VersaPro Type VZ - A Windows 8-based, Large-screen Tablet PC

SAKO Yoshikazu, SASAKI Noriyasu

Abstract

Incorporating a 12.5" LCD screen, the newly announced VersaPro Type VZ (VK15E/ZS-G) is a tablet PC that mounts the latest Windows 8 operating system. This paper discusses the product concept and the technological devices that have been employed to commercialize the product.

Keywords

1. Introduction

Unlike a conventional PC that has its data entry performed mainly via a keyboard, the tablet PC is a new-generation PC that offers new uses. This is thanks to its touchscreen panel technology featuring fingertip operation for a quick look at information and the ability to have comments entered via handwriting using a stylus pen.

There are two types of tablet PCs: one is called a convertible tablet that makes keyboard operation and fingertip/pen operation compatible, and the other one, which does not incorporate a keyboard, is called a "pure" tablet. In order to achieve a weight of less than a kilogram despite its large 12.5" screen, NEC chose the "pure" tablet type for its newly announced VersaPro Type VZ (VK15E/ZS-G) tablet PC. Through the pursuit of a large screen, light weight, and easy operability, NEC has succeeded with this tablet in achieving the lightest design in the class of large 12.5" screen-incorporated tablet PCs and in featuring easy pen writing in addition to fingertip operation.

2. Features and Specifications

The VersaPro, Type VZ (**Photo 1**) has the following features. These are also shown in the **Table** below.

(1) The VersaPro Type VZ has a large screen measuring 12.5 inches across the diagonal and weighs less than a kilogram, and thus it achieves a superior portability. When users switch from a conventional mobile PC, they can

Photo 1   External view of the VersaPro Type VZ.

display conventional Windows application files at about the same size as before.

(2) It incorporates Windows 8 Pro, the latest business operating system that features fast startup after shutting down.

(3) An electrostatic capacitive touchscreen panel compatible with fingertip touch-operation features 10-point multitouch, allowing all fingers and thumbs to operate the screen.

In addition, users can choose to have the latest Office programs compatible with touch operation (including Word 2013, Excel 2013, PowerPoint 2013, and OneNote 2013) pre-installed.

(4) The provided digitizer pen is conveniently held as a pencil and it has a tapered tip that enables delicate handwriting. Moreover, handwriting operation as easy as writing on paper is achieved thanks to the mechanism to enable pen data entry even if the hand of the user that holds the pen is in contact with the screen.

(5) The VersaPro Type VZ incorporates wired LAN, IEEE

801.11a/b/g/n Wi-Fi, and Bluetooth ® modules as standard, while also offering expandability as a means of communication such as WWAN compatibility with NTT DoCoMo's ultra-high-speed wireless communication service Xi (Crossy).

(6) The removable battery conveniently enables users to replace it with a new one when the battery operation time becomes short due to exhausted battery life. Users can avoid troublesome chores to send the device to the maintenance counter of the manufacturer.

(7) An external USB keyboard with the same key layout and keystrokes as those of a conventional mobile PC is optionally available. When the VersaPro Type VZ is combined with a stand to hold it in an upright position, the user can perform keyboard operation in the same manner as with a conventional mobile PC.

3. Incorporation of a Large Screen and the Pursuit of Light Weight

The VersaPro Type VZ incorporates a 12.5" LCD monitor, which is a large screen for a tablet PC. NEC selected this screen size to allow users to switch from conventional mobile PCs to the tablet PC without feeling the difference in screen size, since conventional mobile PCs usually have 12" class LCD screens. This strategy allows them to use backbone systems and business applications that they already use in their mobile PCs without any modifications, because the ways they are displayed are almost the same. Optimum ease of use is thereby achieved.

Moreover, the lightest-possible materials for the components were chosen to construct the VersaPro Type VZ in order

Table   Main specifications of the VersaPro Type VZ.

Item			Specification
CPU			Intel® Celeron® processor
LCD			12.5" touchscreen panel LCD (HD 1,366 × 768 dots), non-glare
	Input method	Fingertip operation	Electrostatic capacitive system (compatible with multitouch)
		Dedicated stylus pen operation	Electromagnetic induction system (provided with digitizer pen)
Chipset			Intel HM76 Express Chipset
Memory (max. memory)			4 GB/8 GB selectable (max. 8 GB)
HDD			64 GB SDD/128 GB SDD selectable
Communications functions	LAN		Gigabit LAN [incorporated as standard]
	Wi-Fi		Wi-Fi (IEEE 802.11 a/b/g/n) [incorporated as standard]
	Bluetooth®		Bluetooth® Ver. 4.0 [incorporated as standard]
	WWAN		Xi-compatible WWAN (selectable as option)
Interface	USB		USB × 3 ports (USB2.0 × 2, USB3.0 × 1)
	Headphone/ microphone		Headphone terminal (stereo mini jack) × 1 Microphone terminal (stereo mini jack) × 1
	External display		Analog RBG × 1
Security chip			TPM (TCG v1.2) incorporated
Fingerprint sensor			Fingerprint sensor TPM [incorporated as standard] mounted on the rear
Sound			Intel High Definition Audio compliant
Speaker			Built-in monaural speaker
Microphone			Built-in stereo microphone
Web cameras	IN camera		Effective pixel number: 920,000 pixels [incorporated as standard]
	OUT camera		Effective pixel number: 920,000 pixels [incorporated as standard]
Battery operation time	S battery		5 hours or more (under JEITA Battery Run Time Measurement Method)
	M battery		7 hours or more (under JEITA Battery Run Time Measurement Method)
Weight			Less than 1 kg (with S battery), 1.1 kg or less (with M battery)
Body size (W x D x H)			Approx. 327 × 206.4 × 18.6 mm
Pre-installed OS			Windows 8 Pro (64 bit) or Windows® 7 Professional (32 bit) [Windows 8 downgrade]

to achieve a lightweight design; in addition, the following devices were adopted.

(1) Employment of thin, durable magnesium alloy for the body

Magnesium alloy with a thickness of less than 1 mm was used for the body of the VersaPro Type VZ in order to ensure durability and freedom from denting or warping when the tablet is held in the hand, while at the same time achieving a lightweight design.

(2) Employment of thin, durable tempered glass for the protection of the LCD

The VersaPro Type VZ uses thinner protective glass than hat used for ordinary notebook PCs. Moreover, the glass surface is coated with an anti-glare film in order to prevent fluorescent light and other types of illumination from being reflected by the protective glass and also to prevent fingerprints from staining the surface.

(3) Employment of an SSD for the storage drive

The VersaPro Type VZ uses an SSD (solid state drive) that is lighter than the HDD (hard disk drive) used for most of the conventional mobile PCs. Since unlike the HDD, the SSD neither has rotating components or head, the SSD is more unsusceptible to vibrations and shocks than the HDD and also has freedom in its positioning angle during use. For these reasons, this tablet may be used at various angles.

(4) Reduction in the weight of the heat dissipation components

By simplifying the air flow for the dissipation of heat from the CPU and chipset, which are heat sources, NEC has designed the VersaPro Type VZ not to use excessive heat dissipation components in order to reduce the weight.

4. Pursuit of Ease of Use in Touch Input and Pen Input

Although the VersaPro Type VZ is a "pure" tablet type without a built-in keyboard, it achieves remarkable ease of use thanks to the employment of the following devices for both touch input and pen input.

(1) A flat surface that takes account of Windows 8 operation

The basic operation of Windows 8 is to touch and slide a finger from the edge of the screen when the menu is displayed. Therefore, NEC has eliminated unevenness between the screen edge and the central display area in order to make the front panel fully flat (flat surface design), which facilitates Windows 8 operation.

(2) Multitouch

The VersaPro Type VZ uses a touchscreen panel that is compatible with 10-point multitouch that enables correct recognition, even if the panel is touched simultaneously with all fingers and thumbs.

This makes it possible for the user to cope with various touch gestures of Windows 8 applications such as enlarging the display size by pinching thumb and forefinger together and reducing the size by stretching them apart.

(3) Character recognition with a high recognition rate

A Japanese handwriting input application that can be used in the desktop mode of Windows 8, "mazec" manufactured by MetaMoji Corporation is optionally available. It has an excellent character recognition rate and achieves easy handwriting input thanks to the character conversion prediction function with a learning capability that improves as it is used more. This application has been evaluated and developed by MetaMoji Corporation in collaboration with NEC's development of the VersaPro Type VZ.

(4) Operability of the pen

An easy-to-grip digitizer pen (**Photo 2**) with a thickness equivalent to that of a pencil is used for the VersaPro Type VZ. Since this pen has a tapered tip, delicate handwriting input is possible, thereby making it suitable for delicate touch operation of window displays on the Windows 8 desktop. Furthermore, pen input is possible even if the hand of the user that holds the pen is in contact with the screen, so pen operation as easy as for ordinary writing is possible while placing a hand on the paper.

(5) How the pen writes

The protective film employed in the VersaPro Type VZ appropriately creates a sense of resistance, just like
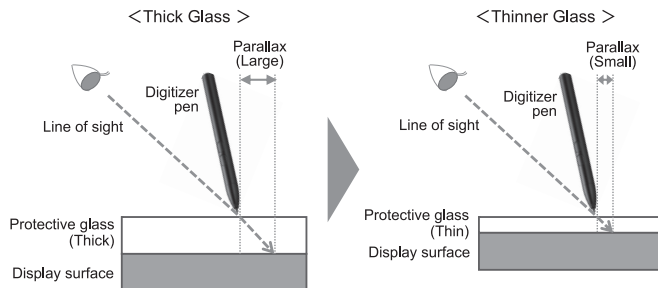

Photo 2   Digitizer pen.

Fig. Schematic diagrams of parallax.

writing on paper with an ordinary pen. It does not make the pen tip too slippery, thereby making it easy to use the dedicated pen to write letters and draw pictures.

(6) Reduction of parallax
The thickness of the protective glass on the exterior surface of an LCD panel creates distance between the pen tip and the display surface of the LCD panel, causing parallax (**Fig.**). To minimize this parallax, the VersaPro Type VZ uses thinner protective glass than that of a conventional notebook PC, thereby achieving easy pen input with virtually no parallax.

(7) Tracking capability of the pen
The electromagnetic induction type touchscreen panel recognizes the position of the pen with the accuracy of ±0.4 mm and reads out 133 times per second.
This helps achieve an excellent tracking capability that responds smoothly to finely performed, rapid pen maneuvers.

5. Other Features

In addition to the large screen, light weight, and easy operability, the VersaPro Type VZ also has the following features.

(1) Extended battery operation time
The VersaPro Type VZ offers a battery operation time of 7 hours at maximum (under the JEITA Battery Run Time Measurement Method). The VersaPro Type VZ can be kept in sleep mode (the condition in which the power consumption is suppressed by the engagement of the power-saving mode for the SSD and display, while the status of the memory in progress is maintained) whenever it is carried around. It may then be used away from the office all day long.

(2) Dual core CPU for high-speed processing
The VersaPro Type VZ employs the Intel ® Celeron ® Dual Core CPU featuring superior processing capability to the Intel ® Atom ™ processor that is used in many tablet PCs.
In combination with standard 4 GB memory upgradable to 8 GB, it offers high-speed processing for smooth operation of the latest Office programs (including Word 2013, Excel 2013, PowerPoint 2013, and OneNote 2013) and extended battery operation time compatibility.

(3) Versatile interfaces
The VersaPro Type VZ has USB ports on both left and right sides in order to easily accommodate multiple devices such as a mouse and keyboard that may become necessary when working at an office desk. It is also provided with versatile interfaces to enable utilization of existing company assets - such as standard provision of an external RGB display connector to enable connection with a projector.

(4) Versatile communications functions
The VersaPro Type VZ incorporates Wi-Fi (IEEE 802. 11a/b/g/n) and Bluetooth ® modules as standard, while offering versatile communications functions such as WWAN compatibility with NTT DoCoMo's ultra-high-speed wireless communication service Xi. Moreover, this tablet is also provided with a LAN port as standard that is compatible with gigabit Ethernet (1000BASE-T) to cope with existing wired LAN environments. The LAN modular jack is laid out so that the latching tab of the modular plug comes on top when inserted into the jack in order to prevent the LAN cable from falling off when the tablet is placed on a desk.

(5) Web cameras incorporated on both the front and back panels.
Web cameras useful for video conferencing, status report preparation, and many other purposes are provided as standard on both front and back panels of the VersaPro Type VZ.

(6) Fingerprint authentication function
The VersaPro Type VZ is provided with a fingerprint sensor as standard that can execute individual authentication with a simple touch and by sliding a fingertip. It is also compatible with a single sign-on capability that simultaneously authenticates access to BIOS and Windows with a single authentication operation to achieve simple yet safe security functionality.

(7) Motion recognition

The VersaPro Type VZ incorporates a gyro sensor that senses the rotation of the body and an acceleration sensor that recognizes movement of the body. Thereby, it detects that it has been rotated and can automatically rotate the display. The automatic rotation of the display can be overridden to enable the user to rotate the display at the touch of a button.

(8) Deletion of data in case of theft or loss

A remote data deletion service that can erase the data in the VersaPro Type VZ via internet is available free of charge for one year.

This service offers a function that automatically deletes the data specified in advance when no authentication is passed for an extended period of time. This service helps reduce the risk of information leakage in case of theft or loss.

(9) Pursuit of ease of use

The VersaPro Type VZ is provided with a strap that prevents the digitizer pen from being lost. Moreover, there are two strap eyelets on the left and right sides of the tablet to allow both left-handed and right-handed users to use the strap. Furthermore, a display rotation button is provided, which is useful when a map is displayed, for example, and in other cases when automatic display rotation is not desirable.

6. Conclusion

This paper discussed various features of the newly announced VersaPro Type VZ (VK15E/ZS-G) tablet PC with Windows 8.

In order to promptly address the new demands of the tablet PC market, which is currently expanding rapidly, NEC is planning to develop and release even more innovative tablet PCs.

To conclude, NEC would like to thank all those that have collaborated in the release of the VersaPro Type VZ.

Authors' Profiles

SAKO Yoshikazu
Manager
Personal Solutions Sales Promotion Division
Personal Solutions Operations Unit

SASAKI Noriyasu
Assistant Manager
Personal Solutions Sales Promotion Division
Personal Solutions Operations Unit

Information about the NEC Technical Journal

Thank you for reading the paper.
If you are interested in the NEC Technical Journal, you can also read other papers on our website.

Link to NEC Technical Journal website

Japanese	English

Vol.7 No.3 Smart Device Solutions

Remarks for Special Issue on Smart Device Solutions

NEC Group Paves the Way for Smart Devices

◇ Papers for Special Issue

Service platforms

Smart Device Management/Security Solutions Regardless of OS or Carrier

Solutions Supporting the Utilization of Smart Devices: System Introduction Case Studies

Authentication Solution Optimized for Smart Devices

"Smart Mobile Cloud" Contributing to the Use of Smart Devices

"BIGLOBE Cloud Hosting" Supports Building of High Quality Services

"Contents Director," Content Distribution Service for Smart Devices

UNIVERGE Mobile Portal Service: A Smart Device Utilization Platform Optimized for BYOD

Remote Desktop Software that Supports Usability of Smart Devices

SystemDirector Enterprise - A Business System Construction Platform to Facilitate Development of Applications Compatible with Smart Devices

Smart Device Content Distribution Platform Service Using the BIGLOBE Hosting

Smart devices

Overview of "LifeTouch" Series Android Tablets

VersaPro Type VZ - A Windows 8-based, Large-screen Tablet PC

Development of an Android-based Tablet(Panel Computer series)

Solutions

ConforMeeting: A Real-time Conference System Compatible with Smart Devices for Conducting Paperless Meetings

BusinessView Maintenance Work Solutions Utilizing Smartphones

Application of the UNIVERGE Remote Consultation Solution to Elderly Care

Introduction of the GAZIRU Image Recognition Service

Tablet Concierge- An Ultimate Customer Service Solution -

Development of a Business Systems Template for Use with Smart Devices

Introduction of Video Communications Cloud Services Compatible with Multiple Devices

Technical researches

Towards a User-Friendly Security-Enhancing BYOD Solution

Implementing Secure Communications for Business-Use Smart Devices by Applying OpenFlow

Human-Computer Interaction Technology Using Image Projection and Gesture-Based Input

Noise Robust Voice UI Technology and Its Applications

◇ General Papers

Efforts to Solve the Congestion Problems of Mobile Communications Services during Major Natural Disasters

NEC Technical Journal

Smart device Solutions

NEC Group Paves the Way for Smart Devices
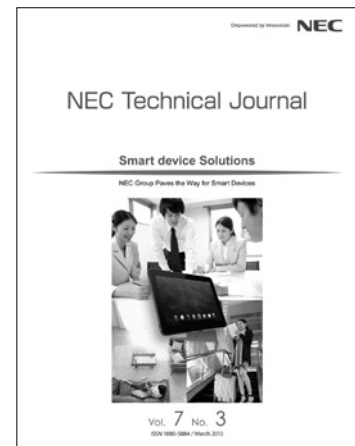
Vol. 7 No. 3

Vol.7 No.3

March, 2013

Special Issue TOP