Office de la Propriété Intellectuelle du Canada
Un organisme d'Industrie Canada

Canadian Intellectual Property Office
An agency of Industry Canada

CA 2200631 C 2003/08/05

(11)(21) 2 200 631

(12) BREVET CANADIEN
CANADIAN PATENT

(13) C

(22) Date de dépôt/Filing Date: 1997/03/21

(41) Mise à la disp. pub./Open to Public Insp.: 1998/09/21

(45) Date de délivrance/Issue Date: 2003/08/05

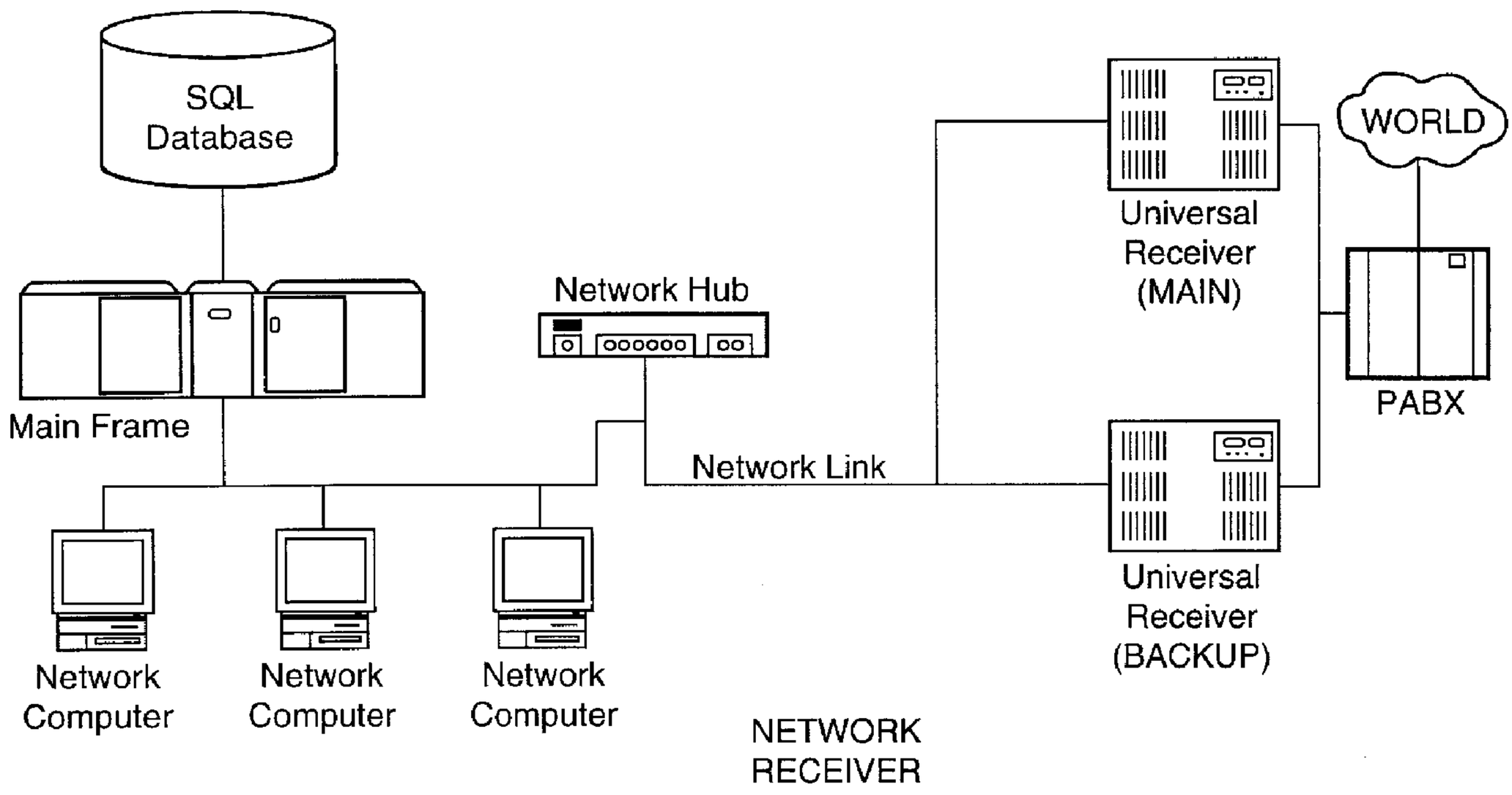
(51) Cl.Int.^{6}/Int.Cl.^{6} H04M 11/04, G08B 25/08

(72) Inventeur/Inventor:
JEFFERS, JOHN, CA

(73) Propriétaire/Owner:
SUR-GARD SECURITY SYSTEMS LTD., CA

(74) Agent: DENNISON ASSOCIATES

(54) Titre : RECEPTEUR DE STATION DE SECURITE
(54) Title: SECURITY STATION RECEIVER



NETWORK
RECEIVER

(57) Abrégé/Abstract:
A universal receiver includes a database of communication protocols which allow the receiver to configure itself for communication with the different panels. The receiver obtains certain information from the alarm panel which is initiating the communication. In the simplest form this is the DID number used by the alarm panel. The receiver uses this information to retrieve the appropriate protocol parameters stored in the database. The receiver can also add further identification codes to the address of the alarm panel for storage in a combined database serving many alarm panels. This allows convenient recording of communications received by the Security Station which serves different alarm panel systems some of which may have the same address code.

ABSTRACT OF THE DISCLOSURE

A universal receiver includes a database of communication protocols which allow the receiver to configure itself for communication with the different panels. The receiver obtains certain information from the alarm panel which is initiating the communication. In the simplest form this is the DID number used by the alarm panel. The receiver uses this information to retrieve the appropriate protocol parameters stored in the database. The receiver can also add further identification codes to the address of the alarm panel for storage in a combined database serving many alarm panels. This allows convenient recording of communications received by the Security Station which serves different alarm panel systems some of which may have the same address code.

2200631

TITLE: SECURITY STATION RECEIVER

FIELD OF THE INVENTION

The present invention relates to receivers for use in receiving and communicating with security system alarm panels and to a call centre required with receivers for receiving communications from alarm panels.

BACKGROUND OF THE INVENTION

Security systems for individual premises are very common and most of these security systems have the capability of reporting, to a central location, any alarm conditions. The central station then processes the calls and can arrange for appropriate action to be taken. The central station is often referred to as a monitoring station.

There has been a high growth rate with respect to security systems and there are many different security systems which are available. Most of these security systems use their own proprietary reporting procedure or protocol. More recently, in order to provide a more cost effective system, different systems report to a common monitoring station which has different receivers for communicating with the different types of security panels. Such a monitoring station requires a certain number of input telephone lines to provide satisfactory performance in handling anticipated communications. Each of the individual systems must be assessed on their own merit, as there is little cross support between the different receivers. The bank of telephone lines for accessing the different types of receivers can be shared and a switching device can direct the communication to the appropriate receiver based on the number dialed.

The present invention seeks to overcome a number of these disadvantages.

SUMMARY OF THE INVENTION

A security system control receiver for simultaneous communication with a plurality of alarm panels where the alarm panels are of different types and each type requires a particular communication protocol comprises a series of bi-directional communication channels for communicating with any of the alarm panels according to a protocol associated with the particular alarm panel, data processing means associated with the channels, which data processing means identifies information associated with each communication, allowing determination of the type of alarm panel which originated the communication, configuration means for selecting a communication protocol from a database of communication protocols of the different types of alarm panels where the selected communication protocol of the alarm panel is based on the identified information, and communication means which uses the selected communication protocol to communicate with the alarm panel and receive alarm information therefrom.

The present invention basically provides a universal receiver, which has associated therewith a database of communication protocols associated with specific information which is provided by the alarm panel and the telephone switching network when the alarm panel is contacting the security system control receiver. The receiver then uses that particular information to configure itself for communication with the alarm panel. The type of information provided to the receiver can be the DID number used by the alarm panel, for example. Different DID numbers can be used to identify different groups of types of alarm panels. Further information sent on the telephone line from the telephone switching network to the receiver regarding the telephone number of the calling entity can be used to further precisely identify the calling alarm panel. Therefore, the DID and the calling telephone number information can be tied to the particular protocol of filing the appropriate configuration of the receiver. After the receiver is appropriately configured, it merely carries out the conventional communication.

With this arrangement, there is no dedicated association of the particular communication channels tied to a particular alarm panel type. This allows the required specification for the receiver to be based on all of

the alarm panels which it is serving as opposed to each individual group of alarm panels. This pooling of the alarm panels into essentially one group greatly reduces the number of receivers which would be required to service the individual types of alarm panels. The receiver can also add signals to the signals received from the individual alarm panels to allow full identification in a further database.

The universal security system control receiver of the present invention provides flexibility with respect to expansion by providing the common servicing of further telephone lines necessary to handle all incoming alarm traffic. The invention allows better use of the telephone lines, as all systems can report over the lines and expansion of the system and or back up is simplified as each receiver is capable of servicing any of the alarm panels.

BRIEF DESCRIPTION OF THE DRAWINGS

Preferred embodiments of the invention are shown in the drawings, wherein:

Figure 1 is a general overview showing different alarm panel types and their cooperation with the universal receiver;

Figure 2 shows an enhancement of the system where the universal receiver is part of a network; and

Figure 3 shows further details of the universal receiver.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The system 2 uses the universal receiver 4 for processing calls from different alarm panels. The alarm panels can be of different types where each type requires a particular communication protocol. The first group of receivers is shown as 6, the second group of receivers is shown as 8 and the third group of receivers is shown as 10.

It can be appreciated that there can be many different groups of receivers and these receivers communicate with the universal receiver via direct in-dial (DID) telephone lines associated with the universal receiver. These direct in-dial lines can include a different direct in-dial number for a group of types of different receivers. In this way, the universal receiver 4, when picking up a call on one of the DID telephone lines 12, will receive the telephone number dialed and this number can be used by the universal receiver to identify the type or group of alarm panels that originated the call.

The universal receiver, upon answering the call, is also provided by the telephone switch the telephone number of the calling alarm panel. The DID and the telephone number information are used to access a protocol database 14, which maintains the particular communication parameters of the protocol necessary to appropriately program the universal receiver for communication with that type of alarm panel. Thus, the universal receiver retrieves the communication parameters and uses these parameters to configure the receiver to communicate with the alarm panel according to the communication protocol of the alarm panel. In this way, there can be different groups of alarm panels, all of which communicate with a universal receiver which adopts the correct protocol for the alarm panel which initiated the communication. Thus, the universal receiver is reconfigured and there is no necessity to change all of the alarm panels to a common communication protocol. The system is also easily expanded when a different type of alarm panel is added to the system.

The universal receiver can also receive from the protocol database further information to add to the particular alarm panel information to allow independent recognition of this communication in the database 16. Basically, the universal receiver receives the communication and then forwards it to the database 16 for further processing. By adding the additional information, each alarm panel that has communicated with the universal receiver can be uniquely identified in the database including all alarm panels served by the universal receiver even though different systems have the same identification. The system

adds a suffix or prefix to provide the unique identification without changing the identification of the alarm panel.

With the above arrangement, it can be appreciated that the direct in-dial numbers 12 effectively service all of the alarm panels, and therefore, the total number of lines required to service these alarm panels is reduced relative to a system where certain lines are dedicated to serving particular alarm panel types. Figure 1 clearly shows how all communications from the different types of receivers are basically fed to the universal receiver on the first available line. With this arrangement, the number of lines required for servicing of the different alarm panel types is kept to a minimum or reduced number. Furthermore, the universal receiver advantageously adds an account prefix on the front end of the message received from the alarm panel to uniquely identify the alarm panel relative to the total number of alarm panels being serviced. In this way, each communication and each alarm panel is uniquely identified in the database 16.

With the present invention, it is possible to have a control call center equipped with universal receivers 4 where the call center has less telephone lines than other control centers where dedicated or partially dedicated receivers are used. This system also allows reduction in the total number of receivers necessary for servicing of the alarm panels, as the telephone lines are pooled and the universal receivers are also pooled.

Although various preferred embodiments of the present invention have been described herein in detail, it will be appreciated by those skilled in the art, that variations may be made thereto without departing from the spirit of the invention or the scope of the appended claims.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A security system control receiver for simultaneous communication with a plurality of alarm panels where the alarm panels are of different types and each type requires a particular communication protocol for communicating with the control receiver, said security system control receiver comprising a series of bidirectional telephone communication channels for communicating with said plurality alarm panels according to a protocol associated with the particular alarm panel, data processing means associated with said channels that receives information provided by the PSTN including the dialed telephone address information and based thereon determining the type of alarm panel which originated the communication, a database of communication protocols including the communication protocols of said different types of alarm panels, a configuration arrangement associated with said data processing means and said database which selects the particular communication protocol for the alarm panel from said database based on the dialed telephone address information provided by the PSTN with each communication, and communication means which uses the particular communication protocol to communicate with said alarm panel and receive alarm information therefrom for further processing.

2. A security system control receiver as claimed in claim 1 wherein said database of communication protocols is maintained in a memory storage arrangement.

3. A security system control receiver as claimed in claim 1 wherein said configuration arrangement includes datastream manipulation means which creates a modified datastream by obtaining and inserting additional identification data into said alarm information to uniquely identify the source of the information.

4. A universal security system communications receiver capable of receiving and responding to plurality of alarm panel communications protocols from a plurality of alarm panels comprising:

a communications channel for communicating with said plurality of alarm panels;

a database containing data related to said plurality of alarm panels;

an alarm panel identification module connected to said communications channel for identifying a communicating alarm panel, its communications protocol and its related entries in said database that communicates on said channel; and

a call processing module connected to said communications channel for communicating with said communicating alarm panel using said communications protocol responsive to data received on said channel or other alarm state conditions.

5. A universal security system communications receiver as in claim 4 including a data processing module for communicating with data processing centres and a second communications channel connected with said data processing centres.

6. A universal security system communications receiver as in claim 5 wherein said data processing module utilizes said data related to said communicating alarm panel when communicating with said data processing centre.

7. A security alarm panel communications system comprising a plurality of alarm panels utilizing a

plurality of communications protocols and a universal communications receiver capable of communicating with all of said alarm panels wherein said universal receiver comprises:

a communications channel for communicating with said plurality of alarm panels;

a database containing data related to said plurality of alarm panels;

an alarm panel identification module connected to said communications channel for identifying a communicating alarm panel, its communications protocol and its related entries in said database that communicates on said channel; and

a call processing module connected to said communications channel for communicating with said communicating alarm panel using said communications protocol responsive to data received on said channel or other alarm state conditions.

8. A security system receiver capable of receiving communications intended for a plurality of receivers comprising a bidirectional communications channel between an input data stream and said universal receiver, data processing means for determining source and intended receiver of said input data stream responsive to origin data in said input data stream, emulation means for configuring said universal receiver to communicate as said intended receiver with said source responsive to said origin data, data stream manipulation means for creating a modified data stream by obtaining and inserting additional identification data said into said input data stream related to said origin data and a second bidirectional communications channel between said modified data stream and other data processors.

9. A universal security system communications receiver as in claim 8 wherein said first communications channel is a private branch exchange device.

10. A universal security system communications receiver as in claim 8 wherein said first communications channel is a private branch exchange device.

11. A universal security system communications receiver as in claim 8 wherein said panel identification module processes DNIS or ISDN information sent by an alarm panel over said communications channel.

12. A universal security communications receiver as in claim 6 wherein communications to said data processing centres includes segments of said additional information about said communicating alarm panel.

13. A universal security system communications receiver as in claim 8 wherein said second communications channel is connected to a plurality of network-linked computers.

14. A security system control station for receiving and responding to telephone communications initiated by any of a plurality of alarm panels using a PSTN where the alarm panels are of different types and each type uses a particular communication protocol, said security control station comprising a plurality of DID telephone lines connectable to any of a plurality of universal receivers, each universal receiver being configurable to communicate according to any provided communication protocol, a database of communication protocols which include the protocols of each type of alarm panel, said security station receiving from said PSTN with each communication the dialed telephone address used by the alarm panel that initiated the communication; said security station using

the dialed telephone address provided with each communication to determine the type of alarm panel which initiated the communication, retrieving the appropriate communication protocol from said database based on the determined alarm panel type and using the retrieved protocol to configure one of said universal receivers selected to communicate with said initiating alarm panel, whereby any of said universal receivers can communicate with any of the alarm panels.

15. A universal receiver for receiving and responding to telephone communications initiated by any of a plurality of alarm panels using a PSTN where the alarm panels are of different types and each type uses a particular communication protocol, said universal receiver being connected to said PSTN by a plurality of DID telephone lines, said universal receiver being configurable to communicate according to any provided communication protocol, a database of communication protocols associated with said universal receiver which database includes the protocols of each type of alarm panel, said universal receiver receiving from said PSTN with each communication the dialed telephone address used by the alarm panel that initiated the communication; said universal receiver using the dialed telephone address provided with each communication to determine the type of alarm panel which initiated the communication, retrieving the appropriate communication protocol from said database based on the determined alarm panel type and using the retrieved protocol to communicate with said initiating alarm panel, whereby said universal receiver can communicate with any of the alarm panels.

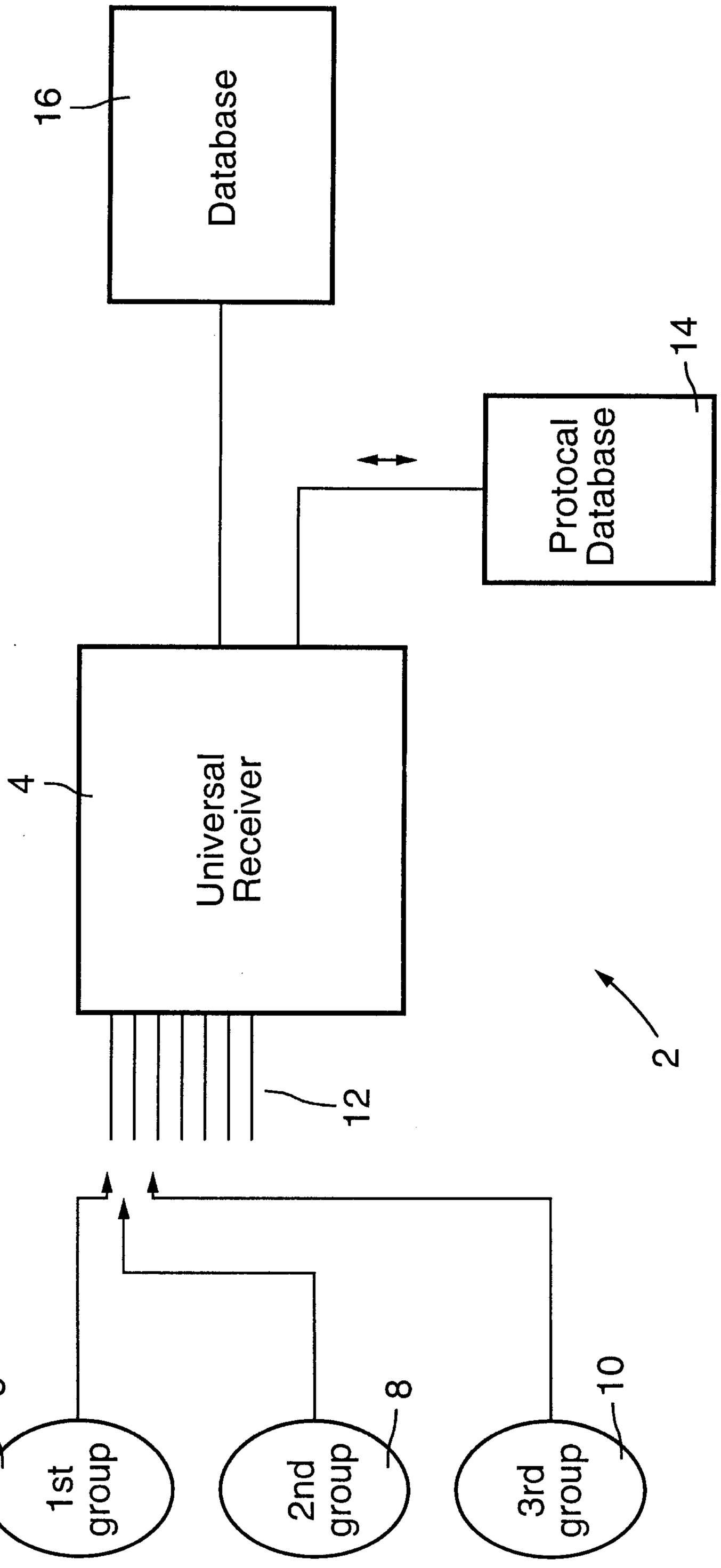

16
Database
Protocal Database
14
Universal Receiver
4
12
2
6
1st group
8
2nd group
10
3rd group

FIG.1

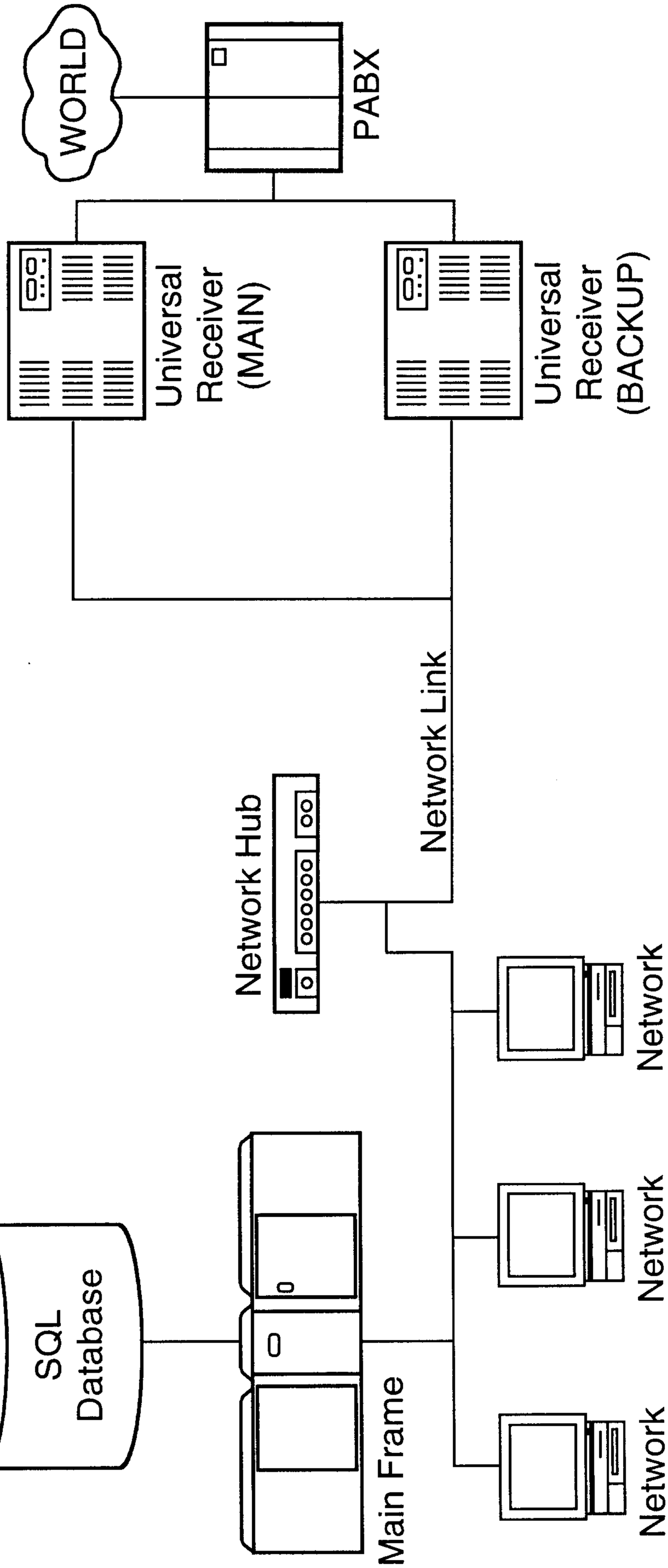

WORLD
PABX
Universal Receiver (MAIN)
Universal Receiver (BACKUP)
Network Link
Network Hub
Network Computer
Network Computer
Network Computer
SQL Database
Main Frame

FIG.4.2

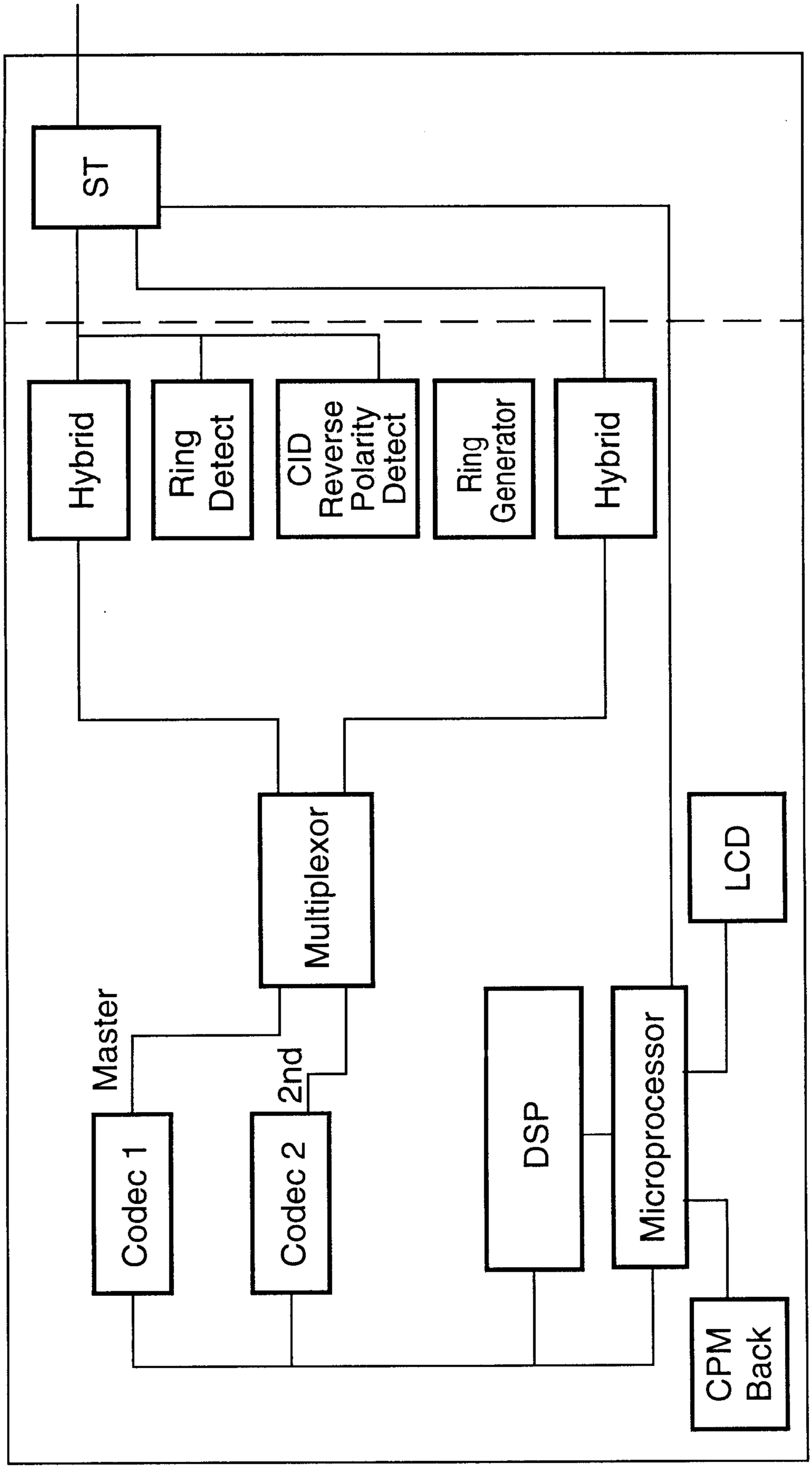
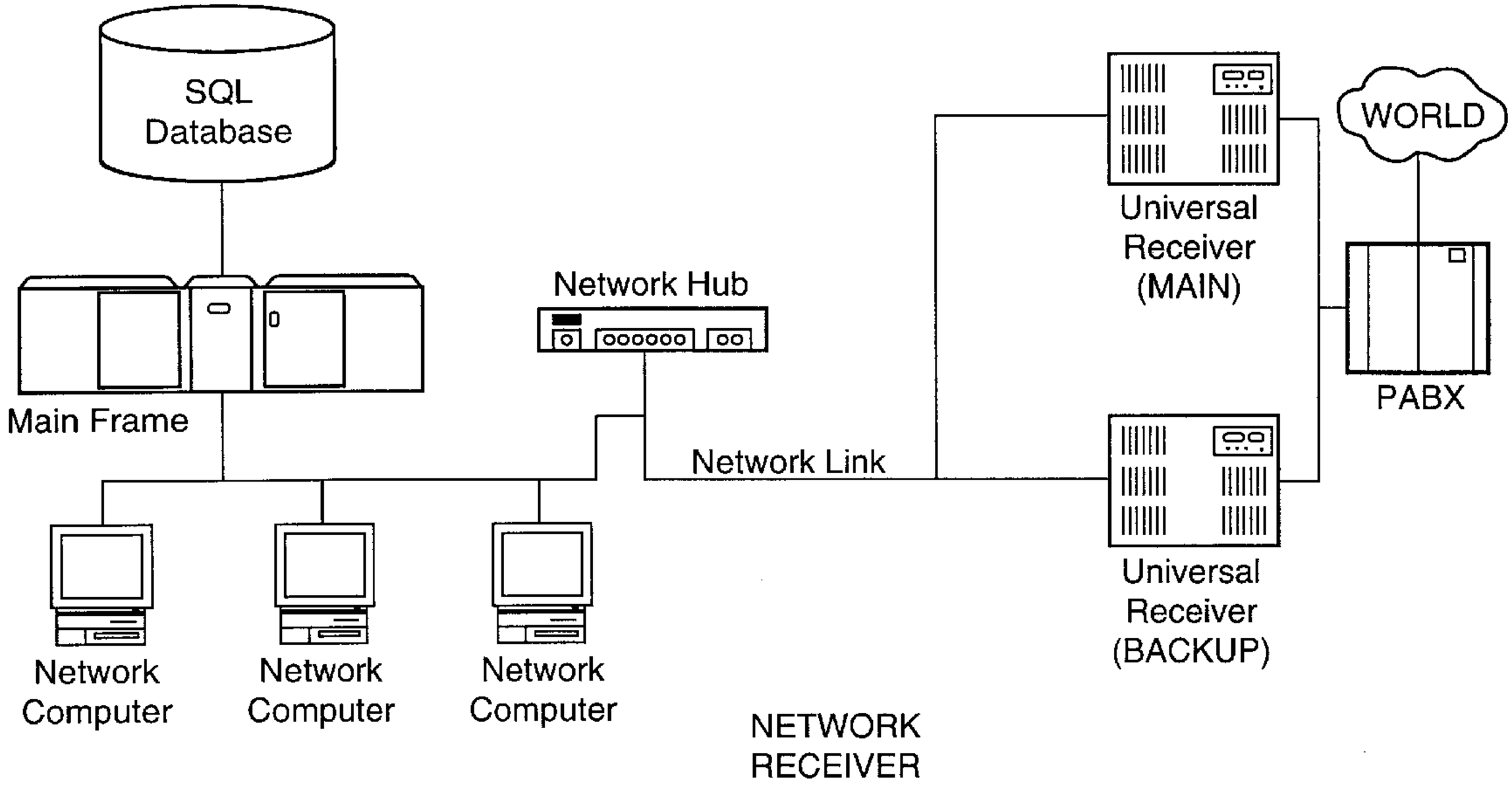

ST
Hybrid
Ring Detect
CID Reverse Polarity Detect
Ring Generator
Hybrid
Multiplexor
Master
2nd
Codec 1
Codec 2
DSP
Microprocessor
LCD
CPM Back

FIG.3



NETWORK
RECEIVER