A Hall Effect sensor is a transducer that varies its output voltage in response to a magnetic field. Hall Effect sensors are used for proximity switching, positioning, speed detection, and current sensing applications. In its simplest form, the sensor operates as an analog transducer, directly returning a voltage. With a known magnetic field, its distance from the Hall plate may be determined. Using groups of sensors, the relative position of the magnet may be deduced. A Hall sensor may be combined with circuitry that allows the device to act in a digital (on/off) mode, and acts as a switch in this configuration.

The sensor signals are led to the control unit and compared with the values corresponding to the programmed equilibrium setpoint. Based on this comparison, the control unit will accordingly decrease the current flowing through the electromagnetic coil. If the controlled change in current and speed of moving up and down is high enough, for example between 200 and 2000 Hz, this up and down movement of the disc becomes considerately small and fast, and it cannot be perceived with the naked eye anymore. This results in the magnetic suspension of the disc underneath the top piece of the Invented luminaire.

Instead of a more or less fixed equilibrium setpoint, the control unit may also run a control algorithm, which aims at a controlled movement of the disc. The algorithm may for example comprise that when the disc is put on the base of the luminaire, the current to the electromagnetic coils is controlled in such a way (by controlled increase of current) that the disc is gently lifted towards the electromagnetic coils, until a predetermined setpoint is reached.

Alternatively the algorithm may be arranged for a continuous movement of the disc, such as swiveling, turning or moving up and down, optionally alternated and/or with intervals.

The control algorithm programmed on the control unit processes the signal from the Hall Effect sensor and controls the current flowing through the electromagnetic coil accordingly. The Hall Effect sensor continuously senses the strength of magnetic field. This data is fed to the control unit and is used to establish the distance between the bottom of the top piece and the top of the magnet on the disc (hereinafter the distance is referred to as “gap”). The setpoint of the disc corresponds to a predefined