What Is a Geomagnetic Sensor?

Inas B. - 2026-11-17 - Health & Activity Tracking

A geomagnetic sensor is an electronic sensor that detects the Earth's magnetic field.

It is commonly used in digital compasses to determine directional orientation. By measuring the magnetic field along different axes, the sensor can help a device identify its orientation relative to magnetic north.

How Does a Geomagnetic Sensor Work?

The Earth generates a magnetic field that extends around the planet. A geomagnetic sensor detects the direction and strength of this field.

The device processes the sensor readings to estimate its orientation and determine compass direction.

Unlike GPS, which uses satellite signals to calculate geographic position, a geomagnetic sensor uses the Earth's magnetic field to determine direction.

What Is It Used For?

In a smartwatch, a geomagnetic sensor supports digital compass functionality.

It provides directional information that can be useful during outdoor activities and when determining orientation.

What Can Affect Geomagnetic Sensor Readings?

Nearby magnetic fields can interfere with the Earth's magnetic field measurements.

Potential sources of interference include:

- Magnets and magnetic accessories.
- Magnetic phone cases and mounts.
- Speakers and headphones containing magnets.
- Certain electronic equipment.
- Large metal structures or vehicles that may distort the local magnetic field.

The effect depends on the strength and proximity of the interfering source.

Which Reebok Smartwatch Includes a Geomagnetic Sensor?

The geomagnetic compass sensor is available on the Reebok Kinetic.