Hampshire® TSHARC™ "Quick Start" Drivers Manual

Warning: Although Hampshire Company has taken steps to protect your touch screen controller from transient voltage, it is important to make all grounding, communication and touch screen connections to the controller and touch screen before powering up computer, video monitor or touch screen controller. **Failure to follow this procedure may result in damage to your controller, touch screen or your communication port.**

DO NOT INSTALL THE HAMPSHIRE TOUCH SCREEN DRIVER UNTIL AFTER YOU HAVE INSTALLED THE OPERATING SYSTEM AND IT IS WORKING PROPERLY. THE TSHARC DRIVER ALLOWS FOR CONCURRENT MOUSE FUNCTIONALITY.

If you had a previous version of another touch screen driver loaded into your system, you must make sure that the drivers are completely removed before continuing with this installation procedure. Contact the manufacturer of the driver to learn how to uninstall their product completely.

Before you begin

make sure:

1) you know the location (comport) of your TSHARC controller
2) you have Hampshire TSHARC driver files
3) you know the TSHARC controller type (TSHARC-8, TSHARC-12, etc.)
4) your communications ports are turned on (laptop computers especially)
5) you have the Hampshire DOS driver disks (for trouble shooting only)
6) the TSHARC controller is connected properly to the touch screen and your communication port.

If you have questions about the correct TSHARC controller board configuration, refer to the users manual supplied with the Hampshire TSHARC controller or contact your Hampshire products reseller. All users manuals and updated drivers are available at the Hampshire web site: www.hampshiretouch.com.

This is a partial reprint of the Hampshire software license agreement. The entire document is displayed to you during your installation process and it may be viewed at the Hampshire web site www.hampshirecompany.com . For further information regarding this license agreement, please contact Hampshire Company, Inc.

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Windows 98, ME, 2000 and XP for TSHARC™ USB controllers

To un-install a previous version of a Hampshire TSHARC USB driver: Proceed to the "Add/Remove Programs" utility located in the Windows® control panel. You must disconnect the TSHARC USB controller before un-installing the driver.

If you have questions about configuring your TSHARC controller board, please reference the users manual supplied with the Hampshire TSHARC hardware or contact Hampshire Company. All users manuals and updated drivers are available at the Hampshire web site: www.hampshiretouch.com

Installing, updating or re-installing the TSHARC USB driver.

Before you begin: If you have a compressed driver file, make a new directory. Copy your driver disk into this directory.
Make sure that your computer is tuned on then connect the TSHARC-12usb controller.

1) Locate the TSHARC USB "Setup.EXE" program located on your installation drive
2) Run the "Setup.exe" program
3) Welcome screen > Next
4) License Agreement screen > Yes
5) Verify the USB controller is connected > Next
6) Setup is ready to install the TSHARC-UYSB driver files. > Finish

At this point the driver should be loaded onto your system and functioning. Re-start your computer.

- The Hampshire TSHARC control panel will be available via the "Start" button > Programs>
- Use the Hampshire TSHARC control panel to calibrate your touch screen. Select the calibration, then press the calibration button to calibrate your touch screen.
- This control panel is also where you may adjust various options of your TSHARC controller.

Once the touch screen is calibrated, adjust the features of your Hampshire touch screen to meet your preferences.
Options you may want to adjust:

1) Adjust double click event area.
2) Activate or deactivate right click.
3) Adjustable calibration modes.
4) Adjust calibration edge off-set.
5) Adjust the touch modes.
6) Activate touch sounds.
7) Auto run calibration timer

Windows 9x and ME, 2k and XP for TSHARC RS-232 or PS/2 or ISA Bus Controllers

Installing the TSHARC driver

1) Start Windows
2) If you downloaded the drivers from the Hampshire web site you must run the self extracting Win9XME50.exe file. Make a new directory called: "TSHARC". Copy the Win9XME50.exe file into this directory and then:
3) Double Click on the Win9XME50.exe file located in the TSHARC directory. Make sure to reference the TSHARC directory as the target directory for the extracting files. Once the files have been extracted into the TSHARC directory.
4) Run the Hampshire TSHARC "Setup.exe" file located in your TSHARC directory
5) Follow the directions on the screen.
7) If your TSHARC controller is configured for RS-232 but you don't know the TSHARC controller type and/or its communication settings, run the Auto Detect feature displayed during the install process. This utility will find your controller and identify its type, configuration and location.
8) If you have a TSHARC controller configured for PS/2 or BUS, you may not use the "Auto Detect" feature of the installation program.
9) Select the TSHARC controller and communication type that matches your configuration. Choose the "Next" Button.
10) The TSHARC files will be copied and Windows will ask to re-start your computer. Restart your computer.
11) From "Start", "Programs" select "Hampshire TSHARC Control Panel".
12) Once the control panel is displayed select the calibration type you prefer: 3, 7 or 20 point calibration.
13) Select the "Run" button located under the General Calibration area of the calibration tab. Calibrate your touch screen. Make sure to touch all calibration points as closely as possible. Your calibration will only be as accurate as your ability to accurately touch the calibration target.
14) If you are planning to use the right mouse button click option of the TSHARC driver, you must enable the double click options and set an event area. The event area should be > ½" square. You may make this larger or smaller depending upon your preferences.

Note: If you need to reinstall your TSHARC driver MAKE SURE TO RUN THE UNINSTALL BEFORE YOU REINSTALL THE DRIVER. See the uninstall notes at the bottom of this page.

Once the touch screen is calibrated, adjust the features of your Hampshire TSHARC controller to meet your preferences. Options may be adjusted in the Hampshire TSHARC control panel found in your programs directory.

1) Activate or deactivate the double click options (General). Allows you to define larger event area as well as time span.
2) Activate or deactivate right mouse click (General). Activated by holding a touch down for a user specified period of time.
3) Adjust the touch modes (General). Normal, Touch Down, Touch up.
4) Activate touch sounds (Other) Audio feed back of touch
5) Activate the task bar pull up (Other). Allows you to hide the task bar and "pull" it up upon touching edge of screen.
6) Activate or deactivate the touch offset (Other). Changes the location of the cursor relative to your touch point.
9) Adjust touch screen skew with Hampshire (Calibration). Align the boxes displayed on the screen.
10) Setup multiple monitors and/or define active area of one monitor. (Calibration) Identify the touch screen active area.
11) Change calibration options by selecting 3, 7, or 20 point calibration modes (Calibration)
12) Program your TSHARC driver for "Soft Zones" touch areas.

Notes about Uninstalling and reinstalling the TSHARC driver for Win95 and Win98 or WinME

To uninstall the Hampshire TSHARC driver go to the "Add/Remove Programs" screen in the control panel. Move to the "Install/Uninstall" tab and highlight the Hampshire TSHARC controller driver and then select "Add/Remove" button. Follow the direction on the screen. This will completely uninstall the TSHARC driver from your system. Once this process is complete you must restart your computer.

To re-install your TSHARC driver it is always best to uninstall the existing driver before installing or reinstalling a new TSHARC driver.

Windows NT4.0 for TSHARC RS-232 or PS/2 or ISA Bus Controllers

New Features:
Multi-Monitor support, 32-bit Dos compatibility, Multi-TSHARC controller functionality, Partial screen active area, Updated firmware for latest NT version OS.

If this is a PS/2 installation, run the Hampshire ps2prein.exe file before installing the TSHARC PS/2 driver. This program will make a backup copy of any files that our driver replaces during the install process.

Installing the TSHARC driver
Make a new directory called "HamMouse". Copy the nt401.exe file (loaded from the Hampshire web site) into this directory and run the nt401.exe program. Make sure to choose the HamMouse directory for the target location of the extracting files. If you have a Hampshire CD copy the NT driver files to the HamMouse directory.

1) Proceed to the mouse properties window in the “Control Panel”
2) Choose the “General Tab”
3) Choose “Change”
4) Select “Have Disk”
5) Identify the “HamMouse” directory as the location of the new driver
6) Choose the “TSHARC.inf” file.
7) “Select Device” Choose the TSHARC controller settings for your application of the Hampshire controller.
   ***For information regarding your hardware, refer to your hardware manual for the TSHARC controller that you purchased. The hardware manuals are available from Hampshire Company via CD or can be copied from our web site.
8) Once the files are copied choose the “Close” button. Note: If NT does not provide you with a “Close” option, it did not copy the files properly. Return to step 6 and try again. The driver will not be loaded properly if you are not given a “Close” option.
9) The dialog box will ask you if you would like to re-start your computer. If your TSHARC controller is configured properly and connected to your communication port; select “YES”. If your TSHARC controller is not connected, do not restart your computer. You should shut down your computer manually and then connect your controller before restarting it.
10) Re-start your computer.
11) When your computer re-starts it will ask you if you would like to create an icon in the program manager. Generally you will choose “Yes”.
12) Follow the direction on the screen.

Once the touch screen is calibrated, adjust the features of your Hampshire touch screen to meet your preferences.
Options you may want to adjust:
1) Activate or deactivate double click option (General)
2) Activate or deactivate right mouse click (General)
3) Adjust the touch modes (General)
4) Activate touch sounds (Other)
5) Activate the task bar pull up (Other)
6) Activate or deactivate the touch offset (Other)

DOS for RS-232 TSHARC™ Controllers

Installing the TSHARC driver

1) Create a new directory on your root drive labeled "HamMouse".
2) Copy the self extracting dos320.exe file to your HamMouse Directory
3) Run the dos320.exe file from the HamMouse directory. This will extract the driver files into the HamMouse directory
4) Add the following command line as the last entry of your autoexec.bat file.

Example: C:\HAMMOUSE\HAMOUSES /B2400 /C1 /I5 /U544

Where:	/B[Baud rate]	= 2400 (Default), 4800, 9600, 19200
	/C[Comport]	=1(Default), 2, 3, 4
	/I[IRQ]	IRQ select 1 – 15
	/U [UART]	UART Select base address as a decimal
	/D [.ini loc]	location of HDosMS.ini
	/r	Remove Driver From Memory
	/? Help Screen	Lists all switch options

NOTE: The TSHARC-8 Baud rate option =/b2400 only. The TSHARC-12 controller my be configured for all Baud rate options. IF YOU ARE PLANNING TO USE YOUR TSHARC WITH A CURRENT MOUSE, THIS COMMAND LINE MUST BE LISTED AFTER ANY EXISTING MOUSE DRIVER DEVICE DRIVERS.

CALIBRATING THE TSHARC CONTROLLER

HdosCalS.exe program.

Example: HDOSCALS /B2400 /C1 /TTSHARC8

Where:	/B[Baudrate]	= 2400 (Default), 4800, 9600, 19200
	/C[Comport]	=1(Default), 2, 3, 4
	/T [Type]	=TSHARC8, TSHARC12
	/? Help Screen	Lists all switch options
	/r	Remove Driver From Memory
	/D [.ini loc]	location of hDosMS.ini file this switch is for dumb terminals only.

DOS drivers are installed using the following Base standard addresses and IRQ's

	Com1	Com2	Com3	Com4
Base Address	3f8h	2f8h	3e8h	2e8h
IRQ	4	3	4	3

Programs supplied with self extracting file.

Updates.txt	Information about changes made from previous driver release.
Readme.txt	Detailed information about the driver.
TSHARCT	Test program used to test controller and touch screen operations. TSHARCT /? For switch options.
TSHARCT2	Test program used to return controller values and configuration
HamouseS.exe	TSHARC DOS driver
HdosCalS.exe	TSHARC DOS Calibration File
Use the /?	Switch in conjunction with these programs for available switch options.

DOS for PS/2 TSHARC™ controllers

Installing the TSHARC driver

1) Create a new directory on your root drive labeled "HamMouse".
2) Copy the self extracting dos310.exe file to your HamMouse Directory
3) Run the dos310.exe file from the HamMouse directory this will extract the driver files into the HamMouse directory
4) Add the following command line as the last entry of your autoexec.bat file.

Example: C:\HAMMOUSE\hamouseP.exe

Where: /D [.ini loc] location of HDosMS.ini file
/? Help Screen Lists all switch options
/r Remove driver from memory

This loads the PS/2 driver at start up.

Next: Add the following command line to your autoexec.bat

Example: Int33.exe

Where:

Int33.exe designates HamMouse directory on root drive
Int33a.exe designates HamMouse directory on drive A:
Int33b.exe designates HamMouse directory on driver B:

This line identifies the location of the calibration data in the HamMouse directory.

Your new autoexec.bat file should list the two files in the following order

C:\HamMous\HamouseP.exe
C:\HamMouse\Int33.exe

IF YOU ARE PLANNING TO USE YOUR TSHARC WITH A CURRENT MOUSE, THESE COMMAND LINES MUST BE LISTED AFTER ANY EXISTING MOUSE DEVICE DRIVERS.

CALIBRATING THE TSHARC CONTROLLER

HdosCalP.exe program. Example: C:\hammouse\hdoscalp /TTSHARC8

Where: /T controller type =TSHARC8, TSHARC12
/D [.ini loc] location of hDosMS.ini file this switch is for dumb terminals only
/? Help Screen Lists all switch options
/r remove driver from memory

Other Programs Supplied on The Diskette:

PS2Draw.exe Test program for Hampshire PS/2 touch screen driver
PS2calib.exe Calibrates the PS2Draw.exe program for test

DOS for ISA- BUS TSHARC™ Controllers

Installing the TSHARC Bus Controller driver for DOS:
1) Create a new directory on your root drive labeled "HamMouse".
2) Copy the self extracting DOS[xxx].exe file to your HamMouse Directory
3) Run the DOSxxx.exe file from the HamMouse directory
4) Add the following command line as the last entry of your autoexec.bat file.

Example: C:\HAMMOUSE\HaMouseB.exe /I5 /B768
Where:
/I [IRQ]= 2,3,4,5,10,11,12,14 or 15
/B [base address]= 640,768,784,800,816,or 832
/? Help Screen Lists all switch options
/r Remove Driver From Memory

IF YOU ARE PLANNING TO USE YOUR TSHARC WITH A CURRENT MOUSE, THIS COMMAND LINE MUST BE LISTED AFTER ANY EXISTING MOUSE DRIVER DEVICE DRIVERS.

CALIBRATING THE TSHARC BUS CONTROLLER
HdosCalB.exe program. Example: HdosCalB /I5 /B768
Where:
/I [IRQ]= 2,3,4,5,10,11,12,14 or 15
/B [base address]= 640,768,784,800,816,or 832
/? Help Screen Lists all switch options
/r Remove Driver From Memory

Other programs supplied with self extracting file.

Readme.txt	Detailed information about driver options
BusDraw.exe	Test draw program for TSHARC-B8
BusCalib.exe	Calibrates the Bus Draw program

WinCE 3.0 for TSHARC™ RS-232 and PS/2 Controllers

This Hampshire Windows CE driver was created for x86 platforms. Other platforms are available please call Hampshire to compile the drivers for your specific platform. The drivers have been compiled and tested using Windows CE version 3.0.

This document is divided into 3 parts:

RS232
PS/2
Calibration Registry

RS232:

Components:

HamouseS.dll - Rev 1.05, Hampshire Serial Touch Screen Driver
Hcecal.exe - Rev 1.05, Hampshire Touch Screen Calibration program

Installation:

To install the Windows CE driver the following modifications need to be made to your target operating system configuration. For this example assume the operating system is built using the CE Platform Builder 3.0.

1. Under the Platform workspace right click on your project (i.e. MAXALL) and select Settings

2. Under the Environment tab enter the following:

Variable: CEPC_HAMOUSES
Value: 1

3. Select OK

4. Under the Platform workspace select Parameter

5. Double click on PLATFORM.REG and add the following. Note a good place to add this is after IF CEPC_SERMOUSE:

```
IF CEPC_HAMOUSES
[HKEY_LOCALE_MACHINE\Drivers\BuiltIn\HAMOUSES]
        "Index"=dword:1
        "Dll"="hamouses.dll"
        "Prefix"="HRM"
        "Order"=dword:1
        "Port"=dword:1
        "Type"=dword:C              ;see notes
        "Baud"=dword:2580 ;see notes
        "Priority"=dword:1   ;see notes
ENDIF

Notes: (all values must be in Hex)
        Type = 8  for TSHARC8 and C(12) for TSHARC12
        Baud = 960          for 2400 bps
            = 12C0          for 4800 bps
            = 2580for 9600 bps
            = 4B00          for 19200 bps
        Priority = 0        for THREAD_PRIORITY_CRITICAL
                 = 1        for THREAD_PRIORITY_HIGHEST
                 = 2        for THREAD_PRIORITY_ABOVE_NORMAL
                 = 3        for THREAD_PRIORITY_NORMAL
        (Sets the thread priority for the RS232 read thread
        see SetThreadPriority in the CE Help files)
```

6. Double click on PROJECT.BIB and add the following under FILES:

```
hamouses.dll        $(_FLATRELEASEDIR)\hamouses.dll    NK        SH
hcecal.exe          $(_FLATRELEASEDIR)\hcecal.exe      NK        S
```

7. Include hamouses.dll and hcecal.exe in your image.

Comments:

If you have problems selecting COM1 use the following:

The driver loads based on the Port value. In this case "Port"=dword:1 assigns the port as COM1. In the registry COM1 corresponds to IRQ 3, IOBase 2F8. Either add an entry in the registry for COM1 or use the following:

1. Modify the PLATFORM.REG
2. Find the entry for IF ODO_NOSERIAL!
   The values should currently be set at COM2:
   "Irq"=dword:03
   "IoBase"=dword:02F8
   "IoLen"=dword:8
3. Change these values to the following (assuming COM1 on Irq 4 and Base 3F8):
   "Irq"=dword:04
   "IoBase"=dword:03F8
   "IoLen"=dword:8

PS/2:

Components:

kbdmouse.dll - Rev 1.05, Hampshire PS/2 Touch Screen Driver
Hcecal.exe - Rev 1.05, Hampshire Touch Screen Calibration program

Installation:

The kbdmouse.dll driver supports both the PS/2 keyboard and the PS/2 mouse. The driver has been enhanced to include the PS/2 touch screen functionality. To install the Windows CE driver the following modifications need to be made to your target operating system configuration. For this example assume the operating system is built using the CE Platform Builder 3.0.

1. Under the Platform workspace right click on your project (i.e. MAXALL) and select Settings

2. Under the Environment tab enter the following:

   Variable: CEPC_HAMOUSEP
   Value: 1

3. Select OK

4. Under the Platform workspace select Parameter

5. Double click on PLATFORM.REG and add the following. Note a good place to add this is after IF CEPC_SERMOUSE:

```
IF CEPC_HAMOUSEP
[HKEY_LOCALE_MACHINE\Drivers\BuiltIn\HAMOUSEP]
        "Type"=dword:C                  ;see notes
ENDIF
```

   Notes: (all values must be in Hex)
   Type = 8 for TSHARC8 and C(12) for TSHARC12

6. Double click on PROJECT.BIB and add the following under FILES:

```
hcecal.exe          $(_FLATRELEASEDIR)\hcecal.exe      NK        S
```

   Note: kbdmouse.dll should already be included in your image you are basically just replacing the current one with the new one that has TSHARC touch screen support.

7. Include kbdmouse.dll and hcecal.exe in your image.

Comments:

The Registry keys for this driver should already be defined in PLATFORM.REG. The keys are reproduced here:

File:

PLATFORM.REG

Key:

```
; Mouse Driver
[HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\MOUSE]
"DriverName"="kbdmouse.dll"

; Keybd driver is the same
"DriverName"="kbdmouse.dll"
        |
        |
```

Calibration Registry:

Calibration parameters are created by Hcecal and stored in the registry under the following key:

HKEY_LOCAL_MACHINE\SOFTWARE\Hampshire\CurrentVersion\Global

The following values are stored: (All types are REG_BINARY)

Name	Size
FlipFlag	- UCHAR
xmulL	- WORD
xmin	- WORD
xminC	- WORD
xminCy	- WORD
xmulC	- WORD
xmulR	- WORD
xmaxC	- WORD
xmaxCy	- WORD
xmax	- WORD
ymulL	- WORD
ymin	- WORD
yminC	- WORD
yminCy	- WORD
ymulC	- WORD
ymulR	- WORD
ymaxC	- WORD
ymaxCy	- WORD
ymax	- WORD

Upon boot, if the registry entries are not located the driver defaults to a default un-calibrated state.

Win 3.1x for TSHARC™ RS-232 , PS/2 and Bus controllers

1) Once you have powered down your entire system and connected your Hampshire controller, make sure your display and controller are connected to your computer and start Windows

2) Open the “Main” window

3) Open the “File Manager”

Insert the Hampshire Install disk into your floppy drive.

Open “File” and then Click “Run” type “a:\setup.exe”

Follow the directions on the screen.

After running the install program: You must tell Windows that you will be using a touch screen as a mouse.

1) Open “Windows Setup” from the “Main” window.

2) Change the “System Settings” in the “Windows Setup” screen.

3) Move to the “Mouse” option box.
Choose “Other mouse (Requires Disk From OEM)” usually located at the bottom of the list.

4) Windows now asks you for the location of the file. Type: “c:\hammouse\” and press “Enter”.
“Choose a mouse driver from the list”. The Hampshire driver should be highlighted. Press “Enter”.

5) Windows will now go back to the “Change System Settings” box and you will see the Hampshire mouse driver next to the “Mouse” dialog box. Press “enter” or click on “OK”.

6) Reboot windows and the new driver take effect.

Your Installation is complete! **Restart your computer!**

SoftZone Programming

SoftZones allow you to define any area on the touch screen surface as a sequence of keyboard strokes. It can range from a single character, to an entire line of text, to a sequence of special commands.
The basic steps of creating a SoftZone are as follows:

1. In the Hampshire v5.0 beta control panel select the “SoftZones” tab
2. Click on the “Add” button
3. In the “New SoftZone” window that pops up enter a name for the SoftZone.
4. If you want to define a group of buttons at once, change the Horizontal and Vertical counts to the appropriate numbers.
   Click “Define Locations” and follow the on-screen directions to define toe location of the SoftZone.
5. Enter a command in the “Zone Command” box. You may select special commands from the list below the box, or type directly in the box.
   COMMAND NOTES:
   a. For a space, you need to use the special command <SPACE>.
   b. for a < symbol, you need to use two << in a row.
   c. If you use a key-down character (eg. <WIN>) it is also necessary to have an equivalent key-up character(</WIN>) after it.
   Note that all special characters are listed in the box below the “Zone Command” area.
6. Select the Activation type

ACTIVATION TYPES:
Touch-Down - The command is done when a Touch-Down occurs in the SoftZone
location
Hold - The command is done when the user holds their finger on the location. Use the sliders to define an initial delay before the command is executed, as well as the repeat rate of the command.
Touch-Up - The command is done when a Touch-Up occurs in the SoftZone
location
Beep: If checked, the computer will beep when a command is executed
Toggle: Defines the button to be used as a toggle button, for example
switching SHIFT on and off, on alternating activations. Note that this changes the Zone Command to a Drop-Down menu where the Toggled command can be selected.

To select different SoftZones click on them in the “screen” area of the SoftZones control panel, or select the from the “Zone” drop down menu.

Example Commands:
Windows Key press and release:
<WIN></WIN>
Up Arrow:
<UA>
Control alt Delete:
<CONTROL><ALT><DELETE></ALT></CONTROL>
Quit an application (Alt-F4):
<ALT><F4></ALT>
Type the phrase “Hello World”:
Hello<SPACE>World