



Windows 10 Touch and Pen Overview

Blue Lan
Software Engineer
Partner Enablement Team

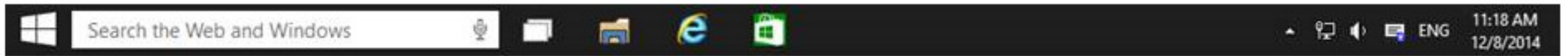
Agenda

- Windows Touch Investment
- Windows 10 Requirements for Touch
- Inbox Apps that uses the Windows 10 DirectInk Platform
- Windows 10 Requirements for Pen
- Co-engineered Assistive Testing Jigs for Pen hardware
- Compatibility Program
- Resources for Touch and Pen

Windows 10 Touch Investment

Touch Friendly Taskbar

Without Touch

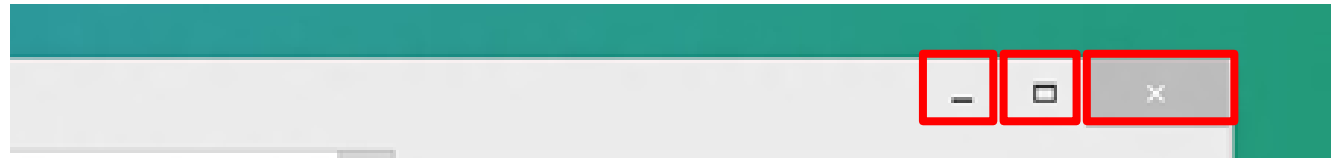


With Touch: More space between icons

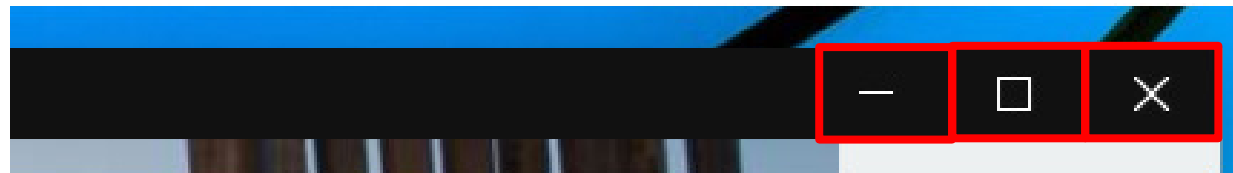


Touch Friendly Controls

Windows 8



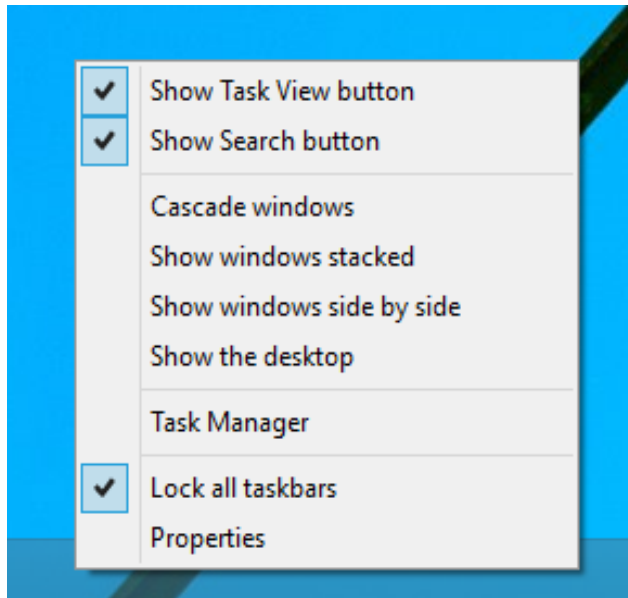
Windows 10



Touch Friendly Context Menu System

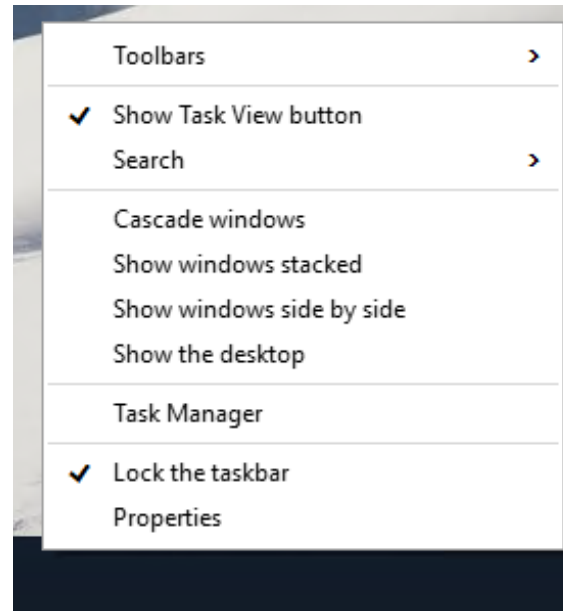
Windows 8

Mouse & Touch

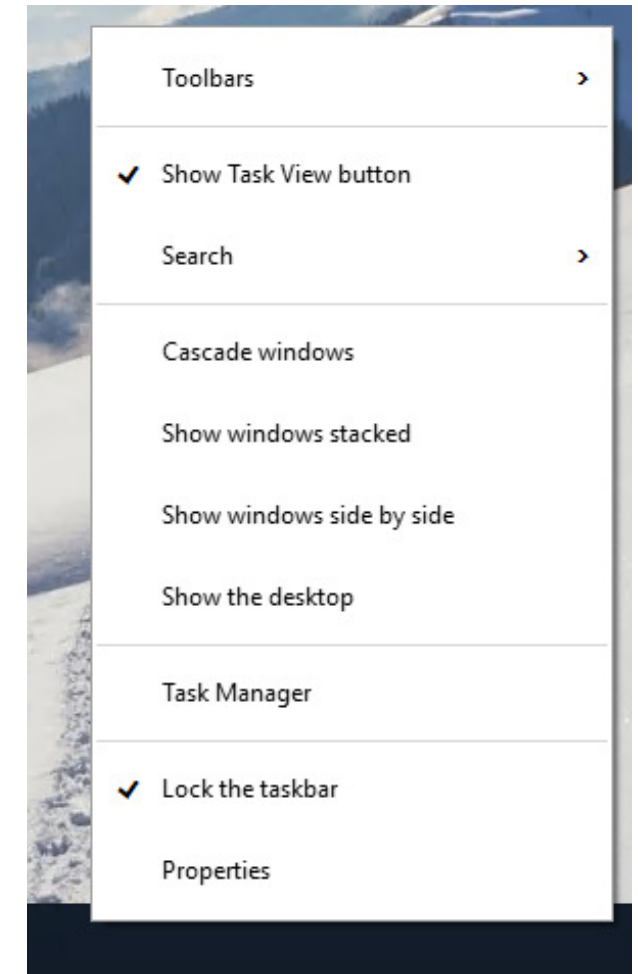


Windows 10

Mouse



Touch

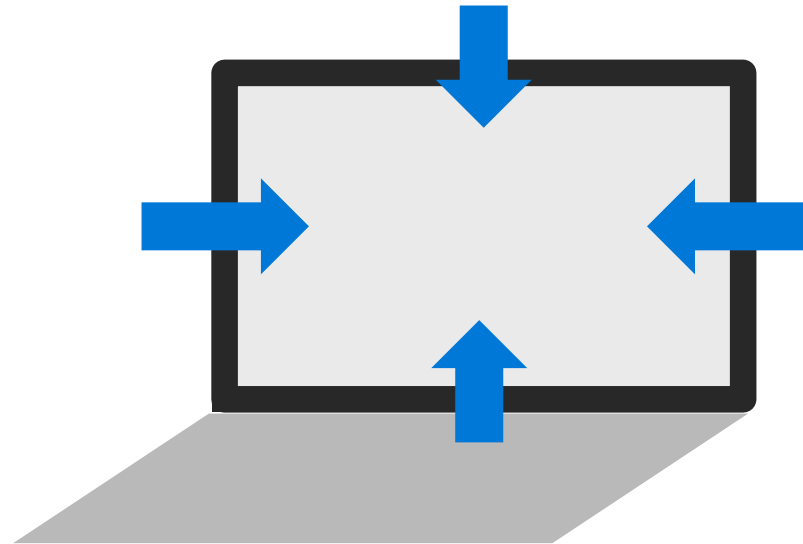
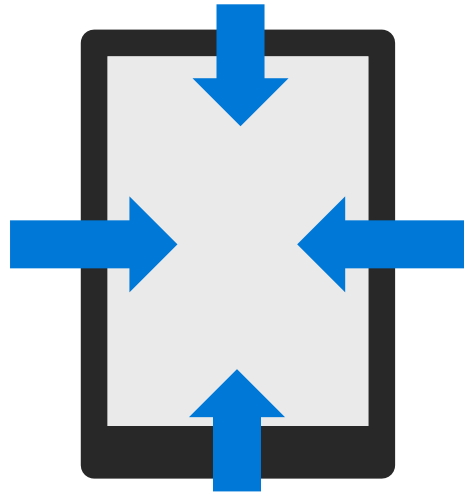


New Touch Swipe Gestures

Edge Swipe Gestures

We've relaxed requirements on how the digitizer should perform around screen edges to support a broader range of hardware!

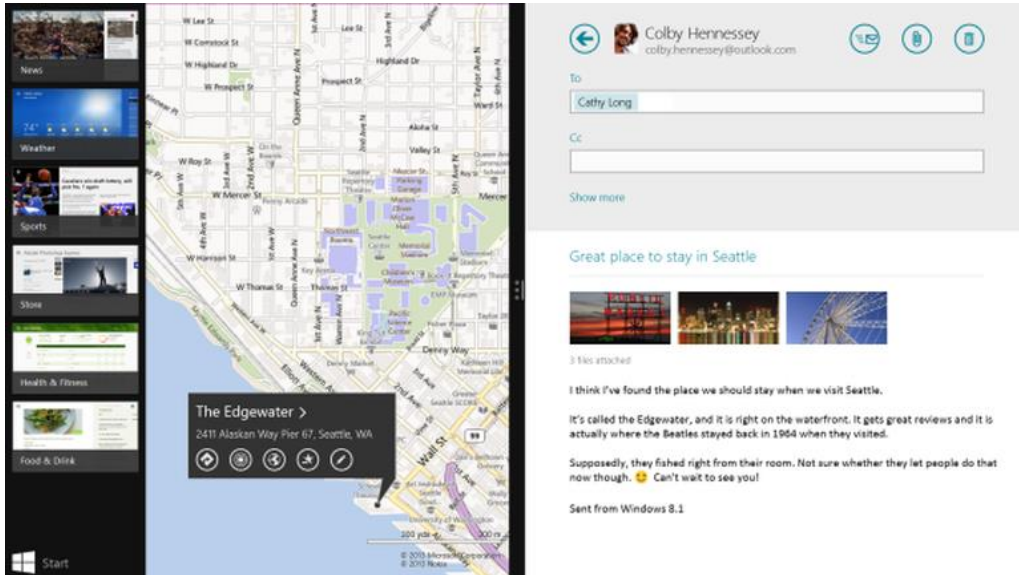
Edge gestures on all four sides of the screen provide quick access to important system UI in Windows 10.



➡ Left Edge Swipe: Task View

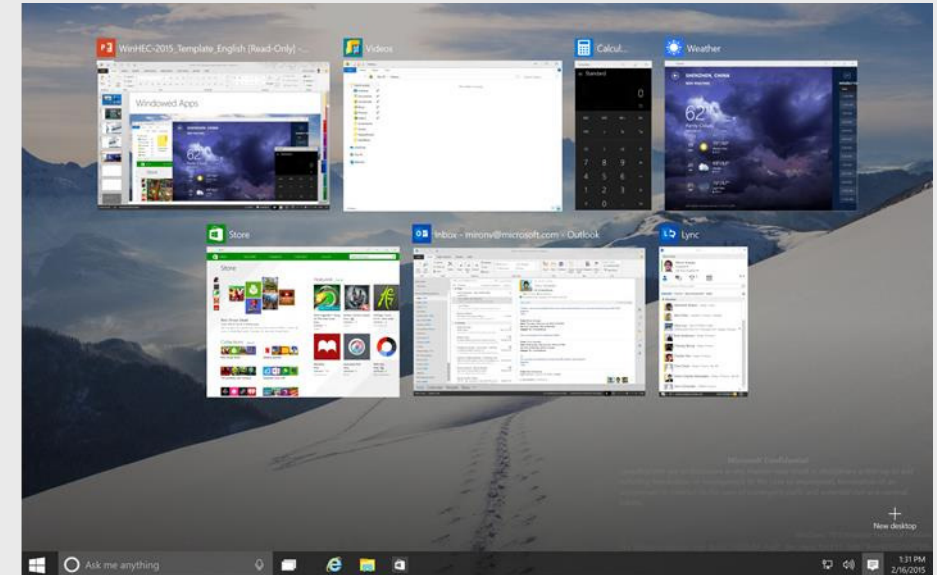
Windows 8.1

Bring out the last-used app or the list of most recently used apps (Switch List).



Windows 10

Bring up a grid of most recently used apps (Task View).



← Right Edge Swipe: Action Center

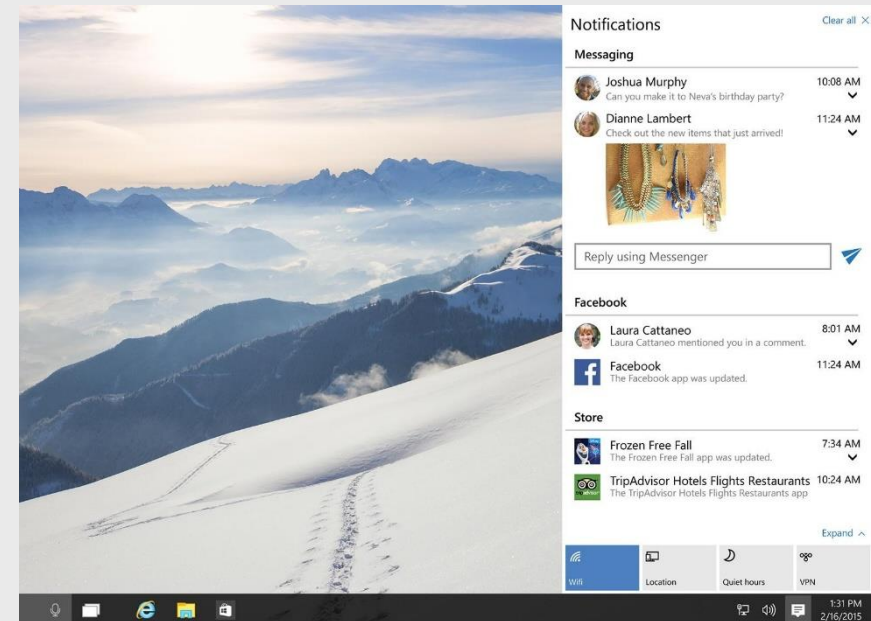
Windows 8.1

Bring up the Charms Bar, which includes commonly used system settings.



Windows 10

Bring up Action Center, which shows notifications and commonly used system settings.



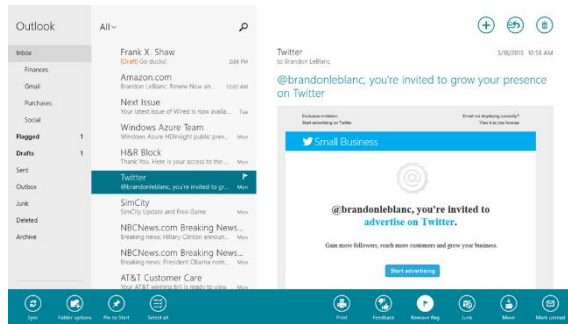


Top Edge Swipe: Multitasking

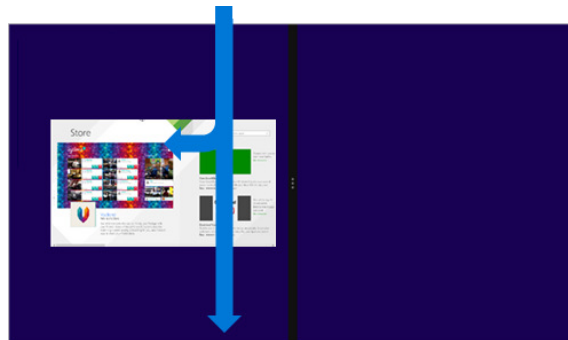
Windows 8.1

Bring up the app commands (short swipe) or snap/close an app (long swipe).

1



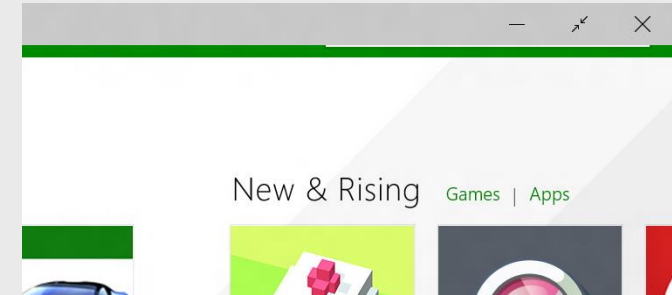
2



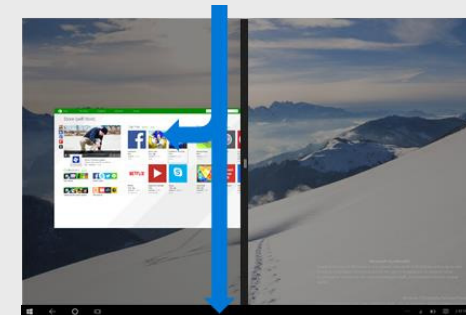
Windows 10

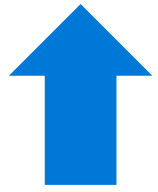
Bring up a hidden title bar (short swipe) or snap/close an app in Tablet Mode (long swipe).

1



2

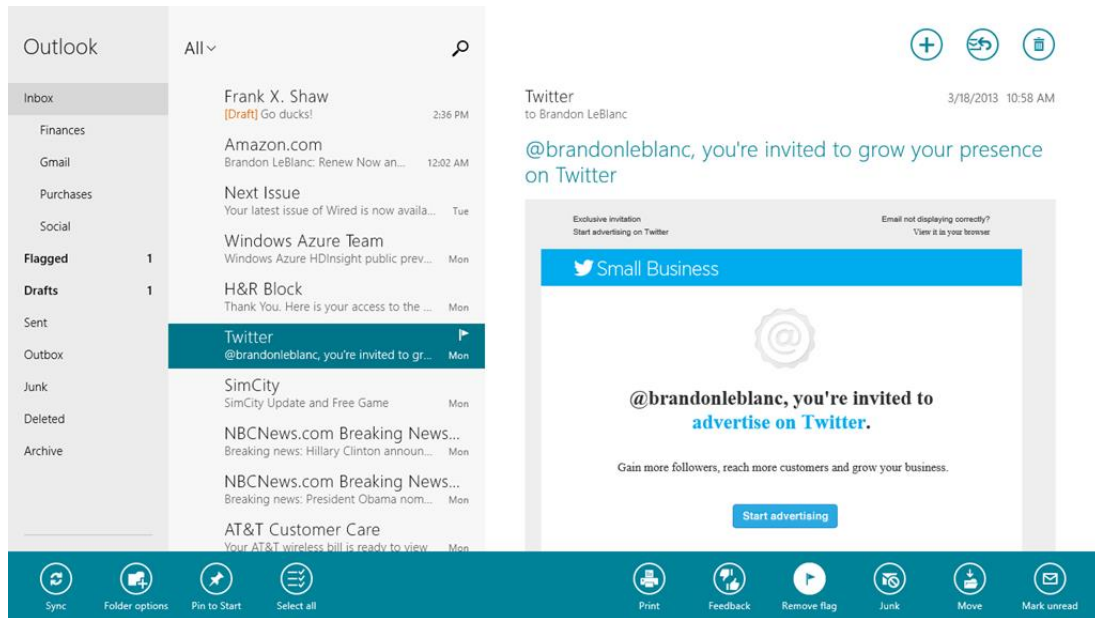




Bottom Edge Swipe: Taskbar

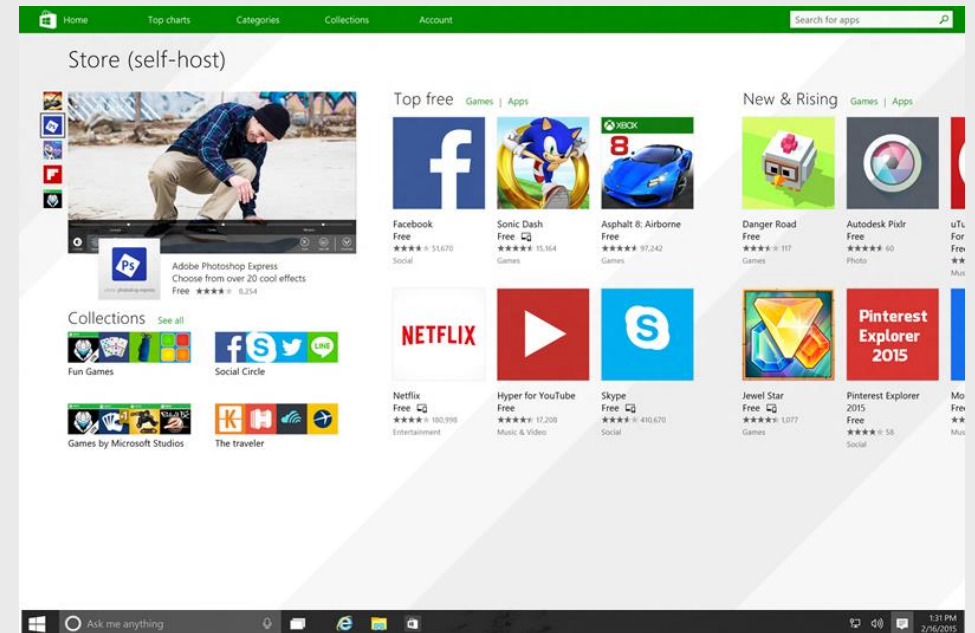
Windows 8.1

Bring up app commands.



Windows 10

Bring up the taskbar when an app is full screen.



Windows 10 Touch Hardware Requirements

Easier Win10 Touch Requirements for Compatibility

Attribute	Windows 10 Requirement
HID Compliance	All digitizers are required to be HID compliant
Ghost Points	No ghost contacts are reported
Accuracy	$\leq \pm 1\text{mm}$ (outside 3.5mm from edges) $\leq \pm 2\text{mm}$ (within 3.5mm of all edges)
Move Latency	For $<7''$, $\leq 35\text{ms}$ For $\geq 7''$, $\leq 25\text{ms}$
Down Latency (Active)	$\leq 35\text{ms}$
Down Latency (Idle)	$\leq 150\text{ms}$
Cold Boot Latency	Immediately responsive once the display is active
Resolution	\geq Native display resolution or greater

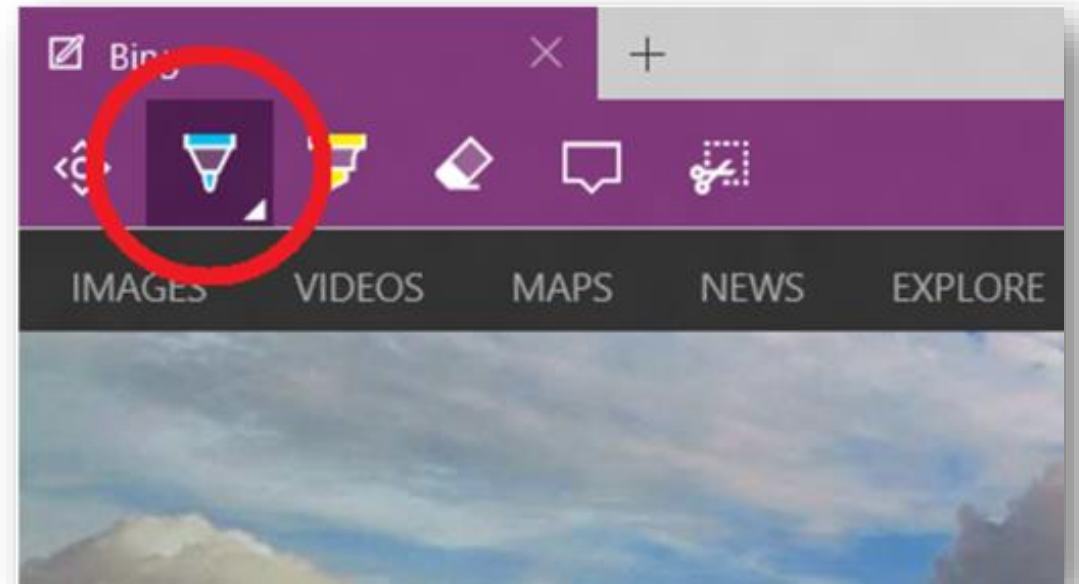
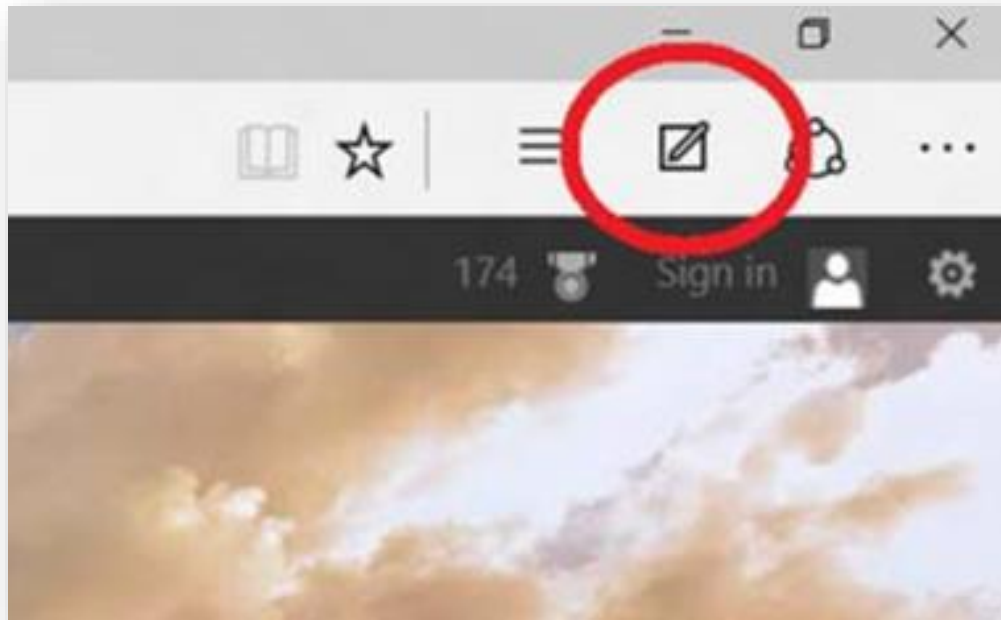
Easier Win10 Touch Requirements for Compatibility

Attribute	Windows 10 Requirement
Linearity (Moving jitter)	$\leq \pm 1\text{mm}$ (outside 3.5mm from edges) $\leq \pm 2\text{mm}$ (within 3.5mm of all edges)
Stationary Jitter	$\leq \pm 0.5\text{mm}$
Finger Separation	$\leq 8\text{mm}$ [Edge to Edge]
Minimum Simultaneous Contacts	≥ 5
Buffering	$\geq 100\text{ms}$ of data
Report Rate	$\geq \text{Display Refresh Rate}$ $\leq 250\text{Hz}$
Custom Gestures	Custom gestures are not allowed
Third party drivers	Desktop: Third party drivers prohibited Mobile: Third party drivers allowed

Windows 10 Inbox App With DirectLink

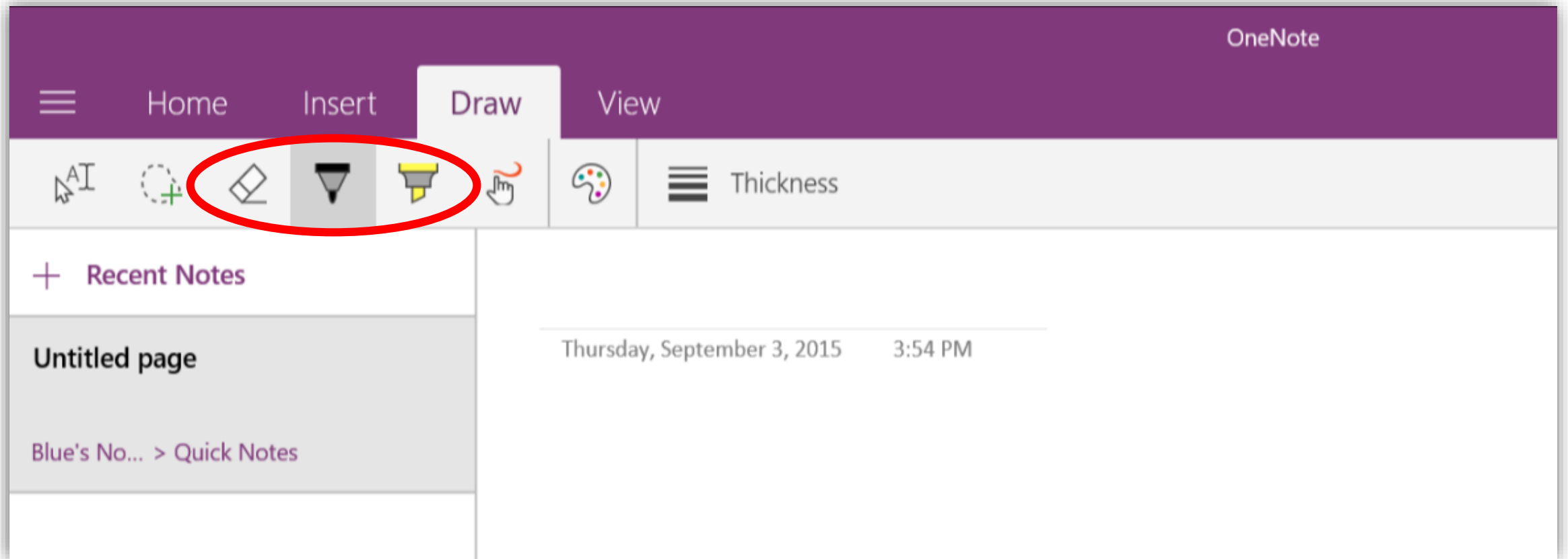
Inbox Applications With DirectLink

- Microsoft Edge



Inbox Applications With DirectLink

- One Note



Windows 10 Pen Hardware Requirements

Windows 10 Pen Hardware Requirements

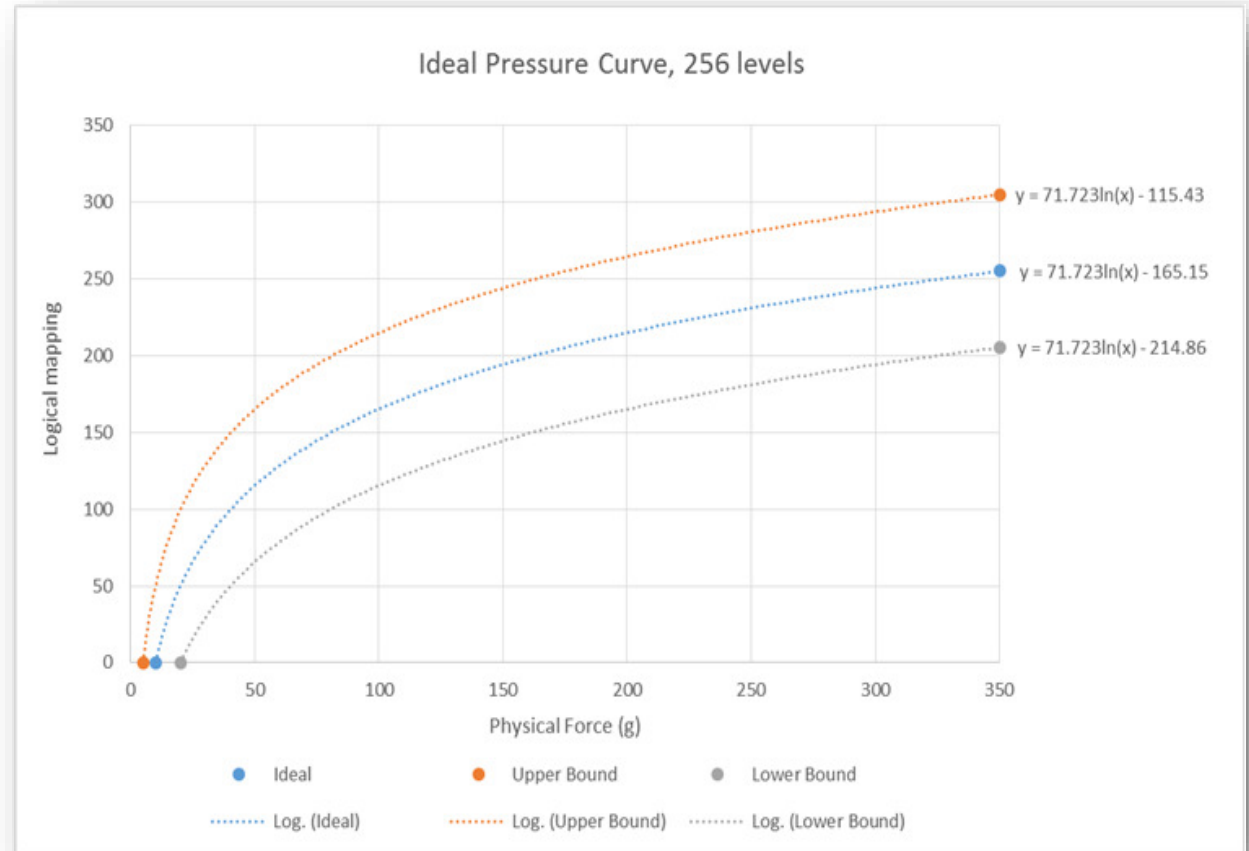
Attribute	Windows 10 Requirements
HID Compliance	All digitizers are required to be HID compliant
Ghost Reporting	No "Phantom" or "Ghost contacts" shall be reported.
Accuracy	$\leq \pm 0.5$ mm(Center), $\leq \pm 1$ mm (within 3.5mm of all edges)
Moving Latency	≤ 30 ms (Center) (Average over 10 rotations)
Down Latency (Active)	≤ 35 ms (Average over 50 taps)
Down Latency (Idle - If implemented)	≤ 150 ms
Cold Boot Latency	Pen shall be immediately responsive once the display is active
Resolution	\geq the native display resolution or 150 dpi (whichever is greater)
Eraser	Windows pen solution shall have a hardware affordance on the pen that provides eraser functionality compliant with the associated protocol.

Windows 10 Pen Hardware Requirements

Attribute	Windows 10 Requirements
Stationary Jitter	$\leq \pm 0.3\text{mm}$ (Center), $\leq \pm 0.5\text{mm}$ (within 3.5mm of all edges)
Hover Stationary Jitter	$\leq \pm 0.5\text{mm}$ (Center)
Moving Jitter	$\leq \pm 0.4\text{mm}$ (Center), $\leq \pm 0.6\text{mm}$ (within 3.5mm of all edges)
Report Rate	$\geq 133\text{Hz}$
Hover Accuracy	$\leq \pm 1\text{mm}$ (Center)
Hover Range	$\geq 5\text{mm}$
Custom Gestures	Irrespective of reporting implementation, additional custom pen gestures are prohibited with the exception of wake gestures.
Pressure	Pen digitizers shall report ≥ 256 levels of pressure

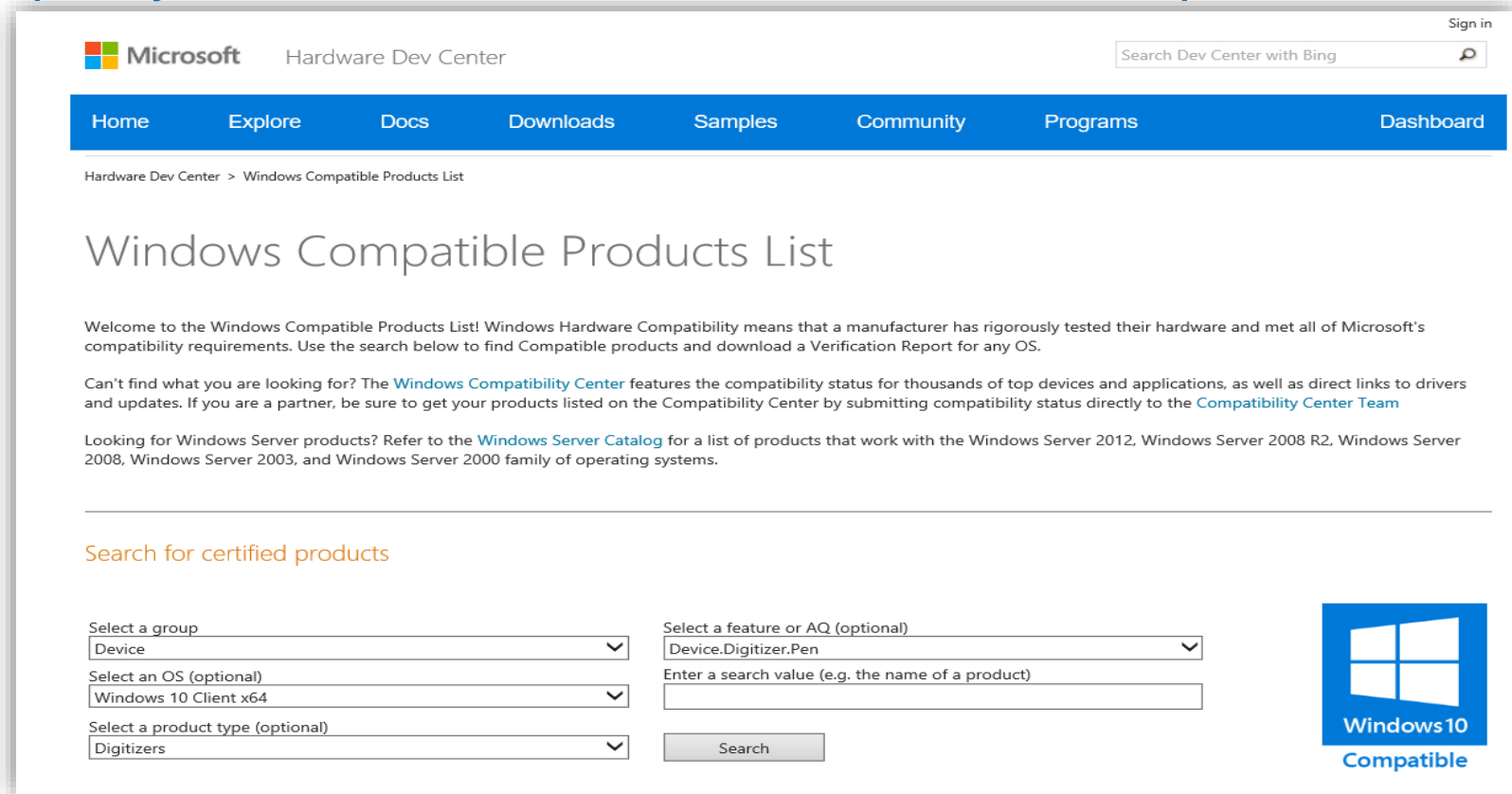
Testing Pressure Reporting

- Pressure Levels and Motion
 - As weight is added to stylus, reported pressure should increase logarithmically
 - Ensures smooth inking performance preferred by artists
 - Pressure should remain fairly stable as pen moves across screen



Windows Compatible Product List

- Compatible Product List:
- <http://sysdev.microsoft.com/en-us/hardware/lpl/>



The screenshot shows the 'Windows Compatible Products List' page on the Microsoft Hardware Dev Center. The page has a blue header with the Microsoft logo and navigation links: Home, Explore, Docs, Downloads, Samples, Community, Programs, and Dashboard. A search bar is located in the top right corner. The main content area is titled 'Windows Compatible Products List' and contains a welcome message, a search section, and a search form. The search form includes dropdown menus for 'Select a group' (Device), 'Select an OS (optional)' (Windows 10 Client x64), and 'Select a product type (optional)' (Digitizers). It also has a text input for 'Enter a search value (e.g. the name of a product)' and a 'Search' button. A 'Windows 10 Compatible' logo is visible in the bottom right corner.

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Hardware Dev Center > Windows Compatible Products List

Windows Compatible Products List

Welcome to the Windows Compatible Products List! Windows Hardware Compatibility means that a manufacturer has rigorously tested their hardware and met all of Microsoft's compatibility requirements. Use the search below to find Compatible products and download a Verification Report for any OS.

Can't find what you are looking for? The [Windows Compatibility Center](#) features the compatibility status for thousands of top devices and applications, as well as direct links to drivers and updates. If you are a partner, be sure to get your products listed on the Compatibility Center by submitting compatibility status directly to the [Compatibility Center Team](#)

Looking for Windows Server products? Refer to the [Windows Server Catalog](#) for a list of products that work with the Windows Server 2012, Windows Server 2008 R2, Windows Server 2008, Windows Server 2003, and Windows Server 2000 family of operating systems.

Search for certified products

Select a group
Device

Select an OS (optional)
Windows 10 Client x64

Select a product type (optional)
Digitizers

Select a feature or AQ (optional)
Device.Digitizer.Pen

Enter a search value (e.g. the name of a product)

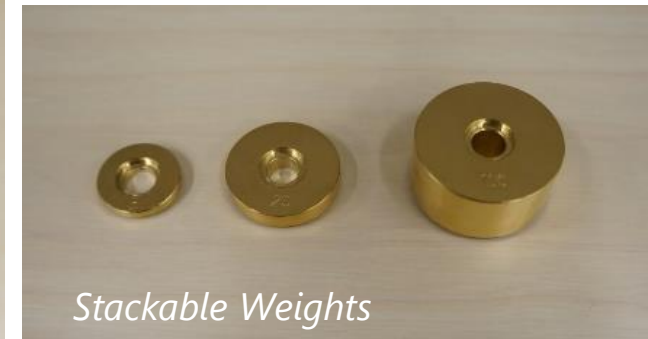
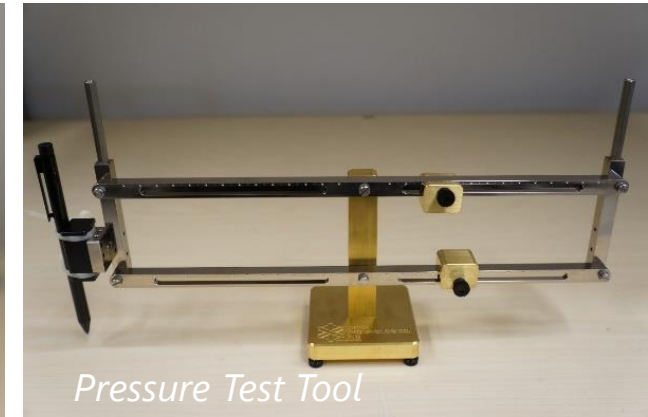
Search

Windows 10
Compatible

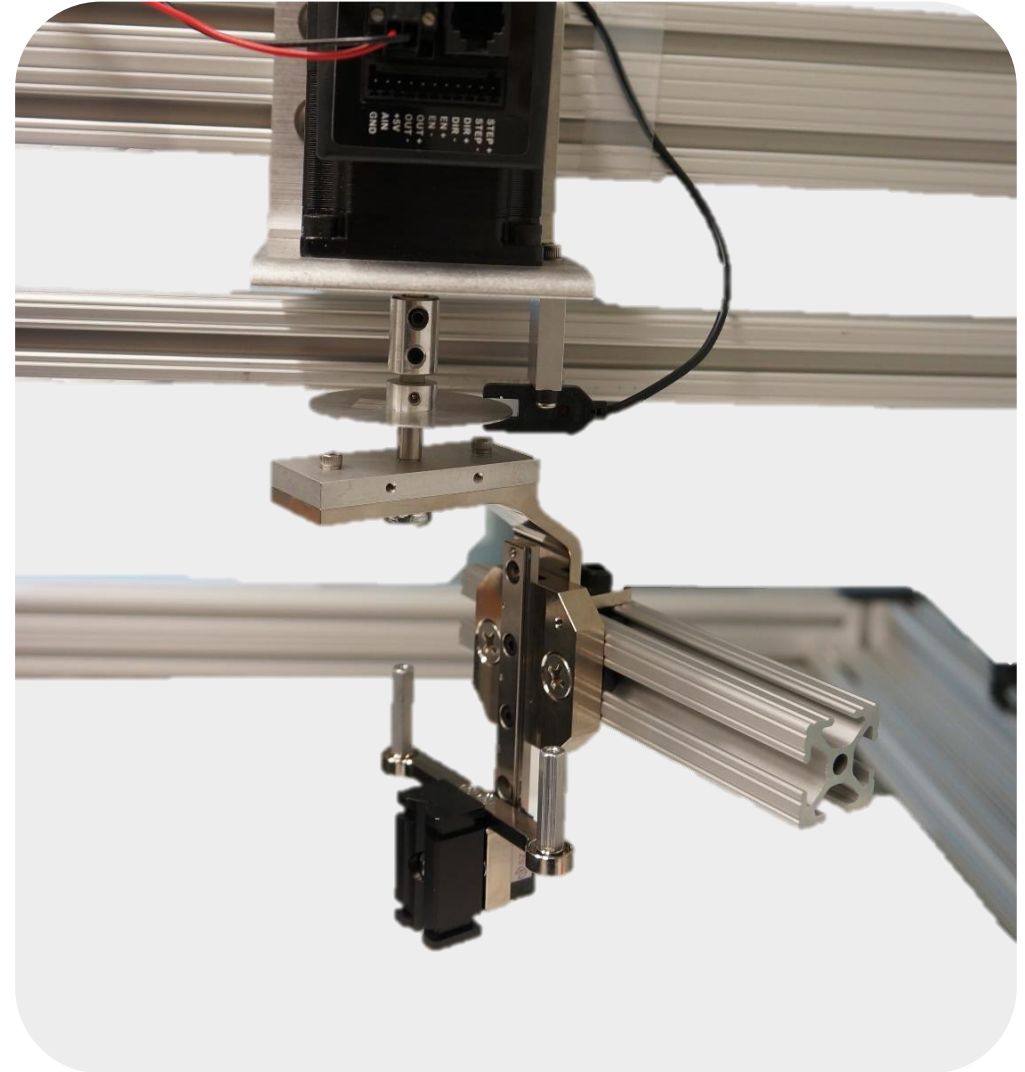
Pen Test Jigs

Test Jigs for Pen HLK

- Existing testing tools from Win 8/8.1 are still used for Pen tests:
 - Precision Touch Testing Tool (PT3)
 - Rotational Acoustic Tool (RA)
- New accessory jigs to enable Pen testing:
 - Stylus Holders
 - Pressure Test Tool
 - Stackable Weights



New Test Jigs: Stylus Holder for PT3/RA



Purchasing Test Jigs



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Compatibility Program

Windows 10 Compatibility Program

- Windows 10 HLK designed specifically for Windows 10
 - Reporting of HQA not a requirement for Windows 8 .1 / 10
 - This change was made available to Windows 8.1 through KB article 3095649. For more information, please see <https://support.microsoft.com/en-us/kb/3095649>. It is important that OEMs update 8.1 factory images to include this KB article if Touch and or Precision Touchpad devices without the blob are to be used.
- Windows 10 Fast Track program for Touch platforms that ship 8.1 and 10
 - http://blogs.msdn.com/b/windows_hardware_certification/archive/2015/05/19/fast-track-windows-10-compatibility-program.aspx
 - Pen devices are not included in Windows 10 Fast Track program
 - For best results, test pen in Windows 10 HLK

Resources

- Device.Input.Digitizer.Touch Requirements
 - [https://msdn.microsoft.com/en-us/library/windows/hardware/dn932661\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/windows/hardware/dn932661(v=vs.85).aspx)
- Device.Input.Digitizer.Pen Requirements
 - [https://msdn.microsoft.com/en-us/library/windows/hardware/dn932659\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/windows/hardware/dn932659(v=vs.85).aspx)
- Touch & Pen Implementation & Validation Guide
 - <http://go.microsoft.com/fwlink/?LinkId=528890>

Resources

- Windows Pointer Device Data Delivery Protocol
 - <https://msdn.microsoft.com/en-us/library/windows/hardware/dn672287.aspx>
- Submission workbook For Touch & Pen
 - <http://go.microsoft.com/fwlink/p/?LinkID=691145>
- HLK Pen Testing Videos:
 - <https://channel9.msdn.com/Blogs/WinHEC/WinHEC-Pen-Validation-Workshop-Taipei-August-Content>

Thank You!



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