



**TSHARC™ Drivers Manual**  
**UniWinDriver™**  
**Windows® 2000, XP, 98se, ME**  
**RS-232, USB and PS/2**  
All TSHARC™ analog resistive and capacitive controllers  
Rev 6.20a

**Document Revision and Copyright**

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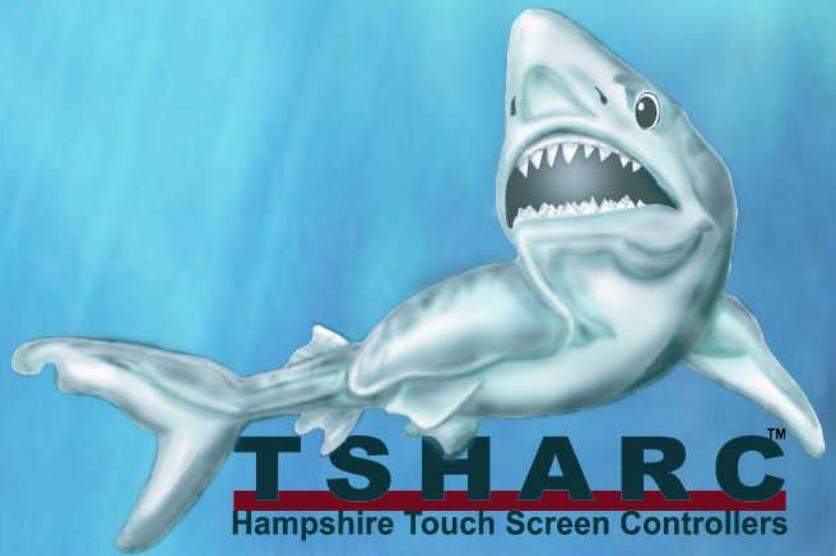
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**What's New**

TSHARC-C capacitive USB and RS-232 controller support  
Auto and Manual screen rotation functions  
Auto-Calibration time-in  
Auto-Calibration time-out  
ACPI support  
Command line install  
Command line Control panel  
Command line Calibration  
Enabled Windows standard keyboard navigation  
Quick calibration functions  
Private label tab options  
"Kick" registry command



# IMPORTANT DOCUMENT AND USER INFORMATION

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## Installation notes: BEFORE YOU PROCEED!

As the TSHARC controllers and drivers become more and more sophisticated, it is now more important than ever that your system is set-up properly. Please review the following to insure that your system is ready.

Hampshire controllers are universal by design. This means that the controller may be configured for any number of touch screen types as well as communication and power settings. Please check your TSHARC controller board to insure that the user configurable configuration settings are set correctly your application. You may find the users manual for each of Hampshire controller board at: [www.hampshirecompany.com](http://www.hampshirecompany.com) Select the products tab and then proceed to the appropriate TSHARC controller product.

Make sure that you do not have another manufacturer's touch screen controller driver installed on your system. Many touch screen manufacturer's un-install programs do not completely remove all components of there drivers. Please review the associated drivers' manuals and/or contact the driver manufacturer to learn how to completely remove their driver programs from your system. In most cases this information is available from the manufacturer's web site.

Hampshire drivers use your display driver software settings to accurately configure various touch screen driver setup files. Make sure that your display and your display driver cards are installed properly before installing any TSHARC touch screen controller drivers. If your display's are not configured and working properly prior to loading the TSHARC controller drivers, the TSHARC controllers will not function properly.

Now that you have double checked your system settings and have verified that your system is working properly, proceed with the TSHARC controller driver installation procedure.

### Installing the TSHARC driver:

If you are installing you driver on a XP embedded system go to page: 10 of this manual for information regarding this installation procedure.

1) Connect the TSHARC controller(s) to your computer. (See your user's manual for details). **If this is a multi-monitor application make sure all controllers are connected before you install the TSHARC driver.**

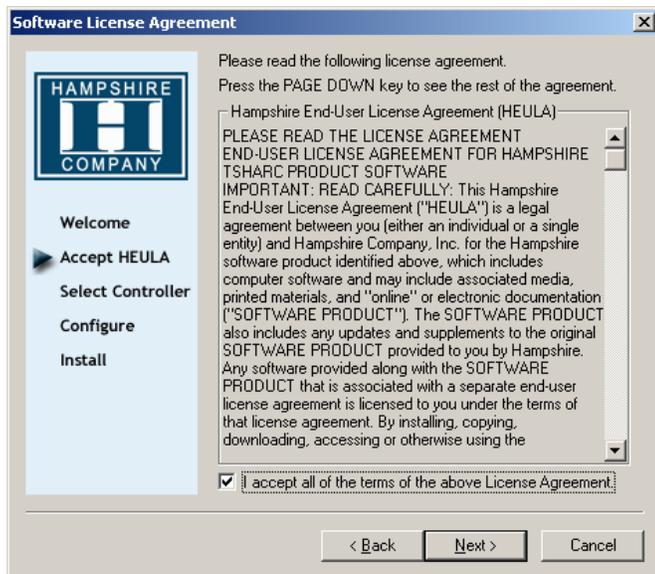
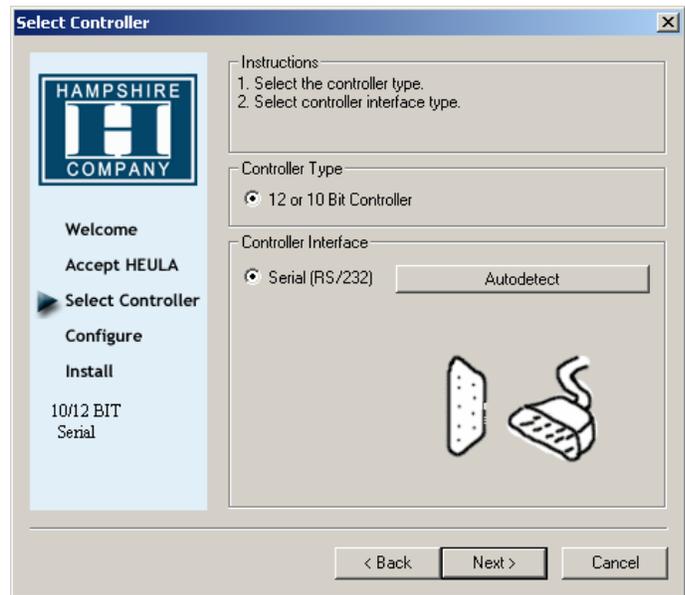
**\* You will have to install the driver for each instance of a Serial or PS/2 controller.**  
**\*\* You will only need to install the driver once for multiple USB controllers.**

2) Turn on your computer. .  
If you are using a TSHARC-xx USB Windows will load a temporary driver. Wait until Window's completes this process.

3) Run the "Setup.exe" program which was provided with the Hampshire driver's disk or from the directory which contain your TSHARC driver files.

Note: If Windows asks if you want to allow an unsigned driver to be installed: accept, and continue. You may have a released un-signed driver from Hampshire. If you require driver signing please contact Hampshire Company or visit the Hampshire web site to download the latest signed driver.

Welcome to Hampshire installation screen will appear.  
Follow the directions on the screen.  
Click "Next"



### Hampshire End User License Agreement:

In order to proceed with the installation process you must agree to Hampshire's license agreement.

Hampshire drivers are available at no charge to Hampshire touch screen controller board or chip customers only. Any unlawful use of Hampshire drivers is in strict violation of the United States and international copyright laws. Please contact Hampshire if you have any questions regarding the license agreement.

**USING A HAMPSHIRE DRIVER WITH ANY THIRD PARTY TOUCH SCREEN CONTROLLER IS STRICTLY PROHIBITED**

Click "Next"

## Select TSHARC controller type:

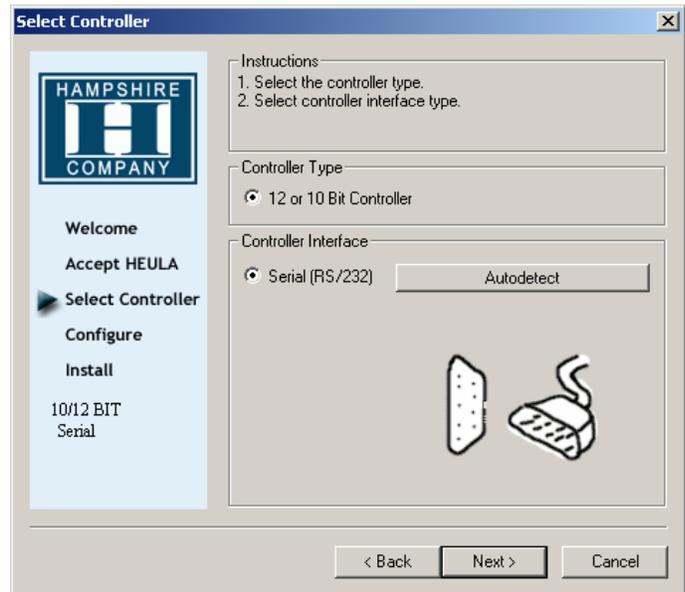
The 12 or 10 bit controller radio button is automatically selected for you.

If you are using a TSHARC touch screen controller for RS-232 you may select the autodetect button to find your controller and set the appropriate settings. See next page for selecting the communication interface.

Hampshire's standard driver supports all Hampshire TSHARC-8, TSHARC 10 and TSHARC-12 touch screen controllers.

If you are using a TSHARC-8 controller, you should contact Hampshire Company for a TSHARC-8 enabled driver. While Hampshire continues to support this product for existing customers, the TSHARC-8 controller selection has removed to eliminate possible user configuration errors.

Click "Next" (If autodetect is used it will automatically take you to the next screen)



## Automatically detect a serial TSHARC controller:

Selecting the "autodetect" option will automatically detect all of the TSHARC, RS-232 touch screen controller products. **USE AUTODETECT FOR RS-232 (SERIAL) COMMUNICATION ONLY.**

or,

Select Serial (RS-232) to manually configure the communication settings.

If you are using a USB controller select USB. **DO NOT USE AUTODETECT FOR USB.**

If you are using a PS/2 controller solution, select the PS/2 controller interface option to load the appropriate device driver. **DO NOT USE AUTODETECT FOR PS/2.**



## Manual serial controller set up:

To manually install your TSHARC serial controller select the "Serial" communication radio button and then select "Next" to manually select. Enter the appropriate settings.

If you have a custom controller from Hampshire that is set to some other baud rate. Select the appropriate baud rate here.

If you are using the TSHARC capacitive controller select the "Capacitive Controller" box to enable the capacitive controller functions in the control panel.

Select "Next"





## Completing the installation process:

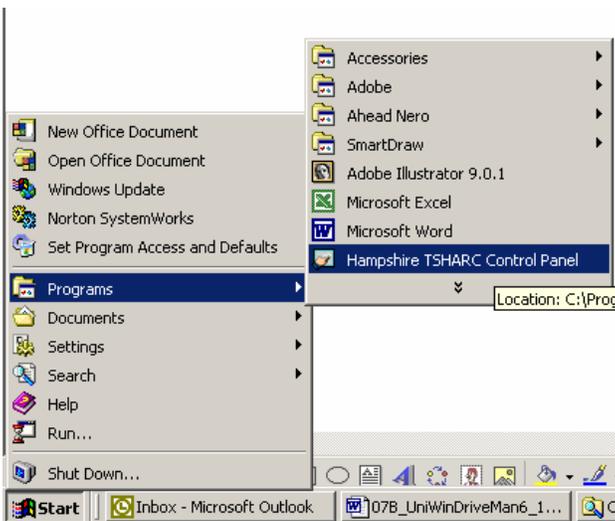
Once the installation process is complete, Click "Finish"

Reboot your computer when prompted to do so.

Notes:

When your computer reboots, the touch screen will be functional. However, it will not be calibrated. **You must calibrate the touch screen by running the calibration routine before the touch screen will work properly.**

See next page for calibration options.



## Configure and calibrate your touch screen

Use the TSHARC control panel to configure and calibrate your touch screen.

The control panel includes settings for:

- Touch screen display selection
- Calibration
- Click Settings
- Touch Settings
- Capacitive Settings

To run the TSHARC control panel:

Run the Hampshire TSHARC control panel:  
Start> Programs> Hampshire TSHARC Control Panel

**If you do not interact with the control panel within 10 seconds the Hampshire calibration program will automatically be launched to allow you to calibrate the touch screen.**

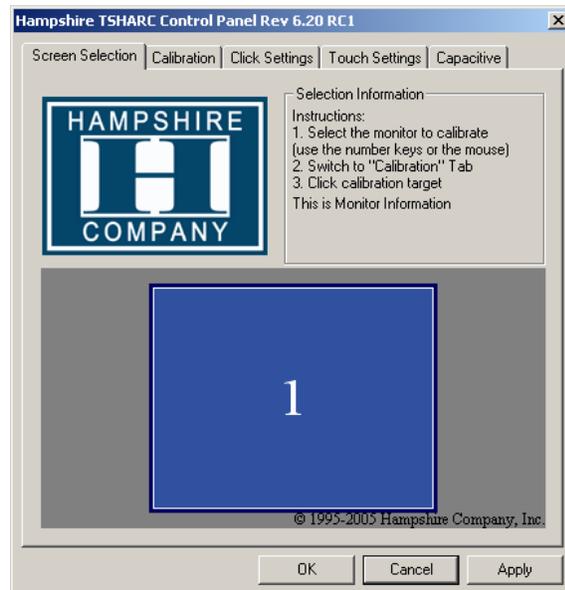
## Configuring for Multi-monitor:

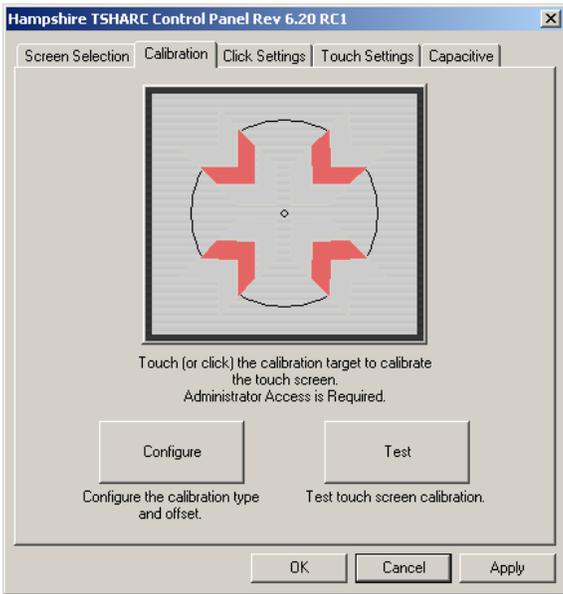
**If you do not have a multi-monitor application, skip to the next section.**

A graphic representation of the monitors installed on your system will be displayed. NOTE: Microsoft® does not support multi-monitor for Win98.

Select the image of the display whose properties you would like to adjust. Once a monitor image is selected all subsequent configuration settings will be associated with that monitor.

Once you have configured one of the monitors, select the other display images to adjust its associated properties.





## Calibration Tab

Before you start using your touch screen you must calibrate it to your monitor. This process is used to align the touch screen overlay to specific points displayed on your screen.

**Configure:** The configure button will allow you to set the calibration variables used to most accurately calibrate you touch screen to your display. See "Calibration Options" below for details on the available options.

**Test:** This is a simple drawing program that allows you to test your calibration to insure that you have accurately calibrated your touch screen to your display.

While the Hampshire goes to great lengths to insure that all of the controllers and drivers will provide you with the highest possible performance and will even improve the performance and extend the life of a poor quality or failing touch screen, the overall accuracy and stability of the calibration will be dependent on the quality of your touch screen.

Linearity, sheet resistance, contact resistance, tail assembly, capacitance and the printed silver linearization pattern vary between touch screen manufacturers, construction, assembly and technology. For more information regarding touch screen constructions and types, visit the Hampshire web site at: [www.hampshirecompany.com](http://www.hampshirecompany.com).

## Calibration "Configure" Button:

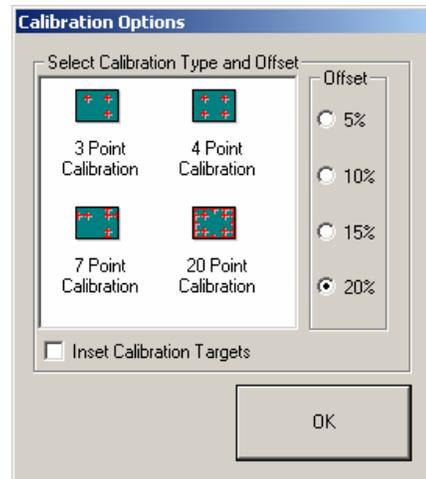
**Three point calibration:** Quick calibration of a known good touch screen overlay. No correction. May be used to evaluate inherent touch screen linearity.

**Four Point Calibration (Default):** Will compensate for skew, and some edge linearity anomalies. **Best general calibration.**

**Seven Point Calibration:** More accurate than 3 point calibration. Helps calibrate screen to the edges. No correction.

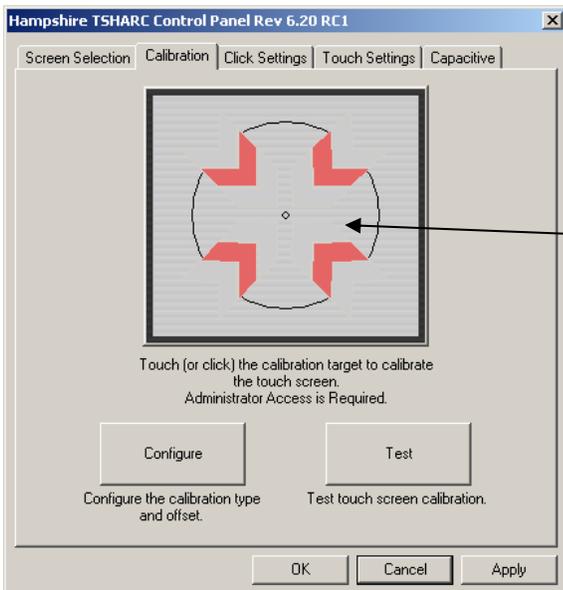
**Twenty point calibration:** Provides the **highest level of touch screen linearization and skew correction.** Should be used to get the best possible calibration. May also be used to extend the life of a failing touch screen.

**Calibration Offset:** Typically used for 5 wire touch screen applications to reduce the effect of the inherent linearity bow associated with 5 wire linearity patterns. Because there are a variety of 5 wire linearization patterns used by as many touch screen manufacturers, it may be necessary to fine tune the offset percentage to get the best possible bow correction. Experiment with this setting to find the best result. Default is 20%. Note: All five wire touch screen have an inherent linear bow associated with there construction, this is not inconsistent with quality. However, the less bow the better.

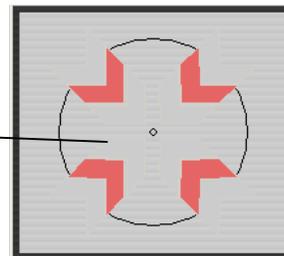


## Inset Calibration Targets:

Typically used for Capacitive touch screen applications. Use this to bring the targets away from the edge of the display making them more accessible to the user. This does not have the same effect at "Offset". This function may be used in conjunction with the "Offset" feature.



**SELECT THE LARGE TARGET TO CALIBRATE**



Once you have selected the parameters for calibration in the "Configure" button select "OK" and touch or click the large calibration target to begin the calibration process.

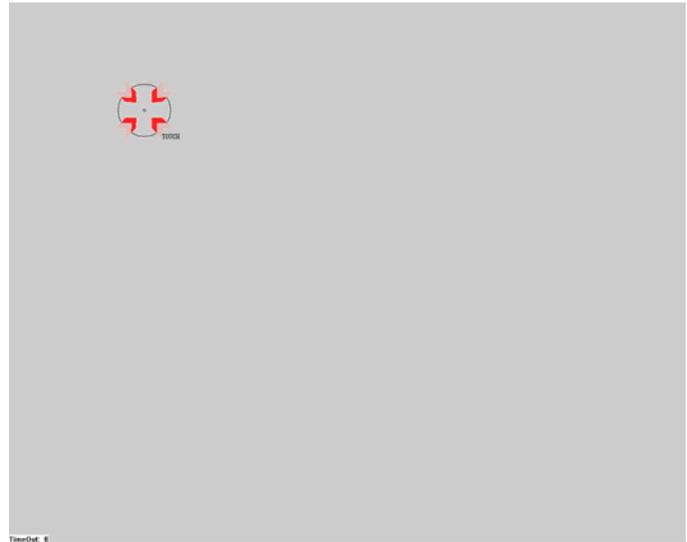
## Calibration Routine:

As each target is displayed on the screen TOUCH and hold the center of each target as directed by the text displayed adjacent to each target.

Touch the center of each target as accurately as possible. Hampshire calibration targets have been specially developed to assist you in calibrating your touch screen as accurately as possible.

Touch and hold the center of each calibration target until it shrinks and the "Hold" text changes to "Release".

**The calibration screen will automatically time out and return you to the control panel if the first point is not touched within 10 seconds.** This time-out feature insures that you can exit the calibration screen in the event that you have a miscalibrated the touch screen or the touch screen has been damaged or disconnected from the host computer.



## In Process Calibration Test:

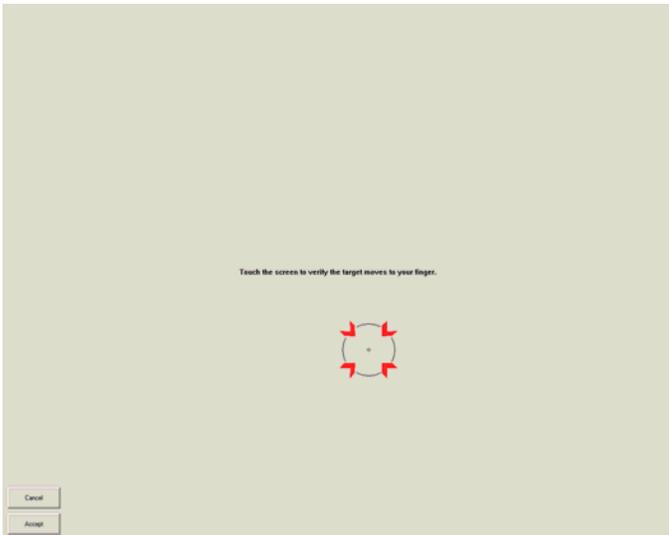
This is the last screen displayed in the calibration process.

Touch the screen and notice if the calibration target is displayed under your finger or stylus. If the target appears directly under your finger, select the "Accept" button.

If the target does not appear directly beneath your finger or stylus, select the "Cancel" button, reconfigure your calibration options and recalibrate until you get an acceptable calibration. You may adjust the "Offset", or try the 4 point and/or 20 point calibration.

Select "Accept" to apply and record your calibration data. Select "Cancel" to return to the calibration tab. Once you return to the calibration tab, select, "OK" or "Apply" to save your settings.

**Special Note: If you have multiple monitors return to the "Screen Selection" tab and select another monitor to calibrate following this same process for each monitor.**



## Drawing Test:

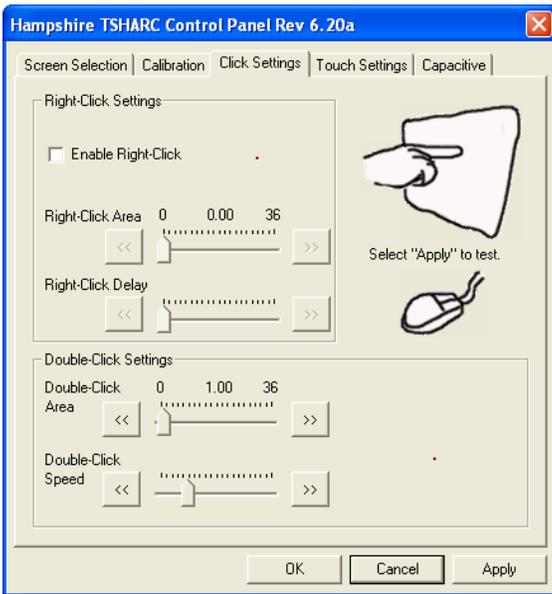
Once you have calibrated your touch screen, you may select the "Test" button located on the calibration tab of the control panel.

This is a simple drawing program that you may use to determine if you touch screen is working properly.

Draw on the screen with your finger or stylus and notice if the screen is displaying your drawing accurately.

Click or touch "Quit" to exit the drawing test screen.





## Click Settings:

### Right Click Area:

The event area should be set to an area that is slightly larger than the activator tip. If the activator is a finger tip, the right click area should be as big as your finger tip.

### Right Click Options:

Hampshire developed the "timed hold" right click mouse event. This allows the user to initiate a "right click" by holding down a touch point for a specified period of time. Check the "Enable right click emulation" box to enable the right click option, then, set the "Right-Click Delay" value to the preferred time needed to produce a right click event.

### Double Click Area

Set the area that will allow for a double click event. This area should be set to an area that you can accurately touch multiple times.

### Double Click Speed

Set this to allow a sufficient amount of time needed to perform a double touch in the specified area.

Click or touch "Apply" to apply your selection. "OK" to apply and exit the control panel.

## Touch Settings:

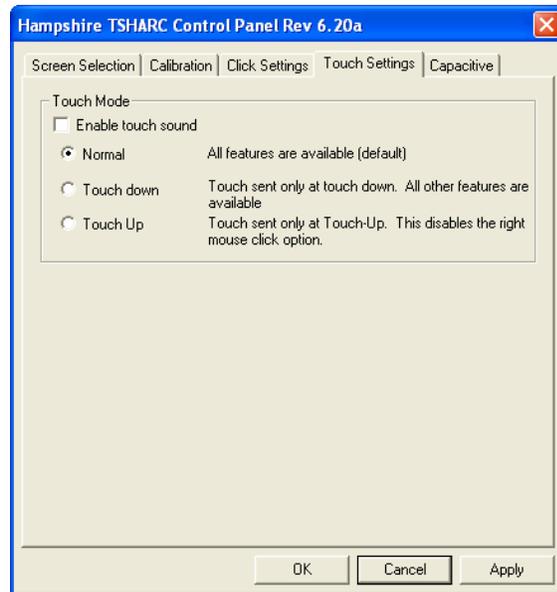
**Touch Sound:** Check "Enable touch sound" to enable a beep when the touch screen is touched.

**Normal:** Emulates a standard mouse. Selecting "Normal" will allow for single click, double click, drawing, dragging and right click option (if right click is enabled).

**Touch down:** Touch down will allow for a click event to take place at touch down. You will not be able to draw or drag if this option is selected.

**Touch up:** Touch sent only at touch up. Disables right click and double click functions.

Click or touch "Apply" to apply your selection. "OK" to apply and exit the control panel.



## Capacitive Tab Disabled

**A TSHARC-C controller must be installed!**

If you do not have a Hampshire TSHARC capacitive touch screen controller connected to your system or you have not calibrated the TSHARC-C controller this tab will be inoperable.

To enable this tab you must have a TSHARC capacitive controller connected to you system and you must calibrate the panel.



## For Capacitive Applications Only:

You must calibrate your capacitive controller before using the capacitive tab options. Failure to calibrate the touch screen first will disable all capacitive tab functionality.

### Sensitivity Settings

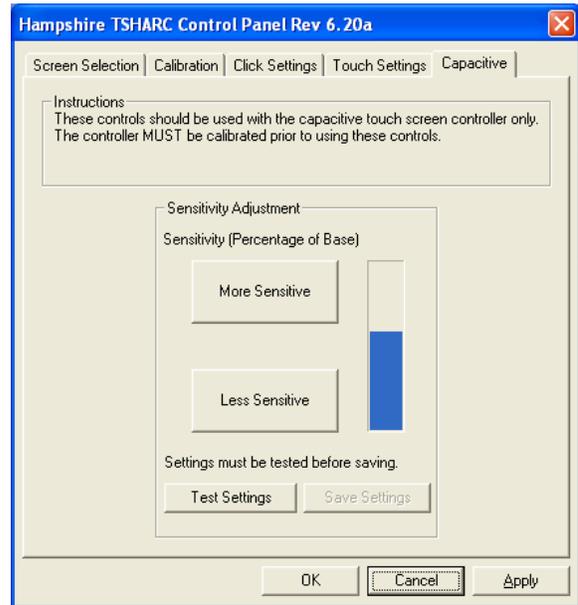
Use this adjustment to fine tune the pressure required to activate the capacitive touch screen. Experiment with these settings to identify the correct setting for your capacitive touch screen.

### Test Settings Button:

Press this button to temporarily save and then test the sensitivity adjustments you make. Changes will not be permanently saved until you select "Save Settings".

### Save Settings

Once you have modified the sensitivity settings to meet your requirements, press the "Save Settings" button to save the settings to RAM. The changes will become permanent until you modify them again.



## Command Line options:

The UniWinDriver will support customized setup and Calibration command line options. These commands will allow the user to pre-configure the TSHARC driver setup and calibration programs to run in an application specified manner.

### “Setup.exe” Installation command line switches

The "Setup.exe" program is used to install the TSHARC touch screen controller driver. During the setup procedure you may customize the way that setup performs the setup process. In so doing you may eliminate the choices that an end user will have to answer during the setup process. You may identify the TSHARC touch screen controller that is being used, the communication and the communication port location as well as the baud rate and controller type. Review the following switches to determine if you prefer to use a specific command line setup operation.

Note: Hampshire standard products require you to install the TSHARC10 or TSHARC12 controller board option only. The TSHARC8 command is for legacy support only. Hampshire standard products support 9600 baud only. Once again, the TSHARC8 is the only controller which used any other baud rate which is 2400. The other baud rate options are for Hampshire custom applications which have been written for specific customers only.

Where to run: You may run these files from the "Run" command in the start menu (make sure to use " " in the data path. Example: "C:\Program Files\Tsharc\hwincal.exe" or, from the Start> Programs > Hampshire TSHARC Control Panel properties screen or, from the command prompt (no " " needed when running from the command prompt).

You may string these commands together into a single command line in any order you like. However, the DBG command should be used independently and cannot be used with other switches.

Command	Usage	Example / Description
DBG	DBG<number> between 1 and 255	"C:\Program Files\Tsharc\setup.exe" DBG Generate a Debug log. Lower number more information, higher number less information. Use this when working with Hampshire technical support only.
TSHARC8	TSHARC8	"C:\Program Files\Tsharc\setup.exe" TSHARC8 Sets the default setup program to install driver for the TSHARC-8 controller
TSHARC10	TSHARC10	"C:\Program Files\Tsharc\setup.exe" TSHARC10 Sets the default setup program to install driver for the TSHARC-10 controller
TSHARC12	TSHARC-12	"C:\Program Files\Tsharc\setup.exe" TSHARC12 Sets the default setup program to install driver for the TSHARC-10 controller.
Com<Number>	Com<Number> between 1 and 8	"C:\Program Files\Tsharc\setup.exe" com2 Sets the default communication port to communication port number placed in the number field.
9600	9600 For all TSHARC-10 and 12 serial controllers	"C:\Program Files\Tsharc\setup.exe" 9600 Sets the default setup baud rate to 9600. Default
4800	4800 For custom controller only.	"C:\Program Files\Tsharc\setup.exe" 4800 Sets the default setup baud rate to 4800
2400	2400 For custom and TSHARC-8 controllers only	"C:\Program Files\Tsharc\setup.exe" 2400 Sets the default setup baud rate to 2400
19200	19200 For custom controllers only	"C:\Program Files\Tsharc\setup.exe" 19200 Sets the default setup baud rate to 19200
Serial	Serial	"C:\Program Files\Tsharc\setup.exe" Serial Sets the default communication during setup to be Serial
PS2	PS2	"C:\Program Files\Tsharc\setup.exe" PS2 Set the default communication during set up to be PS/2
USB	USB	"C:\Program Files\Tsharc\setup.exe" USB Set the default communication during setup to be USB
Capacitive	Capacitive	"C:\Program Files\Tsharc\setup.exe" Capacitive Set the default controller type to be Capacitive

## “Hwincal.exe” Calibration command line switches

The Hwincal.exe program calls the Hampshire control panel. In addition to calling the control panel you may perform specific functions using the switches listed below. These commands must be run from the Program files/tsharc/ directory. They are typically used in combination with associated commands. Example: Hwincal -q4 -o20 -d2 which will perform a quick 4 point calibration with a 20% offset on display two.

Where to run: You may run these files from the “Run” command in the start menu (make sure to use “ “ in the data path. Example: "C:\Program Files\Tsharc\hwincal.exe" from the Start> Programs > Hampshire TSHARC Control Panel properties screen or from the command prompt (no “ “ needed when running from the command prompt).

You may string these commands together into a single command line in any order you like. However, the -Kick and the DBG commands should be used independently and cannot be used with other switches.

Command	Usage	Example / Description
DBG	DBG<number> between 1 and 255	"C:\Program Files\Tsharc\hwincal.exe" DBG50 Generate a Debug log. Lower number more information, higher number less information. Use this when working with Hampshire technical support only.
-q	-q<number> where number is 3, 4, 7, 20	"C:\Program Files\Tsharc\hwincal.exe" -q4 Starts "Quick Calibration" program with 4 point calibration. Does not display the entire control panel.
-o	-o10<number> where number is 5, 10, 15, 20	"C:\Program Files\Tsharc\hwincal.exe" -o10 Starts the calibration program with 10% offset.
-d	-d2<number> where number is a specific display number on the system.	"C:\Program Files\Tsharc\hwincal.exe" -d2 Starts the calibration program on the #2 display.
-solo	-solo Must be used in conjunction with -o & -d	"C:\Program Files\Tsharc\hwincal.exe" -solo Starts the calibration program on the display identified by -d
-kick	-kick	"C:\Program Files\Tsharc\hwincal.exe" -kick Reinstalls the driver registry files.

## Advanced Features and Utilities

### Private Labeling:

All of the screens in this installation as well as in the control panel screens may be private labeled for OEM customers who meet Hampshire's quality support requirements.

### Backward compatible, for competitive controller products.

Hampshire has the ability to provide legacy support for other manufacturer's controllers with Hampshire's own drivers. These drivers are only available to forward looking customers who will incorporate Hampshire's standard controller and driver products in future products but have legacy support issues with products purchased from a Hampshire competitor. Please contact Hampshire Company for details on this functionality and the associated support agreement.

### Enable and Disable functions

You may enable or disable the Hampshire USB or RS-232 driver without disconnecting the TSHARC controller from the system. This function must be implemented by the OEM through an OEM written application. Sample source code and engineering instructions for implementing this function are available from Hampshire Company by request only.

## Uninstalling the Driver

- 1) Open Add/Remove Programs (Start Menu -> Settings -> Control Panel>Add/Remove Programs)
  - 2) Select "Touch Screen Controller Uninstall" from the list. This will run the Hampshire uninstall program.
  - 3) Click "Remove" button
- Or, run the Hampshire un-install program file: tsun10.exe. This file is located in the "common" directory of the files you received from Hampshire Company.
- 4) Read the Message Box, accept.
  - 5) Reboot the system when prompted

## Troubleshooting

Check these first:

Touch screen connections:

Check your touch screen overlay connection to make sure that it is connected to your TSHARC controller properly. Refer to the TSHARC controller user's manual for the proper pin-out for your controller. [www.hampshirecompany.com](http://www.hampshirecompany.com)

Note: For 4 and 8 wire touch screens: The x and y lines of the touch screen may be swapped and the TSHARC controller will compensate for the inverted pin-out. Driver not installed

A USB controller will operate in a default mode when first plugged in; however, it will not be calibrated. You must install the Hampshire TSHARC driver to calibrate the touch screen as well as, enable all other Hampshire TSHARC features.

Issue	Cause	Solution
Touch screen does not respond.	1. Controller is not plugged in. 2. Touch screen not plugged in. 3. Driver has been uninstalled. 4. Hardware failure.	1. Check connections between the touch screen and the controller, as well as between the controller and computer. 2. Plug the controller into a different port 3. Reinstall the TSHARC driver. 4. Contact Hampshire Company.
Touch screen moves, but it does not follow the stylus	1. Controller not calibrated. 2. Driver Not installed. 3. Touch screen is not plugged in correctly.	1. Run the calibration through Hampshire TSHARC Control Panel 2. Install the TSHARC driver 3. Verify the Touch screen pin-out.
When calibrating an "Error in Calibration" message appears.	1. The driver is not installed correctly. 2. The touch screen is not connected correctly.	1. Verify the pin-out of the controller matches the pin-out of the touch screen 2. Uninstall the driver then reinstall the driver.