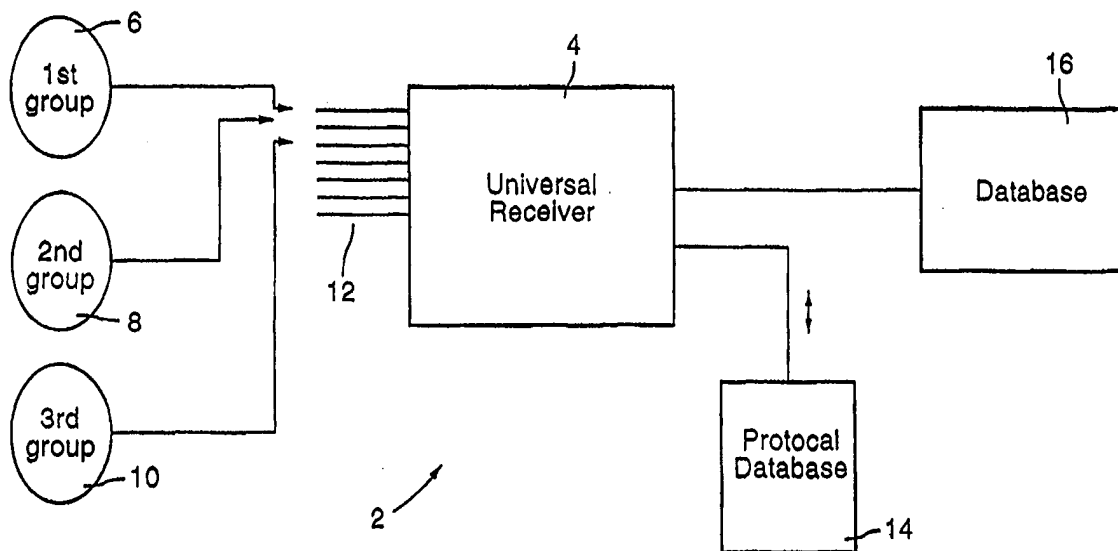




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : H04M 11/04, G08B 25/08	A1	(11) International Publication Number: WO 98/43403 (43) International Publication Date: 1 October 1998 (01.10.98)
(21) International Application Number: PCT/CA98/00268 (22) International Filing Date: 23 March 1998 (23.03.98) (30) Priority Data: 2,200,631 21 March 1997 (21.03.97) CA (71) Applicant: SUR-GARD SECURITY SYSTEMS LTD. [CA/CA]; Units 24 & 26, 401 Magnetic Drive, Downsview, Ontario M3J 3H9 (CA). (72) Inventor: JEFFERS, John; Units 24 & 26, 401 Magnetic Drive, Downsview, Ontario M3J 3H9 (CA). (74) Agents: JOHNSON, Douglas, S. et al.; Suite 301, 133 Richmond Street West, Toronto, Ontario M5H 2L7 (CA).		(81) Designated States: AU, CN, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>

(54) Title: SECURITY STATION RECEIVER



(57) 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.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav	TM	Turkmenistan
BF	Burkina Faso	GR	Greece		Republic of Macedonia	TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's	NZ	New Zealand		
CM	Cameroon		Republic of Korea	PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

TITLE: SECURITY STATION RECEIVERFIELD OF THE INVENTION

5 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

10 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.

15 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
20 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
25 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
5 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
10 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.

15 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;

20 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

25 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
5 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.

10 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
15 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
20 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
25 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
30 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
35 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
5 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,
10 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.
15 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
20 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
25 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, said security system control receiver comprising a series of bidirectional communication channels for communicating with any of said alarm panels according to a protocol associated with the particular alarm panel, data processing means associated with said channels that receives information from the PSTN associated with each communication allowing determination of 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 using the type of alarm panel determined by said data processing means, and communication mean 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 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, said security system control receiver comprising a series of bidirectional communication channels connections for connection with communication channels used by any of said alarm panels according to a protocol associated with the particular alarm panel, data processing means associated with said communication channel connections that identifies information associated with each communication allowing determination of the type of alarm panel which originated the communication, configuration means for selecting, from a database of communication protocols of said different types of alarm panels, the particular communication protocol of the alarm panel based on the identified information received in the communication from the alarm panel, and communication means which uses the particular communication

protocol to communicate with said alarm panel and receive alarm information therefrom.

3. A universal receiver for simultaneous processing of telephone communications received from any of a host of security alarm panels programmed to report to said universal receiver, said universal receiver comprising a series of communication connections for connecting with a bank of telephone communication channels, a memory storage arrangement for storing communication protocols of different types of receivers, a data processing arrangement associated with said communication connections for monitoring the receipt of incoming communications and receiving information associated with each communication, which information allows determination of the type of alarm panel, a configuration arrangement for selecting from said memory storage arrangement the protocol of an alarm panel which has initiated a communication with said universal receiver based on the received information, and a communication arrangement which uses the particular communication protocol to communicate with said alarm panel and receive alarm information therefrom for further processing.

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.

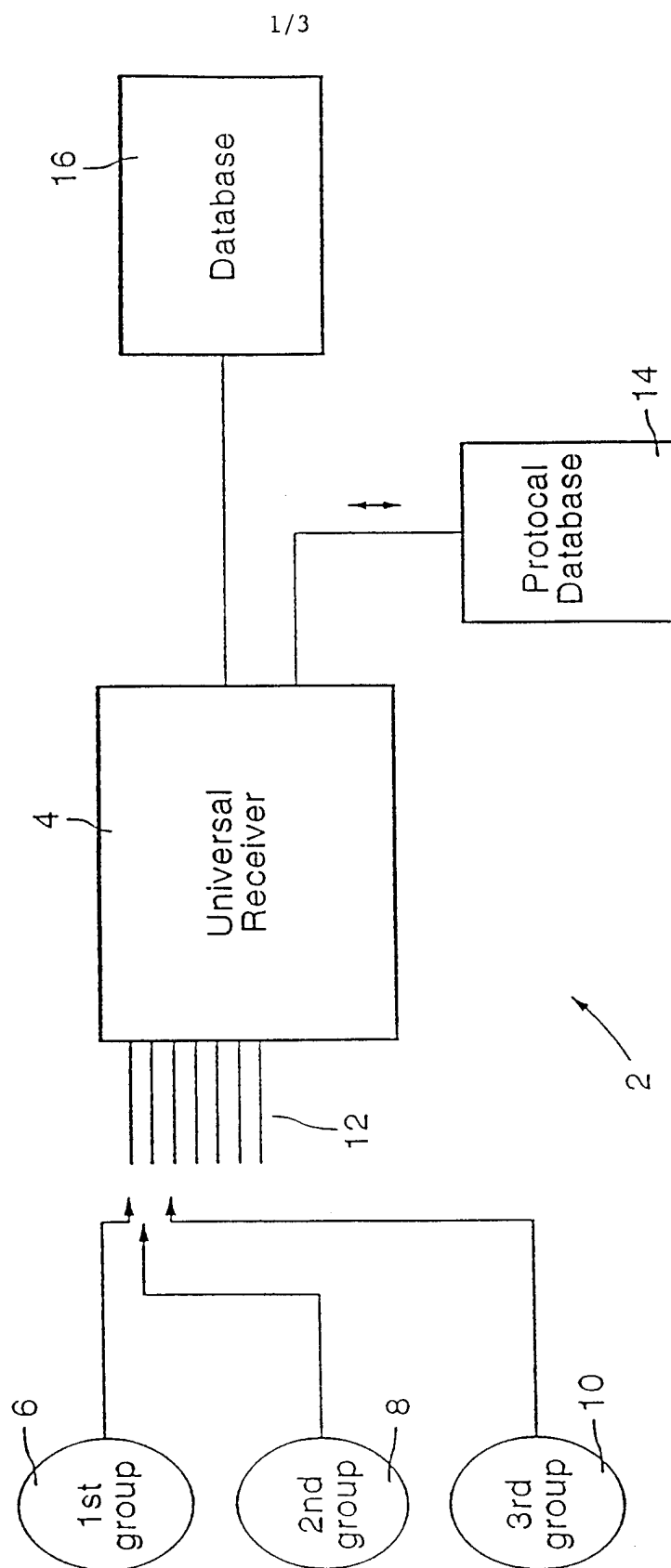


FIG.1

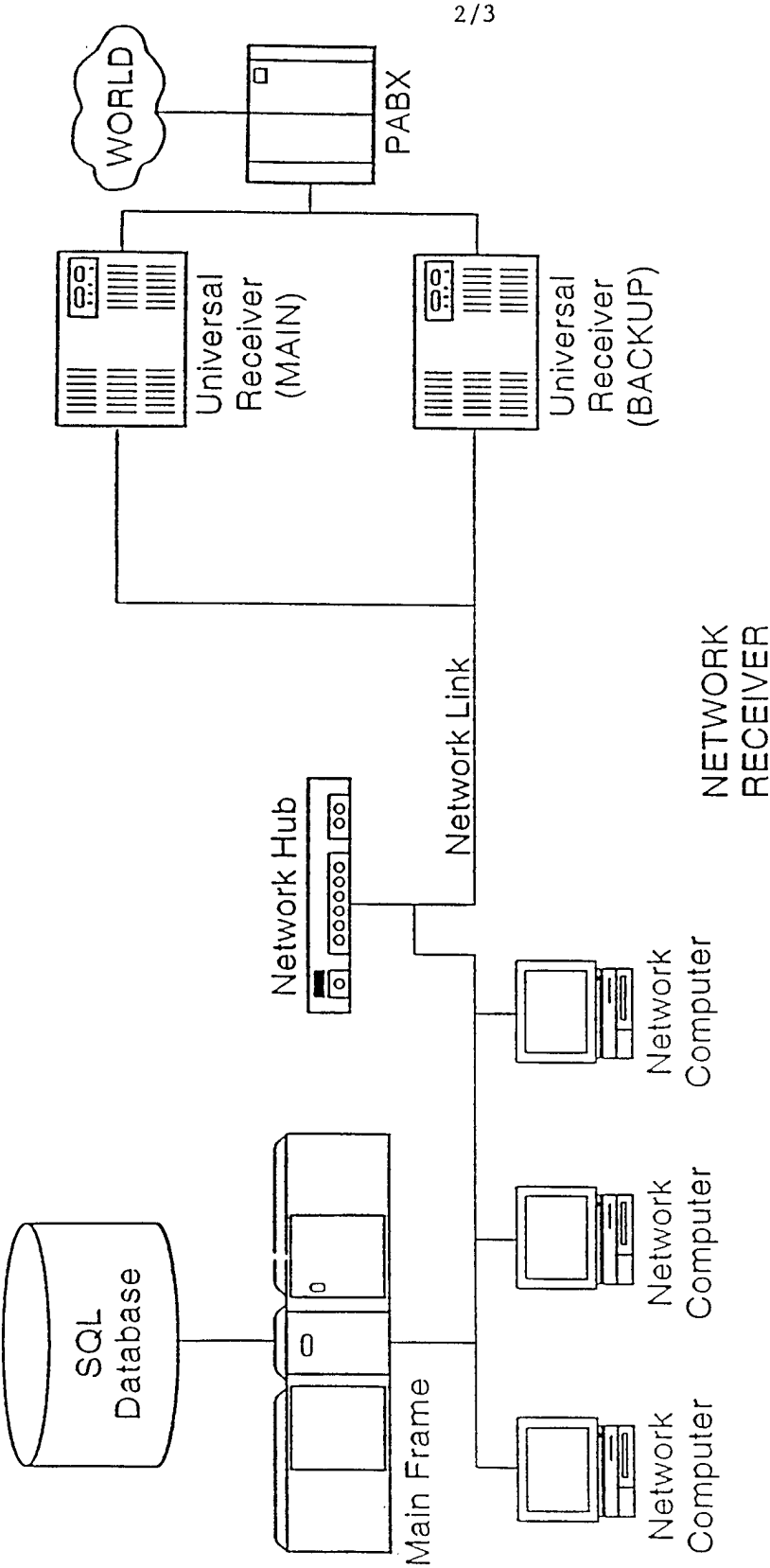


FIG.2

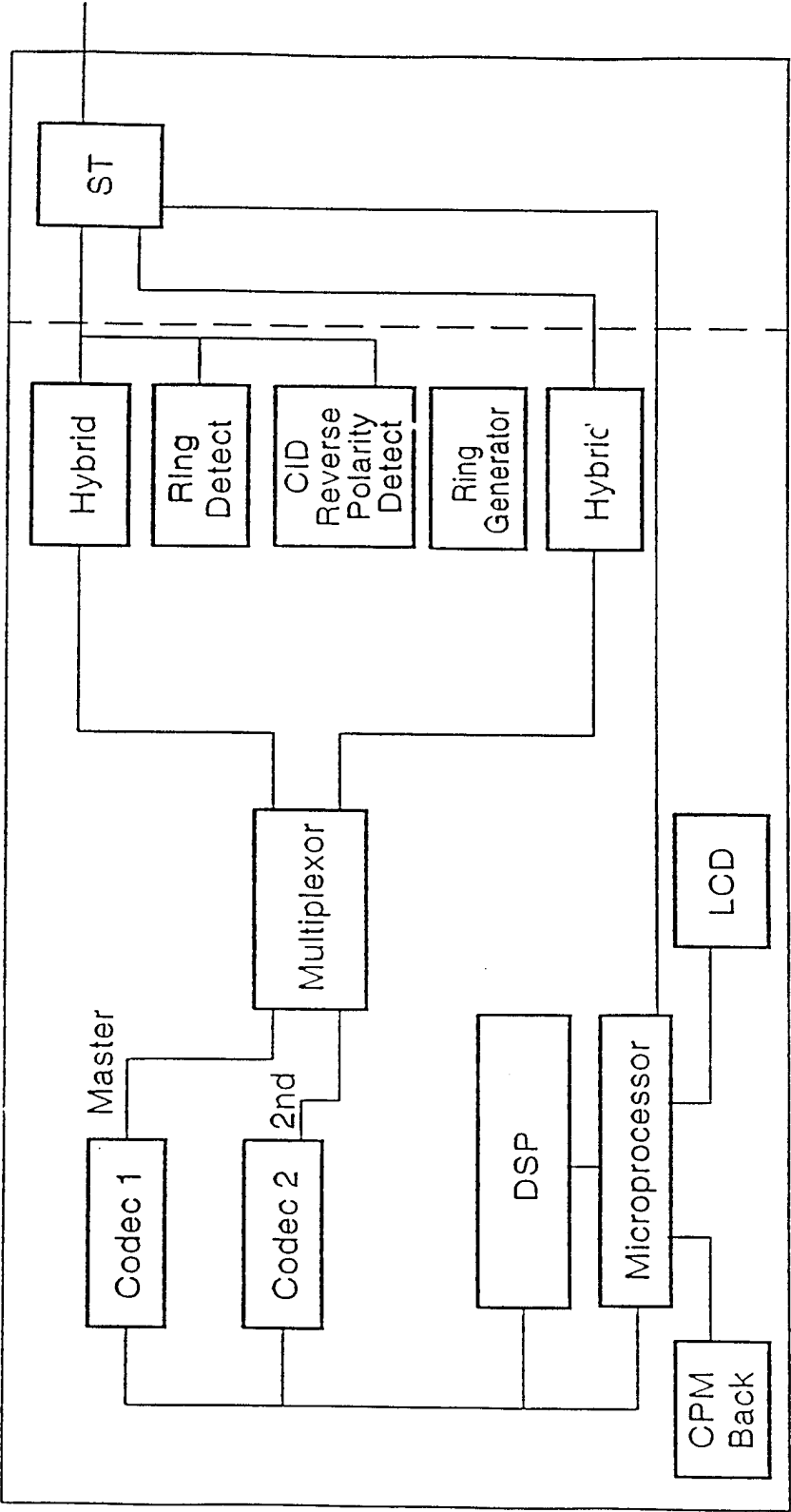


FIG.3

INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 98/00268

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 H04M11/04 G08B25/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 H04M G08B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	PATENT ABSTRACTS OF JAPAN vol. 016, no. 475 (E-1273), 2 October 1992 & JP 04 170145 A (MITSUBISHI ELECTRIC CORP), 17 June 1992, see abstract	1-4, 7, 8
Y	WO 89 05553 A (BT TELECOM INC) 15 June 1989 see page 9, line 24 - page 10, line 12; figure 2	1-4, 7, 8
A, P	US 5 629 687 A (SUTTON GARY E ET AL) 13 May 1997 see column 4, line 48 - column 5, line 23; figure 1	1
	-/--	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance
 "E" earlier document but published on or after the international filing date
 "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
 "O" document referring to an oral disclosure, use, exhibition or other means
 "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
 "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
 "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
 "&" document member of the same patent family

Date of the actual completion of the international search

21 July 1998

Date of mailing of the international search report

28/07/1998

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

Breusing, J

INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 98/00268

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A,P	PATENT ABSTRACTS OF JAPAN vol. 098, no. 004, 31 March 1998 & JP 09 331370 A (MATSUSHITA ELECTRIC IND CO LTD), 22 December 1997, see abstract ----	1
A	PATENT ABSTRACTS OF JAPAN vol. 013, no. 359 (E-804), 10 August 1989 & JP 01 117550 A (NEC CORP), 10 May 1989, see abstract ----	1
A	PATENT ABSTRACTS OF JAPAN vol. 095, no. 009, 31 October 1995 & JP 07 147579 A (MATSUSHITA ELECTRIC WORKS LTD), 6 June 1995, see abstract ----	1
A	US 5 398 277 A (MARTIN JR EDGAR C ET AL) 14 March 1995 see abstract; figure 1 ----	1
A	US 5 134 644 A (GARTON DOUGLAS ET AL) 28 July 1992 see column 4, line 3 - line 33; figures 1,2 ----	1
A	US 4 141 006 A (BRAXTON KENNETH J) 20 February 1979 see abstract; figure 1 ----	1
A	DE 43 41 322 A (DEUTSCHE BUNDESPOST TELEKOM) 8 June 1995 see the whole document -----	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CA 98/00268

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 8905553 A	15-06-1989	AU 2917489 A CA 1319955 A EP 0345337 A JP 2502681 T US 5131019 A	05-07-1989 06-07-1993 13-12-1989 23-08-1990 14-07-1992
US 5629687 A	13-05-1997	NONE	
US 5398277 A	14-03-1995	CA 2088138 A,C	07-08-1993
US 5134644 A	28-07-1992	NONE	
US 4141006 A	20-02-1979	NONE	
DE 4341322 A	08-06-1995	NONE	