

POSITION RELIABILITY OF MAGNETS OF A SWITCHING DEVICE

ABSTRACT

A switching device comprising:

- 5 a housing (HS),
- a moveable element made of a header, a first magnet (C1) and a second magnet (C2) and slidably mounted in the housing, the moveable element being adapted to move relative to the housing between a released position and an engaged position,
- a printed circuit board (PCB) comprising a microcontroller and an upper face on which are
10 mounted upfront a first magnetic sensing element (MSE1) and a second magnetic sensing element (MSE2) positioned to face the first magnet (C1) and the second magnet (C2),
- wherein the first magnetic sensing element (MSE1) and the second magnetic sensing element (MSE2) are configured to detect respectively a first magnetic field and a second magnetic field generated respectively by the first magnet (C1) and the second magnet (C2), wherein the
15 moveable element is closer to the first magnetic sensing element (MSE1) and the second magnetic sensing element (MSE2) in the engaged position than in the resting position,
- wherein the pole configuration of the first magnet (C1) is opposed to the pole configuration of the second magnet (C2) and the first magnetic field generated by the first magnet is reversed and equal in magnitude with respect to the second magnetic field generated by the second magnet,
- 20 wherein the first magnetic sensing element (MSE1) and the second magnetic sensing element (MSE2) are able to produce respectively a first output signal and a second output signal from the first magnetic field and the second magnetic field,
- wherein the microcontroller is able to validate a reliable position of the moveable element:
- if the first output signal is included in a first range of values and if the second output
25 signal is included in a second range of values, and
- if the sum of the first output signal and the second output signal is substantially equal to a predefined value derived from the difference between the magnitude of the first magnetic field and the magnitude of the second magnetic field.