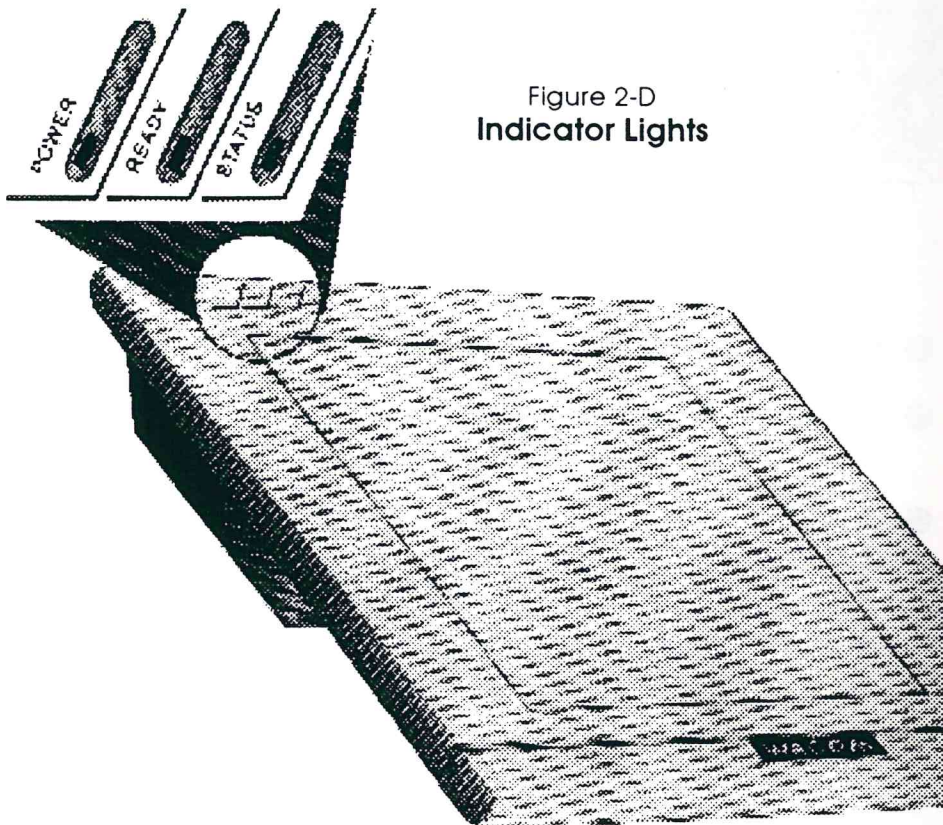


Figure 2-D
Indicator Lights

3. Place the stylus or cursor in the effective area of the tablet. Check that the READY indicator lights up.
4. Press the stylus tip or a cursor button. Make sure you have only one pointing device in the effective area at one time. Check that the STATUS indicator lights up. The STATUS light means data is available in the communications buffer.
5. If the indicators do not light as described above, check that:
 - (1) your power connections are secure, and
 - (2) DIP switches are set to factory default settings (Figure 2-B).

Connect Digitizer to Host

1. Turn the digitizer power switch to OFF.
2. Attach the male connector of the interface cable to the RS-232C port on the back of the digitizer.
3. Attach the female end of the interface cable to the serial port (or adapter) on the host. This cable with a 25-pin adapter follows the cable configuration shown in Appendix B.

NOTES:

The configuration in the interface cable supplied with your digitizer is custom-made for WACOM digitizers and will not work with other devices.

For making custom cables, see Appendix B.

A standard RS-232C extension cable can be used with the Wacom cable. It should be shielded, however, for compliance with FCC regulations.

To verify communication between the digitizer and an IBM PC compatible, use WACOM's communication test program (WTEST.COM) packaged with the digitizer.

WTEST.COM checks that communication "handshaking" or control lines are at the right voltage levels for data transfer, activates the test command which generates a report to the screen, and shows the current location and switch values of the stylus or cursor.

Before you run the test, verify that the DIP switches are set to the factory defaults (Figure 2-B).

To run WTEST.COM, use the following procedure:

1. Insert the diskette containing WTEST.COM into the floppy drive.
2. Enter: **A:WTEST**
or
A:WTEST 2 (*if using COM2*)

If all is well, you will see the screen shown in Figure 2-E. Be sure to tighten your cable connections.

If there's a problem, you will see the screen shown in Figure 2-F. Check the cables and DIP switch settings and enter the command again.

Verify Communication

Figure 2-E
WTEST.COM "I AM FINE" Screen

```

WACOM TABLET TEST PROGRAM
Copyright WACOM Co. LTD. 1989

TESTING WACOM TABLET ...
*TEST
RECEIVE OK!
I AM SUPER DIGITIZER SD-420. Ver 1.1 (WACOM 2)
*** WACOM SUPER DIGITIZER SD-420 TRANSMISSION TEST DATA ***
!"#$%&'()*+,-/
0123456789:;<=>?@ABCDEFGHIJKLMNPOQRSTUVWXYZ[\]^_`abcdefghijklmnop
qrstuvwxyz{|}~
TRANSMIT OK!
LED TURN ON AND OFF.
I/F PROGRAM MEMORY 32KBYTE (ROM : 0 TO 7FFFH) MEMORY OK!
I/F MEMORY 8KBYTE (RAM: C000H TO DFFFH) MEMORY OK!
CONTROL BOARD TEST OK!
BUZZER BEEP ( 0.1 Sec * 5 ).
I AM FINE. HAVE A NICE DAY!

CURSOR or STYLUS TEST - Manipulate Cursor or Stylus on tablet.
Press any key to end test.
CURSOR X = 4112 Y = 13359 Button = 0

```



Pressure and nonpressure data reported by the pointing device(s) are displayed in the "Button =" field (at the arrow). Test your pointing device(s) using the procedure on the next page.

Figure 2-F
Error Screen

```

WACOM TABLET TEST PROGRAM
Copyright WACOM Co. LTD. 1989

TESTING TABLET ...

TEST ERROR: No ready signal from tablet.
A:\>

```

3. Test your pointing devices. When you see the "I AM FINE" screen, check that your pointing devices are sending the correct data. ("Button =" is at the bottom of the screen)

Test the cursor buttons:

- Pressing the *top* button: Button = 1
- Pressing the *left* button: Button = 2
- Pressing the *bottom* button: Button = 3
- Pressing the *right* button: Button = 4
- Pressing *no* button: Button = 0

Test the standard stylus:

- Pressing the *tip* switch (with a firm pressure): Button = 1
- Pressing the *side* (barrel) switch: Button = 2
- Pressing *both* switches: Button = 3
- Pressing *no* switch: Button = 0

Pressure stylus:

- As you increase pressure, "Button =" will change as follows:
4, 1, 0, 3, 2

Environments

The number of software applications and command sets determines your operating environment, which in turn affects installation. Following are the installation procedures for three environments.

Follow any special instructions for device installation in your application software documentation.

Single Application Installation Procedure

If you will be running a single software application, follow the procedure below.

1. *CHOOSE A COMMAND SET*

Check the documentation for your application software for the best way to provide communication to the tablet. Your software may provide communication directly through its own internal drivers (e.g., Dr. Halo, Lumena, etc.) for:

- WACOM II
- MM 1201
- Bit Pad Two

2. *INSTALL A DEVICE DRIVER (if needed).*
If your software does not provide communication directly, you can install one of the memory-resident device drivers packaged with the digitizer.
3. *SET DIP SWITCHES.*
 - a. See Appendix A for DIP switch defaults for WACOM II, MM 1201, and Bit Pad Two. Unless you are writing your own driver, use the defaults for the appropriate command set.
 - b. Use the WACOM II (factory default) DIP switch settings if you are installing one of the device drivers that comes with the digitizer or a driver that supports WACOM II.
4. *RESET.*
If you changed any DIP switches, press RESET in the back of the digitizer.
5. *RUN YOUR APPLICATION SOFTWARE.*

If you are running more than one software application, determine if there is one command set that is common to all the applications.

- Yes — Set the DIP switches to the defaults for that command set and install device drivers as instructed by the software or driver documentation.
- No — See the next subsection.

Note: *Using the Microsoft Mouse Emulation Driver is frequently a way to find a common command set, but with this choice may come the relative position reporting characteristics of a mouse. If this is unacceptable, because some applications require absolute coordinate data — like AutoCAD using a template — then you may have to follow the directions for setup in multiple command set situations presented next.*

When using multiple applications and command sets, you can use WMODE.COM to change command sets or emulation modes from the DOS command line without having to physically change DIP switches. The form of the WMODE.COM command is:

WMODE [emulation] [COMport]

[emulation] is the emulation designator:

- W2 for WACOM II command set
- MM for MM 1201 emulation
- BP for Bit Pad Two emulation

[COMport] is 1 or 2 for COM1 or COM2

Example: WMODE W2 1

where:

WMODE = command

W2 = WACOM II command set

1 = COM1

The only reason to use WMODE is if you need to change the tablet into another command set without having to change the DIP switches. This situation occurs most frequently when some applications use the WACOM II device drivers (WMOUSE.COM and WADI.EXE) and others require MM 1201 or Bit Pad Two emulation. The best way to provide this change is to include the WMODE command in the AUTOEXEC.BAT file and any batch files used to invoke the applications.

For example, Application A (APPA.EXE) uses the WACOM mouse driver and Application B (APPB.EXE) requires MM 1201 emulation. To provide simple control, the batch files could be set up as follows:

AUTOEXEC.BAT *Batch file executed when host boots*

...	[beginning of the batch file]
MODE COM1:96,n,8,1	[set the port to tablet defaults]
WMOUSE	[load the mouse driver using COM1]
WSET D	[disable the mouse driver]
...	[the rest of the batch file]

A.BAT *Batch file to invoke application A*

WSET D	[disable the mouse driver]
WMODE W2	[switch to Wacom II command set]
WSET E	[enable mouse driver]
APPA	[invoke the application]
WSET D	[disable the mouse driver]

B.BAT *Batch file to invoke application B*

WSET D	[disable the mouse driver]
WMODE MM	[change to MM 1201 emulation]
APPB	[invoke the application]

NOTES

1. The MODE command in the AUTOEXEC batch file insures that the COM port to which the tablet is connected gets set to the factory default values for the tablet.
2. Always use WSET D before WMODE to eliminate conflict.
3. Do not count on the application program to terminate properly and allow the batch file to continue. The WSET D command in the A.BAT batch file may never be executed if the application exits abnormally, so it's best to always include the WSET D command before a WMODE command.
4. This example assumes that the programs are all either in the same directory or accessible through the PATH that is active. To provide switching to other directories and/or adjust the PATH, see the DOS Manual.
5. Either application could be executed first.

Utilities Installation

Introduction

This section presents documentation and software support for the WACOM SD-Series digitizers with the following application environments:

- MS Mouse-compatible applications
- MS Windows/286-compatible applications
- DRI GEM-compatible applications
- ADI driver-compatible applications

This section also presents information on two additional utilities: one that tests tablet communication and one that allows emulation switching from the DOS command line level.

How to Install the WACOM Pointing Devices as a Microsoft Mouse

Wacom's WMOUSE.COM driver is intended as a replacement for Microsoft's MOUSE.COM when using any WACOM SD-Series pointing device.

WMOUSE.COM is a TSR (Terminate and Stay Resident) program which must be loaded into the memory of your computer before execution of the application program which uses it. Once loaded, WMOUSE.COM remains in memory and intercepts and responds to various interrupts initiated by the applications in use or by the activity of the external hardware devices.

Cautions

- Because many TSR programs may be resident and active at one time, exercise care in loading and using them in order to avoid conflicts.

IMPORTANT!

Remove any reference to Microsoft's MOUSE.COM or MOUSE.SYS in your AUTOEXEC.BAT or CONFIG.SYS files

- Since the Wacom Microsoft Mouse emulation driver uses the same interrupts and functions as Microsoft's MOUSE.COM, both programs may not be loaded at the same time. If you were loading MOUSE.COM or MOUSE.SYS automatically in the AUTOEXEC.BAT or in the CONFIG.SYS files, *you must remove these references to allow WMOUSE.COM to work properly.*
- TSRs sometimes adversely affect each other. Should you have difficulty after adding a new TSR to your system, first try to isolate the problem by removing other TSRs until the conflicting one is isolated. Then try changing the order that the TSRs are loaded. Many times switching the order of loading the TSRs will resolve the difficulty. *Please write to Wacom regarding any TSR conflicts.*
- The WMOUSE.COM program includes both absolute and relative coordinate data and can be easily switched between these modes from the DOS command line using WSET.COM. While MOUSE.COM provides absolute coordinate data, not all application programs that use a standard mouse interface can use this type of data. If you find that WMOUSE.COM when configured for absolute mode performs as if in relative mode, you have two choices: (1) Accept the mouse-like feel, or (2) Invoke the MM 1201 emulation mode via WMODE.COM.

Procedure

The easiest way to install the WMOUSE.COM program is as follows:

1. Copy WMOUSE.COM and WSET.COM from the Driver/Utility diskette into the root directory or into some convenient directory on the active PATH of the disk with which you boot.
2. Add a line to the AUTOEXEC.BAT file:
WMOUSE
or
WMOUSE /2 (for tablet on COM2)

By invoking WMOUSE.COM in the AUTOEXEC.BAT file, the program is always available.

The Wacom mouse driver can be used with any of the Wacom pointing devices, but you should take note of the translation of the pointing device buttons to the Microsoft mouse left and right buttons.

On the Wacom cordless cursor, the left and right buttons translate to the left and right Microsoft mouse buttons. The top and bottom cursor buttons correspond to both Microsoft mouse buttons being pressed at the same time.

On the Wacom standard stylus, the point switch is equivalent to the left mouse button; the side or barrel switch is equivalent to the right mouse button. Both pressed together are equivalent to both mouse buttons pressed together.

**Enabling and Disabling the
Microsoft Mouse Emulator**

WSET.COM

The command **WSET E** enables the mouse driver.

Note: This command is usually not included in the application program.

The command **WSET D** disables the mouse driver.

Note: This command must always be used before changing emulation modes. A recommendation is to do all emulation changes in batch files with the WSET D command before the WMODE command.

How to Use the WACOM Pressure Stylus as a Microsoft Mouse

Using the WACOM cordless pressure stylus with the WACOM mouse driver requires that the driver be switched into pressure mode using the WSET.COM command. The pressure thresholds corresponding to left and both MS Mouse buttons, respectively, may be set using the T1 and T2 parameters shown below. Note that with the pressure stylus, there is no way to provide the equivalent of the side switch alone.

- To turn on pressure mode of the mouse driver, use the following command:

```
WSET P [ON] [T1] [T2]
```

where:

[ON] Default
 [T1] Optional. Left mouse button threshold (-10 default)
 [T2] Optional. Value for both buttons (+22 default)

Note: Typical pressure values run from -30 (no pressure) to +30 (maximum pressure).

- To turn off pressure mode of the mouse driver, use the following command:

```
WSET P OFF
```

Absolute and Relative Mode

To use absolute mode:

```
WSET A offset-x offset-y width height
```

where "offset-x" and "offset-y" are the distance from the upper left-hand corner in thousandths of an inch. "Width" and "height" are the size of the area to be mapped to the screen, also in thousandths of an inch.

A standard command for the SD-420 might be:

```
WSET A 1000 1000 10000 7500
```

This gives one inch margins from the top and left of the active area, a mouse response area of 10 inches horizontally and 7.5 inches vertically (a 3 to 4 ratio to maintain display aspect ratio of 1 to 1) (assuming VGA 640 x 480).

To return to relative mode:

```
WSET R
```

WMS286.DRV

How to Use the WACOM Digitizer with Microsoft Windows/286

WMS286.DRV is an installable driver which allows Microsoft Windows/286 to use the WMOUSE.COM memory resident device driver. To install WMS286.DRV, follow the installation instructions for the Windows package or run-time version of Windows.

1. When asked if the items in the list are correct, position the highlighted bar at Microsoft Mouse (Bus or Serial) and press ENTER.

Shown below is the display adapter, keyboard and mouse or pointing device which Setup thinks you have. Review the list, then do one of the following:

If the list is correct, press the ENTER key to continue.
Use the ↑ ↓ keys to move the highlight to the incorrect item, then press the ENTER key.

No Change
EGA with high resolution color display
United States keyboard
Microsoft Mouse (Bus or Serial)

WHEN YOU'RE READY TO	PRESS
Confirm your choice	ENTER
Exit without completing Setup	CONTROL+X

2. The Windows installation program will now ask you to select your pointing device.

Position the highlighted bar at "Other" and press ENTER:

Please select your pointing device from the following list.

Use the ↑ ↓ keys to move the highlight to the incorrect item, then press the ENTER key.

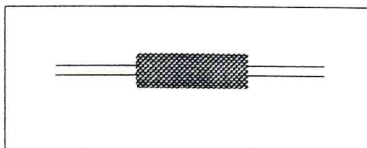
Microsoft Mouse (Bus or Serial)
No Mouse or other pointing device
HP Mouse (HP-HIL)
IBM Personal System/2 Mouse
Logitech Mouse
Microsoft Mouse connected to Serial-PS/2 Interface
Mouse Systems Mouse connected to COM1:
Mouse Systems Mouse connected to COM2:
Olivetti Bus Mouse

Other requires disk provided by a hardware manufacturer

WHEN YOU'RE READY TO	PRESS
Confirm your choice	ENTER
Exit without completing Setup	CONTROL+X

3. The Windows installation program will now ask you to insert the disk for your mouse driver in the indicated drive.

Insert the WACOM Driver/Utility disk into the drive you have indicated and press ENTER:



Insert disk for your Mouse driver in the following drive:

A:

If you want to use a different directory and/or drive, use the BACKSPACE key to delete the name shown, then type the correct name.

WHEN YOU'RE READY TO	PRESS
Confirm your choice	ENTER
Exit without completing Setup	CONTROL+X

4. Highlight the selection "WACOM/286 Mouse" and press ENTER:

Here are the Mouse drivers on your disk.

Use the keys to move the highlight to the incorrect item, then press the ENTER key.

No selection

WACOM/286 Mouse

WHEN YOU'RE READY TO	PRESS
Confirm your choice	ENTER
Exit without completing Setup	CONTROL+X

5. The Windows installation program will now display the device list again. The highlighted bar should be positioned at "The selected mouse driver is loaded and can not be changed."

Move the highlight to "No Change" and press ENTER:

Shown below is the display adapter, keyboard and mouse or pointing device which Setup thinks you have. Review the list, then do one of the following:

If the list is correct, press the ENTER key to continue.

, keys to

move the highlight to the incorrect item, then press the ENTER key.

No Change

EGA with high resolution color display

United States keyboard

The selected mouse driver is loaded and can not be changed.

WHEN YOU'RE READY TO	PRESS
Confirm your choice	ENTER
Exit without completing Setup	CONTROL+X

6. Continue with the Windows installation until completed.

Windows will now be able to recognize and use the WMOUSE.COM device driver (assuming WMOUSE.COM has been loaded prior to invoking the Windows application).

How to Change Emulation Mode from the DOS Prompt

WMODE.COM

When using multiple applications and command sets, use the WMODE command to change command sets or emulation modes from the DOS prompt without having to change DIP switch settings. The form of the WMODE command is:

WMODE [emulation] [COMport]

where:

- [emulation] is the emulation designator:
 - W2 for WACOM II command set
 - MM for MM 1201 emulation
 - BP for Bit Pad Two emulation
- [COMport] is 1 or 2 for COM1 or COM2

Example: WMODE W2 1

The only reason to use WMODE is if you need to change command sets without having to change the DIP switches. This situation most frequently occurs when one application uses the WACOM II device drivers (WMOUSE.COM and WADI.EXE) and another application requires MM 1201 or Bit Pad Two emulation. The best way to provide this change is to carefully set up the AUTOEXEC.BAT file and the batch files used to invoke the applications.

For example, Application A (APPA.EXE) uses the Wacom mouse driver and Application B (APPB.EXE) requires MM 1201 emulation. To provide simple control, the batch files could be set up as follows:

AUTOEXEC.BAT

Batch file executed when host boots

...	[beginning of the batch file]
MODE COM1:96,n,8,1	[set the port to tablet defaults]
WMOUSE	[load the mouse driver using COM1]
WSET D	[disable the mouse driver]
...	[the rest of the batch file]

A.BAT

Batch file to invoke application A

WSET D	[disable the mouse driver]
WMODE W2	[switch to Wacom II command set]
WSET E	[enable mouse driver]
APPA	[invoke the application]
WSET D	[disable the mouse driver]

B.BAT

Batch file to invoke application B

WSET D	[disable the mouse driver]
WMODE MM	[change to MM 1201 emulation]
APPB	[invoke the application]

NOTES

1. The MODE command in the AUTOEXEC batch file insures that the COM port to which the tablet is connected gets set to the factory default values for the tablet.
2. Always use WSET D before WMODE to eliminate conflict.
3. Do not count on the application program to terminate properly and allow the batch file to continue. The WSET D command in the A.BAT batch file may never be executed if the application exits abnormally, so it's best to always include the WSET D command before a WMODE command.
4. This example assumes that the programs are all either in the same directory or accessible through the PATH that is active. To provide switching to other directories and/or adjust the PATH, see the DOS Manual.
5. Either application could be executed first.

How to Use WACOM's Microsoft Mouse Emulation with GEM

Bus Mouse

To use the WMOUSE.COM device driver with GEM or GEM run-time applications like Ventura Publisher, choose "Bus Mouse" as the mouse or tablet selection during the installation process.

WADI.EXE

How to Use the WACOM Digitizer with Autodesk Products

The ADI driver, WADI.EXE, was created to enable WACOM SD Series Digitizers, reporting in WACOM II mode, to be used with Autodesk products. Note that ADI drivers differ from device drivers supplied by Autodesk in that they must be loaded *before* you start the Autodesk product.

WADI.EXE is a TSR (Terminate and Stay Resident) program which must be loaded into the memory of your computer before execution of the application program which uses it. Once loaded, WADI.EXE remains in memory and accomplishes its purpose by intercepting and responding to various interrupts initiated by the applications in use or by the activity of the external hardware devices.

Note: The Wacom ADI driver does not support use of the pressure styli (SP-300 or SP-310). Attempted use of a pressure stylus will result in unpredictable data.

- Because many TSR programs may be active and resident at one time, care should be exercised in loading and using them to avoid conflicts.

IMPORTANT! Remove any ADI drivers from batch files used to set up your system before install- ing the WACOM ADI Driver

Make sure that previous ADI drivers have been deactivated or removed from any batch files used to set up your system for use with ADI products prior to installing the WACOM ADI Driver.

- TSRs sometimes adversely affect each other. Should you have difficulty after adding a new TSR to your system, first try to isolate the problem by removing other TSRs until the conflicting one is isolated. Then try changing the order that the TSRs are loaded. Many times switching the order of loading the TSRs will resolve the difficulty. Please write to Wacom regarding any TSR conflicts.

Cautions

Procedure

To use the ADI driver:

- (1) Copy WADI.EXE onto the floppy disk you use to run the Autodesk product, or into the product's directory on your hard disk, or to another directory accessible in your DOS path.

- (2) Type: WADI [ENTER]

The following message will appear on the screen:

```
WADI [tablet] [serial interface]
```

- (3) Type tablet size and serial interface.

Possible tablet sizes:

- 0 = A0 (47x35) SD-013
- 1 = A1 (35x25) SD-113
- 2 = A2 (25x18) SD-210
- 3 = A3 (15x15) SD-320/1/2
- 4 = A4 (12x12) SD-420/1/2

Serial interface (RS-232-C):

- 1 = COM1: (IBM-PC/XT/AT standard)
- 2 = COM2: (IBM-PC/XT/AT standard)
- 3 = COM3: (supported by WACOM driver)
- 4 = COM4: (supported by WACOM driver)

For example, if you have an A2 size digitizer connected to the COM1 serial interface:

- Type: WADI 2 1
- Press [ENTER]

The following message will appear on your screen:

```
*****WACOM DIGITIZER DRIVER*****
```

```
Selected size: A2 (25x18) SD-210  
Selected port: COM1  
Communication port initialised.  
Interrupt-Vector 79h installed.  
Driver version 2.02 WADI made  
resident.
```

WADI is ready for operation and will be active until the host computer is turned off or reset.

- (4) The Autodesk product can then be executed.

The first time you use AutoCAD with this driver, you need to configure AutoCAD for the ADI device.

- From the AutoCAD MAIN MENU, select "CONFIGURE AUTOCAD." (If AutoCAD was not previously configured, you will automatically be put into the configuration process when you start AutoCAD).
- Select the ADI display, digitizer, plotter, or printer/plotter option from the configuration menu. If you do not have this menu option, check to see that you have installed your AutoCAD DRV diskette(s) and (if applicable) any new drivers (files with extension .DRV)

from the AutoCAD Driver Update Disk (available from your Authorized AutoCAD Dealer).

Respond to the remaining configuration questions as detailed in the AutoCAD User Reference.

- (5) If WADI.EXE is already installed and the installation procedure is repeated, the existing program in RAM is merely updated with new parameters, and the following message is displayed:

WACOM DRIVER PARAMETERS UPDATED

- (6) Using a .BAT file to start the Autodesk application will enable you to automatically load WADI.EXE. To load WADI.EXE on startup, include the following commands in a batch file:

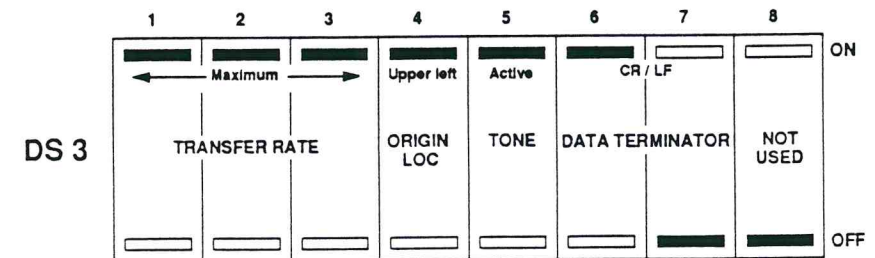
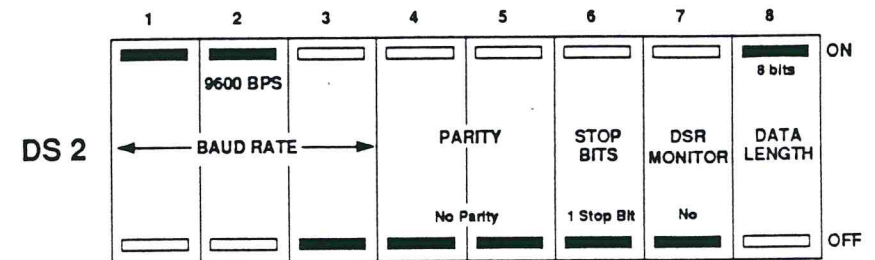
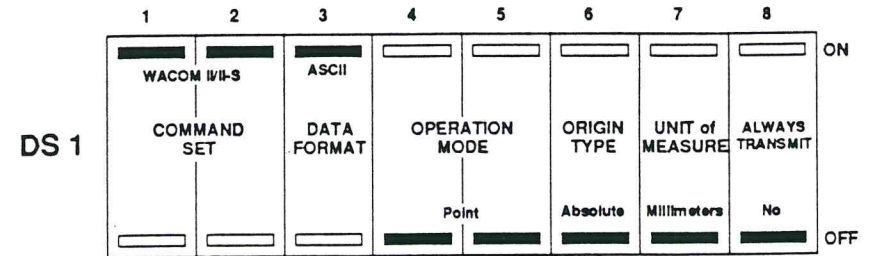
```
CD \ [Name of the AutoCAD directory]
WADI [tablet size] [COM PORT]
ACAD
CD \ [Name of the directory you wish
to be returned to]
```

For example, if the name of your AutoCAD directory is ACAD, and you are using an A2 tablet connected to COM1, type the following at the DOS prompt:

```
COPY CON ACAD.BAT
CD ACAD
WADI 2 1
ACAD
CD \^Z
```

(Press "Z" while holding down the CTRL key)

WACOM II and II-S (Factory) DIP Switch Defaults



■ = DIP switch position

WACOM II and II-S DIP Switch Options

DS 1

COMMAND SET	1	2
WACOM II	ON	ON
DATA FORMAT	3	
Binary	OFF	
ASCII	ON	
OPERATION MODE	4	5
Point	OFF	OFF
Suppressed	OFF	ON
Switch Stream	ON	OFF
Stream	ON	ON
ORIGIN	6	
Absolute	OFF	
Relative	ON	
UNIT OF MEASURE	7	
Millimeters	OFF	
Inches	ON	
ALWAYS TRANSMIT	8	
No	OFF	
Yes	ON	

DS 2

BAUD RATE (bits/sec)	1	2	3
150	OFF	OFF	OFF
300	OFF	OFF	ON
600	OFF	ON	OFF
1200	OFF	ON	ON
2400	ON	OFF	OFF
4800	ON	OFF	ON
9600	ON	ON	OFF
19,200	ON	ON	ON
PARITY	4	5	
None	OFF	OFF	■
Odd	ON	OFF	
Even	ON	ON	
STOP BITS	6		
1	OFF		
2	ON		
DSR MONITOR	7		
No	OFF		
Yes	ON		
DATA LENGTH	8		
7 bits	OFF		
8 bits	ON		

DS 3

TRANSFER RATE (points / sec)	1	2	3
1	OFF	OFF	OFF
5	OFF	OFF	ON
10	OFF	ON	OFF
20	OFF	ON	ON
50	ON	OFF	OFF
67	ON	OFF	ON
100	ON	ON	OFF
MAX	ON	ON	ON
ORIGIN LOCATION	4		
Lower left	OFF		
Upper left	ON		
STONE	5		
Disabled	OFF		
Active	ON		
DATA TERMINATOR	6	7	
CR	OFF	OFF	
LF	OFF	ON	
CR/LF	ON	■	
NOT USED	8		
Mandatory setting	OFF		

Factory Setting

A-1



A-2

WACOM II and II-S DIP Switch Definitions

DS 1 DIP Switch(es)

- | | | |
|-----|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1,2 | COMMAND SET | WACOM II
WACOM II-S |
| 3 | DATA FORMAT | ASCII or Binary
Format of the data sent from the digitizer to the host |
| 4,5 | OPERATION | Determines the mode in which coordinate data is sent to the digitizer: <ul style="list-style-type: none"> ■ Point Mode
Sends one pair of X,Y coordinates with each switch press of the pointing device ■ Suppressed Mode
Sends X,Y coordinates only when a "significant" pointing device event occurs. This event could be a: <ul style="list-style-type: none"> • Switch press or release • Entering or leaving the effective area • Change in X or Y greater than a specified value ■ Switch Stream Mode
Sends X,Y coordinates continuously while a button or stylus switch is pressed ■ Stream Mode
Sends X,Y coordinates continuously |

- 6 ORIGIN TYPE
- Relative
Like a traditional mouse, every touchdown creates a new origin.
 - Absolute
The origin is fixed at the location selected with the ORIGIN LOCATION DIP switch.

7 UNIT OF MEASURE
Inches or millimeters. Measurement unit of the data coordinates. See "Resolution" under "General Specifications" in Appendix B.

- 8 ALWAYS TRANSMIT
- Yes
In stream mode, coordinates will be sent continuously when the pointing device is in or out of the effective area.

- No
In stream mode, no data will be sent to the host when the pointing device is out of the effective area.

For more details on this parameter, refer to the *WACOM Programmer's Manual*, AL command.

WACOM II and II-S DIP Switch Definitions *(continued)*

DS 2 DIP Switch(es)

1,2,3 BAUD RATE
150 - 19,200 bps
Number of bits transmitted per second from the digitizer to the host. Baud rate for the digitizer and host must be the same.

4,5 PARITY
Parity, a method used to determine if an error occurred in data transmission, can be even, odd, or none. Parity for the digitizer and host must be the same.

6 STOP BITS
Number of stop bits to signal the end of a character. Stop bits for the digitizer and host must be the same.

7 DSR MONITOR
Determines whether or not the tablet responds to the DSR input signal of the RS-232C serial port.

8 DATA LENGTH
The number of bits in a character. Must be the same for digitizer and host.

DS 3 DIP Switch(es)

- 1,2,3 TRANSFER RATE Number of coordinate pairs transmitted per second with related switch or pressure data

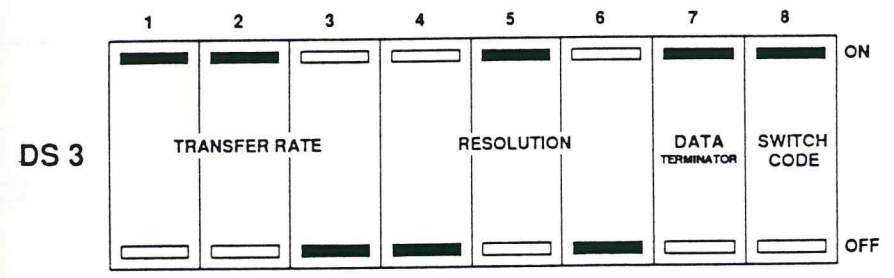
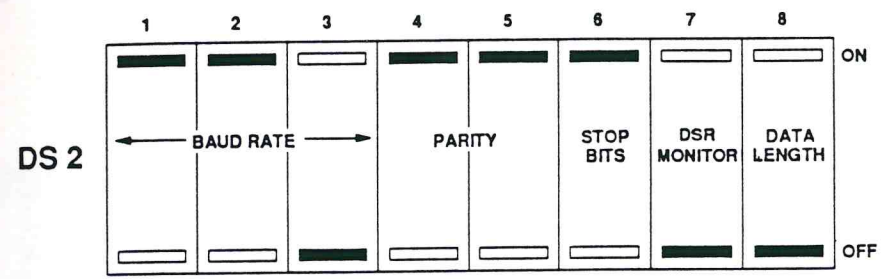
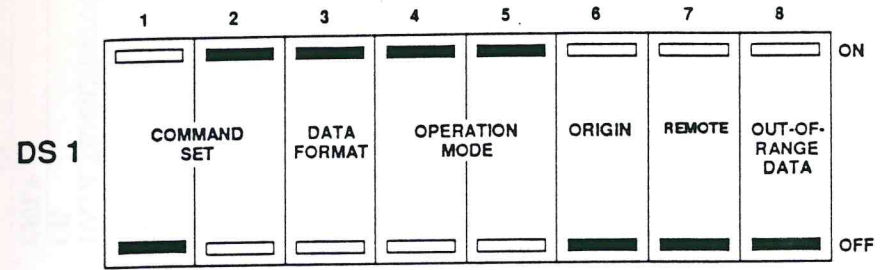
- 4 ORIGIN LOCATION If ORIGIN TYPE is "absolute" (DS 1, switch 6), ORIGIN LOCATION determines whether the origin is in the upper or lower left of the tablet.

- 5 TONE Activates or disables audio feedback

- 6,7 DATA TERMINATOR A data delimiter — CR/LF, CR, LF. The characters sent to signal the end of an X,Y coordinate pair in ASCII mode data transmission

- 8 NOT USED Must be set to OFF (mandatory setting)

Bit Pad Two DIP Switch Defaults



█ = DIP switch position

Bit Pad Two DIP Switch Options

DS 1

COMMAND SET	1	2
BIT PAD II	OFF	ON
DATA FORMAT	3	
Binary	OFF	
ASCII	ON	
OPERATION MODE	4	5
Point	OFF	■
Switch Stream	ON	OFF
Stream	ON	ON
ORIGIN	6	
Absolute	OFF	
Relative	ON	
REMOTE	7	
Disabled	OFF	
Enabled	ON	
OUT-OF-RANGE-DATA	8	
No	OFF	
Yes	ON	

DS 2

BAUD RATE (bit/sec)	1	2	3
110	OFF	OFF	OFF
150	OFF	OFF	ON
300	OFF	ON	OFF
1200	OFF	ON	ON
2400	ON	OFF	OFF
4800	ON	OFF	ON
9600	ON	ON	OFF
19,200	ON	ON	ON
PARITY	4	5	
None	OFF	■	
Odd	ON	OFF	
Even	ON	ON	
STOP BITS	6	7	
1	OFF	OFF	
2	ON	ON	■
DSR MONITOR	7		
No	OFF		
Yes	ON		
DATA LENGTH	8		
7 bits	OFF		
8 bits	ON		

DS 3

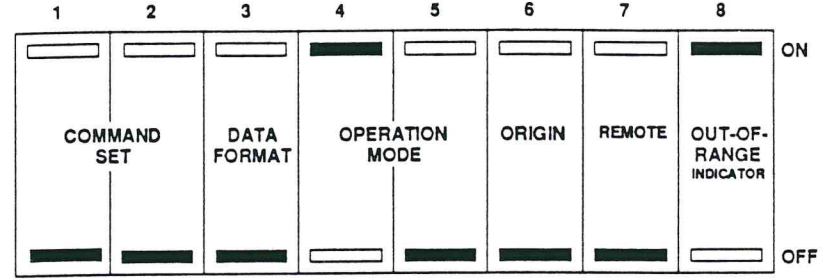
TRANSFER RATE (points / sec)	1	2	3
2	OFF	OFF	OFF
4	OFF	OFF	ON
10	OFF	ON	OFF
20	OFF	ON	ON
40	ON	OFF	OFF
67	ON	OFF	ON
100	ON	ON	OFF
MAX	ON	ON	ON
RESOLUTION (lines / inch)	4	5	6
100	OFF	OFF	OFF
127	OFF	OFF	ON
200	OFF	ON	OFF
254	OFF	ON	ON
400	ON	OFF	OFF
500	ON	OFF	ON
508	ON	ON	OFF
508	ON	ON	ON
DATA TERMINATOR	7		
CR	OFF		
CR/LF	ON		
SWITCH CODE	8		
OUT B (1,2,3,4)	OFF		
OUT A (1,2,3,4)	ON		

■ ON or OFF

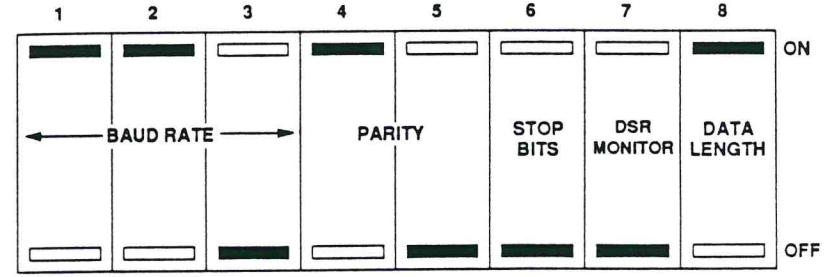
A-7

MM 961 and 1201 DIP Switch Defaults

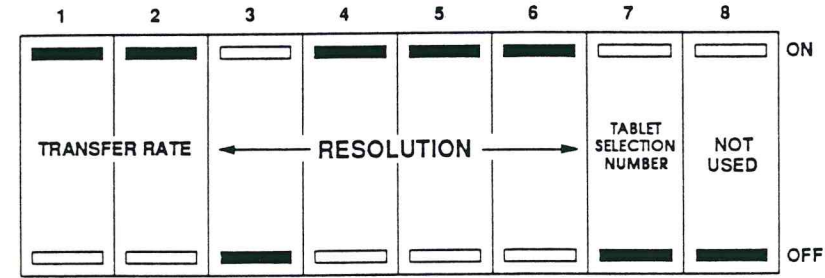
DS 1



DS 2



DS 3



■ = DIP switch position

A-8

MM 961 and MM 1201 DIP Switch Options

DS 1

COMMAND SET MM 1201	1	2	OFF	OFF
DATA FORMAT Binary ASCII	3	OFF	ON	ON
OPERATION MODE Point Switch Stream Stream	4	OFF	ON	ON
ORIGIN TYPE Absolute Relative	6	OFF	ON	ON
REMOTE Disabled Enabled	7	OFF	ON	ON
OUT-OF-RANGE INDICATOR No Yes	8	OFF	ON	ON

DS 2

BAUD RATE (bits / sec.) 150 300 600 1200 2400 4800 9600 19,200	1	2	OFF	OFF	3	OFF
PARITY None Odd Even	4	OFF	ON	ON	5	■
STOP BITS 1 2	6	OFF	ON	OFF	7	■
DSR MONITOR No Yes	7	OFF	ON	ON	8	OFF
DATA LENGTH 7 bits 8 bits	8	OFF	ON	ON		

DS 3

TRANSFER RATE (points / sec.) 2 20 50 100	1	2	OFF	OFF	ON	ON
RESOLUTION (lines / inch) - all tablets 1 2 4 100 200 254 400 500 508	3	4	OFF	OFF	OFF	OFF
ADDITIONAL RESOLUTION (MM 1201, Wacom A2, A3, A3+, A4+)	5	6	OFF	OFF	ON	ON
TABLET SELECTION NUM. 0 1	7	8	OFF	ON	ON	ON

■ ON or OFF

NOT USED

8

User DIP Switch Settings

Use this page to record your configuration.

DS 1

1	2	3	4	5	6	7	8
COMMAND SET		DATA FORMAT	OPERATION MODE	ORIGIN TYPE	UNIT of MEASURE	OUT-OF-RANGE DATA	
ON		ON	ON	ON	ON	ON	ON
OFF		OFF	OFF	OFF	OFF	OFF	OFF

DS 2

1	2	3	4	5	6	7	8
← BAUD RATE →			PARITY	STOP BITS	NOT USED	DATA LENGTH	
ON		ON	ON	ON	ON	ON	ON
OFF		OFF	OFF	OFF	OFF	OFF	OFF

DS 3

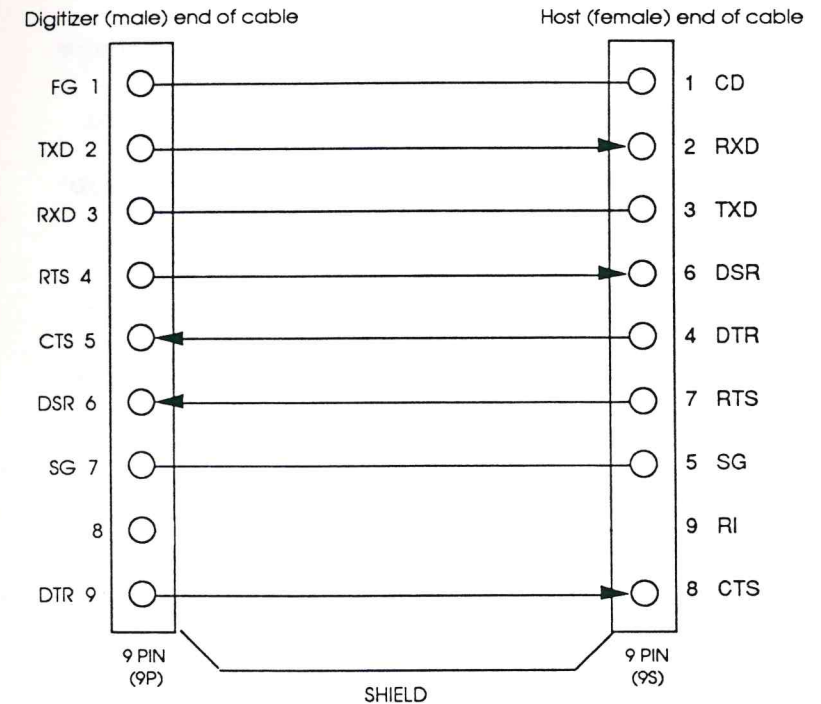
1	2	3	4	5	6	7	8
TRANSFER RATE		ORIGIN LOC	TONE	DATA TERMINATOR			
ON		ON	ON	ON	ON	ON	ON
OFF		OFF	OFF	OFF	OFF	OFF	OFF

■ = DIP switch position

Appendix B

RS-232C Cable Configurations for IBM PC AT and PS/2

Pin Assignments for the WACOM Interface Cable



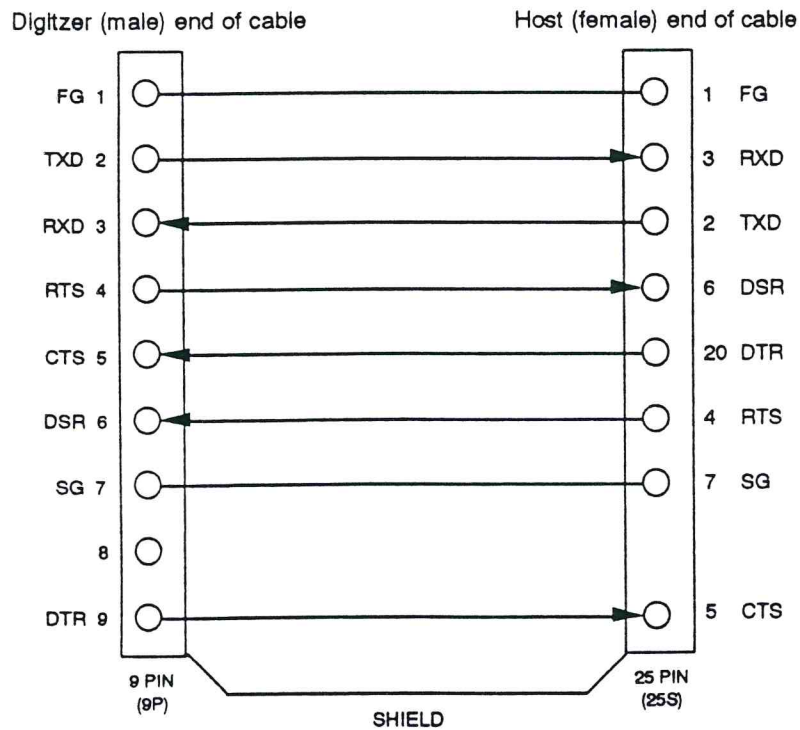
RS-232C Cable Configurations

The WACOM SD series RS-232C Interface circuits have been designed to meet the electrical specifications presented in the EIA (Electronic Industries Association) standards. The interface is full duplex, asynchronous serial.

FG	Frame Ground
TXD	Transmit Data
RXD	Receive Data
RTS	Request to Send
CTS	Clear to Send
DSR	Data Set Ready
SG	Signal Ground
CD	Carrier Detect
DTR	Data Terminal Ready

RS-232C Cable Configurations for IBM PC or XT

Pin assignments for the WACOM interface cable
with 25 pin adapter



The WACOM SD series RS-232C interface circuits have been designed to meet the electrical specifications presented in the EIA (Electronic Industries Association) standards. The interface is full duplex, asynchronous, and serial.

FG	Frame Ground
TXD	Transmit Data
RXD	Receive Data
RTS	Request to Send
CTS	Clear to Send
DSR	Data Set Ready
SG	Signal Ground
CD	Carrier Detect
DTR	Data Terminal Ready