EUROPEAN PATENT SPECIFICATION

Date of publication and mention of the grant of the patent: 08.06.2011 Bulletin 2011/23

Application number: 09173423.6

Date of filing: 20.12.2005

System for monitoring security systems
System zur Überwachung von Sicherheitssystemen
Système de surveillance de systèmes de sécurité

Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR


Date of publication of application: 13.01.2010 Bulletin 2010/02

Document number(s) of the earlier application(s) in accordance with Art. 76 EPC:
05854749.8 / 1 829 004

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Description

BACKGROUND OF THE INVENTION

[0001] This invention relates to intelligent security systems. More particularly, the present invention is directed to a system for monitoring security systems which comprises at least one pedestal set for transmitting a signal to a tag passing near the pedestal set and receiving a signal back from the tag as the tag passes near the pedestal set to establish an alarm event, at least one IP camera configured to operate for a period of time during the alarm event, a computer to compile data received from the at least one pedestal set, including video data from the IP camera, and a graphical display to display the compiled data received from the pedestal set.

[0002] The present invention is directed to an intelligent system for monitoring security systems that auto-mates many functions that previously required manual input by an operator. The security system is designed to operate with radio frequency (RF) security apparatus such as electronic article security (EAS), AM and radio frequency identification (RFID) systems and tags. The present system may be used in any location for which there is a need for tracking items or protecting items from theft. The present system could be deployed, for example, in a retail store, shipping facility, warehouse, airport, library, and the like.

[0003] Several companies manufacture and sell intelligent RF security systems. For example, Sensormatic Electronics Corporation, a subsidiary of Tyco International, Ltd., markets a system that performs real-time monitoring of stores that has the ability to interface with store alarms, has remote diagnostic hardware, performs data mining, and counting of people passing through a detection area.

[0004] This system also performs electronic entry of alarm logs and has the ability to link video surveillance cameras. Sensormatic also has a system that enables store employees to track alarms, based on information input into a panel. This system automatically records elapsed response time, reason, location, and system status. Using a keypad or scanner, point of sale information such as the specific aisle or cashier used and quantity and identification of items recovered can be logged. An alarm incident report becomes part of a centralized database that is accessible, for example, via the internet or by e-mail. The Sensormatic system also can link EAS deactivation with a point of sale transaction. The system provides a record of all deactivations. A Sensor-matic system also records information on the number of people entering and exiting stores which may be automatically transmitted to corporate headquarters. Finally, a Sensor-matic system manages RFID readers remotely.

[0005] U.S. Patent Application Publication No. 2004/0164863, by Sensormatic (Tyco Fire & Security Services, as noted on the publication) is directed to an integrated EAS and point of sale system and method where a computer receives and processes EAS data together with point of sale data for use by a user. This patent also includes several other features including a timer that is initiated upon receiving an alarm. The timer is stopped in response to input by a user. In operation, the system receives an alarm event corresponding to an activated EAS tag. Information related to the alarm event is made available, including a reason code (such as failure to deactivate, failure to remove, stock movement, system test, unexplained, unattended, etc.). A keypad or scanner may be used to input the alarm event information. See also International Published Application No. WO 2004/077362, by Sensormatic.

[0006] N.V. Nederlandsche Apparatenfabriek (NEDAP) of the Netherlands also markets a system that counts people, such as customers entering and leaving an area. This information is used to determine the effectiveness of marketing campaigns or can be compared with point-of-sale alarm data to determine how best to deploy sales and security staff. This system shows incoming and outgoing customers passing through an area in a designated time period, allows an operator to survey relevant data, compares current data to data received during previous time periods, shows a correspondence between the number of alarms and number of visitors, etc. NEDAP also makes a security system monitor that provides an operator with EAS system status (e.g. fully operational, possible fault causes and solutions, etc.). NEDAP also markets software that monitors tag and tagging performance, including quantity and quantity of de-activated tags. The system provides remote service and on-line maintenance options.

[0007] European Patent No. EP 1 226 565, by NEDAP, is directed to a system for monitoring theft protection. Here, the system includes a transceiver disposed adjacent to a passage that detects anti-theft labels passing through the passage. The system includes a communication device that transmits, in real time, information about the detected labels. The system is arranged for manual input and real-time transmission of information regarding anti-theft labels attached to paid-for goods. When a security officer has established that a detection originates from an anti-theft label attached to a paid-for article, at least one local control system and/or the central control system is provided with this information. Real time information may be processed remotely. The central control device may statistically process the information received. A display may be used where a city may be selected and information related to that city is displayed.

[0008] European Patent Application No. EP 1 411 484, owned by NEDAP, is directed to a real time system for monitoring theft protection. Similar to EP 1 226 565, this system is directed to a theft security device having a transceiver that is set up in a passageway and detects antitheft labels that pass through the passageway. The system may include provision for people counting. The system provides for manual input and real-time transmission of information regarding antitheft labels attached to
paid for goods. A local control unit and a central control unit may be used. Analysis and statistical processing of results may be displayed by the local or central control unit.

[0009] Detectag, Inc. of Ontario, Canada, provides a system that uses transceivers connected to a controller using a user's private ethernet network. The transceivers monitor the activity of RFID tags in a store. The user can connect numerous controller modules on the network. The transceivers are equipped with self-diagnostic software. Additionally, the transceivers are tamper-resistant. If the transceiver detects tampering, the transceiver generates an audible alarm. The system may also use a speech module and a relay driver module. The speech module allows a user to record and then play back voice messages or instructions. For example, the system can greet someone as he or she enters a building. Similarly, the system can inform users of certain building security procedures. The relay driver module allows a user to control power to separate external devices. The module is essentially a remote on and off switch. This system provides for, for example, turning on and off of electric locks, alarm modules, and building lights.

[0010] U.S. Patent No. 5,748,085 (Davis et al.) is directed to an EAS monitoring system. This system is capable of recording alarm and other events associated with the operation of the EAS system. The monitor may have alarm detection capability, an alphanumeric keyboard for event code entry by an employee, memory for storage of event data and employee identification, and means for downloading data to a portable reader or central processor. This monitoring system allows store managers and EAS manufacturers to audit the performance of installed EAS systems. The user can remotely access the data in the form of a map of locations.

[0011]WO 01/46923 A1 discloses a remote monitoring system for monitoring a facility for fire, burglar and other alarms. The system comprises radio frequency identification (RFID) tags that are activated by physically touching a reader or by passing near to a reader. When the tags receive a radio frequency signal, they transmit their ID number to the reader so that personnel or physical assets of the business can be located in the facility. In addition, video and audio data are collected from cameras and microphones positioned in and around the facility, wherein the data collection can be initiated via an external trigger or alarm. The combined tag and video data can be stored for later review or transmitted live over the Internet to a central host.

[0012] However, presently known systems have a number of shortcomings resolved by the present invention. Most importantly, presently known systems provide no analysis of data, for example, no graphical displays of the frequency of stolen items are provided along with no data as to why specific alarms are triggered.

[0013] All references cited herein are incorporated herein by reference in their entireties.

BRIEF SUMMARY OF THE INVENTION

[0014] In the present invention, the system for monitoring security systems includes a reason code generator that is connected to the computer, wherein the computer compiles data received from the reason code generator and wherein the graphical display displays the compiled data in the form of a map of locations.

[0015] The time period may be in a range from about one to ten seconds and, preferably, about four seconds.

[0016] The present invention preferably includes all of the advantages of the systems identified above (e.g., interface with store alarms, remote diagnostic hardware, remote management, data mining, people counting, alarm logs, linking of security cameras, tracking of alarms, comparison of data, monitoring of tag performance, a speech module, use of a network, etc.) but resolves shortcomings in the prior art. The present system provides a system that uses automatic reason code generation. That is, the present system automatically determines the reason for an alarm. For example, the present invention automatically generates a code when an alarm has been activated because an item has been stolen. Additionally, the present system uses detailed displays such as displays having annotated maps to quickly provide an operator of the system with detailed information from stored event information.

[0017] Finally, the present system provides a short video of an alarm event that is viewable from a central computer, remote from the site of the event.

BRIEF DESCRIPTION OF SEVERAL VIEWS OF THE DRAWINGS

[0018] The invention will be described in conjunction with the following drawings in which like reference numerals designate like elements throughout the several views and wherein:

FIG. 1 is a block diagram of a system for monitoring security systems in accordance with one preferred embodiment of the present invention;

FIG. 2 is a simplified drawing of an example of a display showing a map as used in the system of FIG. 1; and

FIG. 3 is a simplified drawing of an example of a display showing a second map as used in the system of FIG. 1, wherein the second map is a detail view of a portion of the first map.

DETAILED DESCRIPTION OF THE INVENTION

[0019] The present system is directed to a novel security system that comprises a software system that re-
ceives information from a hardware system. The hard-
ware and software systems will be described separately
below.

HARDWARE SYSTEM:

[0020]  Referring now to the drawings, wherein like part
numbers refer to like elements throughout the several
views, there is shown in FIG. 1 a system for monitoring
security systems 10 in accordance with one preferred
embodiment of the present invention. The system for
monitoring security systems 10 includes one or more
pedestal sets 20 for sending a signal and receiving a
signal from a tag T, such as an RFID tag. The system
may further include, for example, a deactivating scanner
30, a people counting system 40, an IP camera 45 (a
device which allows a user to view live or stored, full
motion video from anywhere on a computer network) one
or more auxiliary inputs 50 and a local computer 60 that
is connected to a server 70. These subsystems are all
connected to the system for monitoring security systems
10 in accordance with a first embodiment of the present
invention. The local computer 60 is connected to a reason
code generator 90 (as will be described in further detail
below). The local computer 60 also receives data related
to information observed by the system at the pedestal
sets 20, deactivating scanner 30, people counting system
40 and auxiliary inputs 50. The hardware system, i.e.,
the system 10 for monitoring security systems, of the
present invention, is compatible with a wide variety of
products in a wide variety of areas, such as general se-
curity systems, shipping facilities, airports, casinos, li-
braries and stores (the retail industry in general). The
system 10 preferably includes the pedestals 20, as are
well known, connected by wire or wirelessly to send in-
formation to the server 70, preferably via the local com-
puter 60. The server 70 processes the information re-
ceived at the pedestals 20 and other attached apparatus
deactivating scanner 30, people counting system 40, etc.). As shown in FIG. 1, the pedestals 20 may connect to a hub (for example, ports in local computer 60 or a separate hardware hub 15 that has ports for other communication sources including, for example, the people counting system 40, the deactivating scanner 30, the rea-
son code generator 90, and the auxiliary inputs 50 for
other devices.

[0021]  The auxiliary inputs 50 can include, for exam-
ple, systems for determining electrical status information
for the store or pedestals 20, closed-circuit television,
information on the status of door and window locks, metal
detector information, lighting in the store and the like.

[0022]  Rather than feeding information to the com-
puter 60, these systems 10, including the pedestals 20, may
feed information received to the hub 15. The hub 15 acts
as a server to send the information to an offsite process-
ing station, i.e., the server 70 at, for example, facility
headquarters. Optionally, a modem 65 or wireless con-
nenction may transfer the data from the hub 15 to the serv-
er 70.

[0023]  The system 10 may also include one or more
outputs 110 for acting on a given condition entered into
the reason code generator 90 or automatically (i.e., with-
out direct input by a human operator) by an automatic
reason code generator 90. The outputs 100 are designed
to effect security measures such as summon the police,
lock doors, turn on lights, or sound an alarm. While in-
stalled, the components will send information to the hub
15 continuously. The hub 15 sends the information to the
in-store, local computer 60 which sends the information
to the offsite server 70. The offsite server 70 sends the
information to a managing computer 80 or computers
that are sufficiently powerful to view the security data
generated. Store owners, district managers, regional
managers, and the like will be able to monitor their store
or stores’ profile to gain useful information about the cus-
tomers in the store. The managing computer 80 would
preferably be a single computer located at, for example,
company headquarters.

[0024]  Optionally, the system 10 may include provision
to view video related to a triggered condition using, for
example, the IP camera 45. When triggered, the IP cam-

Software System:

[0025]  As can be seen in FIGS. 2 and 3, which depict
examples of a display screen 100A, 100B of the present
invention, the software system 10 creates a map display
to show the security system 10 of different areas within
a region associated with the security system. Each loca-
tion may be coded with, for example, a color or a different
type of shading (as shown in FIGS. 2 and 3). For example,
a display of a red area (displayed as an area of angled
defined lines 120 in FIGS. 2 and 3) on a map may show a security
risk associated with that area while a display of a green
area (displayed as an area of vertical lines 130 in FIGS. 2
and 3) on the map may show a normal (everything
active and fully functional with no alerts). For each oc-
currence of a security event, the color of the symbol
changes. For example, the color of a symbol could gradu-
ally change from green to red depending upon the
number of occurrences of security events (depicted as
an area of cross-hatched lines 140 in FIGS. 2 and 3).
Therefore, a graphical representation offering a more
precise view of data is available for viewing. For example,
a map could initially start as a median color between
green and red (e.g., pale green, pink or even a different
color such as blue) to provide for an operator to view
which locations have a greater or lesser number of se-
curity events.

[0026]  In a preferred embodiment of the present inven-
tion, by clicking on the map area using a cursor associ-
ated with a mouse, the map will zoom in on a particular
region (see FIG. 3 as compared to FIG. 2). For example,
if an initial map shows the entire world, a operator could
While the invention has been described in detail and with reference to specific examples thereof, it will be apparent to one skilled in the art that various changes and modifications can be made therein without departing from the scope of the claims thereof.

Claims

1. A system (10) for monitoring security systems, comprising:
   (A) at least one pedestal set (20) for transmitting a signal to a tag (T) passing near the pedestal set (20) and receiving a signal back from the tag (T) as the tag (T) passes near the pedestal set (20) to establish an alarm event;
   (B) at least one IP camera (45) configured to operate for a period of time during the alarm event;
   (C) a computer (60) to compile data received from the at least one pedestal set (20), including video data from the IP camera (45); and
   (D) a graphical display to display the compiled data received from the pedestal set,

characterized in that the computer (60) is connected to a reason code generator (90) and compiles data received from the reason code generator (90), wherein the graphical display displays the compiled data in the form of a maps of locations.

2. The system for monitoring security systems of claim 1, wherein the time period is in a range from about one to ten seconds.

3. The system for monitoring security systems of claim 1, wherein the maps of locations comprise a series of levels of maps wherein a first map displays a broadest geographic region, a second map displays a smaller geographic region of the first map with greater detail than that shown on the first map and a third map displays a smaller geographic region of the second map with greater detail than that shown on the second map.

Patentansprüche

1. System (10) zum Überwachen von Sicherheitssystemen, mit:
   (A) wenigstens einem Sockelsatz (20) zum Senden eines Signals zu einem Etikett (T), das sich nahe bei dem Sockelsatz (20) vorbeibewegt, und Empfangen eines von dem Etikett (T) zurückkommenden Signals, wenn sich das Etikett (T) nahe bei dem Sockelsatz (20) vorbeibewegt,
um ein Alarmereignis zu etablieren;
(B) wenigstens einer IP-Kamera (45), die so konfiguriert ist, dass sie für eine Zeitspanne während des Alarmereignisses in Betrieb ist;
(C) einem Computer (60) zum Kompilieren von aus dem wenigsten einem Sockelsatz (20) empfangenen Daten, welche Videodaten aus der IP-Kamera (45) umfassen;
(D) einer grafischen Anzeige zum Anzeigen der aus dem Sockelsatz empfangenen kompilierten Daten,

dadurch gekennzeichnet, dass
der Computer (60) mit einem Ursachencodegenerator (90) verbunden ist und aus dem Ursachencodegenerator (90) empfangene Daten kompiliert, wobei die grafische Anzeige die kompilierten Daten in Form von Karten von Orten anzeigt.

2. System zum Überwachen von Sicherheitssystemen nach Anspruch 1, wobei die Zeitspanne in einem Bereich von etwa einer bis zehn Sekunden liegt.


Revendications

1. Système (10) pour surveiller des systèmes de sécurité, comprenant :

(A) au moins un ensemble de socle (20) pour émettre un signal vers une étiquette (T) passant à proximité de l'ensemble de socle (20) et recevoir en retour un signal de l'étiquette (T) alors que l'étiquette (T) passe à proximité de l'ensemble de socle (20) pour établir un événement d'alarme ;
(B) au moins une caméra IP (45) configurée pour fonctionner pendant une période de temps pendant l'événement d'alarme ;
(C) un ordinateur (60) pour compiler les données reçues dudit ensemble de socle (20), comprenant des données vidéo provenant de la caméra IP (45) ; et
(D) un afficheur graphique pour afficher les données compilées reçues de l'ensemble de socle,

caractérisé en ce que

l'ordinateur (60) est connecté à un générateur de code de raison (90) et compile les données reçues du générateur de code de raison (90), dans lequel l'afficheur graphique affiche les données compilées sous la forme de cartes d’emplacements.

2. Système pour surveiller des systèmes de sécurité selon la revendication 1, dans lequel la période de temps est dans une plage d'environ une à dix secondes.

3. Système pour surveiller des systèmes de sécurité selon la revendication 1, dans lequel les cartes d’emplacements comprennent une série de niveaux de cartes, dans lequel une première carte affiche une région géographique la plus large, une deuxième carte affiche une région géographique plus petite de la première carte avec plus de détails que celle montrée sur la première carte et une troisième carte affiche une région géographique plus petite de la deuxième carte avec plus de détails que celle montrée sur la deuxième carte.
REFERENCES CITED IN THE DESCRIPTION

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