

What is claimed is:

1. An electronic device having a housing, comprising:

a dual state magnetic element disposed within the housing at a first side wall and arranged to provide a first magnetic surface at an exterior surface of the first side wall in an inactive state, the first magnetic surface not substantially affecting a magnetically sensitive device at the exterior surface, wherein in an active state, the dual state magnetic element provides a second magnetic surface at the exterior surface of the first side wall, the second magnetic surface suitable for generating a peak magnetic attachment force for forming a magnetic attachment between the electronic device and a first magnetic element in a first part of an accessory unit;

a state maintaining means coupled to the housing and arranged to maintain the dual state magnetic element in the inactive state by providing a retaining force; a second magnetic element located away from the dual state magnetic element that cooperates with dual state magnetic element to secure a second part of the accessory unit to the electronic device, wherein the second magnetic element comprises:

a plurality of magnetic elements most of which magnetically attract corresponding magnetic elements in the second part of the accessory unit to secure the second part of the accessory unit to the electronic device;

a display device disposed within the an opening in a top side portion of the housing;

a protective layer on top of the display device, wherein the second magnetic element is disposed beneath the display; and

a sensor located near the display device, the sensor arranged to detect the presence of the accessory device in relation to the protective layer of the display device, wherein in a closed configuration the accessory device completely covers the protective layer and wherein in the closed configuration, the sensor causes the electronic device to disable the display device such that the display device is not capable of presenting any visual content; and

wherein when the accessory device partially covers the protective layer, the electronic device partially disables the display device such that the display device is arranged to present visual content only in that portion of the display device that is not covered by the accessory device.

2. The electronic device as recited in claim 1, wherein an off peak magnetic attachment force has a force value that is equal to or greater than one half of a force value of the peak magnetic attachment force.

5 3. The electronic device as recited in claims 1 or 2, wherein the dual state magnetic element comprises:

a first plurality of magnetic components arranged adjacent one another in a first relative size order along a first line and arranged according to a first polarity pattern of magnetic polarities; and

10 a second plurality of polarity magnetic components arranged adjacent to one another in a second relative size order along the first line and according to a second polarity pattern of magnetic polarities, wherein the first and second size orders and the first and second polarity patterns are complementary of each other.

4. The electronic device as recited in claim 3, wherein the first polarity pattern is at least {P1,P2,P1} and wherein the second polarity pattern is at least {P2,P1,P2} and wherein P1 is a first polarity and P2 is an opposite polarity wherein the first relative size order is at least {2L,1L,1L} and wherein the second relative size order is at least {1L,1L,2L}, wherein 1L corresponds to an effective unit magnet length and wherein 2L corresponds to about twice the effective unit magnet length.

20 5. The electronic device as recited in claim 4, wherein the dual state magnetic element changes from the inactive state to the active state only when the first magnetic element in the first part of the accessory device aligns with corresponding ones of the first plurality of magnetic components and the second plurality of magnetic components, and wherein when the dual state magnetic element changes from the inactive to the active state, the dual state magnetic element moves from a first position to a second position against the retaining force a distance Δx towards the first sidewall.

6. The electronic device as recited in claim 5, wherein the state maintaining means comprises a spring having a spring constant k , and wherein the retaining force is directly related to the distance Δx and the spring constant k .

30 7. The electronic device as recited in claim 6, wherein the dual state magnetic element is activated when an activating force that is greater than the retaining force is generated between the first magnetic element in the first part of the accessory device

and the dual state magnetic element causing the dual state magnetic element to move from the first position towards the first wall the distance Δx .

8. The electronic device as recited in claim 7, wherein the activating force has a value that is greater than or equal to the off peak magnetic attachment force value and
5 less than the peak magnetic force value.

ELECTRONIC DEVICE WITH MAGNETIC ATTACHMENT

What is claimed is:

1. An electronic device having a housing, comprising:
 - 5 a dual state magnetic element disposed within the housing at a first side wall and arranged to provide a first magnetic surface at an exterior surface of the first side wall in an inactive state, the first magnetic surface not substantially affecting a magnetically sensitive device at the exterior surface, wherein in an active state, the dual state magnetic element provides a second magnetic surface at the exterior surface
 - 10 of the first side wall, the second magnetic surface suitable for generating a peak magnetic attachment force for forming a magnetic attachment between the electronic device and a first magnetic element in a first part of an accessory unit;
 - a state maintaining means coupled to the housing and arranged to maintain the dual state magnetic element in the inactive state by providing a retaining force;
 - 15 a second magnetic element located away from the dual state magnetic element that cooperates with dual state magnetic element to secure a second part of the accessory unit to the electronic device, wherein the second magnetic element comprises:
 - a plurality of magnetic elements most of which magnetically attract corresponding magnetic elements in the second part of the accessory unit to secure the
 - 20 second part of the accessory unit to the electronic device;
 - a display device disposed within the an opening in a top side portion of the housing;
 - a protective layer on top of the display device, wherein the second magnetic element is disposed beneath the display; and
 - 25 a sensor located near the display device, the sensor arranged to detect the presence of the accessory device in relation to the protective layer of the display device, wherein in a closed configuration the accessory device completely covers the protective layer and wherein in the closed configuration, the sensor causes the electronic device to disable the display device such that the display device is not capable of presenting any
 - 30 visual content; and
 - wherein when the accessory device partially covers the protective layer, the electronic device partially disables the display device such that the display device is

arranged to present visual content only in that portion of the display device that is not covered by the accessory device.

- 5 2. The electronic device as recited in claim 1, wherein an off peak magnetic attachment force has a force value that is equal to or greater than one half of a force value of the peak magnetic attachment force.
3. The electronic device as recited in claims 1 or 2, wherein the dual state magnetic element comprises:
- 10 a first plurality of magnetic components arranged adjacent one another in a first relative size order along a first line and arranged according to a first polarity pattern of magnetic polarities; and
- a second plurality of polarity magnetic components arranged adjacent to one another in a second relative size order along the first line and according to a second
- 15 polarity pattern of magnetic polarities, wherein the first and second size orders and the first and second polarity patterns are complementary of each other.
4. The electronic device as recited in claim 3, wherein the dual state magnetic element changes from the inactive state to the active state only when the first magnetic element in the first part of the accessory device aligns with corresponding
- 20 ones of the first plurality of magnetic components and the second plurality of magnetic components, and wherein when the dual state magnetic element changes from the inactive to the active state, the dual state magnetic element moves from a first position to a second position against the retaining force a distance Δx towards the first sidewall.
- 25 5. The electronic device as recited in claim 4, wherein the state maintaining means comprises a spring having a spring constant k , and wherein the retaining force is directly related to the distance Δx and the spring constant k .
6. The electronic device as recited in claim 5, wherein the dual state magnetic element is activated when an activating force that is greater than the retaining force is
- 30 generated between the first magnetic element in the first part of the accessory device and the dual state magnetic element causing the dual state magnetic element to move from the first position towards the first wall the distance Δx .

7. The electronic device as recited in claim 6, wherein the activating force has a value that is greater than or equal to the off peak magnetic attachment force value and less than the peak magnetic force value.