

# Wacom *feel*™ EMR



## 30 years of expertise

Perfected and improved for over 30 years, loved by artist and professionals everywhere, Wacom's unique digital pen technology enables precise and natural input that lets you focus on what really matters: your creations.

From the pen-tip material, carefully selected to match each writing surface, to the state-of-the-art signal noise management and pressure sensing techniques, everything is painstakingly optimized in order to achieve the Wacom feeling.

By quickly adapting to new technological challenges, Wacom has proven to deliver a natural pen experience

## Introduction of *feel* EMR (Electromagnetic)

Wacom uses the technology of electromagnetic induction. This involves sending electromagnetic waves from a sensor, receiving the signals returned by the pen and then creating the functions and capabilities of a digital pen by subjecting these signals to algorithm-based analysis.

## Our hardware offering:

Excellent performance incorporating accumulated expertise on multi-touch and pen input technologies

**Pen** in any size, available for every use case

**Sensor board and Controller IC** dedicated for pen input

**Variation of pen tips** available to create different writing experiences

## Our quality assurance:

High levels of perfection supported by long-standing expertise on digital pen development and manufacturing

Optimization of exterior design, material choice and writing feeling.

Mass manufacturing capability of high quality products using automated pen production facilities and Wacom's own Quality Assurance techniques.

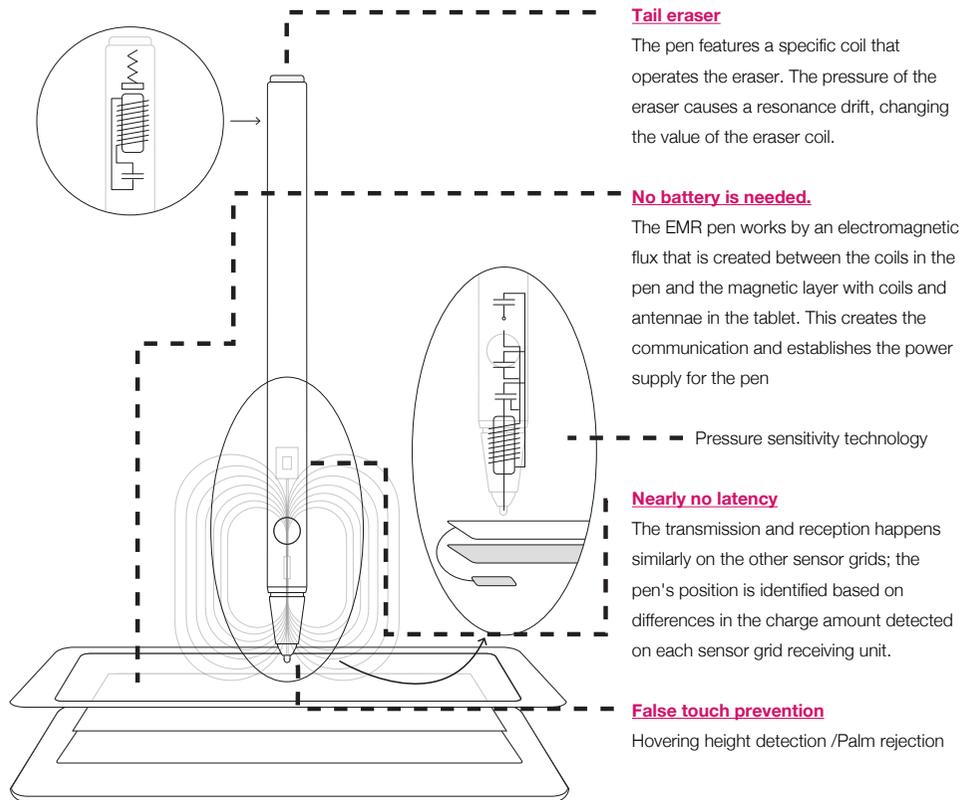
High level of accuracy. Pressure sensitivity, low latency and high pen report rate create a natural, smooth writing feeling. The pressure sensitivity creates a richer experience and opens up a wide range of use case scenarios, e.g. for signature capturing.

## How to quantify feeling?

begin with, we faced technological hurdles on the hardware side of things, such as how to optimize the performance of the sensor that imports information. If this part is insensitive, you cannot obtain accurate signals. These signals are analyzed by the software and output as data. However, it is not that easy to analyze and output these signals. You need to reconcile human feelings with digital information. For example, the *feel*™ EMR pen has an estimated pen pressure sensitivity of at least 2,000, but it would be a mistake just to try to output an exact value like that. The human hand is blessed with sensitive feelings and complex tendencies. If you tried to express the hand's data as a graph, you would end up with a distinctive curve and not a straight line. You cannot achieve authentic pen pressure sensitivity by combining simple data returned by hardware with the unquantifiable and unique sensations of the human hand. You could probably say that our technology and experience in this area are the largest advantages that Wacom has.

# Working principle

The digitizer has multiple parallel coils arranged orthogonally (X-axis, Y-axis) to each other. The pen also includes a coil. One digitizer sensor coil and the pen coil act as the transmitting unit; the other coils act as receiving units. The transmitting unit generates a magnetic field. The generated induction signal is detected according to the magnetic field felt on the receiving unit. The transmission and reception happens similarly on the other digitizer sensor coils; the pen's position is detected based on differences in the induction signal detected on each sensor coil receiving unit. This has been widely adopted with its high degree of precision and reliability.



# User benefits

## Write on Paper Feeling – Natural writing experience

To create the most natural writing feeling that comes as close as writing on standard paper, Wacom uses a feature set that contributes to this feeling:

1. Pixel precision transfers the precision that everyone is used to into the digital space. The high-quality writing experience of the users is directly linked to the respective hardware.
2. Millisecond data exchange (responsiveness) is key to the concept of instant interaction between the user and the hardware device. The Wacom pen communicates with the tablet in milliseconds.
3. Thousands of levels of pressure sensitivity mean mimicking the standard pen experience up to the highest possible level. For B-2-B solutions, the pressure sensitivity is one of the biometric factors, needed to capture a signature in a legally binding way.
4. Pen tip materials selection: Depending on what users write or draw, they use a different kind of pen. Wacom offers a large choice of different pen tip materials. Manufacturers can equip their pen with the material, which suits their needs and use case scenarios best.
5. Palm rejection: When using a pen on a hardware device, users expect a smooth experience. This also includes the fact that – when using a pen – the palm should not interfere with the pen. By integrating palm rejection into Wacom technology, users do not need to worry about laying their hand on the tablet, but can concentrate on what they are doing. The pen comes first and natural.

## 6. Freedom in design

For manufacturers, integrating a pen solution into their hardware offering should not mean compromising

on their own design ideas. Wacom's pen offering allows customers the freedom in design. Different options are available that neatly fit into the original manufacturer's concept. Wacom's garage pen is a small, portable device. It integrates smoothly into the design of the manufacturer's hardware, building a logical design unit.

The Wacom pen needs only little power to communicate with the tablet. This is a major advantage for product design. The pen can be light and there is no need for thick coils or other. For manufacturers, this makes integration into their hardware easier, resulting in thinner, lighter devices.

Depending on the use case scenario, the pen can be in use for several hours a day. The design of the Wacom pens is ergonomic; it not only heightens the user acceptance of the digital pen, but helps them to avoid fatigue at the same time.

## 7. Personal User Experience and Adaptation

Bottom command, the side switches of the Wacom pens make customization for different applications easy. By pre-programming the most common functions or a complete feemenu, onto the side switches, the use of software and hardware becomes much faster and easier for users.

Depending on the use case scenario, hardware manufacturers can either do the pre-programming themselves or leave it up to their users. In any case, this feature makes the pen more than "only" a writing tool.