A security device for computer appliances including a computer section and a control section, such as diskette station, hard disk or the like. The novelty resides in the feature that the computer section (1) as well as the control section (9) each are enclosed by a shielding cover (5 and 8, respectively), that a connection, also shielded, is provided between the sections in the form of a so called interface (10, 11), the arrangement being such that separating the sections (1, 9, respectively) from one another will cause said connection to be broken and its shielding made inoperative, and that the shielding (12, 13) is so arranged that it can cooperate, when a section of the appliance is moved and stored, with another external, supplementing shielding portion (12') for the purpose of maintaining complete shielding of said section.
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Security device for computer appliances

Technical field

The invention relates to a security device for computer appliances where, for example, software is utilized or where there is input information of a secret nature and the like.

Prior art

In order to protect computer appliances against unauthorized use of data or statements handled, put in or stored in the appliance a plurality of various solutions have been proposed. In order to prevent electronic scanning the equipment can be installed in a shielded space. In order to prevent the appliance from being physically used by an unauthorized person it can be provided with more or less sophisticated electrical, mechanical or electronical locks, e.g. in the form of magnet cards readable by the appliance in combination with e.g. personal codes. When one has to protect oneself against unauthorized persons gaining access by electronic means to data handled or stored, usually electronic shielding of the apparatus is resorted to. Hereby the complete apparatus, or at least all those parts of the apparatus which emit magnetic or electronic fields, is surrounded by enclosures of metal sheet or metal grids. However, arranging such shielding will make an apparatus, perhaps already bulky, even more hard to move, or bring with it that particularly heavy demands have to be made upon the procedure of checking persons entering shielded premises where unshielded equipment is placed.

It would seem to be known to the man of the art that any locking system, also electronic ones, can be forced with the aid of advanced technical means, and this brings with it that outsiders - in those cases when an apparatus of the kind under consideration here is connected to an externally available communication network - can get hold of and in certain cases also manipulate stored data.

Besides protecting the apparatus against unauthorized acquisition of information put in, stored or processed in the apparatus, the shielding has for its object to protect the apparatus against external action from e.g. so called EMP, that is, strong electrical or electromagnetical discharges and other similar
phenomena. Such can cause permanent damage to computer appliances but are prevented by shielding arrangements which operate in accordance with the principle of Faraday's cage. However, in order to attain the protection intended it is necessary that the protective shielding be unbroken, that is, that there are no connection openings, contact means or the like exposed to the surroundings.

Object of the invention

An object of the invention is to provide a device which will solve the problem of protecting essential data information from unauthorized observation and acquisition and at the same time enhance the protection against external phenomena.

A further object is to provide a device arranged such that essential data in the form of programs or stored information can be separated in a simple way from a processing machine and brought to a safe storage location with the protective shielding maintained.

Another object is to arrange the device such that data can be transferred with the shielding maintained, also when storing the device in a storage location.

Yet another object is to bring about, in combination with the above, a possibility to indicate or alert in order that erroneous processing of a unit removed for storage be sensed, whether processing is exercised by an authorized person or by an unauthorized one.

Another object is to ensure that a unit carrying predetermined data is utilized only at one or more predetermined units, complementary to said unit.

Summary of the invention

The invention is based on the feature that the computer appliance or apparatus is divided into two sections, namely, one computer section and one control section, whereof the latter can comprise a diskette station, hard disk or the like.

According to the invention the computer section and the control section are each enclosed by a shielding cover, and in addition there is provided a connection between the sections in the form of an appropriately designed interface. Also this connection is enclosed by a shielding cover formed of two or
more complementary parts, said cover shielding the bridge between the sections when the sections are combined. The shield portion enclosing the connecting part of the control section can also be adapted to cooperate with another complementary shield portion arranged in a storage room, which shield portion is adapted to cooperate with the shield portion of the control section when this is introduced in the storage room.

Also, in accordance with the invention alarm means, which can come into action when the computer section and the control section are separated and/or the shielding is broken, can be provided in order to indicate — suitably with an adequate time delay — that shielding of the control part is made inactive by the interface being exposed.

Description of embodiments

The invention will be described in greater detail in the following with reference to the accompanying drawings, upon which Fig. 1 shows in perspective a computer appliance or apparatus arranged in accordance with the invention, assembled in operating position,

Fig. 2 shows, also in perspective, the apparatus separated from the control section,

Fig. 3 illustrates in perspective a storage unit, and

Fig. 4 shows on a larger scale a locking and operating means component of the device.

In the drawing a computer is designated 1, and by way of a shielded connection piece 2 a display screen 3, likewise suitably shielded, is permanently connected to the computer. Furthermore, in the usual way a keyboard 4 is provided, connected by cable. To the computer 1, enclosed by a shielding box 5, a control section 9, likewise enclosed by a shielding box 8, is releasably connected by means of guiding and locking brackets 6 and 7, respectively, the latter being of toggle type.

On the side of the computer section 1 facing the control section 9 and on the opposing side of said section 9 there are interface means 10, 11 provided which can comprise galvanic contacts, electro-optical contactors or the like, said interface means being surrounded by complementary portions 12, 13 of resilient shield material, e.g. braided metal wire hose. When the
parts 1 and 9 are brought together said portions will form a shield enclosing the interface 10, 11, but when the parts 1 and 9 are separated the interface means 10, 11 will be exposed.

According to the preferred embodiment the computer section 1 can only be activated when the control section 9 is applied. Thus the computer section 1 becomes unserviceable when the control section 9 is removed. The interface 10, 11 can be formed in a way which is unique to every pair of computer/control sections or to individual computer and control sections. Hereby security is attained against incompatible sections being connected, intentionally or unintentionally. Besides providing security by electrical/electronical means it is possible, by designing specifically the interfaces 10, 11 and orient or localize them in various ways, to interconnect specific sections mechanically while preventing connection of others.

For reasons of secrecy, but also in order to prevent data or information in the control section from being impaired by influence from electrical fields or the like, the control section 9 has to be stored in a shielded space when removed from the computer section 1 or, where such space is not available, on a support or storage unit 14 provided with an interface-like receiving means 15 having shielding portions 12', which shield effectively the interface 11 of the control section from the surroundings when the control section is applied to the unit.

The support and storage unit 14 can be provided with an interface portion connectable to an external operating or storing unit. Then so called "back up" can be performed while the control section 9 is stored on the support 14, that is, transferring to another external memory or the like data put in or operations made during the period of time elapsed since the latest moment of storage.

In order to secure that control sections 9 disconnected from their respective computer sections 1 are not left unattended, or are seized upon for removal by person unauthorized, the control sections 9 of the embodiment shown are provided with an alarm device, not shown. This device is so designed, preferably, that it will be released by means of a timer if the control section is left without connection with its computer section 1 or a storage unit 14 beyond a predetermined period of time. Hereby
non-appearing connection of certain components in the interface
10, 11 will serve as triggering means. The time-limit offered
by the timer is calculated to correspond to the time requested
for transport from the place of operation to that of storage.

Mechanical or galvanic contacts in particular require
-especially if the number of contact pins or such means is large
-a great force to be separated as well as to be combined. To
that end the locking bracket 7 of the device is arranged as a
combined locking and operating means in cooperation with the
guide means 6. The guide means 6 comprise a pair of tapering
pins on the control section 9, which pins can be inserted into
an end plate 6' on the computer section 1 in order to bring the
control section into a proper position in relation to the com-
puter section. The locking and operating bracket 7 has a base plate
16 which is arranged stationary on the computer section 1 and
has a projection 17, essentially U-shaped and facing laterally.
A locking and operating latch 19 with a handle 20 is carried
pivotably about a pin 18, said latch having a projection 21 es-
tentially L-shaped whose upwardly directed shank 22 extends, in
a locking position, across the recess 23 in the U-shaped projec-
tion whereas, in a withdrawn position, the shank frees said re-
cess. In addition there is a pusher plate 24, likewise pivoted
about the pin 18, which is provided with a tongue 25 arranged
to enter into the interspace between the computer section 1 and
the control section 9. The pusher plate 24 has a follower pin
26 coacting with an arch-shaped recess 27 in the locking and
operating latch 19, the pusher plate 24 being pivoted about the
pivot pin 18 only when the latch 19 has been swung so far that
the end of its recess 27 engages the follower pin 26. At further
turning of the latch 19 the tongue 25 will force the control
section 9 away from the computer section 1. Then the connection
across the interface ceases, and the total shielding is broken
by the interfaces being exposed when the shield portions are
drawn from one another.
Claims

1. Security device for computer appliances including a computer section and a control section such as diskette station, hard disk or the like, characterized in that the computer section (1) as well as the control section (9) are enclosed individually by a shielding cover (5 and 8, respectively), that a connection is provided between the sections in the form of a so called interface (10, 11), such as galvanic contacts, an electro-optical communication or the like, said connection also being enclosed by a shielding (12, 13), an arrangement such that separating the sections (1, 9, respectively) from one another will cause said connection to be broken and its surrounding shielding made inoperative, and that the shielding (12, 13) is so arranged that it can cooperate, when a section of the appliance is moved away and stored, with another external, supplementing shielding portion (12') for the purpose of maintaining complete shielding of said section.

2. Security device according to claim 1, characterized in that the computer section (1) and the control section (9) are enclosed in each its box-like cover (5 and 8, respectively) serving as the shielding, said cover being provided with matching guiding and locking means (6, 7) for mutual orientation and joining of the sections, and that there are provided on both sections interface portions (10, 11) which interengage when the sections are brought together, said portions being surrounded by shielding components (12, 13) which establish upon combining the sections, on the one hand, the intended connection between the sec-
tions and, on the other hand, a shield about said connection, but which will brake, upon separating the parts, the connection and make the shielding inoperative.

3. Security device according to claim 2, characterized in that the shielding at the interface portions (10, 11) which form the connection between the sections comprise mutually complementary components (12, 13) of resilient shield material which, in order to ensure perfect shielding, are compressed when the sections are brought together.

4. Security device according to claim 1, characterized in that the interface portion (11) of the control section (9) with its surrounding shielding component (13) is adapted to cooperate with an external storage and support unit (14) which is at least provided with means (12') for shieldingly closing the interface.

5. Security device according to claim 4, characterized in that the storage and support unit (14) includes means for cooperation with the interface half (11) of the control section (9) and for establishing a connection between the control section (9) and an external storage or handling unit, for example, for rendering so called back-up possible.

6. Security device according to claims 1 and 4, characterized in that an alarm unit with sensing means is provided at the control section (9), said alarm unit being adapted to trigger an alarm device provided with delay means when the control section (9) is separated from the computer section (1), or from a stor-
age and support unit (14) arranged in a predetermined manner,
said alarm device being set such that alarm is beaten only when
a period of time has lapsed which is normal for moving the con-
trol section between computer section and storage unit.

7. Security device according to any of the preceding claims,
*characterized in that* the locking means (7) which bring about
proper combining and interlocking of the computer section and
the control section (1, 9, respectively) also include, besides
guide portions for orientation, a member (25) pushing the com-
puter and control sections (1, 9, respectively) apart when the
locking means (19) is displaced in a separating direction, said
member having a limited range of displacement adjusted such that
when the pusher member (25) is maximally displaced outwardly the
connection across the interface (10, 11) is broken and shielding
thereabout made essentially inoperative.

8. Security device according to claim 6, *characterized in that*
the alarm device is adapted to be controlled by a control circuit
via two pairs of contact means situated in variable, unique po-
sitions at the interface halves (10, 11), and that said circuit
is unaffected by signals from the rest of the computer appli-
cance.
INTERNATIONAL SEARCH REPORT

International Application No. PCT/SE 91/00289

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)9

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC5: H 05 K 9/00, 7/14, G 06 F 1/00, 12/14

II. FIELDS SEARCHED

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Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in Fields Searched8

SE, DK, FI, NO classes as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT3

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IV. CERTIFICATION

Date of the Actual Completion of the International Search: 11th July 1991

Date of Mailing of this International Search Report: 1991-08-07

International Searching Authority: SWEDISH PATENT OFFICE

Signature of Authorized Officer: Bo Gustavsson
ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO. PCT/SE 91/00289

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