feel™

wacom®

EMR™ Pens

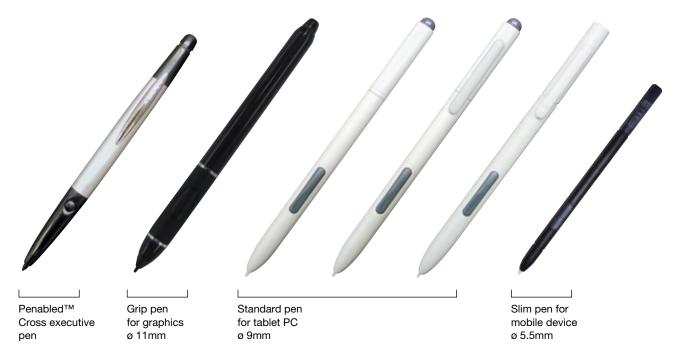*feel* good about the experience you have with technology. For more than a quarter of a century Wacom has been creating natural and intuitive interface experiences for both professional and consumer users. At the heart of all our products are the core technologies that make Wacom experiences unique. Wacom has named its core patented sensor and display integration technology Wacom Penabled™ and provides these components to the world's top technology companies' finished products.

Wacom's Penabled™ pen sensor components are now incorporated into most Tablet PCs used around the world today. Wacom is known for providing the very best performance in an ever expanding array of applications from eBooks and Digital Paper terminals to Handhelds, Laptops, System Devices, Gaming Equipment and Toys. Penabled™ pens can be used with any equipment bearing the logo, regardless of the manufacturer or brand.

The EMR™ Pen

Wacom's cordless and battery-free pens are small, light and offer excellent usability and ergonomics. The built-in pressure sensor can provide applied pressure sensitivity to 256 levels. An options switch which has the same function as a mouse button can be added to the pen tip, to the side or to the rear portion.

Penabled™
Cross executive
pen

Grip pen
for graphics
ø 11mm

Standard pen
for tablet PC
ø 9mm

Slim pen for
mobile device
ø 5.5mm

Features and Advantages

Small, Light pen with FLIGHT POINT™
Cordless, battery-less, pressure sensitive, durable, small and light pens. Options include pen tips, side switch and an eraser function. FLIGHT POINT™ function enables pen detection without the pen actually having to touch the display.

Low Cost, Low Power Consumption
Low cost and low power consumption are essential features for accessories built into a mobile device. Wacom has developed its own control IC (W8001, W8002, W8003, W8004, W8005, W8006) which uses little power and is a available at a low cost.

High Screen contrast High durability
Wacom pen tablet devices are embedded beneath the displays, allowing 100 per cent luminous transmission producing a clear display of full bright colors without color wash. This embedded concept also ensures reliability and durability.

High response High r esolution
Wacom patented EMR™ technology enables high resolution 0.01mm (2540dpi) and high-speed reading 133 point/second. Users can input as naturally as using a pen and paper at any writing speed and at any applied pressure with high reliability and durability.

EMR™

Electro Magnetic Resonance Technology

wacom®

Other forms of input require the generation of lines of magnetic force which means relying on cords and batteries. This has the disadvantages of limited availability, limited size and the need to occasionally change batteries. Wacom's patented EMR™ does not require cord or batteries embedded in our pens, therefore providing a lighter, brighter, more natural input experience.

Why not consider integrating Wacom's unique EMR™ technology, which already wins an overwhelming share of the tablet market, into your product?

How it works

1. Several sensor coils are placed in the sensor unit. A resonance circuit which consists of both coil and capacitor are built inside the pen.

2. When the sensor coil is energised, a magnetic field is generated on the surface of the tablet and energy is stored within the resonance circuit inside the pen.

3. When the signal to the sensor coil is halted, a magnetic field is transmitted to the sensor coil from the pen by using the energy stored inside the pen. By repeating steps 2-3 above, the sensor board detects the position of the pen and operating status (applied pressure).
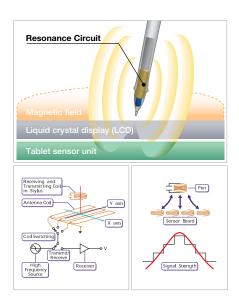
With FLIGHT POINT™

Cordless, battery free electronic pen

Cover and protected panel

LCD display

Sensor board

Resonance Circuit

Magnetic field

Liquid crystal display (LCD)

Tablet sensor unit

Receiving and Transmitting Coil in Stylus

Antenna Coil

Y axis

X axis

Coil Switching

Transmit / Receive

V

High Frequency Source
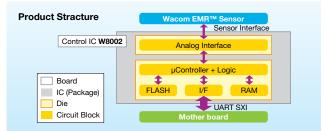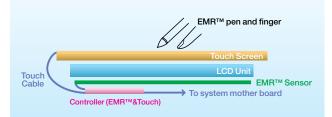
Receiver

Pen

Sensor Board

Signal Strength

Sensor unit

Wacom has various sensor sizes that cover small mobile terminals to display monitor sizes. A W8000 series custom LSI is built into the control board. W8002 is smaller and low cost, for smaller size displays with both digital and analog LSI placed on single chip. W8003, W8004, W8005, W8006 are chosen according to applicable medium and large size displays.

DualTouch *New line up!!*

Wacom DualTouch the capacitive Sensor is neuly addel to DualTouch Lineup. Which is a world first sensor integration technology for both pen and finger input, provides increased functionality and an enhanced user experience. No need for PC system redesign as the interface to PC system is the same as EMR™ only. Both sensors are controlled by single controller, enabling seamless, accurate and reliable switching between pen and finger.

Product Stracture

Wacom EMR™ Sensor

Control IC **W8002**

Sensor Interface

Analog Interface

μController + Logic

FLASH | I/F | RAM

UART SXI

Mother board

Board
IC (Package)
Die
Circuit Block

EMR™ pen and finger

Touch Screen

LCD Unit

EMR™ Sensor

Touch Cable

To system mother board

Controller (EMR™&Touch)

Product lineup

EMR Pen

Parts number	Diameter (ømm)	Length (mm)	Weight (g)	Side	Eraser Switch	Pen tip exchange	Tether hole	Clip	Remarks
Cross Wacom pen	14	150	30	1	1	OK	none	1	
UP-7110E grip pen	11	145	15	1	1	OK	1	none	
UP-714E	9	140.5	10	1	1	OK	1	1	
UP-714W	9	140	8	1	none	OK	1	1	drip-proof
UP-810	9	140	9	2	none	OK	1	1	
UP-810E	9	140.5	9	2	1	OK	none	none	
MP-102 Slim pen for mobile device	5.5	105	3	0	none	none	none	none	
MP-203B Slim pen for mobile device	5.5	105	4	1	none	none	1	none	
Ruggedized pen	12	128	13	1	none	OK	1	1	under planning

Sensor board

Parts number	Diagonal size of tablet active area	Outer dimensions (mm) LxWxt	Active area	Total thickness (mm) T*1	Weight (g) *2	Interface	Remarks
SU5E-06S03AS-00X	6.0"	142.8 x 109.4 t=0.35	122.4x90.6	2.7	17	UART	aligns with EPD *3
SU5E-08S06AS-00X	8.4"	184.5 x 139.0 t=0.35	172.4x129.8	2.7	23	UART, USB	
SU5E-09S02AS-00X	9.7"	224.8 x 165.4 t=0.35	204.8x141.4	2.7	32	UART	aligns with EPD *3
SU4E-10S08PS-00X	10.4"	235.3 x 170.8 t=0.7	212.4x159.8	3.0	68	UART, USB	
SU5E-12S05AS-00X	12.1"	259.1 x 196.0 t=0.35	247.8x186.3	2.7	38	UART, USB	
SU5E-12W16AS-00X	12.1" wide	271.2 x 172.5 t=0.35	263.1x165.2	2.7	38	UART, USB	
SU5E-13W01AS-00X	13.3" wide	296.1 x 188.8 t=0.35	288.1x180.8	2.7	42	UART, USB	
SU4E-14W01ES-00X	14.0" wide	326.2 x 194.2 t=0.6	307.3x185.2	3.0	102	UART, USB	

*1 total thickness of sensor board and controller board
*2 weight (g) is a typical value
*3 EPD=Electronic Paper Display
Note: Wacom standard sensor boards are all Dual Touch capable. Please inquire us for Wacom recommended touch panels.

General specification

Reading method	EMR™ (Electro-Magnetic Resonance)
Tablet active area	2.2 ~ 21 inch (more sizes are available on request)
Outer dimensions of sensor board	tablet active area plus 3 ~ 5mm non-active area
Resolution	0.01mm (2540ppi)
Accuracy	± 0.4mm
Reading height	5 ~ 14mm from the surface of sensor board
Interface	UART, USB (W8001, W8001, W8003, W8004, W8005, W8006), UART, SXI (W8002)
Device driver	Windows 7, Windows Vista, Windows XP, Windows 2000, Windows CE (•), Symbian (••)

• Windows 7, Windows Vista, Windows XP, Windows 2000, Windows CE are registration of trade mark of Microsoft Co., Ltd. USA
• • Symbian is registration of trade mark of Symbian, UK.

The information on this catalogue is subject to change. Please ask for latest specifications.
The contents of this catalogue are current as of April 2010, and may be chaned without prior notice.

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Wacom Components website provides a full range of information on our **feel** technology, products, news, partners and integrated products.