# PART NUMBERS

## Main Product

Bolded items are new or revised.

|  |  |  |
| --- | --- | --- |
| Part | Description | Revision |
| **78-0006-3058-8** | **SU-MT7.13 for Windows Distribution** | **D** |
| 25695 | MT 7 Software User Guide | L |
| 36098 | MT 7 Build Environment Snapshot | AJ |
| 35883 | MT 7 Test Plan | M |
| **TSD-45052** | **MT 7 Source Code - Proprietary** | **AM** |
| **TSD-45134** | **MT 7.13 Release Notes - Proprietary** | **AP** |
| **TSD-45135** | **MT 7.13 Build Snapshot Proprietary** | **AP** |

# PRODUCT DESCRIPTION

MT 7 Software, a member of the MicroTouch™ Software Suite, provides unified driver support for MicroTouch touch technologies over a wide range of operating systems. This product includes a driver, a control panel, a calibration tool, and a touch monitor that provides enhanced touch features on your Windows Vista, Server 2008, 7, 8, and 10 operating systems.

# RELEASE HISTORY

Note that most of these release notes are hidden. To view the entire document, use Tools>Options>View>Hidden Text.

## Version 7.13.22

### Release Candidate 1 (June 28, 2016)

## Version 7.13.21

### Release Candidate 1 (January 28, 2016)

### Release Candidate 2 (February 18, 2016)

## Version 7.13.20

### Release Candidate 1 (December 2, 2015)

### Release Candidate 2 (December 17, 2015)

## Version 7.13.19

### Release Candidate 1 (September 22, 2015)

### Release Candidate 2 (September 28, 2015)

## Version 7.13.18

### Release Candidate 1 (July 29, 2015)

### Release Candidate 2 (July 31, 2015)

### Release Candidate 3 (August 5, 2015)

### Release Candidate 4 (September 1, 2015)

### Release Candidate 5 (September 21, 2015)

## Version 7.13.16

### Release Candidate 1 (June 24, 2014)

### Release Candidate 2 (June 26, 2014)

## Version 7.13.15

### Release Candidate 1 (October 4, 2013)

### Release Candidate 2 (October 11, 2013)

### Release Candidate 3 (October 18, 2013)

## Version 7.13.14

### Release Candidate 1 (July 15, 2013)

## Version 7.13.13

### Release Candidate 1 (April 15, 2013)

## Version 7.13.12

### Release Candidate 4 (January 25, 2013)

### Release Candidate 3 (January 18, 2013)

### Release Candidate 2, Respin 2 (January 10, 2013)

### Release Candidate 2, Respin 1 (January 9, 2013)

### Release Candidate 2 (January 8, 2013)

### Release Candidate 1 (January 4, 2013)

## Version 7.13.11

### Release Candidate 1 (November 27, 2012)

## Version 7.13.10

### Release Candidate 1 (September 27, 2012)

### Release Candidate 2 (October 1, 2012)

### Release Candidate 3 (October 9, 2012)

### Release Candidate 4 (October 19, 2012)

### Correction 5 (October 31, 2012)

## Version 7.13.9

### Release Candidate 1 (April 27, 2012)

### Release Candidate 2 (May 2, 2012)

### Release Candidate 3 (July 25, 2012)

## Version 7.13.8

### Release Candidate 1 (March 8, 2012)

### Release Candidate 2 (March 21, 2012)

## Version 7.13.7

### Release Candidate 1 (November 16, 2011)

### Release Candidate 2 (December 8, 2011)

### Release Candidate 3 (December 12, 2011)

## Version 7.13.6

### Release Candidate 1 (September 22, 2011)

### Release Candidate 2 (October 6, 2011)

## Version 7.13.4

### Release Candidate 1 (June 2, 2011)

### Release Candidate 2 (June 3, 2011)

## Version 7.13.3

### Release Candidate 1 (December 14, 2010)

## Version 7.13.2

### Release Candidate 1 (June 8, 2010)

### Release Candidate 2 (September 10, 2010)

## Version 7.13.1

### Test Submission 1 (February 19, 2010)

### Release Candidate 1 (March 3, 2010)

### Release Candidate 2 (March 8, 2010)

### Release Candidate 3 (March 12, 2010)

### Release Candidate 4 (March 15, 2010)

## Version 7.13.0

### Release Candidate 1 (November 12, 2009)

### Release Candidate 1, Respin 1 (November 16, 2009)

### Release Candidate 1, Respin 2 (November 18, 2009)

### Release Candidate 1, Respin 3 (November 30, 2009)

### Release Candidate 1, Respin 4 (December 18, 2009)

### Release Candidate 1, Final (January 12, 2010)

### Release Candidate 1, Final 2 (January 22, 2010)

## Version 7.12.6

### Release Candidate 1 (January 23, 2009)

## Version 7.12.5

### Release Candidate 1 (September 2, 2008)

### Release Candidate 2 (October 1, 2008)

## Version 7.12.4

### Release Candidate 1 (July 31, 2008)

## Version 7.12.3

### Release Candidate 1 (February 26, 2008)

### Release Candidate 2 (March 25, 2008)

## Version 7.12.1

### Release Candidate 1 (September 4, 2007)

### Patch 1 Release Candidate 1 (September 10, 2007)

## Version 7.12.0

### Release Candidate 1 (June 26, 2006)

### Release Candidate 2 (July 10, 2006)

### Release Candidate 3 (July 11, 2006)

### Release Candidate 4 (July 17, 2006)

### Release Candidate 5 (July 25, 2006)

### Release Candidate 6 (July 28, 2006)

### Release Candidate 7 (August 23, 2006)

### Release Candidate 8 (September 13, 2006)

### Release Candidate 9 (September 20, 2006)

### Release Candidate 10 (September 26, 2006)

### Release Candidate 11 (October 25, 2006)

### Release Candidate 12 (November 2, 2006)

### Release Candidate 13 (December 27, 2006)

### Release Candidate 14 (January 18, 2007)

### Release Candidate 15 (February 1, 2007)

## Version 7.11.2 Service Patch 2

### Release Candidate 1 (May 2, 2006)

## Version 7.11.2 Driver Patch 1

### Release Candidate 1 (April 27, 2006)

## Version 7.11.2

### Release Candidate 1 (February 22, 2006)

### Release Candidate 2 (February 28, 2006)

### Release Candidate 3 (March 22, 2006)

### Release Candidate 4 (March 24, 2006)

### Release Candidate 5 (March 27, 2006)

## Version 7.11.1

### Release Candidate 1 (January 9, 2006)

### Release Candidate 2 (January 16, 2006)

### Release Candidate 3 (January 30, 2006)

## Version 7.11.0

### Release Candidate 1 (July 8, 2005)

### Release Candidate 2 (July 14, 2005)

### Release Candidate 3 (July 20, 2005)

### Release Candidate 4 (August 1, 2005)

### Release Candidate 5 (August 5, 2005)

### Release Candidate 6 (August 9, 2005)

### Release Candidate 7 (August 11, 2005)

### Release Candidate 8 (September 7, 2005)

## Version 7.10.0

### Release Candidate 1 (March 2, 2005)

### Release Candidate 2 (March 9, 2005)

### Release Candidate 3 (March 11, 2005)

### Release Candidate 4 (March 14, 2005)

## Version 7.00.0

### Release Candidate 8 and before were issued prior to the first publication of these release notes.

### Release Candidate 9 (January 27, 2004)

### Release Candidate 10 (March 1, 2004)

### Release Candidate 11 (March 4, 2004)

### Release Candidate 12 (March 16, 2004)

### Release Candidate 13 was never published as Software Quality Assurance approved Release Candidate 12. Release Candidate 13 was for the Linux and Windows CE platforms.

### Release Candidate 14 (May 26, 2004)

### Release Candidate 15 (June 7, 2004)

### Release Candidate 16 (June 11, 2004)

# SYSTEM REQUIREMENTS

## Hardware Prerequisites

### MT 7 runs on most computers that run on 32-bit or 64-bit versions of the Windows Vista, Windows Server 2008, Windows 7, Windows 8, or Windows 10 operating systems.

### One or more of the following MicroTouch touch screen controllers:

#### MicroTouch EX serial, USB, or HID controllers

#### MicroTouch DX serial or USB controllers

#### MicroTouch PX serial or USB controllers

#### MicroTouch RX serial or USB controllers

#### MicroTouch SX serial controllers

### Depending on the touch screen, either a serial (COM) port or a USB port is required.

## Software Prerequisites

### MT 7 requires a 32-bit or 64-bit version of the Windows Vista, Windows Server 2008, Windows 7, Windows 8, or 10 operating systems.

### Note that 3M’s multitouch products work well with Windows 7, 8, and 10 without the MT 7 for Windows driver. Unless you need a special feature of MT 7, do not install this software on these operating systems.

### The help file requires a PDF viewer.

# CHANGES FOR VERSION 7.13.22 (CO 041689, QAWR 2342-TS)

### Release Candidate 1

#### Added support for new PCT devices.

# CHANGES FOR VERSION 7.13.21 (CO 039798, QAWR 2215-TS)

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### Added support for new PCT devices.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### The 3M-signed CAT files will be replaced after WHQL certification.

#### The new PIDs are current as of January 28, 2016. However, extra PIDs were added as well.

### Release Candidate 2

#### Contains Microsoft-signed drivers.

## ISSUES ADDRESSED

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 1

#### Enabled code accidentally disabled for 7.13.19. There is no known affect so no there are no known means to verify this change.

# CHANGES FOR VERSION 7.13.20 (CO 039617, QAWR 2190-TS)

Note that version 7.13.19 was advertised as being the last 7.13 release. A critical customer needed a 7.13 update so here we are.

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### Addressed a driver halt issue seen with on some systems that do not run the TwMonitor.exe background application.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### The 3M-signed CAT files will be replaced after WHQL certification.

#### Updated the support PIDs to be accurate as of December 1, 2015.

### Release Candidate 2

#### Contains Microsoft-signed drivers.

## ISSUES ADDRESSED

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

# CHANGES FOR VERSION 7.13.19 (CO 039414, QAWR 2163-TS)

Note that version 7.13.18 was not widely distributed. As such, the readme file for 7.13.19 does not mention 7.13.18 and includes its change list.

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### Addressed a system halt issue seen with USB controllers on some virtual machine systems.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### The 3M-signed CAT files will be replaced after WHQL certification.

#### Added driver support for legacy USB controllers. Note that there is no application level support.

#### Updated the support PIDs to be accurate as of September 18, 2015.

#### Changed part 23537 to 78-0006-3058-8 and renamed it to ‘SU-MT 7.13 for Windows Distribution’.

### Release Candidate 2

#### Contains Microsoft-signed drivers.

## ISSUES ADDRESSED

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 1

#### Addressed loss of software restore default function from the Control Panel introduced in 7.14.5.

#### Reconfigured driver build to omit the CX support code.

### Release Candidate 2

#### Corrected to remove the root/TwBus device when uninstalling.

# CHANGES FOR VERSION 7.13.18 (CO 039266, QAWR 2137-TS)

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### This is the last planned release of the MT 7.13 driver. Support continues with the MT 7.14 driver.

#### Changed installer technology. The only major change involves how to record and playback an installation. See below for details.

#### Added driver support for more touch screen products.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### The 3M-signed CAT files will be replaced after WHQL certification.

#### Removed support for the CX controller.

#### Removed the ‘Known Issues’ list from ReadMe.txt.

#### Updated the installation and install recording instructions.

#### Other installer changes include (a) no ‘typical’ or ‘upgrade’ options, (b) loss of component descriptions, (c) drivers are no longer exposed as everything is in the single setup executable, (d) blank cursor is now in the user interface group, and (e) no longer detects and uninstalls TouchWare.

#### Eliminated an extraneous space in the license files. The installer copies License.txt to the user’s computer but uses License.rtf internally.

#### Merged the 7.13 and 7.14 driver branches.

#### Added Perl scripts to build the TwTouch.sys and TwTouch.inf files. These automatically increment the version number of these files. The INF files also are built from a master PID file.

#### Added Perl script to build the installer. This copies the License.txt, License.rtf, TwFactory.cfg, and ReadMe.txt file to OSWDEVBR. It also builds TwFramework.cfg which is not copied to OSWDEVBR but is built into the installer.

#### The Setup.exe file produced now has 3M version information within. As such, it now appears in the manifest lists below.

### Release Candidate 2

#### Added a read feature for TwCfgUtil.exe. The command line option is ‘/r <outputfile>’.

### Release Candidate 3

#### Obtained the Microsoft WHCK signature. This affects all inf, sys, and cat files.

#### **KNOWN ERROR:** The inf files have the 7.14.5 version number instead of the 7.13.18 version number. This will be corrected in RC4 for new WHCK testing and hence resulting in an RC5 when the new signatures are available.

## ISSUES ADDRESSED

### Release Candidate 1

#### Addressed a timing issue with USB controller that could cause loss-of-touch.

### Release Candidate 2

#### Addressed an issue recognizing the controller identifier of some PX serial touch controllers.

#### Addressed a minor memory leak seen during calibration.

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 1

#### Added a ‘/silent’ switch to TwRegSvc.exe to suppress message boxes seen with the new installer. Also changed this program not to display a message if the system is already in a requested state (i.e., suppressed the message stating that the service is already installed).

### Release Candidate 2

#### Fixed command line processing error introduced in TwRegSvc.exe with the addition of the ‘/silent’ switch. This caused issues during installation.

#### Fixed TwRegSvc.exe to not issue an error when starting an already started service. This could happen also when installing.

#### Fixed TwRegSvc.exe so that it worked. An error was introduced with the 64-bit conversion.

#### Fixed version information for Setup.exe.

#### Addressed several faults in the installer script.

#### Fixed AddRemoveDrv.exe to handle the new TwTouch.inf files.

### Release Candidate 3

#### Installation now deletes MT7UnInst.dll, TwFramework.cfg, RemoveTW5x.exe, and Uninst.isu.

#### Fixed the license dialog to work with keyboard input only.

#### To stop and remove currently running services, changed the installer to use internal copies of the services and the uninstaller to installed versions. This suppresses error messages seen in RC2 when uninstalling a system without TwService.exe.

#### Changed the uninstall shortcut to use the text "Uninstall MT 7" as the old installer did. This ensures that the old uninstall shortcut is overwritten and only a single uninstall shortcut appears.

### Release Candidate 4

#### Corrected INF files and have new HCK certification.

#### Corrected year in ReadMe.txt (was 2014).

#### Fixed the accidental installation of MT7Uninst.dll.

### Release Candidate 5

### This is a documentation change only. Nothing in the distribution package changed.

#### Corrected release notes.

# CHANGES FOR VERSION 7.13.16 (CO 038049, QAWR 1989-TS)

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### Added driver support for more touch screen products.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### Removed old parts 25384 (MT7 Driver S/C Proprietary) and 25404 (MT7 Installer Win32 S/C Proprietary) from the BOM. The pertinent code is now in part TSD-45134.

#### This build does not have the releasable driver CAT files.

### Release Candidate 2

#### Added 3M signatures to the drivers.

#### The ReadMe.txt is not updated to this release candidate’s date.

## ISSUES ADDRESSED

### Release Candidate 1

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 1

#### Bug 420: Fixed inspection of the DPInst.exe exit code in the installer.

# CHANGES FOR VERSION 7.13.15 (CO 037024, QAWR 1864-TS)

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### Added driver support for more touch screen products.

#### The various draw screens now accept multitouch input.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### Because of the new driver model, MT 7 for Windows is now MT 7.13 and MT 7.14 for Windows. The MT 7.14 for Windows branched from the MT 7.13.14 version.

#### Also because of the split, the old source code part numbers were consolidated into three parts: source code for both, MT 7.13 only, and MT 7.14 only. There is also now a similar division of the build snapshot parts.

#### The Readme.txt and these release notes are now kept with part TSD-45134.

#### Some parts of the source code are now under Subversion.

## ISSUES ADDRESSED

### Release Candidate 1

#### The TwCfgUtil.exe utility program now updates the driver when it changes configuration parameters.

#### Uninstall under Windows 8 now properly removes the MT 7 driver.

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 1

#### None

### Release Candidate 2

#### AddRemoveDrv functionality has been returned to the deinstall process and is followed by the DpInst.exe functionality. This was added back in due to the fact that older installs were encountered whereby DpInst was not able to remove the driver. This was also included because an instance of the bus driver would remain. AddRemoveDrv functionality was also returned to the install process, mainly because it would purge out the existing “Microsoft Input Configuration Device” entry that was attached to the VID/PID instance of a HID controller attached. An AddRemoveDrv rescan was also added back in since the install would leave the Device Manager in a strange state with the MT7 driver not appearing until the user touched the screen.

### Release Candidate 3

#### Fixed MT 7 upgrade problem in Windows 8

# CHANGES FOR VERSION 7.13.14 (CO 036650, QAWR 1827-TS)

## FEATURES AND ENHANCEMENTS

### Release Candidate 2

#### None

### Release Candidate 1

#### Added driver support for more touch screen products.

#### Added official support for Windows 8. This includes a note on an uninstall issue.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 2

#### Driver certification added;

### Release Candidate 1

#### None.

## ISSUES ADDRESSED

### Release Candidate 2

#### None

### Release Candidate 1

#### Adjusted the driver installation to satisfy new Microsoft requirements. However, the change removed code that attempted to force installation of the Microsoft mouse driver. A note on installing the driver on a system without a mouse covers potential issues with this.

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 2

#### None

### Release Candidate 1

#### Driver and INF files are not certified. Certification will be in RC2.

#### Issue 951: Corrected the operation of /M switches on the TwCalib.exe command line. This was coded in 2010 but never built into the MT 7 for Windows product.

#### Fixed memory leak associated with getting screen parameters from TwSystem.dll.

# CHANGES FOR VERSION 7.13.13 (CO 036303, QAWR 1777-TS)

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### None.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### Driver certification added;

## ISSUES ADDRESSED

### Release Candidate 1

#### Improved driver communication for case of USB bus errors.

#### Right click tool issue resolved for initial installation.

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 1

#### Driver is now recycling USB port if an error is detected on interrupt pipe.

# CHANGES FOR VERSION 7.13.12 (CO 035876, QAWR 1698-TS)

## FEATURES AND ENHANCEMENTS

### Release Candidate 4

### Release Candidate 3

### Release Candidate 2

### Release Candidate 1

#### Added support for additional PX touch controllers.

#### Added new beep support for 64 bit systems.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 4

### Release Candidate 3

#### Introduction of asynchronous system beep.

### Release Candidate 2, Respin 2

#### TwMonitorBeep is fixed for close on uninstall, try 2;

### Release Candidate 2, Respin 1

#### TwMonitorBeep is fixed for close on uninstall;

### Release Candidate 2

#### Uninstall for the new TwMonitorBeep added;

#### Driver certification added;

#### Added support for Win 8 PX controllers;

### Release Candidate 1

#### Driver certification added;

## ISSUES ADDRESSED

### Release Candidate 4

### Release Candidate 3

#### None.

### Release Candidate 2

#### None.

### Release Candidate 1

#### None.

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 4

#### Fixed uninstall problem with TwMonitorBeep on 64 bit systems.

### Release Candidate 3

#### Fixed speaker and wav file sound handling in TwMonitor.

### Release Candidate 2

#### Reboot flag in addremove driver application fixed.

### Release Candidate 1

#### None.

# CHANGES FOR VERSION 7.13.11 (CO 035740, QAWR 1685-TS)

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### Added support for additional PX touch controllers.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### Driver certification added;

## ISSUES ADDRESSED

### Release Candidate 1

#### Driver crash fixed for MT 7 control panel rapid setting changes.

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 1

#### Issue 239 - MT 7 driver will blue screen with "Verifier" enabled and an Application "TwMonitor" sending "Update Param”. This was fixed by changing handles for registry access from user space mode to kernel mode.

#### Driver crash fixed for update parameter stress testing. The problem was evident if the user was touching MT 7control panel buttons in rapid succession. The driver will now block touch until update is complete.

#### Disabled debug messages in TwConfig.

#### TwMonitor was re-opening event device in its poll thread right after the read failed due to device departure. This will cause driver crash.

# CHANGES FOR VERSION 7.13.10 (CO 035466, QAWR 1675-TS)

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### Added support for additional PX touch controllers.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### It is now possible to limit the possible values for the double click speed and time in the control panel. This affects TwConfig.dll and TwLangEng.dll.

### Release Candidate 3

#### Driver certification added; readme not updated

## ISSUES ADDRESSED

### Release Candidate 1

#### The ‘Version Info’ button in the MT 7 control panel now shows the version numbers of the drivers. The list of files and their version numbers is now scrollable.

#### The driver now switches any PX controller into digitizer mode. Some versions of the PX controller default to mouse mode.

#### Using the control panel’s restore firmware defaults button on PX USB controllers no longer disrupts the touch behavior.

#### The control panel no longer shows ineffective settings when using the digitizer driver, such as touch modes, double-click settings, and the right-click tool.

#### Both the installation and uninstallation processes trigger a full rescan of the system for new devices.

### Release Candidate 4

#### The serial search service no longer crashes on systems with disabled serial searches and automatic user login.

#### Committing a large volume of individual configuration changes no longer crashes the system.

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 1

#### Because of work performed in preparation of MT 7.15, the version number of some of the files may now are ‘7.15.0.x’ instead of ‘7.13.10.x’. The aborted MT 7.14.0 for Windows release labeled some files as ‘7.14.0.x’ and there was a decision not to roll back these versions to the ‘7.13’ levels.

### Release Candidate 2

#### Fixed driver crash created by code to force the PX controller into digitizer mode.

### Release Candidate 4

#### Corrected an error in TwConfig.dll, introduced with the addition of parametric minimum and maximum values, that caused default transactions to incorrectly set an affected value. In particular, the SysDoubleClickTime was set low because the SysDoubleClickTimeMin parameter value was undefined when evaluated.

#### Removed issue 849 from the list of known issues.

### Correction 5

#### There were some mistakes in the release notes regarding file dates. This correction does not affect any of the build product so this did not generate a new release candidate.

# CHANGES FOR VERSION 7.13.9

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### Added support for additional PX touch controllers.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### This version has self-signed cat files for the driver. These will be replaced by Microsoft-signed cat files.

### Release Candidate 3

#### Added more PIDs

#### This version has the Microsoft-signed cat files for the driver.

## ISSUES ADDRESSED

### Release Candidate 3

#### The TwMonitor program no longer reacts to screen size changes triggered by a remote session. Furthermore, TwMonitor no longer starts in a remote session; it only starts in a local user session.

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 2

#### Added a message loop to AddRemoveDrv.exe. This keeps Windows from detecting the program as a ‘not responding’ application.

### Release Candidate 3

#### A second instance of TwMonitor no longer runs. There was an error that allowed a second instance could remain in memory.

# CHANGES FOR VERSION 7.13.8

## FEATURES AND ENHANCEMENTS

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### This version has self-signed cat files for the driver. These will be replaced by Microsoft-signed cat files.

### Release Candidate 2

#### This version includes the Microsoft-signed cat files.

## ISSUES ADDRESSED

### Release Candidate 1

#### Fixed a driver crash seen in the preview copies of Windows 8.

#### Fixed a driver crash seen on some machines when touching the ‘Controller’ tab in the MT 7 Control Panel.

#### Fixed a memory leak in the TwMonitor program triggered by a change in screen resolution.

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 1

#### The files TwMMManager.dll, TwUICP.dll, and TwUIEngine.dll also changed because of a potential memory leak.

#### All drivers are now signed.

### Release Candidate 2

#### Corrected TwUIEngine.dll to not crash when changing the ‘sound on touch’ feature in the control panel.

#### Corrected the version number of TwAppIO.dll in the release notes. This was incorrectly reported as 7.13.0.1 instead of 7.13.0.0.

# CHANGES FOR VERSION 7.13.7

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### Added support for additional PX controllers.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### The INF files now recognize PX controllers for the mid-size monitor series, PIDs 0x0515 through 0x0518.

#### The drivers need qualification and hence the cat files are out-of-date.

### Release Candidate 2

#### Added new cat files.

### Release Candidate 3

#### The WinQual submission for the legacy drivers was incorrect in release candidate 2. This release candidate fixes that and adds new cat files.

## ISSUES ADDRESSED

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

# CHANGES FOR VERSION 7.13.6

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### Added support for additional PX controllers.

#### Updated help file.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### The driver now recognizes all USB PIDs 0x0500-0x05FF as PX controllers. There should be no further revisions to the driver due to new PX controllers unless a PID falls outside this range. However INF file updates are still required.

#### The drivers need qualification and hence the cat files are out-of-date.

### Release Candidate 2

#### Added the new driver cat files.

## ISSUES ADDRESSED

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

# CHANGES FOR VERSION 7.13.4

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### Added support for the PX 32" controllers.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

## ISSUES ADDRESSED

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

# CHANGES FOR VERSION 7.13.3

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### The installer defaults to legacy drivers on XP systems.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

## ISSUES ADDRESSED

### Release Candidate 1

#### Issue 273: The driver problem with Windows XP hangs on reboot or shutdown is fixed.

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

# CHANGES FOR VERSION 7.13.2

## FEATURES AND ENHANCEMENTS

### Release Candidate 2

#### The MT 7 Software now supports edge adjustments for multi-touch controllers.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

## ISSUES ADDRESSED

### Release Candidate 1

#### Issue 247: The driver now works with PX 19" USB monitor.

#### Issue 181: The drivers more reliably unload for serial controllers after communication port has been disabled.

### Release Candidate 2

#### Issue 271: The driver now works with PX 19" and 22” serial monitor.

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 1

#### Issue 264: SetDisable now will disable digitizer output

#### Issue 267: Checking block 8 in Comtest version 134 using the PX controller causes blue screen crash. Bad\_Pool\_Header Stop: 0x00000019. This was fixed in the 7.13.2 functional driver. The USB “Local write” function was using fixed size buffer of 256 and block 8 for PX is bigger.

#### Issue 165: Rotating display on some configurations of touch device behavior (digitizer vs. mouse) does not track with touch. This is fixed in driver.

# CHANGES FOR VERSION 7.13.1

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### Issue 199: The installer now queries the user if to use the touch digitizer, HID mouse, or legacy mouse drivers. Before the installer attempted to exclusively use the touch digitizer for Windows 7 and Server 2008 R2 and the HID mouse driver for all other operating systems unless the user selected an obscure legacy support option.

#### Issue 238: The Monitor program is now responsible for sending ‘beeps’ to the system speaker. The drivers no longer send beeps to the system speaker.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Test Submission 1

#### Obsoleted the old patch parts 31888. 31889. 31890, 31891, 31892, 31893, and 34681.

## ISSUES ADDRESSED

### Test Submission 1

#### Issue 188: The calibration data of a CX controller now is restored correctly if a calibration is canceled or otherwise fails.

#### Issue 189: Successful linearization of a CX controller now triggers calibration.

#### Issue 203: Corrected the handling of pen and finger frequencies for the SX controllers.

#### Issue 226: Fixed a memory leak related to loading auxiliary databases. The Monitor program triggered this leak.

### Release Candidate 1

#### Issue 192: The installer properly detects the type of driver previously installed.

#### Issue 196: The HID mouse driver now supports the right-click tool. Do not use the right-click tool with the touch digitizer driver; instead use the native Windows right-click feature for touch.

#### Issue 200: The serial bus driver no longer sends diagnostic messages to the system event log.

#### Issue 225: The Control Panel’s About dialog now properly identifies the latest Windows operating systems.

#### The installer now copies TwFramework.cfg to the install directory. This reverts to the behavior seen in earlier versions of MT7 but removed in the first release of MT 7.13.

#### The installer removes the file TwHIDKmdf.sys when installing the legacy driver on a system that previously used the touch digitizer or HID mouse driver.

#### Upon uninstall, the MT 7 package removes old devices generated by the Windows HID subsystem when a PX controller was connected to a system before installing MT7.

#### The touch digitizer driver now supports the lift-off touch mode.

#### The drivers now support the production PX controllers. The drivers still support the legacy version of the PX controller found in the multi-touch development systems.

#### The drivers more reliably recover touch from serial controllers after exiting a system sleep mode.

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Test Submission 1

#### Issue 159 (partial resolution): The INF file for the HID-compatible drivers now show the appropriate brand names for controllers. The INF file for the legacy driver still has the old brand names.

#### Issues 181, 182: Changed the driver to reduce the chances of crashes and to support WLK testing. This includes improvements to the handling device addition, start, stop, and removal actions, internal I/O controls, serial read IRPs, USB driver error statuses, and power management.

#### Changed the driver to allow unloading if there was a failure with an application opening it.

#### Added a note to the Readme regarding the lack of serial plug-and-play support for the development PX units.

### Release Candidate 1

#### TwUICompiler now includes the header file ‘wchar.h’ to allow Linux compilation. This does not affect any builds for Windows products.

#### Issue 149: The XML parser programs used to generate common header files now reliably produce the proper XML files during editing. The errors were introduced during the conversion to Visual Studio 2008.

#### The parameters PhysicalHeight and PhysicalWidth now default to 0, allowing programs to query the controller for their size.

#### Issue 159: All INF files now show the proper controller brand names.

### Release Candidate 2

#### The installer now applies TwFramework.cfg and TwFactory.cfg after driver installation.

#### Issue 242: The installer now better detects the support for touch digitizers. The test, exported from MT7UnInst.dll, now solely depends on the detection of the Tablet PC Input service.

#### Issue 243: The installer now has a new driver select dialog. It refers to both the User Guide and the Readme.txt for details.

#### Issue 244: The installer now removes all device instances before installing the main driver. This uses the new PURGEALL command added to AddRemoveDrv.exe.

### Release Candidate 3

#### Corrected a problem with the AddRemoveDrv.exe program that corrupted memory when using the REMOVE command line argument. This had the side effects of removing random devices from the system and requesting unneeded reboots of the system.

#### Reworked the wording of the driver selection notice. This corresponds to the wording in the pending user guide.

### Release Candidate 4

#### Update the User Guide.

#### Added a note in the unpublished issues regarding the loss of support for the 19” PCT development systems.

# CHANGES FOR VERSION 7.13.0

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### The MT 7 Software now supports the Microsoft Windows Server 2008 and Windows 7 operating systems. The Microsoft Windows 2000 operating system is no longer supported.

#### The MT 7 Software now supports the new PX series of projected capacitive controllers.

#### The MT 7 Software driver now emulates a HID device instead of a mouse. If you want your touch screen system to still emulate a standard mouse, use the custom installation option and select the ‘Legacy Driver’ option under the ‘Utilities and Tools’ group.

### Release Candidate 1, Respin 4

#### Issue 126: The MT 7 help file is now contained within the file MT7Help.pdf. The old CPHelp subdirectory no longer exists.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### The MT 7 Software now reflects the new brand names of the Touch Systems’ controller.

#### Added the new parameters HIDMode, PhysicalHeight, and PhysicalWidth for HID support in the driver.

#### TwRegSvc no longer issues an error message if there is a failure to stop the service.

### Release Candidate 1, Respin 2

#### The TwBus.sys and TwTouch.sys drivers are now certified for Windows 7.

#### A new driver, TwHIDKmdf.sys, is installed with a selection of the default HID driver.

### Release Candidate 1, Final 2

#### Issue 213: Included Rev 07 of the user documentation to address some rebranding issues.

#### Issue 219: Rebuilt four binaries, TwMonitor.exe, TwCommon.dll, TwIO\_Serial\_PX\_Series.dll, and TwIO\_USB\_PX\_Series.dll, to statically link the C runtime library. This obviates the need for the VC 9.0 redistributable package so the installer and Readme.txt have also changed.

## ISSUES ADDRESSED

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 1

#### TwRegSvc.exe now has a proper version stamp.

### Release Candidate 1, Respin 1

#### Issue 147 (Partial): Built TwCommon\_JNI.dll for the first time.

#### Issue 148: Corrected the editing of table values in the XParamEdit.exe.

#### Issue 153: Corrected version information in TwCfgUtil.exe.

#### Issue 154: Corrected version information in TwSystem.dll.

#### Rebuilt all of the TwAppIO.dll and TwIO\_\*.dll libraries so that they conform to development standards.

#### Corrected a crash in XML document processing in TwCommonDev.dll. This was due to bad code made apparent by the VS 2008 conversion.

#### Temporarily fixed a crash in TwCommon.dll that occurs if the PATH environment variable is too long. This appeared usually as a crash when starting the Control Panel. A permanent fix will be made later.

#### Corrected a crash in string processing in TwCommon.dll. This was due to bad code made apparent by the VS 2008 conversion.

#### Corrected an error in the installer that would upgrade the ‘EX Serial’ module if only the ‘SX Serial’ module was previously installed.

#### Added a temporary option to select the legacy driver.

### Release Candidate 1, Respin 2

#### Issue 155: The Control Panel now properly reports the information for a SX controller.

#### Issue 157: A restructuring of the code indirectly fixed the information appearing for the CX controller in the Control Panel. This code was deployed in Respin 1.

#### Issue 158: Changed the names displayed in the Control Panel for the RX series controllers. A former serial SC400/800 is now RX142/RX182, a serial SC500 is now RX152, a USB SC400/800 is now RX141/RX181, and a USB SC500 is now RX152.

#### Issue 160: Installation dialog showing the type of driver selected is now removed.

#### Corrected an apparent issue with command line parsing in TwService. It is unclear if this problem would have presented itself during testing but could have failed if there was a second command line argument. A problem would have been evident during installation, removal, and system startup.

### Release Candidate 1, Respin 3

#### Issue 150: Fixed the crash in TwUIXMLParser by changing how TwCommonDev.dll implemented tinyXML.

#### Issue 156: A conversion error in TwMonitor.exe caused the program to create its windows with the wrong names. The installation and uninstallation processes were unable to kill TwMonitor leading to locked files and other errors.

#### Issue 162, 163: Corrected the installer to properly install the new HID driver.

#### Implemented a permanent fix for the error in TwCommon.dll regarding the reading of the PATH environment variable. Respin 1 contained a temporary fix.

#### Corrected a command line handling error in TwUICompiler.exe introduced in the conversion to Visual Studio 2008.

#### Added the DisplayScreen parameter. This was for Linux support but appears in the Windows version. The affected files at TwLangEng.dll and TwConfig.dll. Release candidate 1, respin 0 contained this change.

#### For the last Linux 7.12 build, changes were made to linearization that affected the Windows code base. The first occurrence of this code was in release candidate 1, respin 0. This affects the TwCalibLib.dll and TwCalib.exe files.

#### Corrected a race condition in the driver that occurs with a ‘fast’ application reading the driver. The first occurrence of this code was in release candidate 1, respin 0. This affects the TwTouch.sys file.

#### Corrected an error with the implementation of the BounceActivationDeadband parameter that forced an unwanted delay of single taps. The first occurrence of this code was in release candidate 1, respin 0. This affects the TwTouch.sys file.

#### Applied a fix to the Control Panel’s ‘Edge Adjustment’ page that appeared under Linux. The first occurrence of this code was in release candidate 1, respin 0. This affects the Control Panel.

### Release Candidate 1, Respin 4

#### Issue 152: Corrected the error in the control panel that expanded its height with each configuration update.

#### Issue 167: Changed the installer to use the HID mouse mode when installing the HID-compatible driver on the XP operating system.

#### Issue 168: Corrected the error in the control panel that caused the tabs to be invisible.

#### Issues 172, 183: Corrected an error with the software reading and writing the frequency setting of EX serial controllers. The 7.13 versions of the TwIO\_Serial\_EX and TwIO\_Serial\_SX modules introduced this problem.

#### Issue 173: Resolved an issue with the RX serial controllers where the software failed to parse command responses in the midst of a stream of touches. The 7.13 version of the TwIO\_Serial\_RX module introduced this problem. A similar problem was fixed within the TwIO\_Serial\_PX module.

#### Issue 176: Corrected a timing error that caused a failure writing block data to the RX USB controller.

#### Issue 179: Corrected a spelling error in the PX USB control panel page that prevented the software from displaying the controller’s tab. Also excised some unused code from the module.

#### Issue 180: Resolved an issue with the CX controllers where the software would not display the proper control panel tab.

#### Issue 186: Resolved an issue with DX USB controllers where the software would not write block data correctly. The exhibited itself by the failure to restore calibration data. The 7.13 version of the TwIO\_USB\_Passthru module introduced this problem.

#### Issue 190: Changed the installer to install the serial bus driver whenever the PX serial controller is selected.

#### The installer now automatically installs the Visual C++ 9.0 redistributable files.

#### The file TwFramework.cfg is no longer installed. The new installer should remove it and keep it internally.

### Release Candidate 1, Final

#### Issue 166: The TwMonitor program no longer crashes after using the Multi-monitor Mapper program. This was fixed in a prior respin but not properly documented.

#### Issues 178, 190: The installer now installs and starts TwService when the user selects only the PX serial support.

#### Issue 195: Calibration now asks for pen or finger calibration if the controller is in pen-finger mode and the user has not previous specified which mode to use. This support was broken in a prior 7.13.0 release candidate.

#### Issue 197: The installer now also installs the policy module for the Visual C++ 9.0 redistributable module. The readme also has a note about manually installing the Visual C++ 9.0 redistributable download from Microsoft.

### Release Candidate 1, Final 2

#### Withdrew the claims that the /M:P and /M:F switches in TwCalib work. This is now a known issue.

#### Issue 109: Readme.txt now has the correct names of the controllers.

#### Issue 115: The installer now has the correct names of the controllers.

#### Issue 119: TwService now has the correct branding.

#### Issue 204: Corrected the title and copyright in the Installer.

# CHANGES FOR VERSION 7.12.6

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### MT 7 now supports XP/2003/Vista AMD 64 bit systems.

#### CX100 USB support is introduced.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### Improved DST de-bounce algorithm added

## ISSUES ADDRESSED

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

# CHANGES FOR VERSION 7.12.5

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### Installer upgrade from TouchWare 5.6x is introduced.

#### EX II HID support is introduced.

#### Full monitor rotation handling is implemented. It supports rotation on multiple monitors and calibration and linearization while the display is rotated.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### Right click on hold implemented

### Release Candidate 2

#### Size of Linearization Test targets is now same in landscape and portrait mode.

#### Exiting linearization target test is now handled better. The prior linearization data will be resorted if user escapes or times out of target test screen. Before the linearization was not restored.

## ISSUES ADDRESSED

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 2

#### Escaping out or timing out of EX II HID calibration after the third target, the old calibration is now being restored.

#### Removing TouchWare is now really working in installer.

#### Hitting escape keyboard key in calibration test or linearization test screen will exit the screens without delay.

#### Calibrating DST controllers will have again “Tap” in the screen instructions.

# CHANGES FOR VERSION 7.12.4

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### Added calibration support for DST revision 16 controllers.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

## ISSUES ADDRESSED

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

# CHANGES FOR VERSION 7.12.3

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### Windows Vista operating system security issues resolved.

#### Localization capability is introduced.

#### Monitor rotation handling is introduced.

### Release Candidate 2

#### MT 7 now supports WePos.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 2

#### Dragging right click button is now possible without waiting for drag timeout (useful for DST support).

## ISSUES ADDRESSED

### Release Candidate 2

#### Issue 985 and 986: Addressed installer issue when only TP controller support is selected.

#### Issue 997: Display numbering in Multiple Monitor Manager now matches to Windows Display Property numbering scheme.

#### Issue 996: Multiple Monitor Manager handles mapping correctly using touch screen.

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 2

#### Orientation on older Windows 2000 (before SP 4) was not detected correctly.

#### ssue 1005: Fixed the language library loading when starting application links from Start menu (MMManager and Calibration utility).

#### Issue 1004: Calibration was crashing because the language library could not be loaded. By loading this library the crash is gone.

#### Issue 1006: Configuration library changed to handle current user registry used by TwMonitor to save right click position.

# CHANGES FOR VERSION 7.12.2

## FEATURES AND ENHANCEMENTS

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

## ISSUES ADDRESSED

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

# CHANGES FOR VERSION 7.12.1

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### All MT 7 drivers are now WHQL-certified for the Windows Vista operating system.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

## ISSUES ADDRESSED

### Release Candidate 1

#### Issue 612: Since the drivers are now certified, the installer no longer has a problem reacting to a user selecting “Cancel” on the dialog asking to install an uncertified driver. Before, the installer continued installation.

### Patch 1 Release Candidate 1

#### Issue 1004: Calibration for serial SC touch controllers may fail on fast CPUs.

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 1

#### The installer should install only on 32-bit Windows operating systems.

# CHANGES FOR VERSION 7.12.0

## FEATURES AND ENHANCEMENTS

### Release Candidate 5

#### Multiple monitor and touch screen support is now available. The Multiple Monitor Manager tool allows the assignment of touch screens to different monitors.

#### The control panel allows selection of a controller to configure. This allows configuring individual controllers when multiple controllers are present. If only one controller is present, that controller is automatically selected.

#### The control panel allows assignment of a unique ID number to a controller. This enables the Multiple Monitor Manager to identify the correct controller during mapping. The Advanced Options tab in the control panel allows access to the unique ID number assignment.

#### This release of MT 7 also provides a new edge adjustment tool. This tool defines a region of the touch screen that positions a touch closer to the edge to compensate for the inability to touch near a bezel.

#### The installer is smaller to ease the downloading of MT 7. The process of recording a silent installation and replaying it has changed. Unlike the prior uninstaller, the new uninstaller just uninstalls the product; to upgrade the product, you need to rerun the Setup.exe file. The installer should also resolve all issues with conflicts with older drivers.

#### Another enhancement is the controller reset button. This button in the control panel resets the firmware on a touch screen controller. This is mostly a diagnostic tool.

### Release Candidate 15

#### MT 7 now supports Windows Server 2003 and Vista.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

Note that this release candidate is solely for the purpose of performing a WHQL test on the driver TwTouch.sys.

#### Removed references to IST touch screen controllers from TwTouch.inf.

#### Changed the development tool XDrvrEdit.exe to generate the TwDrvWindowsControlCode.h and TwDrvLinuxControlCodes.h files. This is for development only and does not appear in the distribution package.

#### Revised the controller exclusion algorithm in the driver TwTouch.sys. Unsupported controller recognition modules were removed to reduce code size. The result is that some controllers that were formerly positively recognized and rejected could now be recognized by more general controller recognition modules. For example, the TP4 and IST serial controllers are now recognized as legacy serial controllers.

#### Changed the TwTouch.inf file to use the variable name “MMM” (3M) instead of “MSFT” (Microsoft) for the manufacturer name variable. Also changed the descriptions of the various supported hardware identifiers to be more specific.

#### Disabled code in TwTouch.sys to reduce file size. These routines were not used and only used space.

#### Added a parameter, “SuppressReboot” to control TwTouch.sys’s automatic rebooting of EX II USB touch controllers in ROM/Fixed code. Setting this parameter to 1 disables the feature. The default value, 0, retains the old behavior. In conjunction with this, the controller ID for a ROM mode controller is now “USBFFFFFFFF”. This is needed to allow firmware downloads.

#### Added a new I/O control to TwTouch.sys, UpdateControllerID, to force the driver to reread the controller’s ID from the controller. This is used in conjunction with writing new controller ID’s.

### Release Candidate 2

Note that this release candidate is solely for the purpose of performing a WHQL test on the driver TwTouch.sys.

### Release Candidate 3

Note that this release candidate is solely for the purpose of performing a WHQL test on the driver TwTouch.sys.

#### Added support for the Windows Vista Beta 2, 32-bit operating system.

### Release Candidate 4

Note that this release candidate is solely for the purpose of performing a WHQL test on the driver TwTouch.sys.

#### Added a new parameter “AsyncReconnectDelay” to address a problem where touch is lost with USB controllers. This parameter, if set to a non-zero value, causes the driver to re-establish a dropped interrupt endpoint after delaying the given number of milliseconds. The parameter’s default value, 0, disables the re-establishing of the endpoint, mimicking the behavior of earlier drivers.

#### Added a new I/O control “GetAsyncStatus” which returns the number of times the interrupt endpoint has disconnected and the endpoint’s current state.

#### Added two new states to the driver’s Device event: DeviceAsyncStarted and DeviceAsyncStopped.

### Release Candidate 5

This is the first full release candidate for MT 7.12.

The Help files and readme.txt are not current.

#### Removed all IST related parameters from the configuration library (TwConfig.dll, TwLangEng.dll).

#### Added support for the AllowAccessIdentifier, AsyncReconnectDelay, and SuppressReboot parameters (TwConfig.dll, TwLangEng.dll).

#### Created a system information library that supports the Multiple Monitor Manager and other libraries (TwSystem.dll).

#### Added support in the graphics library for picture frames, resizing windows, and line styles; changed the calling conventions when accessing native windows, creating the routines TwGraphCreateDrawWindowGraph, TwGraphCreateDrawWindowNative, TwGraphMessagePopupNative and deprecated the routines TwGraphCreateDrawWindow and TwGraphMessagePopup; deprecated the unimplemented routines TwGraphSetTextAspectRatio and TwGraphGetTextAspectRatio (TwGraphics.dll).

#### Moved the controller-specific calibration code from the calibration library into the application I/O library (TwAppIO.dll, TwCalibLib.dll, TwIO\_\*.dll).

#### Changed the calibration library to use the new system information library; changed to support the new interface to the graphics library; changed the code to be OS independent (TwCalibLib.dll).

#### Added support for PNG files that are encoded in true color without alpha shading and support for transparencies for encodings without alpha shading (TwCommon.dll).

#### Added the following routines to the application I/O and support libraries: TwAppIO\_Calibrate, TwAppIO\_Get\_Identifier, TwAppIO\_Set\_Identifier, TwAppIO\_Get\_Orientation, TwAppIO\_Set\_Orientation, TwAppIO\_Collect\_Raw\_Data, TwIO\_Core\_Get\_Driver\_Event\_State, TwIO\_Core\_Set\_Driver\_Event\_State, TwIO\_Core\_Disable\_Touch, TwIO\_Core\_Get\_Device\_Count, TwIO\_Core\_Get\_Device\_ID, and TwIO\_Core\_Get\_Port\_ID (TwAppIO.dll, TwIO\_Core.dll, TwIO\_\*.dll).

#### Added support for vertical combo boxes, programmatic population of combo boxes, and a controller ID internal variable to the UI engine (TwUIEngine.dll, TwUIXMLParser.dll).

#### Started support for embedded graphics in the Control Panel. This is unused (TwUIEngine.dll, TwUIXMLParser.dll).

#### Expanded the SW License Dialog library to include more customization of the installer (TwLicenseDlg.dll).

#### Enabled installation on Windows Vista.

#### The old AddRemoveDrv.exe, InstallDriver.bat, and RemoveDrv.bat are no longer supported. A new AddRemoveDrv.exe replaces these files. This program can run from the command line to install and remove inf files from the system (AddRemoveDrv.exe).

#### Changed the installer to replace the driver for devices known to the system but currently absent (AddRemoveDrv.exe).

#### Silent uninstallation suppresses reboot message generated when the MT 7 drivers are removed (MT7UnInst.dll).

### Release Candidate 6

This release candidate is solely for the purpose of performing a WHQL test on the driver TwTouch.sys.

### Release Candidate 7

This release candidate was not submitted to QA. It was built to satisfy a beta request from a customer.

### Release Candidate 8

This test needs to perform a WHQL test for the core driver, TwTouch.sys. Also, since RC7 was never submitted to QA, the items in RC7 need to be tested as well.

### Release Candidate 9

This release is a driver test only for WHQL certification.

### Release Candidate 10

This release candidate is a preliminary release. It is missing the WHQL certification file and the help file.

### Release Candidate 11

This release candidate, in addition to the correction and feature changes listed, has the WHQL certification file for the driver. The help file has not been updated.

#### DST no longer appears as a controller option during installation. To enable the DST options, you need to create a file called “custom.ini” in the same directory where the Setup.exe program resides. This file needs to contain the line “DST=1”.

#### The controller tabs in the Control Panel now appear after the Tools tab. (TwIO\_Serial\_DST.dll, TwIO\_Serial\_EXII.dll, TwIO\_Serial\_EXII\_TouchPen.dll, TwIO\_Serial\_Legacy.dll, TwIO\_Serial\_SC\_Series.dll, TwIO\_USB\_DST.dll, TwIO\_USB\_EXII.dll, TwIO\_USB\_SC\_Series.dll)

#### Changed the text associated with the controller ID on the Controller pages to refer to the help file. (TwIO\_Serial\_DST.dll, TwIO\_Serial\_SC\_Series.dll, TwIO\_USB\_DST.dll, TwIO\_USB\_EXII.dll, TwIO\_USB\_SC\_Series.dll)

#### Changed the serial search service to respond to the SerialDisableSearch, SerialPortNoSearch, SerialPortSearch, SerialTimeout, TouchScreenSearchDelay, and TouchScreenSearchTries parameters. (TwService.exe)

#### Change the serial search service to log errors to the system event log. (TwService.exe)

### Release Candidate 12

#### This release candidate now has the new version of help files.

### Release Candidate 13

The release candidate resolves a quality hold placed on the product after it was released into Agile.

#### The configuration library has a new routine ‘TwConfigGetTransactionInstanceID’. This routine provides the same support for configuration transactions as given by the routine ‘TwConfigGetInstanceID’ for non-transaction queries.

### Release Candidate 15

#### Added a note regarding security on Windows Vista along with official support for Vista.

#### Restored explicit support for the DST electronics.

## ISSUES ADDRESSED

### Release Candidate 5

#### Issue 52: During installation, there is no indication, such as an hour glass cursor, that the Setup program is working.

#### Issue 162: The setup tool does not respond to the Cancel button once it starts to copy files.

#### Issue 182: The uninstall tool fails if any MT 7 programs are open, such as the control panel.

#### Issue 221: The setup and uninstall tools may create extraneous DOS windows. These close automatically.

#### Issue 253: The uninstaller does not remove any auxiliary or user data. This is done by design.

#### Issue 342: A silent installation does not detect the presence of an old copy of TouchWare and installs MT 7 anyways. Upon rebooting, MT 7 is not operational.

#### Corrected spelling and grammar mistakes in the calibration library (TwCalibLib.dll).

#### Improved text out of the calibration library to prevent cropping (TwCalibLib.dll)

#### Improved calibration timeout for USB controllers (TwCalibLib.dll).

#### Calibration temporarily changes the touch mode to “draw” mode during calibration. Before, the “draw” test would not work properly (TwCalibLib.dll).

#### Corrected a problem where calibration screens appeared only on the first monitor instead of the one being calibrated (TwCalibLib.dll).

#### Added an “/I” command line switch to ignore the last dialog normally presented by the standalone calibration tool (TwCalib.exe).

#### Changed the label of the controller-specific tabs in the Control Panel to “Controller”. This used to be the name of the controller family. This name is now available on the page itself. (TwIO\_\*.dll).

#### Reduced the amount of text explaining linearization and frequency selection (TwIO\_Serial\_EXII.dll).

#### Removed the tooltip (flyover) associated with the “Calibrate” button in the control panel (TwUICP.dll).

#### Removed the communication port field from the calibration tab of the control panel (TwUICP.dll).

#### Relabeled the “Controller Information” box to “Support Information” on the calibration tab of the control panel (TwUICP.dll).

#### Reorganized the old “Reset Software” and “Restore Controller” to be included in a box called “Restore Factory Settings”. The individual buttons are now called “Software” and “Controller” (TwUICP.dll).

#### Calibration now allows the calibration of a touch screen in a multiple monitor situation and there is no corresponding entry for it in the configuration database. In such cases, the touch screen is assumed to be mapped to the first display (TwCalibLib.dll).

### Release Candidate 6

#### Restored an accidentally deleted feature so that EX II USB controllers are now reset when first connected with driver.

### Release Candidate 7

#### Issues 592, 812: There are three touch targets presented during calibration. For SC controllers, the third target is for the controller’s three-point calibration. For other controllers, the third target is a software target that does not affect the controller’s calibration. Before, the calibration terminated with a liftoff for SC controllers and a touchdown for other controllers. Now, the software waits for a liftoff for all controllers.

#### Issue 814: The control panel’s “Version Information” tool now shows the version number of the TwService.exe program.

#### Issue 850, 859: The Touch Monitor program is no longer an option and is now always installed.

#### Changed the EX II serial controller initialization to include a reset command.

#### Changed TwService.exe to statically link against the MFC libraries.

### Release Candidate 11

#### Issue 274: The uninstaller now removes any configuration data in the registry. Some Windows related entries may remain.

### Release Candidate 13

#### Addressed an installer error which disabled calibration if only EX II serial support was requested. This was observed on early copies of MT 7.12.

#### Addressed a calibration problem observed with serial controllers on newer, faster CPUs. This was observed on early copies of MT 7.12.

#### Addressed an issue where the Control Panel reported the wrong frequency for capacitive EX II controllers if the frequency used was not one normally supplied by the Control Panel.

#### Changed the display of the EX II controller frequency so that it is now in whole numbers.

#### Addressed an issue where the Multiple Monitor Manager would crash the first time it was run on some systems. This was observed on early copies of MT 7.12.

#### Addressed an issue in the installer which failed to properly create a custom installation path during a silent installation. This was observed on early copies of MT 7.12.

### Release Candidate 15

#### A new message now appears when a touch screen controller’s frequency is changed informing the user not to touch the touch screen.

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 2

#### Corrected an error in the UpdateControllerID I/O control that caused a driver crash.

#### As part of a review by Herve Houde on March 29, 2006, the following active issues are now considered closed:

#### Issue 328: HID Calibration Tool release notes need to be updated.

#### Issue 329: HID Calibration Tool installer offers a custom installation even though there are no options.

#### Issue 336: HID Calibration Tool can produce a large data if previous calibration data is present.

#### Issue 346: MT 7 for Windows’ silent installation does not work.

#### Issue 347: MT 7 for Linux’s calibration tool does not recognize TP5 controllers.

#### Issue 349: MT 7 for Linux’s touch monitor tool does not launch automatically.

#### Issue 372: MT 7 for Linux’s readme file does not mention support for SC controllers.

#### Issue 379: MT 7 for Linux’s control panel does not display as much operating system information as its Windows counterpart.

#### Issue 407: MT 7 for Windows CE’s #include directive in the .bib and .reg files do not work.

#### Issue 420: MT 7 for Windows CE’s driver does not work under Windows CE 4.2.

#### Issue 421: MT 7 for Windows’s driver occasionally puts a message in the system event log about a subsystem start failure.

#### Issue 500: MT 7 for Windows’ control panel does not reflect a touch pen controller’s pen/finger setting after a “Restore Defaults” command is sent to the controller.

#### Issue 524: MT 7 for Windows’ control panel does not properly update the double click parameters for a multiple monitor system.

#### Issue 557: MT 7 for Windows’ right-click button displays an hourglass cursor when used with an NFI/IST controller.

#### Issue 562: MT 7 for Windows’ calibration tools fails if the configuration database contains definitions for other controllers but not the sole attached controller.

#### Issue 596: MT 7 for Windows’ control panel can have several instances running. This is a feature.

#### Issue 616: MT 7 for Windows CE’s version information screen is in lowercase letters. This is a feature.

#### Issue 727: MT 7 for Windows cannot start linearization for EX II 7000 controllers.

### Release Candidate 3

#### Corrected a crash in the driver that occurred when two USB controllers have the same ID number. Now, the driver appends a “.#” to the ID, where the “#” is a unique number. This number is purely a software function and does not affect the controllers.

### Release Candidate 5

#### Issue 106: The driver test program shows multiple error messages when there is no controller attached to a port and an operation is attempted on that port. (This is should not be logged as an issue).

#### Issue 338: The driver does not support the Merit double touch event.

#### Issue 444: A custom installation can produce a file InstallErr1.log.

#### Issue 527: The touch monitor is not sensitive to the “right-handed/left-handed” mouse settings. (This is now tracked under issue 816.)

#### Issue 528: The driver crashes if an NFI V serial controller is present.

#### Issue 657: Setting the IST touch screen type is slow.

#### Issue 680: The IST and SC USB controllers report the version number of the front-end processor and not the touch processor. This is a function as designed.

#### Issue 760: The driver does not recognize a serial DST controller unless it is at 9600 baud.

#### Issue 766: The touch monitor is not sensitive to the “right-handed/left-handed” mouse settings. (This is now tracked under issue 816.)

#### Issue 767: The files cleaninstall.bat and installdriver.bat appear to have diagnostic messages in them.

#### Issue 781: The DST serial controller is not found after installation.

#### Issue 800: A driver crash can be induced by using a serial DST controller and in the control panel, touching in order these buttons (touch down, lift off, each touch sound, right-click enable), dragging the right-click button, and then adjusting the double-click settings.

#### Issue 811: The uninstaller refers to the SMT3 controller family when it should not.

#### To support porting to processors that require word alignment of data, code was changed where it implicitly relied on byte alignment of data. There are no functional changes. (TwCommon.dll)

#### Corrected an error in the TwString class’ member function “Trim”. This contributed to the Control Panel failure in Windows Vista Beta 1. (TwCommon.dll)

#### Added support in the TwString class for casting to const char \*. (TwCommon.dll)

#### Corrected the positioning of graphic windows. This caused windows to appear on the wrong screen in multiple monitor setups. (TwGraphics.dll)

#### Corrected graphics line drawings to properly support line end caps, line joins, and line styles. (TwGraphics.dll)

#### Fixed the graphics library so that it no longer deleted windows not created by itself. (TwGraphics.dll)

#### Fixed graphics library so that drawn text boxes were properly sized. Before the right and bottom sides were too small. (TwGraphics.dll)

#### Changed the background color of message boxes from white to a shade of blue. (TwGraphics.dll)

#### Improved the detection of invalid parameters passed into the Application I/O library routines. (TwAppIO.dll)

#### Changed the behavior of TwAppIO\_Open so that if a controller is not present, a default set of routines are used to service the connection. Before, the open attempt failed. (TwAppIO.dll)

#### Changed the routine TwAppIO\_Get\_Touch\_Response to initialize the whole TwCoord structure instead of just populating certain members. (TwAppIO.dll)

#### Changed various application I/O routines to correctly handle a 0 millisecond timeout. (TwAppIO.dll, TwIO\_\*.dll)

#### Added the routines TwIO\_Get\_Orientation, TwIO\_Set\_Orientation, TwIO\_Get\_Driver\_Event\_State, TwIO\_Set\_Driver\_Event\_State, TwIO\_Disable\_Touch, TwIO\_Get\_Device\_Count, TwIO\_Get\_Device\_ID, TwIO\_Get\_Port\_ID, TwIO\_Get\_Identifier, TwIO\_Set\_Identifier, TwIO\_Get\_BlockHID, and TwIO\_Set\_BlockHID (TwAppIO.dll, TwIO\_\*.dll).

#### Improved parsing of serial controller responses (TwIO\_Cobra.dll).

#### Now delays the execution of the controller reset and restore default buttons until there is no touch on the touch screen (TwUICP.dll).

#### Introduced a 2000 millisecond delay in the Control Panel from when it detects a plug-and-play event and it updates its controller information (TwUIEngine.dll).

#### Changed the text input controls to properly pad if needed (TwUIEngine.dll).

#### Disabled calibration from writing alignment data to the configuration database (TwCalibLib.dll).

#### Changed the installer to overinstall MT 7.00 instead of requiring that to be uninstalled (Setup.exe).

### Release Candidate 6

#### Issue 816: The driver now properly responds to the SwapMouseButtons parameter under Windows 2000 or better or Windows XPe. Note that there is now no linkage between Windows’ swap mouse button feature and the drivers.

### Release Candidate 7

#### Issue 819: Shortcut icons do not appear under XP (Installer).

#### Issue 820: Icons do not appear in the Control Panel when installed in a custom directory (TwCommon.dll).

#### Issue 823: Unable to access help when installed in a custom directory (TwCommon.dll).

#### Issue 837: The title of the legacy serial support page should be “Controller” (TwIO\_Serial\_Legacy.dll).

#### Issue 838: The linearization text of the legacy serial support page should match that of the EX II serial support page (TwIO\_Serial\_Legacy.dll).

#### Issue 839: The controller type for some older legacy serial controllers is random (TwIO\_Serial\_Legacy.dll).

#### Issue 841: The “restore controller” button is now disabled if no controller is present (TwUICP.dll).

#### Issue 845: The controller type for an EX II USB controller running ROM code is incorrectly labeled as “EX II USB” (TwIO\_USB\_EXII\_Fixed\_OS.dll).

#### Issue 847: The edge adjustment tool’s “Test” button now works if there are no controllers attached (TwUICP.dll).

#### Corrected an error in the Unicode string handling. This error did not show itself in the MT 7.12 product but did in its support tools (TwCommon.dll).

#### Revised the “recycle” graphic used with the reset controller button (recycle.png).

#### The file TwFramework.cfg is no long installed (Installer).

#### The core driver now handles the double PnP string issued by the DST and SC serial controllers on some noisy systems. Before, the driver would mistakenly identify these controllers are legacy controllers (TwTouch.sys).

#### The core driver now correctly recognizes quick touches on serial controllers. Before, quick touches were lost (TwTouch.sys).

#### The readme file is now updated.

### Release Candidate 8

#### Issue 833: The installer now properly handles errors from the SetupDiGetDeviceRegistryProperty routine. The error occurred when the device was “unknown”. Now, the AddRemoveDrv program marks it to have its driver re-installed.

#### Issue 836: Corrected AddRemoveDrv so that the driver TwBus.sys is properly installed on all systems.

#### Issues 856, 857: Corrected the multiple monitor manager to correctly handle all screen configurations and avoid the truncation or absence of some display icons. (TwMMManager.dll).

#### Corrected a coding error in calibration that could cause the calibration screen to appear on the wrong display.

#### Change the calibration library (TwCalibLib.dll) to use the new system library (TwSystem.dll) to get its display information.

#### Changed the installer to always force the operating system to scan for new hardware. Previously, the installer did this only when installing serial support.

#### The AddRemoveDrv program no longer requires a full path for its file names. This remedies many installation problems.

#### The AddRemoveDrv program performs a more exhaustive search for devices. Previously some HID devices were missed.

#### The AddRemoveDrv program now correctly cleans out the critical device database during an uninstall. Before, this database was left intact causing the operating system to remember the device and driver relationship.

#### Added reboot support to the EX II support routines (TwIO\_Cobra.dll, TwIO\_USB\_EXII.dll, TwIO\_USB\_EXII\_Fixed\_OS.dll).

#### Fixed a display error in the multiple screen manager. (TwMMManager.dll).

#### The application display count and locations are now computed from the MT 7 database instead of the system database. This is consistent with the driver’s behavior. (TwSystem.dll).

#### Corrected an error in the computation of the edge adjustment error that appeared in multiple touch screen systems. (TwUICP.dll).

#### Corrected an error in the user interface that could miss a plug-and-play event. (TwUIEngine.dll).

#### Improved the reboot sequence of the EX II USB controllers in ROM mode. (TwTouch.sys).

#### Improved error checking in the core driver. This should avoid crashes but may result in no touch. (TwTouch.sys).

#### Corrected a flaw in the driver that lost touch from a USB controller when returning out of a power save mode. This could have caused a crash too. (TwTouch.sys).

#### Corrected a flaw where the driver would crash if a controller was removed while the system was in a power save mode. (TwTouch.sys).

#### Reduced the size of the driver’s event queue. It was set inappropriately high. (TwTouch.sys).

#### Futher improved the handling of an SC serial controller in constant touch. (TwTouch.sys).

### Release Candidate 9

#### Altered the internal interaction between data acquisition from the controllers and the reading of buffered data by applications. This caused problems on fast machines that manifested themselves as application errors.

### Release Candidate 10

#### Issue 866: The release notes now accurately document the version number of TwCalibLib.dll.

#### Issue 874: The controller ID for a serial SC and DST controllers no longer has a USB prefix. (TwIO\_Serial\_DST.dll, TwIO\_Serial\_SC\_Series.dll)

#### Issue 879: For an EX II serial controller, the targets in the 16-point verification no longer advance without a liftoff. Other controllers should have been affected as well. (TwCalibLib.dll).

#### Changed the behavior of application to match the driver behavior where a display number not defined in the Displays section of the parametric database maps to the entire desktop. (TwCalibLib.dll, TwMonitor.exe, TwSystem.dll, TwUICP.dll).

#### Changed the internals of the calibration that could cause the lift off of the third target to be missed. (TwCalibLib.dll).

#### Changed TwMonitor to remove entries of displays that no longer exist, presumably after the display has been disabled. (TwMonitor.exe).

#### Changed the UI Engine and Touch Monitor to poll the driver for events more frequently so that device arrival and departure events are not missed. (TwMonitor.exe, TwUIEngine.dll).

#### Changed the edge adjustment border from red to a shade of blue-green. (TwUICP.dll).

#### Changed the controller ID update process to confirm the controller is responsive after writing the new ID. This avoids a problem with some controllers, such as the SC USB controller, that do not report the proper ID immediately after a write. (TwAppIO.dll).

#### Changed the writing of controller IDs to serial controllers to use the full eight-character hexadecimal ID number. (TwIO\_Cobra.dll).

#### Removed unused, EX II-specific, code from the serial legacy support. This code was never accessed but was incorrect and did not belong. (TwIO\_Serial\_Legacy.dll).

#### Corrected an internal error with the driver device I/O control support that incorrectly returned an error if the I/O control did not return any response. This never exhibited any symptoms. (TwIO\_Utilities.dll).

### Release Candidate 11

#### Issue 647, 765: The right-click tool now maintains its position after being dragged and then activated. (TwMonitor.exe)

#### Issue 759: The control panel properly displays all controller names. Any limitation is due to the controller.

#### Issue 825, 846, 883: The Edge Adjustment test tool and the Multiple Monitor Manager now accept the ESC and ENTER keys as input. The control panel code was released in RC 7. The supporting code in the graphics library is released in this RC. (TwGraphics.dll).

#### Issue 826: A change to a controller ID does not take affect when a new tab is selected. (TwUIEngine.dll)

#### Issue 830: The right-click tool no longer flashes when there is a change to the configuration database. (TwMonitor.exe)

#### Issue 840: The linearization of serial legacy controllers is now correct. This was fixed in an earlier release candidate. (TwIO\_Cobra.dll)

#### Issue 848: Changed the installation to include TwAppIO.dll automatically since TwMonitor.exe is now always installed. (Setup)

#### Issue 851: Linearization of an EX II USB controller no longer receives spurious liftoffs and touchdowns and linearization should complete. This was corrected in RC10. (TwTouch.sys)

#### Issue 862: The restore default for the software no longer resets the display parameters. This caused problems with multiple touch screen and monitor systems. (TwConfig.dll)

#### The following issues were resolved with the addition of the WHQL catalogue file. (TwTouch.cat)

#### Issue 860: The installer has problems installing under Vista.

#### Issue 863: With a USB controller attached, uninstalling and reinstalling the driver causes a Windows message to appear asking for the location of the driver.

#### Issue 864: Installation does not always recognize an attached serial controller.

#### Issue 865: Installation does not install the driver for HID-compliant controllers under Windows Server 2003.

#### Issue 868: Changed the launching of help files, web pages, and mail addresses to be more reliable under all systems, particularly Windows Server 2003. One side effect is that the web browsers may appear under the control panel. (TwCommon.dll)

#### Issue 870: Calibration now ends on the lift off from the third target. This was corrected in the RC10. (TwTouch.sys)

#### Issue 871: Linearization is now launched for a legacy serial controller. This was corrected in RC10. (TwIO\_Serial\_Legacy.dll)

#### Issue 873: Linearization now works for a pen controller. (TwCalibLib.dll)

#### Issue 877: A controller ID number starting with 0 is rejected for an EX II USB controller. (TwIO\_USB\_EXII.dll)

#### Issue 878: The installer now sets the parameter “DriverScreenCount” to 255 in TwFactory.cfg if it is not already present in the file, serial controller support is being installed, and multiple monitor support is being installed. (Setup)

#### Issue 881: Corrected linearization code for SC USB controllers that caused the targets to advance without a proper touch. (TwIO\_USB\_SC\_Series.dll)

#### Issue 890: Changed the control panel to correct a condition where an addition or removal of a device is missed. (TwUIEngine.dll)

#### The Configuration Library now releases its mutex when an application unloads. Previously, the mutex remained, consuming system resources. (TwConfig.dll)

#### The Configuration Library no longer fails if a data type in the registry is not was is expected. Now it uses the default value instead. (TwConfig.dll)

#### Improved handling of plug-and-play and configuration change events in the multiple monitor tool. (TwMMManager.dll)

#### Changed the spelling of the web page link on the control panel’s About dialog of “3Mtouch.com”. (TwUICP.dll)

#### Removed the dialog in the Setup that recommended that all controllers be attached prior to installation.

### Release Candidate 12

#### Issue 885: Now can move the right-click button horizontally when the secondary monitor is to the left of the primary monitor. (TwMonitor.exe)

### Release Candidate 13

#### Corrected an error in the calibration verification code that could display the test screen on the wrong area of the desktop.

#### Changed the Multiple Monitor Manager to ignore any ‘t’ key presses if there are no touch controllers attached to the system.

#### Changed the Multiple Monitor Manager to use medium font sizes if the display height is between 480 and 864.

#### Changed the frequency value written to an EX II controller so that the value represents the same actual frequency regardless of the clock speed of the EX II.

#### Generally improved the calibration process of serial (Cobra) controllers to better handling timing and touch issues. These changes were ported to the HID pass through code for consistency. Also, the Cobra code was changed to buffer the block 1 data so that only one read of block 1 is needed instead of the three in previous code.

### Release Candidate 14

#### Issue 903: The release notes omit mention of the files BLANK.CUR, TwFactory.cfg, and twtouch.cat in the file manifest.

#### Issue 904: The manifest entries for TwUI.exe and TwTouch.sys are incorrect.

#### Issue 907: TwMonitor.exe has a questionable start copyright date and an invalid trademark.

#### Issue 914: TwCalibLib.dll has an invalid trademark.

#### Issue 923: TwIO\_Serial\_EXII\_TouchPen.dll has an invalid trademark.

#### Issue 927: TwIO\_USB\_EXII.dll has an invalid trademark.

#### Issue 935: TwUIEngine.dll has an invalid trademark.

#### Issue 936: A full installation does not install the Multiple Monitor Tool.

#### Issue 956: Linearization data is not restored after an aborted linearization.

#### Issue 961: The EX II USB controller tab in the Control Panel incorrectly appears when, using a resistive controller, frequency edit is allowed but not when linearization is allowed.

#### Issue 962: Verification of linearization for EX II USB resistive controllers abnormally terminates with a hardware error about half the time on a fast machine.

#### Issue 963: The frequency value of a controller is not properly displayed if it is not a hardcoded value in the control panel

#### The touch monitor does not process the virtual mouse in a timely manner. This may affect other functions such as the right-click tool.

### Release Candidate 15

#### Issue 905: TwIO\_Serial\_SC\_Series.dll has a questionable start copyright date and an invalid trademark.

#### Issue 906: TwIO\_USB\_SC\_Series.dll has a questionable start copyright date and an invalid trademark.

#### Issue 912: TwCfgUtil.exe has a questionable original and internal names and an invalid trademark.

#### Issue 913: TwAppIO.dll has an invalid trademark.

#### Issue 921: TwIO\_Serial\_EXII.dll has an invalid trademark.

#### Issue 930: TwIO\_Utilities.dll has an invalid trademark.

#### Issue 933: TwSystem.dll has an invalid trademark.

#### Issue 934: TwUICP.dll has an invalid trademark.

#### Issue 958: The dialog announcing a successful linearization uses the word “calibration” instead. (TwCalibLib.dll)

#### Issue 964: On some graphics cards, the border painted by the edge adjustment tool appears a wide ‘+’ in the middle of the display.

#### Issue 970: The upgrade option fails to update the driver properly.

#### Issue 971: Selection of either just the help files or just the blank cursor does not update the framework registry values.

#### Issue 974: TwCfgUtil.exe produces useless “sav” files which are no longer needed since the introduction of the “/u” switch.

#### Issue 976: The virtual mouse does not work with the MT 7 draw tool or Java applications.

#### Issue 980: Occasionally, the frequency displayed in the control panel is the last frequency in the dropdown list. This required a change in TwIO\_Utilities.dll. After a code review, error checking was improved in these files: TwAppIO.dll, TwCalibLib.dll, TwIO\_Serial\_EXII.dll, TwIO\_Serial\_SC\_Series.dll, TwIO\_USB\_EXII.dll, TwIO\_USB\_SC\_Series.dll, and TwUICP.dll.

#### Corrected an internal error where the graphics library could reject a valid invocation of the routine TwGraphCreateTextPopUp.

#### Added a “do not touch message” when the frequency is changed. This affects TwIO\_Serial\_EXII.dll, TwIO\_Serial\_EXII\_TouchPen.dll, and TwIO\_USB\_EXII.dll.

#### Moved the calculation of the Windows desktop coordinates under a touch screen into a common location, TwSystem.dll. These files were changed to refer to the new routine: TwUICP.dll (edge adjustment), TwCalibLib.dll (calibration. linearization, draw and 16-point verification), TwIO\_USB\_EXII.dll, TwIO\_Serial\_EXII\_TouchPen.dll, and TwIO\_Serial\_EXII.dll (frequency update message).

# CHANGES FOR VERSION 7.11.2 Service Patch 2

## FEATURES AND ENHANCEMENTS

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### New features added to service application that will allow customers to use it as an executable.

## ISSUES ADDRESSED

### Release Candidate 1

#### This is special feature request from NCR.

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

# CHANGES FOR VERSION 7.11.2 Driver Patch 1

## FEATURES AND ENHANCEMENTS

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### The TwTouch.sys driver is not WHQL certified, but SQA should run internal the WHQL test.

## ISSUES ADDRESSED

### Release Candidate 1

#### Resolved problem with SC controllers and PC power states.

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

# CHANGES FOR VERSION 7.11.2

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### Improved the handling of commands for serial controllers while the touch screen is being touched.

### Release Candidate 2

#### Improved the searching of serial ports for touch screen controllers that do not support serial plug-and-play.

#### Corrected a problem with some systems when updating the MT 7 software that could hang the system either immediately or during shutdown.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### Added support for legacy serial controllers.

#### The TwTouch.sys driver is not WHQL certified. The SQA test should run in parallel with the WHQL test.

### Release Candidate 2

#### Replaced the old serial bus driver with a new serial search daemon and reduced function bus driver.

### Release Candidate 3

#### Added WHQL-certified driver.

#### Changed TwService to recognize the SerialPortNoSearch configuration parameter.

### Release Candidate 5

#### This release candidate updates only the release notes. No software product changed.

## ISSUES ADDRESSED

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 2

#### Issue 803: The “Restore Defaults” action no longer disables the controller.

### Release Candidate 3

#### Corrected the serial bus driver to prevent more hang-ups on reboot.

#### Changed the cleanup.bat file so that it does not blindly delete all txt, bat, sav files.

### Release Candidate 4

#### Issue 802: The installer no longer recommends that USB controllers be attached after installation.

#### Issue 807: SMT controller support is now installed along with EX II serial support.

# CHANGES FOR VERSION 7.11.1

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### This is the initial release of support for the MicroTouch™ DST touch screen technology.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### Release candidate 1 is missing the WHQL certified driver. This may not be addressed prior to release. If not, a note will be added to the known issues section.

### Release Candidate 2

#### Release candidate 2 is missing the WHQL certified driver.

### Release Candidate 3

#### This build includes the WHQL certification.

#### This build excludes support for the MicroTouch™ IST touch screen technology.

## ISSUES ADDRESSED

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 2

#### Issue 773: The conflict with Bus driver resolved.

#### Issue 764: Batch file changed to proper driver installation.

# CHANGES FOR VERSION 7.11.0

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### This is the initial release of support for the MicroTouch™ IST touch screen technology.

### Release Candidate 4

#### The control panel now allows the operating frequency to be set for EX II capacitive controllers.

#### The installer now searches for serial controllers as it exits.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### Release candidate 1 is missing the WHQL certified driver. This may not be addressed prior to release. If not, a note will be added to the known issues section.

#### A control panel page have been added for each the serial and USB IST touch controller.

#### The IST sensitivity setting has two parameters that support this feature. The new parameter ISTUpdateSensitivity, when set, causes both the control panel and touch monitor programs to force the controller to the value contained in the new parameter ISTSensitivity. These parameters are set in two cases. First, the control panel sets these parameters when the user changes the sensitivity. Second, either the control panel or the touch monitor sets these value when they detect a controller with a non-zero touch screen type and the parameter ISTUpdateSensorType is not defined or is zero.

#### The IST touch screen type setting has three parameters that support this feature. The new parameter ISTUpdateSensorType, when set, causes both the control panel and touch monitor programs to set the controller to the value contained in the new parameter ISTSensorType only if the sensor already has a zero touch screen type. These parameters are set in two cases. First, the control panel sets these parameters when the user changes the touch screen type. Second, either the control panel or the touch monitor sets these value when they detect a controller with a non-zero touch screen type and the parameter ISTUpdateSensorType is not defined or is zero. Access to the touch screen type fields is allowed only when the controller’s touch screen type is zero or when the new parameter ISTAllowTouchScreenTypeEdit is set to 1. This parameter may be changed from the “Advanced Options” page.

### Release Candidate 2

#### Each IST control panel page has three controls: the touch screen type number edit control, the manual baseline button, and the touch sensitivity slider control.

#### The IST manual baseline button has a parameter that controls access to it. Access to this button is allowed only when the new parameter ISTAllowManualBaseline is set to 1. This parameter may be changed from the “Advanced Options” page.

#### A new parameter, IOPollDelay, has been added. This does not affect MT 7 Software for Windows 2000/XP.

#### Both the serial and USB IST modules issue Reset commands after setting the touch screen type. This is to cover for an error in the firmware that should be corrected soon. At that point, the software will also be changed.

### Release Candidate 4

#### The capability to change EX II capacitive operating frequency has been added to all EX II control panel pages. A new parameter, AllowAccessFrequencyScan, has been added to support this. This also affects the “Advanced Options” page in the control panel, the configuration library, the language library, the UI engine library, the EX II controller support libraries, and the help file.

#### Changed the internals of the driver to support the IOPollDelay parameter as it is used in Windows CE.

#### The installer now uses a new program, TwReScan.exe, to locate controllers, primarily serial, after the installation completes.

### Release Candidate 8

#### This build includes the WHQL certification. Release Candidate 7 was released into Agile but never distributed.

## ISSUES ADDRESSED

### Release Candidate 4

#### Changed so that the “Restore Controller” works with an EX II USB controller.

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 1

#### Issue 114: The parameters TouchScreenBus and TouchScreenControllerModule do not operate as they should. Keeping these at their default values should produce acceptable results.

#### Issue 118: The file size tallies displayed by the Setup and Uninstall tools may not be correct.

#### Issue 120: The parameters TouchScreenPort, TouchScreenBus, and TouchScreenControllerModule need examples in their descriptions.

#### Issue 179: The configuration tool does not issue an error message if it is unable to save a configuration file. An example of a failure is specifying an invalid file name.

#### Issue 187: Ranges of COM ports cannot be specified in the parameters SerialPortNoSearch and SerialPortSearch. Commas must separate the port names.

#### Issue 218: The setup tool does not warn that a previous version of MT7.0 software is installed.

#### Issue 219: The setup tool halts if no components are selected for a custom installation.

#### Issue 224: Disabling sound in response to touches does not take effect until after a reboot.

#### Issue 240: If no options are selected during a custom installation, the installer continues with the installation and creates an uninstall utility even though nothing is actually installed.

#### Issue 250: If you have a serial device, such as a serial mouse, you may get a driver conflict after you install the MT 7 software. This may cause your system to fail to boot. Please see the “Serial Boot Failure” note for a remedy.

#### Issue 257: The installer issues a message regarding InstallDrv.bat when installing over a previous installation.

#### Issue 264: The first installation of the driver may show up as an unknown device in the Hardware Found dialogs.

#### Issue 266: Installation may generate more Hardware Found dialogs than expected.

#### Issue 270: Installing a new driver on a system that already has touch causes a loss of touch. Rebooting the system remedies the problem.

#### Issue 490: Sliders in the user interface can be slow repainting.

#### Issue 494: The dialogs in the linearization process can inadvertently be moved behind the main linearization screen.

#### Issue 496: The instructions in the license agreement are inconsistent with the options presented.

#### Issue 497: The instructions given by the installer when it detects a prior installation are incorrect.

#### Issue 498: The installer drops files into C:\Program Files\MicroTouch. It should use C:\Program Files\MicroTouch\MT7.

#### Issue 499: Using touch to affect the double-click parameter in the control panel can crash the system.

#### Issue 505: Pressing the right-click tool causes the hourglass or busy cursor to appear. The cursor reverts to normal when the second, right-click touch happens.

#### Issue 520: Exiting from an aborted calibration causes an EX II USB controller to disconnect and reconnect from the driver.

### Release Candidate 2

#### Issue 620: Touch screen type is now correctly written from the IST control panel pages.

#### Issue 621: Invalid touch screen types are no longer written to the registry.

#### Issue 625: The touch screen type now displays the controller setting instead of the registry setting.

#### Issue 628: Calibration restores orientation on an aborted calibration. Note that this does not work for EX II controllers.

#### Issue 629: Calibration is no in better synchronization with the controller.

#### Issues 631 637, and 639: Timing improved within serial I/O modules to remedy the slow calibration issue.

#### Issue 633: Increased the timeout for serial controllers to five seconds to accommodate abnormally long responses as with the CX response from the IST serial controller.

#### Issue 634: IST sensitivity sliders should now work.

#### Issue 640: Version stamp for TwUI.exe corrected in the release notes.

#### Issue 641: Help file better explains the touch screen type.

#### Changed the placement of the “do not touch” message for serial IST so that it displays immediately.

#### Corrected I/O modules to support the lack of a <SOH> character as seen in the SC serial controller NM response.

#### Reduced the number of messages issued by the serial SC module when obtaining default calibration method.

### Release Candidate 3

#### Issue 632: Readme no longer refers to the missing HID document.

#### Issue 638: The file TwUI\_JNI.dll is no longer installed.

#### Issue 642: The file TwTouch.pdb is no longer installed.

#### Issue 643: Corrected installer error with installation of TwTouch.sys when installing over the network.

#### Issue 645: Corrected the loss of touch after performing a manual baseline by resetting the IST controller.

#### Issue 650: Changed the help file to the correct version.

#### Issue 651: Corrected a timing issue affecting the calibration of pen controllers.

#### Included part 25867 (Generic TouchPen DLL) into the list of parts.

#### Updated the EX II TouchPen and Generic TouchPen DLLs to address calibration issues.

### Release Candidate 4

#### Issue 614: The detection of a serial controller no longer requires a reboot.

#### Issue 657: Changed the UI Engine to no longer process external functions if a control is invisible. Calling these external functions caused spurious I/O to be sent to the controllers and slowed down the processing of the control panel.

#### Changed TwAppIO to expose the pen/finger mode settings.

#### Changed TwAppIO to return the proper status for the TwAppIO\_Get\_Event routine.

#### Improved the response system in TwAppIO subsystem.

### Release Candidate 5

#### Issue 658: Corrected a buffer overrun issue with the serial EX II support library.

#### Issue 660: Corrected the installer so that it handles IST-related software.

#### Issue 664: Changed so that the pen/finger mode of a touch pen controller is properly restored after a calibration or linearization.

#### Issue 665: Help file index updated to include “frequency” and “baseline”.

#### Corrected an error in the Touch Monitor that would leave the touch driver open when it should be closed.

### Release Candidate 6

#### Issue 669: Calibration now correctly restores the pen/finger mode.

#### Issue 670, 671: Corrected an error in the UI engine. The indirect effect of this was the disabling of the IST control panel pages.

#### Fixed a time-out issue with EX II USB linearization.

#### Changed the “Restore Controller” function in the control panel to reset the PenFingerMode parameter in the MT 7 database.

#### Changed Touch Monitor to no longer update the display parameters whenever a change occurs in the MT 7 database. This is a system performance enhancement.

### Release Candidate 7

#### Issue 673: The control panel now shows the proper firmware version number of controllers. This is for all USB controllers.

#### Issue 674, 676: Corrected the restoration of block data after a failed or aborted calibration or linearization with touch pen controllers.

#### Issue 675: Changed so that message boxes during touch pen calibration and linearization are sensitive to the proper pen/finger touch.

#### Issue 676: Changed to support older EX II controllers that do not support frequency setting. Previously, such USB EX II controllers caused the control panel to be slow.

#### Changed the uninstaller to better clean the registry and files.

# CHANGES FOR VERSION 7.10.0

## FEATURES AND ENHANCEMENTS

### Release Candidate 1

#### The driver is now WHQL-certified.

#### This is the initial release of the control panel. This tool allows you to calibrate your touch screen, adjust touch modes, enable the right-click tool, produce sounds on touch, change the double-click speed and area, and perform other actions. Consult help from the control panel for details.

#### The custom installation option of the installer allows more control over what is installed. You can now choose to not install support for touch controllers that you do not use on your system.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 1

#### The configuration tool has been removed from the distribution. This is now available separately.

## ISSUES ADDRESSED

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 1

#### The support mechanism for TwCfgUtil has changed. This tool sets the factory default configuration during installation. Prior to this release, the tool would overwrite all user configuration if the factory configuration file, TwFactory.cfg, changed from the prior installation. Now, the tool only updates the configuration, overwriting settings found in the configuration file and leaving all other settings unaltered.

#### Issue 191: The calibration tool now supports pen calibration.

#### Issue 238: The calibration tool should now exit promptly. Before, it could take some time to terminate after completing a calibration.

#### Issue 248: The calibration tool does not properly time-out if not targets are touched when calibrating an EX II USB controller.

#### Issue 254: Added silent installation support to the installer. Note that this is still an open item in the issues list and needs to be closed.

#### Issue 278: The “Serial Boot Failure” along with issues 118, 240, 256, and 257 have language issues.

#### Issue 284: The virtual mouse reports an inverted Y-coordinate within a touch region.

#### Issue 288: The monitor tool does not react to changes in the configuration database. This was fixed before but is still open in the issues database.

#### Issue 316: The calibration tool no longer uses OpenGL. This caused a problem with some ATI graphic cards. Now, calibration should work on all systems.

#### Issue 345: The readme instructions for silent installation are sufficient. Issue 346 covers the complaint about silent installation not working under Windows XP.

#### Issue 355: The touch monitor now supports multiple virtual mice.

### Release Candidate 2

#### Issue 490: Double-click sliders in the control panel do not repaint reliably.

#### Issue 494: Dialog boxes in some full screen graphics windows, such as linearization, can inadvertently be hidden if touched outside the dialog.

#### Issue 499: Dragging the double-click sliders with the touch screen may crash the system.

#### Issue 505: The SC USB controllers show the incorrect power-on conditions (status) on the control panel’s main page.

#### Issue 507: The standalone calibration tool shows unintelligible characters for the touch screen selection in multiple touch screen situations.

#### Issue 509: The help file does not explain linearization with sufficient detail.

#### Issue 510: The readme file incorrectly identifies the installer as the process to use to remove EX II serial support instead. It should identify the uninstaller.

#### Issue 515: The control panel incorrectly changes settings for all touch screens in a multiple monitor situation. It should only affect one touch screen.

#### Issue 516: The silent installation report file contains references to unsupported features that are not visible or available during interactive installation.

#### Issue 518: The EX II fixed code support libraries for both serial and USB show up as options during installation. They should be included as part of the standard EX II installation.

### Release Candidate 3

#### Issue 285: The right-click tool does not work on a system with multiple touch screens.

#### Issue 344: Since both MT 7 and the HID calibration tool install into the same directory, they overwrite each other’s uninstall information.

#### Issue 519: The framework version label incorrectly states RC1.

#### Issue 521: The double-click area and time sliders do not properly update the system.

#### Issue 523: Touch is lost after doing a calibration on a touch pen controller.

### Release Candidate 4

#### Issue 525: The installer places some items onto a Windows 98 or Me system when it should not.

#### Issue 526: The installer allows installation to continue in the presence of an old TouchWare installation.

# CHANGES FOR VERSION 7.00.0

## FEATURES AND ENHANCEMENTS

### Release Candidate 9

#### This is the initial release of the Touch Screen Driver. The touch screen driver communicates with the touch screen controller and converts touches to mouse events.

#### This is the initial release of the Calibration Tool. This tool aligns the touch screen with the video display to enhance accuracy.

#### This is the initial release of the Touch Monitor Tool. This program runs in the background and controls some touch functions, such as the right-click tool, touch generated sound through an audio card, loading of user-specific configuration data, and the virtual mouse.

## INTERNAL FEATURES AND ENHANCEMENTS (not included in Readme file)

### Release Candidate 10

#### Added multiple monitor support to the calibration tool.

### Release Candidate 14

#### Issue 254: Added silent installation support to the installer.

#### Added the ability to load a preset custom configuration during installation.

### Release Candidate 15

#### Changed the installer so that the disabling of the unsigned driver warning is, by default, not done. Instead, the readme.txt file has been changed to provide instructions on how to edit the silent installation instruction file to disable the warning.

## ISSUES ADDRESSED

## INTERNAL ISSUES ADDRESSED (not included in Readme file)

### Release Candidate 9

#### Issue 215: The readme.txt refers to NFI controllers.

#### Issue 217: The setup tool does not display all trademark signs correctly.

### Release Candidate 10

#### Issue 58: Installation does not warn the user if TouchWare 5.6 is installed.

#### Issue 69: Installation of devices show MicroTouch instead of 3M.

#### Issue 72: Searching of multiple COM ports is slow.

#### Issue 193: The readme.txt refers to unsupported operating systems and controllers.

#### Issue 198: Using the Add/Remove Program feature to uninstall the software leaves four files: Log.txt, InstallOut1.log, InstallErr1.log, and Installation.log.

#### Issue 216: The configuration tool refers to itself as the configuration utility.

#### Issue 218: The setup tool does not warn that a previous version of MT7.0 software is installed. This functions as designed.

#### Issue 222: The driver crashes during installation if no controllers are attached to the system.

#### Issue 241: The readme.txt and release notes have the misspelled word “ini”.

#### Issue 243: Several files have incorrect version stamps: TwBus.sys, TwCalib.exe, TwApp\_IO.dll, TwIO\_Core.dll, TwIO\_EX\_II\_Serial.dll, and TwIO\_EX\_II\_USB.dll.

#### Issue 246: Uninstalling from Window’s Control Panel’s Add/Remove Software function does not completely remove the software.

#### The parameters CalibOffsetX, CalibOffsetY, CalibScaleX, and CalibScaleY have been eliminated. These parameters were not used.

#### The parameters TouchRegionDisplayLLX, TouchRegionDisplayLLY, TouchRegionDisplayURX, and TouchRegionDisplayURY have been changed from signed to unsigned parameters. These changes affect the driver alone.

#### The parameters DisplayLLX, DisplayLLY, DisplayURX, and DisplayURY have been changed from unsigned to signed parameters. These changes affect the driver and the touch monitor.

#### Neither the touch monitor nor the configuration tool is installed by the typical installation.

#### The language library TwLangEng.dll is now stored internally as UNICODE instead of ANSI characters.

#### The installer now ensures that the main driver is installed prior to installing the serial bus driver. This fixes the problem where the New Hardware Found dialog may prompt for the driver’s location during installation.

### Release Candidate 11

#### Issue 242: The readme.txt’s copyright notice’s border is too long to be properly displayed in the installer.

#### Issue 252: The EX II touch pen controller is not recognized at boot time.

#### Issue 258: With certain extreme touch region settings, X and Y mappings may wraparound.

#### Issue 263: The readme.txt file refers to version 6.00.0.

#### Issue 264: The files TwLangEng.dll and TwLang\_JNI.dll have incorrect version stamps.

#### Issue 265: Calibration does not run with a default installation.

#### Issue 267: Calibration does not work with a controller on COM2. This was an artifact of issue 265.

#### Issue 268: A parameter update crashes the system. This was an artifact of issue 271.

#### Issue 271: Setting the parameter TouchScreenPort in the root of the registry causes the driver to crash.

#### Issue 272: Installer automatically installs the driver even if it is not selected.

#### Changed the installation instructions to mention that the touch monitor is also needed for touch sound through speakers and for the virtual mouse.

#### Changed the filename of the release notes from using 6.0 to 7.0.

#### Changed the note about issue 187, adding the statement that serial ports must be separated by commas.

#### Eliminated the current version of the product from the revision history in the readme.txt.

#### Eliminated the TouchWare name from the list of trademarks.

### Release Candidate 12

#### Issue 158: The release candidate number needs to be removed from the final version of the setup tool.

#### Issue 281: The installer copies the non-production files TwTouchOld.inf and TwTouchSC.inf.

### Release Candidate 14

#### Issue 287: The parameter TouchRegionIgnore does not function properly and crashes the system if set under a touch screen.

#### Changed so that the core driver passes in house WHQL certification.

#### Changed the Monitor Tool to allow drawing when using the virtual mouse.

#### Changed the default value of the RightClickToolY parameter to 8192 so that the default position of the tool is in the lower-right corner of the display.

#### Removed extraneous trademark symbols. Changed Microsoft and Windows to registered trademarks. Added a trademark to Java. Added trademark notices for Microsoft and Sun at the end of the readme.

#### Added notes to the readme document about how to use silent installation and factory configurations.

### Release Candidate 15

#### Issue 339: There is no mention of a special build for Home Depot. The requirement for a special Home Depot build was obviated by the incorporation of the code to disable the unsigned driver warning into the standard build.

#### Issue 340: The uninstaller may leave the file TwFactory.sav on the system.

#### Issue 341: The TwSilent.txt file from the silent installation may be edited. This is the nature of the file.

### Release Candidate 16

#### Corrected typographical and grammatical errors in readme.txt.

#### Added explicit instructions to double-click the silent installation batch files to run them.

#### Added the SCx series of controllers to the list of supported hardware.

#### Added note to the silent installation section stating that the disabling of the unsigned driver warning works only under Windows 2000.

#### Issue 288: The monitor tool does not react to changes in the configuration database. The system must be rebooted for some functions, such as the right-click tool, are changed. This was fixed in some prior release candidate.

# KNOWN ISSUES

## Published Issues

### Installation

#### Issue B170: If other users are logged on the system, uninstall may not properly clean up all files.

#### Issues B220: If installing only with PX serial support, the control panel does not work until after a reboot of the system.

### Calibration Tool

#### Issue 343: On a multiple touch screen system, when prompted to select a touch screen for calibration, if the “Cancel” button is pressed instead of selecting a touch screen, then the calibration tool inappropriately presents an error message.

#### Issue B194: The /M:F and /M:P switches do not work in TwCalib.exe.

### Miscellaneous

#### Issue 220: The right-click tool responds only to touches and not to the mouse.

#### Issue 843: The Windows’ “swap mouse button” setting does not affect MT 7. See the readme file under “Left-Handed Mice” for details.

#### Issue 885: All users must be at the same security level to run the Control Panel.

#### Issue 893: Edge adjustments affect manual linearization. Before performing manual linearization, change the value of all edge adjustment sliders to the “0” setting. You can restore the sliders to their original settings after performing the manual linearization.

#### Issue B165: Rotating a display with the new HID-emulation driver does not work properly. To remedy, remove ‘Touch Monitor’ from your Windows ‘Startup’ menu.

#### Issue B223: Cancelling work from the multiple monitor mapping tool does not restore the previous settings.

## Internal Issues (not included in the readme file)

### Installer

#### Issue 66: There is no help in the Setup program.

#### Issue 627: Canceling an installation may leave artifacts.

#### Issue 937: The installer balks when just the TouchWare USB driver is installed instead of the whole TouchWare package.

#### Issue 972: Uninstalling may leave legacy help files.

#### Issue 973: A silent installation using the upgrade option does not work on a clean system.

#### Issue B164: The installer does not change the file size when the legacy driver when the user selects the legacy driver.

### Touch Monitor

#### Issue 374: The virtual mouse does not work with all applications.

#### Issue 882: The Touch Monitor does not update the display portion of the configuration immediately after installation.

#### Issue 1007: System reboot may change location of the right-click tool and make it difficult putting it away on multiple monitor systems.

### Driver

#### Issue 187: The “PortNoSearch” parameter does not accept ranges, as in “COM2-COM9”.

#### Issue 223: Enabling sound in response to touches causes sound to be produced through the system speaker even though the audio card speakers were specified.

#### Issue 251: The driver does not send event messages to the Windows event log.

#### Issue 259: Specifying keystrokes in a touch region may cause the driver to crash.

#### Issue 260: The driver does not allow access through the POSIX calls, such as fopen.

#### Issue 337: The driver may report the wrong device list when queried after a plug-and-play event.

#### Issue 808: The driver incorrectly recognizes the TP4 as a legacy, finger only controller.

#### Issue 809: Touch is not recovered when using EX II USB controllers with NEC and HP laptops returning from hibernation mode (S4).

#### Issue 815: TwService does not allow a “?” on the command line to generate the command line syntax. You must launch the program without any command line arguments to see the command line syntax.

#### Issue 884: The core driver does not process serial plug-and-play controllers when the serial search is disabled.

#### Issue 965: A buffer over/underrun condition exists in the I/O queues.

#### Issue 966: The serial DST sends a spurious initialization sequence.

#### Issue B198: A replugged PX USB controller does not always produce touches.

#### Issue B247: The driver no longer supports the 19” PCT developer systems.

### Calibration and Linearization

#### Issue 276: The calibration tool beeps after both the second and third targets.

#### Issue 430: The linearization process does not react to ALT-F4 to close the window.

#### Issue 615: A DST controller needs to be power cycled if a calibration is aborted.

#### Issue 664: Aborting from the 16-point verification screen may leave a TP5 in the wrong pen/finger mode.

#### Issue 799: On a DST controller, inaccurate touches can be induced by performing a valid calibration, re-entering calibration, timing out on the first target, re-entering calibration, and just touching the first target.

#### Issue 842: There is no error message if there is a timeout on the second calibration target.

#### Issue 938: The calibration timeout messages do not timeout quickly.

#### Issue 939: The calibration timeout messages do not timeout for HID controllers.

#### Issue 940: The calibration draw test does not time out.

#### Issue 941: In some situations, a failed calibration does not restore the calibration data.

#### Issue 942: Docking stations can interfere with USB communications, noticeable with calibration.

#### Issue 944: Calibration inappropriately attempts to restore calibration data after a USB disconnect.

#### Issue 945: Disconnecting a USB controller at the first calibration target can generate an “invalid touch” message.

#### Issue 946: Calibration does not issue an error message while in a “constant touch” situation.

#### Issue 947: Instructions for the third calibration target instruct the user to “touch” instead of “tap” a DST sensor.

#### Issue 948: A “/T” switch for the calibration tool does not issue an error message.

#### Issue 949: A “/t” switch for the calibration tool still presents the controller selection dialog.

#### Issue 950: A “/I” switch for the calibration tool does not suppress the dialog at the end of calibration.

#### Issue 952: The “/C”, “/CX”, “/C3”, and “/CN” switches for the calibration tool do not behave appropriately.

#### Issue 957: The border of the successful linearization dialog is dotted and not solid.

#### Issue 959: The dialog asking for verification of linearization does not accept an ESC.

#### Issue 975: Targets are proportional to the width of a window but not the height of the window.

#### Issue 977: The targets appear in the wrong corner on an inverted display.

#### Issue 981: The final dialog in the calibration tool does not time out.

#### Issue 982: The final dialog in the calibration tool does not recognize a controller disconnect.

#### Issue 987: During calibration, two beeps are issued by the third target for controllers that support only 2-point calibration.

#### Issue 1008: After rotating display performing a calibration causes touch to be offset.

#### Issue B145: In the draw test, draw lines are jagged if a dialog is present.

#### Issue B184: Calibration does not issue an error message upon USB disconnect.

#### Issue B185: Using the ESC key on the linearization good dialog is incorrectly interpreted as an abnormal termination.

#### Issue B187: Constant touch when attempting calibration can cause a loss of touch.

#### Issue B191: A timeout on the linearization dialog asking to verify or not does not restore block 2.

### Control Panel

#### Issue 684, 798: If the PATH environment variable includes the MT 7 directory, two controller pages appear.

#### Issue 758: The TP5 frequency display does not update with a touch but does with a mouse.

#### Issue 780: After a “restore software” command, the TP5 page may become corrupted.

#### Issue 817: The legacy serial controller library does not support frequency change on the control panel.

#### Issue 892: The border on some edit controllers do not paint properly.

#### Issue 953: The technical support phone number should have the text “option 3” appended.

#### Issue 954: Sending e-mail with Lotus Notes may generate a “file does not exist” error.

#### Issue 955: Connecting a new controller may cause the currently selected controller to change.

#### Issue 979: The initial focus in the control panel is on the ‘Main’ tab instead of the ‘Calibrate’ button.

#### Issue 988: The last frequency is displayed after first enabling the frequency editing option from Advanced Options.

#### Issue 989: The last frequency is displayed after using Restore Defaults.

#### Issue 994: Do not touch message after a frequency change ignores a screen touch.

#### Issue 995: The reset controller button does not issue a "do not touch" message.

#### Issue B169: The buttons at the bottom touch the border under XP.

#### Issue B202: Using the Restore Defaults button causes loss of communication with a controller that defaults to N72.

### Documentation

#### Issue 611: The “Troubleshooting” link in the help file section is dead.

#### Issue 763: There is no mention in the readme of the slow installation when the Windows XP SP2 firewall is active.

#### Issue 811: In the help index, “Reset Software” is misspelled “Rest Software”.

#### Issue 902: The release notes file has “7.0” in its file name which is misleading.

### Controller Support

#### Issue 610: Any operation involving an “SP1” command on a DST controller can cause loss of touch.

#### Issue 779: A TP5 may lose its pen/finger setting after a reboot.

#### Issue 782: The DST firmware version number is incorrect. The decimal point is incorrectly dropped.

#### Issue 804: Restoring defaults on a 14-78 controller can take up to a minute before touch is restored.

#### Issue 805: When using a TP4 (which is not supported), selection of pen calibration accepts only finger touch.

#### Issue 806: Selecting the legacy serial support page in the control panel causes a loss of touch with a TP4 controller.

#### Issue 978: If the control panel is the first application to communication with a TP5 controller, its status is shown as B5.

### Multiple Monitor Manager

#### Issue 818: The manager does not display a version number.

#### Issue 984: The multiple monitor tool cannot be launched from the control panel.

#### Issue 1009: MM Tool title bar has not been translated.

### File Properties

#### Issue 908: TwBus.sys has an invalid company name.

#### Issue 909: TwTouch.sys has an invalid company name.

#### Issue 910: TwUI.exe has an invalid company name and trademark.

#### Issue 911: TwCalib.exe has a questionable original and internal names and an invalid trademark.

#### Issue 915: TwCommon.dll has an invalid trademark.

#### Issue 916: TwConfig.dll has an invalid trademark.

#### Issue 917: TwIO\_Cobra.dll has an invalid trademark.

#### Issue 918: TwIO\_Core.dll has an invalid trademark.

#### Issue 919: TwIO\_HID.dll has an invalid trademark.

#### Issue 920: TwIO\_Serial\_DST.dll has an invalid trademark.

#### Issue 922: TwIO\_Serial\_EXII\_Fixed\_OS.dll has an invalid trademark.

#### Issue 924: TwIO\_Serial\_Legacy.dll has an invalid trademark.

#### Issue 925: TwIO\_Serial\_TouchPen.dll has an invalid trademark.

#### Issue 926: TwIO\_USB\_DST.dll has an invalid trademark.

#### Issue 928: TwIO\_USB\_EXII\_Fixed\_OS.dll has an invalid trademark.

#### Issue 929: TwIO\_USB\_Passthru.dll has an invalid trademark.

#### Issue 931: TwLangEng.dll has an invalid trademark.

#### Issue 932: TwService.dll has an invalid trademark.

#### Issue 967: TwMMManagerTool.exe has an invalid trademark.

#### Issue 968: TwService.exe has an invalid trademark.

#### Issue 969: TwMMManager.dll has an invalid trademark.

### Miscellaneous

#### Issue 861: Applications do not work with Vista’s User Account Control (UAC).

#### Issue 875: Resetting a legacy control under Windows Server 2003 causes the loss of touch for two minutes.

#### Issue 983: The right-click tool appears on the wrong display on some multiple monitor systems.

## Issues with other products

This section is maintained as a master list of issues in other MT 7 products. Some of these issues are old and are no longer accurate. As the release notes for those products are upgraded and the issues revalidated, items in this section will be excised.

### MT 7 for Windows CE

#### Issue 230: The calibration tool does not accept ESC or ALT-F4.

#### Issue 234: The calibration tool does not issue an error message when there is a problem.

#### Issue 326: The touch response may be slow in a touch region that is smaller than the display size.

#### Issue 406: The right-click tool is poorly shadowed.

#### Issue 536: The version information screen does not react to an ESC or ALT-F4.

#### Issue 550: The control panel does not accept an ESC or ALT-F4.

#### Issue 618: Uninstallation leaves an empty “Help” directory.

#### Issue 689: Drawing may be slow.

#### Issue 692: Old calibration data is not saved when a calibration is aborted.

#### Issue 695: Pen still works in linearization even when finger is selected.

#### Issue 790, 791: Drawing is slow with DST controllers.

#### Issue 796: Pen linearization accepts finger input.

#### Issue 797: Rapidly clicking the “Restore Hardware” button twice causes the control panel to shrink and the loss of touch.

### MT 7 for Linux

#### Issue 290: The installer does not place icons and startup information in the correct location under GNOME.

#### Issue 293: The installer’s icon appears to be a text document and not an executable.

#### Issue 294: It may take up to 30 seconds for the initial installer screen to appear after launch.

#### Issue 297: Uninstalling the product leaves files behind.

#### Issue 298: The calibration tool does not issue an error message if the driver is not present.

#### Issue 299: The installer does not allow upgrades. It refuses to run if a prior installation is present.

#### Issue 300: The installer displays the wrong path to a prior installation.

#### Issue 301: Switching from serial controller to a USB controller requires a reboot before the USB controller is recognized.

#### Issue 304: No sounds are produced through a sound card when specified.

#### Issue 305: The configuration tool does not perform the “Save Auxiliary” command and does not issue an error message.

#### Issue 307: The calibration tool does not support multiple controllers.

#### Issue 308: A change to the configuration does not automatically propagate itself through the system.

#### Issue 310: A question mark may appear is the title bar of applications under SuSE 8.2 instead of a trademark symbol.

#### Issue 311: The right-click tool, when activated with a mouse, does not reflect the right-click state. The right-click works on the next touch.

#### Issue 312: The installer, when installing a driver on an unsupported system without a previous touch driver, complains there is a prior touch driver and then hangs.

#### Issue 348: Uninstall may require a reboot.

#### Issue 349: The touch monitor does not launch automatically.

#### Issue 350: The installer, when installing on an unsupported kernel, makes an entry for MT 7 but only places uninstall information onto the system.

#### Issue 370: Under Red Hat 8.1, some programs grab COM1 preventing touch from working on that port.

#### Issue 373: The calibration tool fails to locate any controllers if there is a touch instance in the configuration that is improperly defined.

#### Issue 530: No documentation refers to the issue where HID controllers may be incorrectly serviced by the Linux native HID driver.

### HID Calibration Tool

#### Issue 330: If the calibration is aborted, the next calibration fails. The calibration after the failed attempt works.

#### Issue 331: The installer appears to allow installation onto unsupported systems. It then just deposits uninstall information. It should not do anything.

#### Issue 332: Calibration at the 12 o’clock and 6 o’clock crashes when using an SC500.

#### Issue 333: The Windows tool bar may be obscured if a HID controller is not present.

#### Issue 334: The release notes and readme need to mention support for Windows 98 SE.

#### Issue 335: The installer incorrectly states it support Windows 98 instead of Windows 98 SE.

# OTHER NOTES

## Published Notes

### Silent Installation

#### The first step in producing a silent installation is to record your standard installation. Open a command line window and set your working directory to the directory containing the MT 7 for Windows setup program. Issue the command "setup /saveinf=<name>.inf", replacing <name> with a valid file name. Run the installation normally.

#### When the installation finishes, it creates the recording file that you specified in the command line, in the directory from where you ran the setup program.

#### To run the silent installation, simply issue the command "setup /loadinf=<name>.inf /verysilent". This replays the installation you recorded above and suppresses any dialog boxes from the setup program.

#### Note that the silent installation may fail if the installer reacts differently than when it was recorded. For example, if you record an installation updating the same version of MT 7 for Windows, the recording may not work on an upgrade or new installation. You should test the silent installation on all expected configurations.

### Multiple Monitor Support

#### This version of the control panel introduces support for multiple monitors and touch screen systems. At this time, this new feature does not support “splitter” systems where two monitors appear as a single monitor to the Windows operating system.

#### To see if your system uses video splitters, open the Windows Control Panel and select the Display option. Go to the “Settings” tab. If the number of monitors shown is different from the number of physical monitors, then you have a splitter system.

#### This is only a problem if each of the monitors shows a different part of the desktop. If each monitor shows the same part of the desktop, the MT 7 for Windows software can support this.

#### The MT 7 for Windows software can support such systems with additional manual configuration. Contact your Field Application Engineer or Technical Support representative at 3M Touch Systems, Inc., for additional information.

### Hiding the Cursor

#### In some applications, it is desirable to hide the cursor. The MT 7 for Windows software provides a blank cursor file so that you can hide the cursor.

#### During installation, select either the “Full” or “Custom” installation option. If you select “Custom”, go to the “Utilities and Tools” section and select the “Blank Cursor” option. This puts a file, BLANK.CUR, into the MT 7 for Windows directory.

#### Copy this file into your Windows “Cursors” directory. There should be other files with the extension “cur” in this directory.

#### Open the Windows Control Panel and select the Mouse option. Select the “Pointer” tab and click on the “Browse” button. Browse to the Windows cursor directory if not already there and select the BLANK.CUR file. Click on “OK” to set the hidden cursor.

### Left-Handed Mice

#### Using the control panel, it is possible to change which button on a mouse generates the “left” and “right” clicks. This feature allows left-handed people to use their index finger to produce a left click. This setting causes the touch screen driver to also reverse the meaning of a touch. Normally, a touch produces a left click. With the changed setting above, a touch starts producing a right-click.

#### To address this, edit the file “TwFactory.cfg” in the MT 7 for Windows software directory. If this file is empty, add in the text: <Touch> </Touch>

#### Between these two lines, add a new line: SwapMouseButtons=1

#### Save the file.

#### Open a command line window and set your working directory to the MT 7 for Windows directory. Issue the command: TwCfgUtil /u TwFactory.cfg

#### At this point, your touches start producing the desired left-clicks.

#### If your system supports multiple users, you may need to create separate files, such as TwLeft.cfg and TwRight.cfg. In TwLeft.cfg, set SwapMouseButtons to 1 and in TwRight.cfg, set SwapMouseButtons to 0. Add the above TwCfgUtil to each user’s Startup menu or login script, using TwLeft or TwRight as appropriate.

### Help Does Not Display

#### The help file is a PDF file. You need to obtain a PDF viewer or reader program to view the help file.

### No Touch from PCT Development Units

#### The original PCT development units used an early PX controller that did not support serial plug-and-play. Starting with version 7.13 Build 1, the Setup program assumes the use of the newer PX controllers that do support serial plug-and-play. If you are using a serial interface with a PCT development system and are using a custom installation, also select EX serial controller support to regain touch behavior.

### MT 7 for Windows Legacy Mouse Does Not Has Touch

#### Starting with MT 7.13.14, the driver installation files (INF) no longer request installation of the Microsoft mouclass.sys driver. The latest Microsoft certification tests no longer allow the method the INF files previously used.

#### Normally, this is not an issue. However, some special system may omit mouse support. If you install MT 7 for Windows with the ‘Legacy Mouse’ driver support on such a system, there will be no touch.

#### To remedy this, attach a PS/2 or serial mouse to your system. This forces the installation the needed driver. If you build an embedded system, include the PS/2 and serial mouse driver.

## Internal Notes (not included in the readme file)

### Upgrading an MT 7 for Windows, Version 7.00 System

#### The installer now can upgrade a version 7.00 system to the current version. Normally, the upgrade process deletes obsolete files. However, for version 7.00 upgrades, the old Configuration Tool is left. This was done because of the impending release of the Configuration Tool. There is no easy way in the new installer system to delete the old Configuration Tool without deleting the new old also.

# INSTALLATION

## Using Windows Explorer, browse to the software distribution and double-click on the Setup program to start the installation. If you downloaded the distribution, unzip the file beforehand. Follow the instructions given by the Setup program.

## If this is a new installation, you have two options: Full and Custom. Use the Custom option to select which features you want. The Full option installs all features.

## The installer then asks for your preference for driver options. You can choose only one.

### The digitizer option makes your touch screens appear as touch devices, enabling some gestures for single-touch devices and the full range of touch support for PX devices.

### The HID mouse option makes your touch screens appear as mice using Microsoft’s HID interface. This disables touch gesture support and treats PX devices as single-touch devices.

### The legacy mouse option makes your touch screens appear as mice using Microsoft’s old serial mouse interface. This disables touch gesture support and treats PX devices as single-touch devices.

## If you already have MT 7 for Windows installed, one of two things happens. If you are installing a different version of MT 7 for Windows, the installer does not prompt you and uses your old choices. If you are installing the same version, the installer asks you to choose features and driver support.

## During installation, you will get messages about finding new hardware. This is the MT 7 software registering your touch controllers.

# BUILD INFORMATION

## Source Control Information

The following sources are in the Visual SourceSafe ‘BlueRidge’ database.

|  |  |  |
| --- | --- | --- |
| **Project** | **Files Produced** | **Label** |
| Languages2 | TwLangEng.dll | RC 2012-09-27 |
| MtGlCalib | TwCalib.exe TwCalibLib.dll | RC 2013-07-15 |
| Tools/Data | *none in the package* | RC 2012-09-25 |
| Tools/XMLParser | *none in the package* | RC 2010-03-02 |
| TwAppIO 2 | TwAppIO.dll TwIO\_Core.dll TwIO\_EX\_HID.dll TwIO\_HID.dll TwIO\_Serial\_DX.dll TwIO\_Serial\_EX\_Fixed\_OS.dll TwIO\_Serial\_Legacy.dll TwIO\_USB\_DX.dll TwIO\_USB\_EX.dll TwIO\_USB\_EX\_Fixed\_OS.dll TwIO\_Utilities.dll TwIO\_Serial\_Pen.dll TwIO\_Serial\_EX.dll TwIO\_Serial\_RX\_Series.dll  TwIO\_USB\_PassThru.dll TwIO\_USB\_RX\_Series.dll TwIO\_Serial\_PX\_Series.dll  TwIO\_Serial\_SX.dll TwIO\_USB\_PX\_Series.dll | RC 2009-11-16           RC 2009-11-18 RC 2009-12-17    RC 2010-01-22 RC 2010-02-18 RC 2012-09-27 |
| TWDRV6.0\_7\_13\_4 | TwBus.inf TwBus64.inf TwBus.sys (all) TwHIDKmdf.sys (all) | ‘Unclassified BUS Logo 3-1-2010’  RC 2011-06-01 |
| TwMapper | TwMMManagerTool.exe TwMMManager.dll | RC 2009-11-10 RC 2012-03-08 |
| TwMonitor | TwMonitor.exe TwMonitorBeep.exe | RC 2013-01-18 RC 2013-01-25 |
| TwService | TwService.exe | RC 2012-10-12 |
| TwSystem | TwSystem.dll | RC 2013-07-15 |
| TwUI | \*.png TwUI.exe TwUICP.dll TwUIEngine.dll | RC 2006-08-23 RC 2009-11-10 RC 2012-09-27 |

The following sources are in Subversion ‘https://SW20-DTMSRVR.usac.mmm.com/svn/MT7’ repository.

|  |  |  |
| --- | --- | --- |
| **Subdirectory** | **Files Produced** | **Tag** |
| Config | TwConfig.dll TwRegSvc.exe | RC 2013-09-05 RC 2015-07-31 |
| **Driver** | **TwTouch.inf (all) TwTouch.sys (all)** | **RC 2016-06-28** |
| Installer | AddRemoveDrv.exe (Win32) AddRemoveDrv.exe (Win64) TwFactory.cfg **The Installer** | RC 2015-07-31   **RC 2016-06-28** |
| TwAppIO2 | TwIO\_Cobra.dll | RC 2015-07-31 |
| TwCfgUtil | TwCfgUtil.exe | RC 2015-07-31 |
| TwCommon | TwCommon.dll | CE RC 2014-04-17 |
| TwGraphics | TwGraphics.dll | RC 2013-09-04 a |

## Build Product (see checksums.xlsx)

## Setup Product

| **File Name** | **Size (Bytes)** | **Date and Time** | **Version Stamp** | **MD5 Checksum** |
| --- | --- | --- | --- | --- |
| **Readme.txt** | **21107** | **2/18/2016 7:35** |  | **bcf68228abb88c75919fa6aabe0d359e** |
| **setup.exe** | **2530128** | **2/18/2016 8:41** | **7.13.21.2** | **160c84df3e0408a72149f4c58418664c** |
| **MT7.13.21.Win32-64.zip** | **2465061** | **2/18/2016 8:41** |  | **55ebf347ccf2db69bad9ead1a2709ddf** |

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End of Release Notes