

УДК 62-97/-98

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THE EMERGENCE OF MAGNETIC RESONANCE TECHNOLOGY FOR THE PEN OF GRAPHICS TABLETS

This method refers to the patented pen input and pen tablet technology, the only one of its kind in the world, which allows for battery-free and cordless input. The tablet creates a magnetic field (electromagnetic field) on its surface in which the electronic pen moves. As the pen moves, electricity flows through a coil inside the pen. The tablet then receives inductive signals generated by the magnetic field on the pen side (induction). By repeating this process several times in a short period of time, the path of the pen is read smoothly by the tablet. The digital pen is capable of detecting the force applied to it and the angle of tilt, allowing differences in line width and color gradation to be displayed. Another notable feature is that an eraser function can be added to the pen, allowing users to easily correct drawings. A graphics tablet is a device for entering hand-drawn drawings directly into a computer. It consists of a pen and a flat tablet that is sensitive to pressure or proximity to the pen. In the early tablets, the pen, when touching the surface, emitted sparks, the sound of which was picked up by nearby microphones. The triangulation method was used to determine the position of the pen in space. Such a system was complex, expensive, and unreliable because external noise prevented the pen from accurately determining its position.

The first graphic tablets, similar to today's, were introduced in 1964 under the name "Graphacon". They contained a grid of thin wires that generated a sequence of weak magnetic pulses that could be picked up by the pen. This made it possible to determine the current position of the pen.

There are different types of tablets based on the principle of operation and technology. Electrostatic tablets detect a local change in the electrical potential of the grid under the pen. In electromagnetic tablets, the pen emits electromagnetic waves and the grid acts as a receiver. In both cases, the pen must be powered.

Wacom has developed a technology based on electromagnetic resonance where the grid both transmits and receives the signal and the pen only reflects it. Therefore, there is no need to power the pen in such a device. However, electromagnetic tablets can be subject to interference from radiating devices such as monitors. Wacom's tablet technology was used in the CompaqConcerto computer in 1992, making it one of the first tablet computers. When the pen is pressed into the tablet's working surface, which is covered with a grid of very thin conductors, a potential difference is created across the piezoelectric plate, allowing the coordinates of the desired point to be determined. Such tablets do not require a special pen and allow you to draw on the tablet's working surface as if it were a regular drawing board. In addition to the coordinates of the pen, modern graphic tablets can also detect the pressure of the pen on the working surface, the inclination, direction and force of the pen grip.