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**IMPROVEMENTS IN OR RELATING TO CONTROL AND/OR
MONITORING SYSTEMS**

This invention relates to improvements in control and/or monitoring systems.

Reference throughout the specification shall now be made to the present invention
5 in relation to security systems which are in fact control and/or monitoring systems.

BACKGROUND ART

An increasing number of security systems are being installed world-wide. Further,
existing security systems are continually being upgraded as technology becomes
smarter, more monitoring/control devices are available, and the desire for
10 increased security increases.

There is often a need to control access to a door or building by using an access
control system that uses electronic means as a token badge or card to identify
persons allowed access. Sometimes the means of electronic identification is a PIN
number that a person is required to enter via a keyboard. Usually, with the
15 appropriate identification is received, access is automatically granted.

For ease of reference the access control system will now be referred to as a card
reader.

There a number of situations whereby the wrong identification is received, or no
identification means is received at all. For example, a person may enter in the
20 wrong PIN number, have an out of date identification device, may not have the



identification device with them or may not have been issued with such a device in the first place.

In the above circumstances, it is desirable for that person to have audio communication with an operator of the security system. That operator can then
5 determine whether access can be granted and subsequently either allow or to deny that person access. This audio communication is typically supplied by a separate intercom device which usually is manufactured by a separate manufacturer to that who would normally manufacture the card reader.

This is obviously an undesirable situation.

10 As these devices are from separate manufacturers, there is no consistency in the data format. Thus, the devices do not normally share in the data between them and two separate communication networks are required to be run from the devices to the main security system.

Also, the devices are required to be installed separately and can take up
15 considerable space in the process.

Further, it is not possible to have any interactions between the devices. E.g. someone swiping their card does not have immediate access to intercom functions.

It can be seen that having separate devices means they are expensive to install and maintain because of the double up of components and cabling.

20 Thus the object of the present invention to address the above problems, or at least to provide the public with the use of choices.

DISCLOSURE OF INVENTION

According to one aspect of the present invention there is provided an access control device including an electronic identification means.

characterised in that

- 5 the access control device also includes an audio communications device.

According to further aspect of the present invention there is provided a control and/or monitoring system which incorporates an access control device as described above.

- According to a further aspect of the present invention there is provided a method
10 of installing a control and/or monitoring system characterised by the step of installing an access control device as described above.

Reference throughout the specification should now be made to the access control device as being a 'plus reader'. It should be appreciated that this term is used for reference only and should not be seen as limiting.

- 15 The electronic identification means may come in a number of forms and may include a single component or a number of different components. For example, the electronic identification means may be a card reader. This may be in the form of a swipe card device, or perhaps in some embodiments a proximity smart card reader.

The electronic identification means may include a key pad into which alpha/numeric or some other form of data can be entered. This may be in addition to or instead of a card reader.

5 In preferred embodiments the key pad has back lighting so that it can be read in the dark.

Other embodiments of the present invention may have the electronic identification means remotely sense some physical attribute of the person wishing to gain access. For example, use a fingerprint or retina scan or other biometric devices.

10 Further embodiments of the present invention the audio communications device would be in the form of an intercom and should now be referred to as such throughout the specification. Again this term should not be seen in any way as limiting.

Preferably, the person situated by the plus reader can press a function key to operate the intercom and communicate with the operator of the security system.

15 Preferably also, the operator can communicate back through the intercom.

In some embodiments of the present invention the operator can choose when to turn on the intercom. For example, in the area close to the plus reader there may be evidence on an alarm or duress situation such as screaming. The operator can then turn on the intercom and listen to this sound.

20 In some embodiments, the operator may also record any of the audio.

The intercom may also be able to provide other audio services. For example, an intercom may play pre-stored audio clips to the user. For example, the user may swipe the card and the security system may determine that there is a message waiting for that particular user. This message may be retrieved from whatever
5 storage system it is kept and played for the user.

The intercom may also be able to play emergency evacuation audio clips. For example, 'Fire, please exit immediately through exit door'.

In some embodiments the present invention the plus reader may also include a display which may also display messages. In preferred embodiments, the display
10 is a graphical LCD display with back lighting.

The intercom may also be used as part of the company paging system. It can also be used to provide voice prompts for operations and disability situations.

While the data from the intercom may be in any suitable format that can be used in any security system, it is preferably in digital format. This allows for easier
15 integration with other data received through the security system and other peripheral devices and with inter-action with the electronic identification means. The digital data is also easier to store and process.

In some embodiments of the present invention, the data from the intercom may be compressed which allows for easier transmission and the use of a smaller
20 bandwidth communication system.

It is envisaged that the person at the card reader will generate an event when pressing a designated function key on the reader that includes the intercom. This event may be recorded by the security system and as well as alerting the operator of the security system. While the operator is talking to or listening to the intercom
5 the conversation may be optionally recorded to the operator's workstation or elsewhere.

In some embodiments, an occurrence of certain events can trigger the transmission of compressed audio data from the intercom such that the security system will have recorded a number of seconds of sound after the event. This means that the
10 security system does not necessarily record sound from an intercom continuously, but only source sound from around the time of events that are of interest.

Data from the intercom and the card reader can be indexed to data received from other peripherals such as video cameras.

It should be appreciated that a number of technical issues needed to be overcome
15 to ensure that the communications system and the plus reader can handle the different data needs of the systems.

For example, a typical card reader only requires communications bandwidth of maybe 40K bits per second to perform normal access control functionality. However, to handle the communications from the intercom and other peripheral
20 devices such as camera, the communications systems need at least four times that bandwidth. For example, in one particular embodiment present invention, the bandwidth of 187.5K bps is required.

The human ear is very sensitive to sound quality. It should also be appreciated that in the security system, sound quality is paramount, not only in communicating instructions, but also with recorded sound happening around an 'event'. Audio dropouts in security systems is something to be avoided.

- 5 Thus, the applicants have in preferred embodiments of the invention designed a system that guarantees to poll each of plus readers at a minimum of 10 times per second. This gives the audio quality desired.

It should now be appreciated that the present invention offers a number of advantages over the prior art.

- 10 The incorporation of a electronic identification such as a card reader along with an audio communications device such as an intercom provides cost savings and several improvements of functionality.

Firstly, common installation costs are far cheaper as only one device has to be installed and one set of cabling as opposed to two.

- 15 Secondly, integration of data can be readily achieved with the two devices in the one unit. Audio information can be played to the card user which is directly linked to the identification of that particular card user.

Visual display of various messages combined with an audio display can be readily communicated to a card holder.

The operator of a security system can also provide integrated control functions and again readily communicate with the person positioned by the access control devices.

Data received by the access control device with the audio or identification data can
5 be readily integrated.

With the embodiment of the present invention which uses digital intercom, data can be readily processed with digital data coming in from other peripheral devices such as video cameras.

Aspects of the present invention have been described by way of example and it
10 should be appreciated that modifications and additions may be made thereto without departing from the scope of the appended claims.

THE CLAIMS DEFINING THE INVENTION ARE:

1. An access control device including electronic identification means,

the access control device characterised in that

the access control device also includes an audio communication device.
2. Access control device as claimed on claim 1 wherein the electronic identification means is in the form of a card reader.
3. An access control device as claimed in either claim 1 or claim 2 where in the electronic identification means includes a key pad.
4. An access control device as claimed in any one of claims 1 to 3 wherein the audio communications device is in the form of an intercom.
5. An access control device as claimed in any one of claims 1 to 4 wherein the audio communications device includes the ability to play pre-stored audio clips.
6. An access control device as claimed in any one of claims 1 to 5 wherein the electronic identification means and the audio communications device are configured to share data with each other.
7. An access control device as claimed in any one of claims 1 to 6 wherein the data from the electronic identification means and audio

communications device is in a format that can be transmitted from the access control device over a single communications cable.

8. An access control device as claimed in any one of claims 1 to 7 which can be activated or controlled by a remote operator.
9. An access control device as claimed in any one of claims 1 to 8 when the audio communications device is bi-directional.
10. A control/monitoring system which incorporates an access control device as claimed in any one of claims 1 to 9.
11. A method of installing a control/monitoring system characterised by the step of installing an access control device as claimed in any one of claims 1 to 9.