

CB901EX
OPERATIONS MANUAL
CRISIS ALERT

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Table of Contents

INTRODUCTION.....	5
FEATURES.....	7
STANDARD FEATURES.....	7
SYSTEM FEATURES.....	7
INDIVIDUAL FEATURES.....	7
NUMBER PLAN.....	8
FEATURE DESCRIPTION.....	9
HANDSET / LOUDSPEAKING.....	9
CONFIDENTIAL /SOFTSPEAKING.....	9
SIMPLEX.....	9
MICROPHONE CUTOFF.....	9
DIRECT DIALING.....	9
DIRECT ACCESS.....	9
ALARM.....	10
LINE SUPERVISION.....	10
TWO BUTTON DC SHIFT SUB-STATION.....	10
REMOTE CONTROL.....	10
CAMP ON BUSY EXTENSION.....	10
PRIVACY.....	10
PRIORITY.....	11
PERSONAL QUEUE.....	11
TRANSFER.....	11
ALL CALL.....	12
GROUP CALL.....	12
GROUP PRIVILEGES.....	12
PROGRAM DISTRIBUTION.....	12
TWO WAY RADIO.....	13
TELEPHONE NETWORK.....	13
INSTALLATION	14
INSTALLATION PLANNING.....	14
CENTRAL LOCATION.....	14
CABLE REQUIREMENTS.....	15
INSTALLATION OF CENTRAL EXCHANGE.....	16
MOUNTING THE CARD RACK BACKPLATE.....	16
CABLE TERMINATION IN STATION SOCKET.....	17
CABLE TERMINATION IN CENTRAL CARDRACK.....	17
INSTALLATION OF CARDRACK.....	18
POWER UNIT SPECS, CENTRAL AND STATION POWER.....	18
PLUGGING IN PRINTED CIRCUITS CARDS.....	20
INSTALLATION OF PROGRAM DISTRIBUTION CARD.....	20
POWER ON SYSTEM CHECK.....	23
ADJUSTMENTS.....	24
FINAL CHECK OUT OF THE SYSTEM.....	25
INTRODUCTION.....	25

FINAL CHECK AND COMMISSIONING.....	25
SERVICE INFORMATION.....	26
CONVERSION TABLE STATION POSITION/CALL NUMBER.....	27
TECHNICAL SPECIFICATIONS.....	35
CONFIGURATION.....	57
SYNTAX.....	57
HELP.....	58
LINE EQUIPMENT.....	60
CALL NUMBER.....	60
CALLER ID.....	62
DEVICE TYPE.....	62
PRIVELEGE TYPE.....	63
DIRECT ACCESS.....	65
DIRECT DIAL.....	65
SUBSCRIBER TIMERS.....	66
TRANSFER.....	68
ANNUNCIATOR DISPLAY.....	69
EVENT LOG PRINTER.....	69
CAMERA SWITCHER.....	70
BATTERY CHARGE MONITOR.....	71
ALL CALL.....	72
GROUP CALL.....	72
INSTALLATION.....	77
SWITCH PROGRAMMING.....	77
RESET BATTERY RAM.....	78

INTRODUCTION

Ring-Master system CB 901EX is an all-to-all direct speech system, controlled by a fully electronic central exchange. All its functions are microprocessor controlled. This enables the customer to select from a wide range of programmable features designed to achieve flexibility and optimal efficiency in internal communication.

A built-in Lithium battery will secure all programmed information up to 10 years when power to system is switched off.

The modular structure of the central permits easy expansion, station by station, from 2 up to a capacity of 7,170 subscribers. Moreover, a wide variety of station types, matching the needs of almost any user, whether institutional, industrial or commercial applications, increases the flexibility of the system.

The unique cabling concept provides the advantages of both centralized and decentralized cabling arrangements. Each station requires one single pair for dialing and conversation. Power can either be individual to each station or remote groups of stations can be supplied from local mains power units. The cabling is ordinary telephone wires.

The central unit is compact. A standard basic cardrack equipped for 80 subscribers measures only 256 mm x 570 mm x 271 mm (10.1" x 22.4" x 10.9"). Silent in operation, once fitted with its cover, the central can operate inconspicuously in almost any location.

In a single-Stage system, the central unit consists of a Basic Cardrack DP 979 containing the Basic Cardset and Subscriber Cards, totaling 88 subscribers. If the number requirements exceed this, an additional Subscriber Cardrack DP 980 is necessary, giving a maximum capacity of 240 subscribers in a single-stage system.

Each single-stage of 240 numbers is equipped with 15 internal links.

The number of subscribers in a CB 901EX system may be expanded in steps of 8, plugging in subscriber cards.

The basic cardrack 10 subscriber cards = 80 subscribers

The subscriber cardrack 20 subscriber cards = 160 subscribers

Giving a maximum capacity of 240 subscribers, each with access to the 15 links.

Each stage in the central unit consists of a basic cardrack for the common basic cardset, and according to the number capacity, an additional subscriber cardrack.

All cards in a CB 901EX system are of plug-in type, interconnected via the motherboard in each cardrack.

The CB901EX printed circuit cards, are briefly described in the following:

PROCESSOR CARD

This card contains the microprocessor (MC 68HC11 series), its program and memory. The 32K bytes program, which controls all computer operations is located in FLASH Memory). It contains the main oscillator (10.7 MHz) and provides all timing signals in the central unit. In this way the system is synchronized all the way through, which minimizes noise generation on the audio links. This card also sets up/disconnects links, directed by the processor. It handles the PAM (Pulse Amplitude Modulation) sampling control for all links. There are 32 time-slots in the system. One time-slot is allocated by the subscriber scanner and one for the tone receiver, leaving 30 time-slots for audio connections. This means that there is room for 15 simultaneous audio links.

AUDIO CONTROL CARD

The duplex voice control circuits are located on this card, together with the receiver and tone transmitter. The processor fully controls the tone receiver/transmitter. The duplex control circuit operates individually for each time-slot, which is much faster than the processor can manage. Therefore, a separate control system is included on this card.

LINK CARD (2 cards)

It connects the audio signals between the subscribers. Each card handles 8 links and there are always 2 link cards in the central unit.

POWER CARD

It contains a switching power supply, synchronized with the main oscillator to minimize noise. Input to the card is 25 - 28V DC.

PROGRAM DISTRIBUTION CARD

It interfaces the intercom system to an external program source and allows the subscribers to activate and connect program- (music) and alarm channels.

Implementing this feature to the system will reduce the total number of subscribers by 8 per stage.

SUBSCRIBER CARD

It terminates the lines for 8 subscribers, and is the interface card between the stations and the central unit. The card splits up the audio/signaling information to/from the subscribers. All subscriber cards are identical.

FEATURES

STANDARD FEATURES

- 15 Links
- Hands free Loudspeaking
- Confidential Softspeaking
- T-Button for manual control of speech direction
- Microphone mute
- Data transmission for remote control
- Privacy
- Camp on busy extension
- Crisis Alert Network Interface

SYSTEM FEATURES

- 2,3 or 4 Digit call numbers
- Program distribution (7 Channels)
- All Call (70)
- 7 Group Calls (71-77)
- Meet me (8-90)
- Group Conference
- Battery Charger Alarm
- Event log printer interface (DNA100 required)
- Video switcher interface (DNA200 required)
- Computer Interface (DNA300 required)
- Pocket Page Interface (DNA400 required)

INDIVIDUAL FEATURES

- Direct access
- 10 Direct dial
- Simplex always
- Assignable call numbers
- 12 Alphanumeric caller ID
- Personal queue for incoming calls
- Autodialer for use with TELCO interface
- External display of the personal queue (DAD104, DS16,DNA300)
- 7 Transfer numbers for each subscriber (with programmable delay)
- Priority
- Line Supervision
- Silent Ring for receiver with Annunciator

NUMBER PLAN

IDLE:

10-69	Subscriber number 2 digit dial
100-699	Subscriber number 3 digit dial
1000-6999	Subscriber number 4 digit dial
70	All Call
71-77	Group Calls
90	Respond to meet-me
98	Program distribution

PRIVACY:

0	Accept call
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CONVERSATION (INITIATOR):

X	Cancel call
8	Activate meet-me from Group Call or All Call

CONVERSATION (RECEIVER):

X	Cancel call
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FEATURE DESCRIPTION

HANDSET / LOUDSPEAKING

When two intercom stations are connected, either party may speak to the other hands free without touching any buttons.

CONFIDENTIAL /SOFTSPEAKING

At any time during the call, either one or both parties may pick up their station (AA916) and use it as a handset for a confidential conversation. When both parties are in handset mode, the system operates in open duplex mode and both parties may talk and listen at the same time.

SIMPLEX

The T-button may be used to control the speech direction (push to talk release to listen). This is useful when one of the intercom stations is in a noisy area. Either party may use this function. If both stations are pushing the T-button the control is given to the station that pushed T last. Either party may revert to handsfree mode by tapping the T-button. Any call number may be programmed with the privilege “simplex always” . When a call is placed from or to a station with the “simplex always” privilege, the initiator will be in listen mode and the T-button must be used to change the speech direction.

MICROPHONE CUTOFF

To temporarily mute the microphone during conversation, the mute button may be pressed down.

DIRECT DIALING

It is possible to program keys 0 to 9 of each intercom station’s keypad to speed dial frequently called numbers. When a programmed key is pressed, a dialtone is heard as normal. If a second key is pressed within 1.2 seconds (programmable subscriber timer) then a normal dial sequence is taken.

DIRECT ACCESS

It is possible to program one call number for each intercom station to be activated by short DC-shift (<1 sec). This type of calling is used with door stations and elevator stations that do not have a tone dialer.

ALARM

Long DC shift (1sec<) will send ALARM to the call number programmed for direct access.

LINE SUPERVISION

Line Supervision is activated with privilege #10. Zero Volt on the audio line will send FAULT to the call number programmed for Direct Access.

TWO BUTTON DC SHIFT SUB-STATION

Direct Access and Direct Dial #1 are programmed to activate this feature.

Short DC shift(<1sec) will send CALL to the call number for Direct Dial #1.

Long DC shift (1sec>) will send ALARM to to the call number programmed for Direct Access.

Zero Volt on the audio line will send FAULT to the call number programmed for Direct Access.

Device Type = sub

Program in Que = none

REMOTE CONTROL

DTMF tones may be sent from one intercom station to the other for remote control. The keypad on the station sends standard telephone dialing tones (CCITT). This is mainly used for electric door-lock release and for dialling out to the public telephone network (PTT). The microphone mute function must be activated while pushing a number key to disable conference add-on . When the B-subscriber (receiver of the call) is programmed with the privilege "DTMF Device" then the number keys may be activated without pushing the microphone mute key.

CAMP ON BUSY EXTENSION

The caller may camp-on to a busy extension for 20 seconds (programmable subscriber timer), after which the call will be automatically cancelled. If the called party becomes free within this time, the connection will be established with warning tone to both parties.

PRIVACY

The stations privacy switch controls the privacy status. When the B-subscriber is in privacy both stations get the ringing tone. The B-subscriber may accept the call by pressing the 0-button within 15 seconds (programmable subscriber timer). This operation is valid when the B-subscriber is not using personal queue.

PRIORITY

When a station is programmed with the privilege “Priority” it may connect to a busy or privacy station by dialing “0”. This is only possible if the busy station does not have Priority privilege.

PERSONAL QUEUE

Each intercom station has a Personal Queue. This queue is activated with privilege “Personal Queue”. All received calls are then put in the personal queue and the intercom station will ring (2 second on, 3 second off) until the call is answered by pressing the 0-key. When the call is cancelled (X) the next call in queue starts ringing after 2 seconds (programmable subscriber timer). With the privilege “Automatic Answer” the call is automatically connected without pushing the 0-key. Calls are inserted to the personal queue on a first in first out within each priority level (1-9). The priority level is the Call Priority of the calling station (level 1 is highest priority). The calling station may be connected to Ringing Tone, Program Channel or silence when in queue. The personal queue may be displayed and answered on a DAD104.

TRANSFER

Call Transfer is used to distribute incoming calls to additional intercom station. Call transfer is using the personal queue. Each subscriber may be programmed with 7 transfer numbers with delays. When a call is placed to the intercom station with “personal queue” the call will be inserted in the personal queue of the called station. When the transfer 1 delay expires the call will be placed in the personal queue of the transfer 1 intercom station. The transfer 2 delay is then activated and when it expires the call is inserted in the personal queue of the transfer 2 intercom station. This sequence is then repeated for transfers 3-7 if programmed. The incoming call is now in the personal queue of multiple intercom stations and when one of them answers the call it is removed from all the personal queues. The transfer delay is 0 - 9 minutes or infinite. If a transfer station is in privacy then the delay to that station is set to 0 and the call will transfer instantly (used for night transfer). Personal Queue is always used when calls transfer to another intercom station independent of the “personal queue” privilege.

ALL CALL

Allows for one way paging from one station to all other stations in the exchange and will override other calls (they will reconnect when the All Call is completed). The initiating station must have privilege "All Call Access". The duration of the All Call is limited to 60 seconds (programmable subscriber timer). The call number for All Call is 70. The All Call is terminated with X, or 8 for call back (meet me). One of the stations can then dial 90 to call back to the All Call initiator. The call back is active until one station dials 90 or a new call back is activated from another All Call or Group Call. It is possible to exclude receivers from the All Call. This is done by entering call numbers in the All Call exclusion group (group #0).

GROUP CALL

Allows for one way paging from one station to a group of stations and will override normal calls (they will reconnect when the Group Call is completed). The initiating station must have privilege "Group Call Access". The duration of the Group Call is limited to 60 seconds (programmable subscriber timer). There are 7 Group Calls in the system with access call numbers 71-77. The Group Call is terminated with X, or 8 for call back (meet me). One of the stations can then dial 90 to be connected to the Group Call initiator. The call back is active until one station dials 90 or a new call back is activated from another All Call or Group Call. Call number of the receivers are entered in the Group Call groups (group 1-7). All station may be a members of multiple Group Call groups. Only one Group Call can be active at a time. Stations calling Group Call when it is in use may camp on until it is free.

GROUP PRIVILEGES

Global privilege: Pages groups in multiple EX500 centrals simultaneously.

T privilege: T button must be used for group calls

C privilege: The group is used for group conference, receivers can talk by using the T button.

PROGRAM DISTRIBUTION

The system has one program channel for distribution of music or other program sources. The access code is 98. The connection to program distribution does not effect normal intercom operations. When a call is initiated or received, the music is put on hold until the call is completed and then it is automatically reconnected.

TWO WAY RADIO

The CB901EX system may be connected to a radio base station for communication on a closed two-way radio network. An interface unit (IF935) is required and is given an ordinary subscriber number. If the radio system is simplex PTT then the subscriber number should be programmed with privilege "Simplex Always" The radio receive signal may be connected to the program distribution channel for monitoring.

TELEPHONE NETWORK

An interface (IF934P) can be supplied to operate between a telephone network and the CB901EX. The interface is used to make calls from any intercom station to the telephone network and to make a call from an outside telephone to any intercom station.

The interface may be used as a speed dialer to a telephone number used for answering intercom calls from elevator intercoms in a night transfer mode of operation. The device type of the interface is set to PBX, and the speed dial number is programmed from the DNA100. A delay may be entered as P1 for one second delay to P9 for 9 second delay. Example: P29P31234567 will delay 2 seconds (waiting for dial tone), dial 9, delay 3 seconds, then dial 1234567. When a call enters the personal que of the interface it will speed dial the remote telephone number, connect the station in que to the telephone line and then wait for disconnect from the remote telephone before releasing the connection between the interface and the intercom station. After 2 seconds (programmable subscriber timer) the next call in personal que will repeat the process.

If the interface does not have the privilege "Personal Queue" then calls made to the interface will not activate the dialer and the phone number must be manually dialed. If transfers are activated from other stations (lobby master), then these calls are automatically placed in the personal que of the interface and will use the speed dialer out on the telephone line. This way a motor room master may use the interface for manually dialed calls, while elevator intercoms that dial the lobby master will be transferred to the personal que of the interface and use the speed dialer. The lobby master may have an infinite transfer delay during the day when all calls are answered by the lobby master. At night the lobby master is placed in privacy and all calls are transferred to the telephone interface.

DIRECT ACCESS MASTER

This master station will connect to the intercom stations programmed in the Direct Acces when a contact closure activates Initiative. When the contact closure is removed the station will cancel.

INSTALLATION

INSTALLATION PLANNING

Proper planning minimizes the time required and costs incurred during an installation. In the long term, maintenance, changes and expansion can be accomplished efficiently when planned for prior to the initial installation. This results in customer satisfaction and goodwill through a minimum disruption of their business activities. Ultimately, customer satisfaction results in additional sales.

Each customer's facility is different and requires a tailored approach to ensure that the job runs smoothly. Each facility will have its own combination of circumstances which must be addressed. Table below summarizes the major stages of a typical intercom installation. The sequence in which the stages are accomplished, or the work accomplished in each stage itself, can be modified to reflect the particular circumstances of each installation. However, the general approach should include the installation stages listed below:

STEP	INSTALLATION
1.	Site survey and data collection.
2.	Plan major equipment layout. (Central, system power supply, and position of the various stations, speakers, etc.)
3.	Plan cable routing.
4.	Preparation and preassembly of central and power supply at shop facility.
5.	Site work: <ol style="list-style-type: none"> a. Running of station cables b. Equipment mounting (central, power supply, etc.) c. Station and speaker installation d. System programming and adjustment
6.	System checkout and commissioning
7.	Customer introduction and training.

CENTRAL LOCATION

A summary of the environmental factors affecting the Ring-Master CB901 system is presented in the listing below. These factors must be considered when developing a detailed system plan.

Site preparation is dependent upon the customer's facilities. In many cases, there may be only one location where the central and power supply (or transformer) can be mounted. However, when several locations are possible, the advantages and disadvantages of each location should be considered. Consider each of the following factors:

- A. The central and power supply must be wall mounted.
- B. Location of the majority of stations, locate the central strategically, so that you can minimize the length of cable runs.

- C. Location of existing telephone ducts or conduit.
- D. The AC line should be dedicated exclusively to the system. If the line is equipped with a circuit breaker at the service entrance panel, the circuit breaker switch should be labeled «DO NOT TURN OFF».
- E. The equipment should be installed in an area that has adequate ventilation. A temperature range of 0°C (32°F) to 25°C (77°F) and humidity range of 30% to 90% relative must be maintained.
- F. Appropriate lighting conditions and adequate working space should be provided for future service calls.
- G. Consideration must be given to those conditions that may cause damage to the equipment. For example, dust or vapor from flammable or corrosive solvent may cause damage. The installation site should not be located in an area likely to be flooded or likely to be damaged by moving objects nearby.
- H. The central should NOT be installed in an area near electrical noise including equipment, i.e., heavy motors, welders, dimmers, radio transmitters etc.
- I. The power supply (or transformer) must not be mounted below the central. This is to prevent overheating the central.

CABLE REQUIREMENTS

Each station is connected to the central by 4 leads (in two twisted pairs).

Leads No. 1 and No. 2. Audio and signaling.

Individual leads i.e., a separate twisted pair is required for each station. This pair carries tone-signaling (CCITT norm.) for dialing, audio transmission and DC control signals for stations.

The maximum loop-resistance of this pair is 240 ohm corresponding to approx. 2km cable-length from station to central, using normal telephone cabling with 0.6 mm diam. wiring. If the actual distance is more than 2 km. (loop resistance more than 240 ohm) doubling this audio pair (or using heavier cable) can cause incorrect dialing transmission, since the capacitance in the cable is also increased. Doubling is not recommended. If cable to a station passes close to radio aerials or other interference sources, the leads to the actual station should be shielded.

Leads No. 3 and No. 4. Station Operating Voltage.

These leads carry operating voltage to the stations. The maximum/ minimum station voltage for proper operation is 21 - 28.5 V. This allows a loop resistance between each station and power supply (centralized or local) of 40 ohm, giving a distance of 350 meters on 0.6 mm copper wire and 600 m on 0.8 mm. (based on power supply output of 27V DC).

The wire dimensions for stations located further from the central must be increased accordingly. However, independent local DC power supplies can be used for distant stations. No reference wiring between local and central power supplies is required.

Important Note: If a number of stations are powered from a common/parallel DC power pair, voltage fluctuations can result in incidental crosstalk. Therefore it is essential that a separate power pair **is always used** for each station.

INSTALLATION OF CENTRAL EXCHANGE

Each basic cardrack and subscriber cardrack consists of two main parts: a metal backplate and a front cardrack (which secures to the backplate with 2 screws) that swivels outward, giving access behind the motherboard during maintenance.

Check for signs of physical damage when unpacking the central. In particular check the long contact-pins on the rear of the motherboards PCB979, PCB980 for possible distortion that may cause short-circuiting.

MOUNTING THE CARD RACK BACKPLATE

Four holes in the backplate are provided for mounting on a wall or 19" rack. The position of the cardracks should allow for easy access of incoming station cables.

Mount the backplate, as follows:

- a. Drill holes corresponding to the backplate in the wall.
- b. Mount the backplate (see note).

NOTE: The four screws required for wall mounting the central unit are not provided. Be certain that the screws used can support the central unit.

When using two cardracks for a central unit, two 20-pair flat cables (NMF6002) are supplied with DP 980 Cardrack to connect the two units together. The cables have a fixed length, thus limiting the distance between the cardracks to approximately 10-12 cm (4-4,5 inches). (See Fig. 1.6, 1.7). The top pin of Cable no. 1 in each pin row will not be connected.

The backplate is now ready for station wiring.

CABLE TERMINATION IN STATION SOCKET

Station type: Master Stations AA916, AA917 w/display - modular 8 pin RJ45 socket.

Leads No. 1 and No. 2 - Audio Signaling Leads

Lead No. 1 to be connected to pin No. 5 in the RJ45 station socket.

Lead No. 2 to be connected to pin No. 4 in the RJ45 station socket.

Leads No. 3 and No. 4 - Station Operation Voltage.

Lead No. 3 is positive and must be connected to pin No 3 in the RJ45 socket.

Lead No. 4 is negative and must be connected to pin No. 6 in the RJ45 socket.

Station type: All station types (Sub- and Master) using Hirschmann 6 pin socket

Leads No. 1 and No. 2 - Audio Signalling Leads

Lead No. 1 to be connected to pin No. 1 in the Hirschmann socket.

Lead No. 2 to be connected to pin No. 2 in the Hirschmann socket.

Leads No. 3 and No. 4 - Station Operation Voltage.

Lead No. 3 is positive and must be connected to pin No 3 in the socket.

Lead No. 4 is negative and must be connected to pin No. 4 in the socket.

NOTE: Always use a separate power pair for each station to the DC power source, to avoid crosstalk.

If an **extra loudspeaker** is required in parallel to the station's speaker, connect to pins 1 and 2 on the RJ45 wall socket or to pin 5 and 6 on the Hirschmann wall socket. Note, min. Combined Impedance 16 ohm.

NOTE: It is stressed that the station's built-in output amplifier shall not be overloaded. Therefore, when an extra speaker is used, the station's volume control shall not be set higher than half-way. If extra power is needed, an extra booster amplifier (e.g. FC 420/10W with independent power supply) must be inserted between pins 1 and 2 on RJ45 (or pin 5 and 6 on the Hirschmann plug) and the one or more parallel speakers.

CABLE TERMINATION IN CENTRAL CARDRACK

Connection of stations wires.

Each subscriber card (DP978) can connect 8 intercom stations. A flat cable connects each subscriber card to the BF901(PCB933) on the back plate (MA901) of the DP979/DP980. The BF901 can connect 3 subscriber cards (24 intercom stations). Two 25 pair cables (CBL25P/20) connect each BF901 to the Main Distribution Frame (MDF). 12 intercoms stations (audio+power) on each cable. The CBL25P/20 cable is 20 feet long with connectors at both ends. The cable can be cut in half to provide two 10 foot cables for the BF901. The connectors plug in to the BF901 and the other end of the cable (24AWG solid) punch down to the MDF. The MDF may be Krone, S110, 66 blocs or similar.

The intercom position in the central have hexadecimal numbering.

See Fig. 1.9. for terminal layout.

See Fig. 1.10. for conversion from hexadecimal position number to decimal call number.

This basic cardrack can be reduced providing only 88 or 80 subscribers, but positions 12 and 13 have parallel card positions 21-22 in subscriber cardrack. Subscribers must either be connected in position 12/13 or 21/22. The subscriber cardrack will then consist of 160 subscribers (20 subscriber

cards). See Figure 1.10.

Connection of 24V power .

24 Volt is connected to the DP979 motherboard (PCB979) and to the power distribution board (PCB935) in DP979/DP980. See figure 1.12.

Four self-healing fuses with red fail LEDs are used on each BF901 (6 stations on each fuse). The red LED is lit when a short is detected in the power. The LED on the power distribution board is normally green but turns red when any of the fuses on the BF901 detects a short. Only when the LED is green is the Power Fail Relay activated. Contacts form C is available at terminal CN3.

INSTALLATION OF CARDRACK

When cable connections are completed, mount the rack to the backplate with the 2 pins. Two magnets are fixed to the rear of the rack to hold it in closed position. Swivel the rack open to permit the flat cables to be plugged into their relative pin-row positions on the rear of the motherboard. Take care when folding the flat cable i.e., that they remain clear of motherboard pins when the central is closed.

POWER UNIT SPECS, CENTRAL AND STATION POWER

Although Ring-Master systems normally function on 24 VDC, power units shall be adjusted to 27 VDC which is the correct charging voltage when systems are connected to batteries for group/ all-call or no-break battery back-up. Using 27 V also permits longer cabling from stations to central with a 3 V tolerance to 24 V control voltage drop on longer cable runs. Ring-Master supplies a standard DC power unit PSDC24V12A which is factory-adjusted to 27 V and can supply 12 Amp. It is adjustable . A smaller power unit PSDC27V5A is also available for local use with remote stations, giving 5 Amp DC, i.e., adequate for max. 20 stations. Power units can also be purchased locally provided that they meet the specifications for supplying Ring-Master systems,- e.g., regulated, and with a max. ripple/noise level of 30 mV peak to peak.

Note. The power unit should be equipped with over voltage protection.

POWER REQUIREMENTS.**Power for stations:**

Power needs for stations are based upon the basic figure of 250 mA per station.

Station power is connected to screw terminals on the power distribution board PCB935 (in DP979 and DP980) marked + and - 24VDC.

Remote local power supply to stations.

A station or a group of stations can be connected to remote power units. If the central is programmed with all or group call, all stations in such a group can be switched on simultaneously and the power unit must be dimensioned accordingly, i.e., at 150 mA per station.

PLUGGING IN PRINTED CIRCUITS CARDS

Plug the cards into the cardracks according to the actual central size. See Fig. 1.10 for correct card positioning. Make sure that all cards are properly pressed into the plugs on the motherboard when using two cardracks for a complete stage. Note that card positions 12/13 and 21/22 have the same station equipment number (50-57 and 58-5F). You must therefore only plug subscriber cards into one of the positions 12/13 or 21/22.

We advise positions 21/22 to be used, this leaves room in the basic cardrack for the future connection of interlink cards.

INSTALLATION OF PROGRAM DISTRIBUTION CARD

The Program Distribution Control Card DP977 is installed in the Basic Cardrack DP 979. This card distributes the Alarm/program audio signal to all the subscribers from the selected program sources,- 2 alarm channel and 8 program channels.

INTERCONNECTION CABLE, INTERNAL ON MOTHERBOARD PCB979.

The Program Distribution Card NFE 1626 is normally installed in card position 10 (plug.pos XA11) in the Basic Cardrack DP 979. If the central is fully equipped with subscriber cards (30 cards), this feature card is to be installed in pos. 12 or 13.

In CB901EX systems the card positions 12 and 13 are used for Interlink B Card NFE1545. If not used then the Subscriber Card NFE1625 can be installed in these positions, giving a total of 88 subscribers in the Basic Cardrack. If subscribers in these positions want to make use of the Alarm/program Distribution Feature, a special flat cable, 20 pair with 4 connectors, must be installed between card position 10, 11, 12 and 13 - plug P1, pins 1A/B to 20 A/B at the back of the Motherboard NFE1523A. This cable NMF6012 is included in DP977 together with the Program Distribution Card NFE1626. When this cable is installed, to utilize plug positions for subscriber connection, the Program Distribution Card NFE1626 can be installed in any position from 10 to 13 incl. If no cable is installed this card must be placed in card position 10. This cable must not be used when the NFE1545 is installed. See Figure for cable location.

TERMINATION OF AUDIO AND CONTROL SIGNALS TO PROGRAMME DISTRIBUTION CARD NFE 1626.

One Subscriber Cable BF902 is used for termination to the Program Distribution Card NFE1626, at the back of the Motherboard PCB979.

Flat cable no. 1 for audio signals to alarm- and program channels.

See Fig 1.18. for cable location and wiring details. The max. input level on alarm channel is 770 mV RMS (cable no. 1, pins 9A/B - 10A/B).

Flat cable no. 2 for control signals to alarm- and program channels.

See Fig. 1.18. for cable location and wiring details. The max. input level on program channels is 100 mV RMS (cable no 1, pins 1A/B - 8A/B)

To activate alarm channel no. 1 (top priority) 24V DC must be supplied to pins 32 A/B on cable no. 2, positive to pin 32A. Audio signal from alarm source no. 1 (cable no. 1, pins 9A/B) will be transmitted to all stations.

To activate alarm channel no. 2, 24V DC must be supplied to pins 31 A/B on cable no 2, positive to 31A. Audio signal from alarm source no. 2 (cable no. 1, pin 10 A/B) will be transmitted to all stations.

Alarm channels have top priority in the system. All other activity, program distribution, all-call, group-call and normal calls will be overridden. Alarm channel no. 1 has priority over alarm channel no. 2. To deactivate an alarm channel the 24V DC «enable signal» must be disconnected (back to open circuit on «alarm enable» input).

Battery Operation Function - cable no. 2. When CB901EX Systems are installed as no-break system (connected to emergency power - battery bank) it is important to cut out the Program Distribution Feature when there is a mains power failure. During this period, all stations using this feature must be suspended from the program channels, otherwise the emergency battery could be overloaded. Alarm channels will operate. Each station has a current consumption of approx. 150 mA. When mains voltage returns, the stations will automatically be reconnected to the program channels. If the Program Distribution «cut out» function is required, do the following:

1. Disconnect Diode D1 on Program Distribution Card NFE1626.
2. Install a separate small power supply/rectifier of 5 - 24V DC. Connect the output voltage to the Battery Operation function, cable no. 2 - pins 30A/B, positive to pin 30A. See Fig. 1.18. for details.

When there is a mains power failure, the voltage (5-24DC) from the separate power supply is missing and the Program Distribution function is disabled. Stations connected to the program channels are canceled, but will be reconnected when mains power is restored.

NOTE. This function may also be operated by the management to allow for program listening during lunch time, CoffeeBrakes etc.

STATION POWER SUPPLY.

In a fully equipped Ring-Master System CB901EX all stations can simultaneously be connected to program channels - 240 stations. The total power consumption will then be approx. 36 Amp. (240 x 0.150 A).

IMPORTANT — STATION POWER CALCULATION.

Each station with access to Alarm/Program Distribution Feature requires 150 mA. Each station in normal conversation requires 150 mA
Each station in rest condition requires 15 mA.

IMPORTANT NOTES:

To initiate these features the Program Distribution Card NFE1626 must be installed in the system, or if not - make a strap on the back side of Motherboard PCB979 in card position 10 (plug pos. XA11) between

Plug P1, pin 10A and
Plug P2, pin 16B.

In addition:

To transfer all/group call signals to subscribers connected to cards in position 11, 12 and 13 the flat cable NMF6012 (part of DP977) must be installed on the back side of the Basic Cardrack DP979. If no cable is available, make a jumper between:

Plug P1, pin 10A on card no. 10 to
Plug P1, pin 10A on card no. 11 to
Plug P1, pin 10A on card no. 12 to
Plug P1, pin 10A on card no. 13.

POWER ON SYSTEM CHECK

NOTE: Always turn OFF the central power (NFE1528) before plugging the cards in or out of the cardracks.

- A. Pull all NFE1625 cards out of the plugs (approx. one inch) except the card in position No. 2. Test one card position at a time.
- B. Plug the flat cable, which is connected to the BF901 mounted in the upper left hand corner of the backplate, into positions 00 - 07 on the back of the cassette motherboard.
- C. Switch on main power.
- D. Ensure that the standard programme is written into the memory on the CPU Card PCB1019 when power is switched on. Set all switches to OFF in package SW2 .
- E. Switch on the central power by operating the switch on the power card PCB1016 (in card position 1).

Any number of LEDs may light up. This is normal and they will extinguish after a few seconds.

Only a few LEDs will be indicating in accordance with the following list, starting with the processor card to the left.

PCB1019	RUN LED will be ON MASTER LED may be On or OFF TX LED will blink RX LED will blink only if external annunciator/DNA100 is connected Battery Charge LED will be ON
NFE1607	No LEDs
NFE1521 No. 1	All LEDs stay dark
NFE1521 No. 2	The upper LED will be steady on All the others will stay off
NFE1626	All LEDs stay dark
PCB978	All LEDs on all subscriber cards stay off
PCB1016	All four LEDs will be steady on

If these indications are not present, switch off power on the central power card and check that all cards are properly pressed into the plugs on the motherboard. Switch on power again. If still not normal, restart the system. Put switch no. 4 on switchpackage SW2 on CPU card PCB1019 in position ON (network address 08). Press the Reset button (SW1, located on the edge of the card). This will restart the processor manually. We will now assume that the indications are normal.

Make a call between, for example, the two stations in positions 00 and 01. They will have call numbers depending on the number of digits selected in the system (SW3 on PCB1019)
This is the first check to see if the system is «alive».

Plug in the rest of the NFE1625/PCB978 cards, one by one and connect the corresponding flat cable to the back of the motherboard in the cardrack. Make a call between the stations in positions 00 and 01.

ADJUSTMENTS

Normally no adjustments are necessary, but it is advisable to check status of:

- A. *The -5V Level* Measure on the motherboard, on the plug of the programming card (card position 20) that the exact value of the -5V. 0V is on pin No. 3a/b and -5V is on pin 1a/b. Both on plug P1 (the lower plug). The correct voltage to measure is between 5,0 and 5,1V. If adjustment is necessary, turn potentiometer R19 on power card PCB1016.
- B. *Duplex Switching.* It is necessary to check the audio control card NFE 1607 for proper duplex switching.
1. Set up a conversation to a station in a room (office) with normal ambient noise level.
 2. Press down the microphone cut-off switch (privacy switch) on the initiating station. The background noise from the receiving station should now be heard in the loudspeaker of the initiating station.
 3. Turn potentiometer R 56 on NFE 1607 card (on front of the card) until the noise just disappears.

NOTE: This adjustment cannot compensate for noise from machinery, noisy airconditioners etc.

- C. Adjustment of warning tone level.
Adjust pot. meter R57 to a pleasant volume on the warning tone.

FINAL CHECK OUT OF THE SYSTEM

INTRODUCTION

When the system has been installed and programmed, perform the following checks to verify the operation of the system and related equipment. If the system is found to be faulty, use the following guidelines to locate the faulty station or printed circuit board(s) and replace the part. This gives minimum system downtime for the customer.

FINAL CHECK AND COMMISSIONING

When all cables are connected to their corresponding terminal blocks, check that these terminal blocks are properly plugged into the circuit boards. Check for 24V DC before the system is switched on (minimum/maximum voltage is 21V DC - 29V DC). Turn system switch ON and check the four upper front LEDs on the Power Card NFE 1528. All should be lit. Prepare a list of all individual programs utilized.

Once the cable connections and the central exchange voltages are verified, perform the following station tests:

- a. Station receives warning tone and light when called.
- b. Sound quality - in handsfree and handset modes.
- c. «Handsfree» voice switching.
- d. T-button manual control.
- e. Press privacy switch down for microphone cut-off.
- f. X-button, released for canceling.
- g. Check station's privacy switch function and 0-button to accept a call, also call back to the test station while in the privacy position.
- h. Check all standard and system features.
- i. Check all individual programs allotted to stations.
- j. Finally, before leaving, make sure that all users have been instructed in the correct use of their station and obtain the signature of the client's responsible representative, accepting the system in full working order.

SERVICE INFORMATION

CAUTION: Always turn power OFF before changing subscriber boards in the central exchange.

The CB 901EX system is a microprocessor controlled system and for servicing/maintenance a certain level of such knowledge is needed together with some understanding of the software.

Remember that the system is bus organized. This means that all subscriber boards are «wired» in parallel, except the master station connections. A fault on one of the subscriber boards may therefore cause the whole system to malfunction. For trouble-shooting, follow the steps below:

- a. Disconnect all the NFE 1625 (NFE 1525) Subscriber Boards.
- b. Install one board at a time into the different plug positions until the faulty board is located.

A master station fault may be located in the station itself, or on the subscriber board. Check both with a known good station to pin point the fault.

The user can be requested NOT to use the system until an all-call announces that the system is ready for use.

CONVERSION TABLE STATION POSITION/CALL NUMBER

BASIC CARDRACK

STATION POS. NO.	CARD POS. NO.	1	2	3	4	5	6	7	8
		00		1000	1256	1512	1768	2024	2280	2536	2792
01		1001	1257	1513	1769	2025	2281	2537	2793
02		1002	1258	1514	1770	2026	2282	2538	2794
03	2	1003	1259	1515	1771	2027	2283	2539	2795
04		1004	1260	1516	1772	2028	2284	2540	2796
05		1005	1261	1517	1773	2029	2285	2541	2797
06		1006	1262	1518	1774	2030	2286	2542	2798
07		1007	1263	1519	1775	2031	2287	2543	2799
08		1008	1264	1520	1776	2032	2288	2544	2800
09		1009	1265	1521	1777	2033	2289	2545	2801
0A		1010	1266	1522	1778	2034	2290	2546	2802
0B	3	1011	1267	1523	1779	2025	2291	2547	2803
0C		1012	1268	1524	1780	2036	2292	2548	2804
0D		1013	1269	1525	1781	2037	2293	2549	2805
0E		1014	1270	1526	1782	2038	2294	2550	2806
0F		1015	1271	1527	1783	2039	2295	2551	2807
10		1016	1272	1528	1784	2040	2296	2552	2808
11		1017	1273	1529	1785	2041	2297	2553	2809
12		1018	1274	1530	1786	2042	2298	2554	2810
13	4	1019	1275	1531	1787	2043	2299	2555	2811
14		1020	1276	1532	1788	2044	2300	2556	2812
15		1021	1277	1533	1789	2045	2301	2557	2813
16		1022	1278	1534	1790	2946	2302	2558	2814
17		1023	1279	1535	1791	2047	2303	2559	2815
18		1024	1280	1536	1792	2048	2304	2560	2816
19		1025	1281	1537	1793	2049	2305	2561	2817
1A		1026	1282	1538	1794	2050	2306	2562	2818
1B	5	1027	1283	1539	1795	2051	2307	2563	2819
1C		1028	1284	1540	1796	2052	2308	2564	2820
1D		1029	1285	1541	1797	2053	2309	2565	2821
1E		1030	1286	1542	1798	2054	2310	2566	2822
1F		1031	1287	1543	1899	2055	2311	2567	2823

CONVERSION TABLE - STATION POSITION NO./CALL NO.**BASIC CARDRACK**

STATION POS. NO.	CARD POS. NO.	1	2	3	4	5	6	7	8
20		1032	1288	1544	1800	2056	2312	2568	2824
21		1033	1289	1545	1801	2057	2313	2569	2825
22		1034	1290	1546	1802	2958	2414	2570	2826
23	6	1035	1291	1547	1803	2059	2315	2571	2827
24		1036	1292	1548	1804	2060	2316	2572	2828
25		1037	1293	1549	1805	2061	2317	2573	2829
26		1038	1294	1550	1806	2062	2318	2574	2830
27		1039	1295	1551	1807	2063	2319	2575	2831
28		1040	1296	1552	1808	2064	2320	2576	2832
29		1041	1297	1553	1809	2065	2321	2577	2833
2A		1042	1298	1554	1810	2066	2322	2578	2834
2B	7	1043	1299	1555	1811	2027	2323	2579	2835
2C		1044	1300	1556	1812	2068	2324	2580	2836
2D		1045	1301	1557	1813	2069	2325	2581	2837
2E		1046	1302	1558	1814	2070	2326	2582	2838
2F		1047	1303	1559	1815	2071	2327	2583	2839
30		1048	1304	1560	1816	2072	2328	2584	2840
31		1049	1305	1561	1817	2073	2329	2585	2841
32		1050	1306	1562	1818	2074	2330	2586	2842
33	8	1051	1307	1563	1819	2075	2331	2587	2843
34		1052	1308	1564	1820	2076	2332	2588	2844
35		1053	1309	1565	1821	2077	2333	2589	2845
36		1054	1310	1566	1822	2078	2334	2590	2846
37		1055	1311	1567	1823	2079	2335	2591	2847
38		1056	1312	1568	1824	2080	2336	2592	2848
39		1057	1313	1569	1825	2081	2337	2593	2849
3A		1058	1314	1570	1826	2082	2338	2594	2850
3B	9	1059	1315	1571	1827	2083	2339	2595	2851
3C		1060	1316	1572	1828	2084	2340	2596	2852
3D		1061	1317	1573	1829	2085	2341	2597	2853
3E		1062	1318	1574	1830	2086	2342	2598	2854
3F		1063	1319	1575	1831	2087	2343	3599	2855

CONVERSION TABLE - STATION POSITION NO./CALL NO.**BASIC CARDRACK**

STATION POS. NO.	CARD POS. NO.	1	2	3	4	5	6	7	8
		40		1064	1320	1576	1832	2088	2344	2600	2856
41		1065	1321	1577	1833	2089	2345	2601	2857
42		1066	1322	1578	1834	2090	2346	2602	2858
43	10	1067	1323	1579	1835	2091	2347	2603	2859
44		1068	1324	1580	1836	2092	2348	2604	2860
45		1069	1325	1581	1837	2093	2349	2605	2861
46		1070	1326	1582	1838	2094	2350	2606	2862
47		1071	1327	1583	1839	2095	2351	2607	2863
48		1072	1328	1584	1840	2096	2352	2608	2864
49		1073	1329	1585	1841	2097	2353	2609	2865
4A		1074	1330	1586	1842	2098	2354	2610	2866
4B	11	1075	1331	1587	1843	2099	2355	2611	2867
4C		1076	1332	1588	1844	2100	2356	2612	2868
4D		1077	1333	1589	1845	2101	2357	2613	2869
4E		1078	1334	1590	1846	2102	2358	2614	2870
4F		1079	1335	1591	1847	2103	2359	2615	2871

SUBSCRIBER CARDRACK

50		1080	1336	1592	1848	2104	2360	2616	2872
51		1081	1337	1593	1849	2105	2361	2617	2873
52		1082	1338	1594	1850	2106	2362	2618	2874
53	21 (12)	1083	1339	1595	1851	2107	2363	2619	2875
54		1084	1340	1596	1852	2108	2364	2620	2876
55		1085	1341	1597	1853	2109	2365	2621	2877
56		1086	1342	1598	1854	2110	2366	2622	2878
57		1087	1343	1599	1855	2111	2367	2623	2879
58		1088	1344	1600	1856	2112	2368	2624	2880
59		1089	1345	1601	1857	2113	2369	2625	2881
5A		1090	1346	1602	1858	2114	2370	2626	2882
5B	22 (13)		1091	134	1603	1859	2115	2371	2627 2883
5C		1092	1348	1604	1860	2116	2372	2628	2884
5D		1093	1349	1605	1861	2117	2373	2629	2885
5E		1094	1350	1606	1862	2118	2374	2630	2886
5F		1095	1351	1607	1863	2119	2375	2631	2887

CONVERSION TABLE - STATION POSITION NO./CALL NO.**SUBSCRIBER CARDRACK**

STATION POS. NO.	CARD POS. NO.	1	2	3	4	5	6	7	8
		60		1096	1352	1608	1864	2120	2376	2632	2888
61		1097	1353	1609	1865	2121	2377	2633	2889
62		1098	1354	1610	1866	2122	2378	2634	2890
63	23	1099	1355	1611	1867	2123	2379	2635	2891
64		1100	1356	1612	1868	2124	2380	2636	2892
65		1101	1357	1613	1869	2125	2381	2637	2893
66		1102	1358	1614	1870	2126	2382	2638	2894
67		1103	1359	1615	1871	2127	2383	2639	2895
68		1104	1360	1616	1872	2128	2384	2640	2896
69		1105	1361	1617	1873	2129	2385	2641	2897
6A		1106	1362	1618	1874	2130	2386	2642	2898
6B	24	1107	1363	1619	1875	2131	2387	2643	2899
6C		1108	1364	1620	1876	2132	2388	2644	2900
6D		1109	1365	1621	1877	2133	2389	2645	2901
6E		1110	1366	1622	1878	2134	2390	2646	2902
6F		1111	1367	1623	1879	2135	2391	2647	2903
70		1112	1368	1624	1880	2136	2392	2648	2904
71		1113	1369	1625	1881	2137	2393	2649	2905
72		1114	1370	1626	1882	2138	2394	2650	2906
73	25	1115	1371	1627	1883	2139	2395	2651	2907
74		1116	1372	1628	1884	2140	2396	2652	2908
75		1117	1373	1629	1885	2141	2397	2653	2909
76		1118	1374	1630	1886	2142	2398	2654	2910
77		1119	1375	1631	1887	2143	2399	2655	2911
78		1120	1376	1632	1888	2144	2400	2656	2912
79		1121	1377	1633	1889	2145	2401	2657	2913
7A		1122	1378	1634	1890	2146	2402	2658	2914
7B	26	1123	1379	1635	1891	2147	2403	2659	2915
7C		1124	1380	1636	1892	2148	2404	2660	2916
7D		1125	1381	1637	1893	2149	2405	2661	2917
7E		1126	1382	1638	1894	2150	2406	2662	2918
7F		1127	1383	1639	1895	2151	2407	2663	2919

CONVERSION TABLE - STATION POSITION NO./CALL NO.**SUBSCRIBER CARDRACK**

STATION POS. NO.	CARD POS. NO.	1	2	3	4	5	6	7	8
		80		1128	1384	1640	1896	2152	2408	2664	2920
81		1129	1385	1641	1897	2153	2409	2665	2921
82		1130	1386	1642	1898	2154	2410	2666	2922
83	27	1131	1387	1643	1899	2155	2411	2667	2923
84		1132	1388	1644	1900	2156	2412	2668	2924
85		1133	1389	1645	1901	2157	2413	2669	2925
86		1134	1390	1646	1902	2158	2414	2670	2926
87		1135	1391	1647	1903	2159	2415	2671	2927
88		1136	1392	1648	1904	2160	2416	2672	2928
89		1137	1393	1649	1905	2161	2417	2673	2929
8A		1138	1394	1650	1906	2162	2418	2674	2930
8B	28	1139	1395	1651	1907	2163	2419	2675	2931
8C		1140	1396	1652	1908	2164	2420	2676	2932
8D		1141	1397	1653	1909	2165	2421	2677	2933
8E		1142	1398	1654	1910	2166	2422	2678	2934
8F		1143	1399	1655	1911	2167	2423	2679	2935
90		1144	1400	1656	1912	2168	2424	2680	2936
91		1145	1401	1657	1913	2169	2425	2681	2937
92		1146	1402	1658	1914	2170	2426	2682	2939
93	29	1147	1403	1659	1915	2171	2427	2683	2939
94		1148	1404	1660	1916	2172	2428	2684	2940
95		1149	1405	1661	1917	2173	2429	2685	2941
96		1150	1406	1662	1918	2174	2430	2686	2042
97		1151	1407	1663	1919	2175	2431	2687	2943
98		1152	1408	1664	1920	2176	2432	2688	2944
99		1153	1409	1665	1921	2177	2433	2689	2945
9A		1154	1410	1666	1922	2178	2434	2690	2946
9B	30	1155	1411	1667	1923	2179	2435	2691	2947
9C		1156	1412	1668	1924	2180	2436	2692	2948
9D		1157	1413	1669	1925	2181	2437	2693	2949
9E		1158	1414	1670	1926	2182	2438	2694	2950
9F		1159	1415	1671	1927	2183	2439	2695	2951

CONVERSION TABLE - STATION POSITION NO./CALL NO.**SUBSCRIBER CARDRACK**

STATION POS. NO.	CARD POS. NO.	1	2	3	4	5	6	7	8
A0		1160	1416	1672	1928	2184	2440	2696	2952
A1		1161	1417	1673	1929	2185	2441	2697	2953
A2		1162	1418	1674	1930	2186	2442	2698	2954
A3	31	1163	1419	1675	1931	2187	2443	2699	2955
A4		1164	1420	1676	1932	2188	2444	2700	2956
A5		1165	1421	1677	1933	2189	2445	2701	2957
A6		1166	1422	1678	1934	2190	2446	2702	2958
A7		1167	1423	1679	1935	2191	2447	2703	2959
A8		1168	1424	1680	1936	2192	2448	2704	2960
A9		1169	1425	1681	1937	2193	2449	2705	2961
AA		1170	1426	1682	1938	2194	2450	2706	2962
AB	32	1171	1427	1683	1939	2195	2451	2707	2963
AC		1172	1428	1684	1940	2196	2452	2708	2964
AD		1173	1429	1685	1941	2197	2453	2709	2965
AE		1174	1430	1686	1942	2198	2454	2710	2966
AF		1175	1431	1687	1943	2199	2455	2711	2967
B0		1176	1432	1688	1944	2200	2456	2712	2968
B1		1177	1433	1689	1845	2201	2457	2713	2969
B2		1178	1434	1690	1946	2202	2458	2714	2970
B3	33	1179	1435	1691	1947	2203	2459	2715	2971
B4		1180	1436	1692	1948	2204	2460	2716	2972
B5		1181	1437	1693	1949	2205	2461	2717	2973
B6		1182	1438	1694	1950	2206	2462	2718	2974
B7		1183	1439	1695	1951	2207	2463	2719	2975
B8		1184	1440	1696	1952	2208	2464	2720	2976
B9		1185	1441	1697	1953	2209	2465	2721	2977
BA		1186	1442	1698	1954	2210	2466	2722	2978
BB	34	1187	1443	1699	1955	2211	2467	2723	2980
BC		1188	1444	1700	1956	2212	2568	2724	2981
BD		1189	1445	1701	1957	2213	2469	2725	2982
BE		1190	1446	1702	1958	2214	2470	2726	2983
BF		1191	1447	1703	1959	2215	2471	2727	2984

CONVERSION TABLE - STATION POSITION NO./CALL NO.**SUBSCRIBER CARDRACK**

STATION POS. NO.	CARD POS. NO.								
		1	2	3	4	5	6	7	8
C0		1192	1448	1704	1960	2216	2472	2728	2984
C1		1193	1449	1705	1961	2217	2473	2729	2985
C2		1194	1450	1706	1962	2218	2474	2730	2986
C3	35	1195	1451	1707	1963	2219	2475	2731	2987
C4		1196	1452	1708	1964	2220	2476	2732	2988
C5		1197	1453	1709	1965	2221	2477	2733	2989
C6		1198	1454	1710	1966	2222	2478	2734	2990
C7		1199	1455	1711	1967	2223	2479	2735	2991
C8		1200	1456	1712	1968	2224	2480	2736	2992
C9		1201	1457	1713	1969	2225	2481	2737	2993
CA		1202	1458	1714	1970	2226	2482	2738	2994
CB	36	1203	1459	1715	1971	2227	2483	2739	2995
CC		1204	1460	1716	1972	2228	2484	2740	2996
CD		1205	1461	1717	1973	2229	2485	2741	2997
CE		1206	1462	1718	1974	2230	2486	2742	2998
CF		1207	1463	1719	1975	2231	2487	2743	2999
D0		1208	1464	1720	1976	2232	2488	2744	3000
D1		1209	1465	1721	1977	2233	2489	2745	3001
D2		1210	1466	1722	1978	2234	2490	2746	3002
D3	37		1211	1467	1723	1979	2235	2491	2747 3003
D4		1212	1468	1724	1980	2236	2492	2748	3004
D5		1213	1469	1725	1981	2237	2493	2749	3005
D6		1214	1470	1726	1982	2238	2494	2750	3006
D7		1215	1471	1727	1983	2239	2495	2751	3007
D8		1216	1472	1728	1984	2240	2496	2752	3008
D9		1217	1473	1729	1985	2241	2497	2753	3009
DA		1218	1474	1730	1986	2242	2498	2754	3010
DB	38	1219	1475	1731	1987	2243	2499	2755	3011
DC		1220	1476	1732	1988	2244	2500	2756	3012
DD		1221	1477	1733	1989	2245	2501	2757	3013
DE		1222	1478	1734	1990	2246	2502	2758	3014
DF		1223	1479	1735	1991	2247	2503	2759	3015

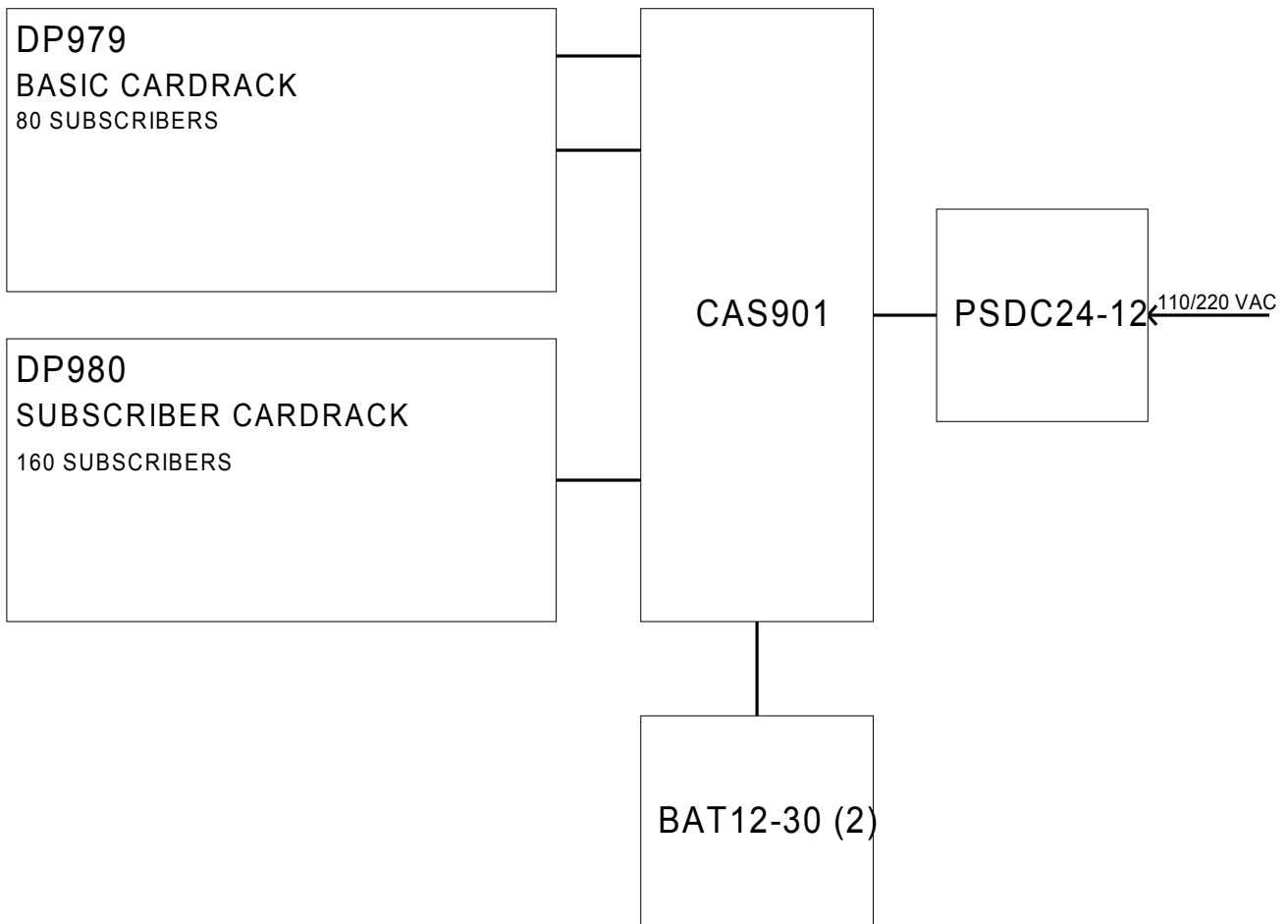
CONVERSION TABLE - STATION POSITION NO./CALL NO.**SUBSCRIBER CARDRACK**

STATION POS. NO.	CARD POS. NO.	1	2	3	4	5	6	7	8
		E0		1224	1480	1736	1992	2248	2504	2760	3016
E1		1225	1481	1737	1993	2249	2505	2761	3017
E2		1226	1482	1738	1994	2250	2506	2762	3018
E3	39	1227	1483	1739	1995	2251	2507	2763	3019
E4		1228	1484	1740	1996	2252	2508	2764	3020
E5		1229	1485	1741	1997	2253	2509	2765	3021
E6		1230	1486	1742	1998	2254	2510	2766	3022
E7		1231	1487	1743	1999	2255	2511	2767	3023
E8		1232	1488	1744	2000	2257	2512	2768	3024
E9		1233	1489	1745	2001	2258	2513	2769	3025
EA		1234	1490	1746	2002	2259	2514	2770	3026
EB	40	1235	1491	1747	2003	2260	2515	2771	3027
EC		1236	1492	1748	2004	2261	2516	2772	3028
ED		1237	1493	1749	2005	2262	2517	2773	3029
EE		1238	1494	1750	2006	2263	2518	2774	3030
EF		1239	1495	1751	2007	2264	2519	2775	3031

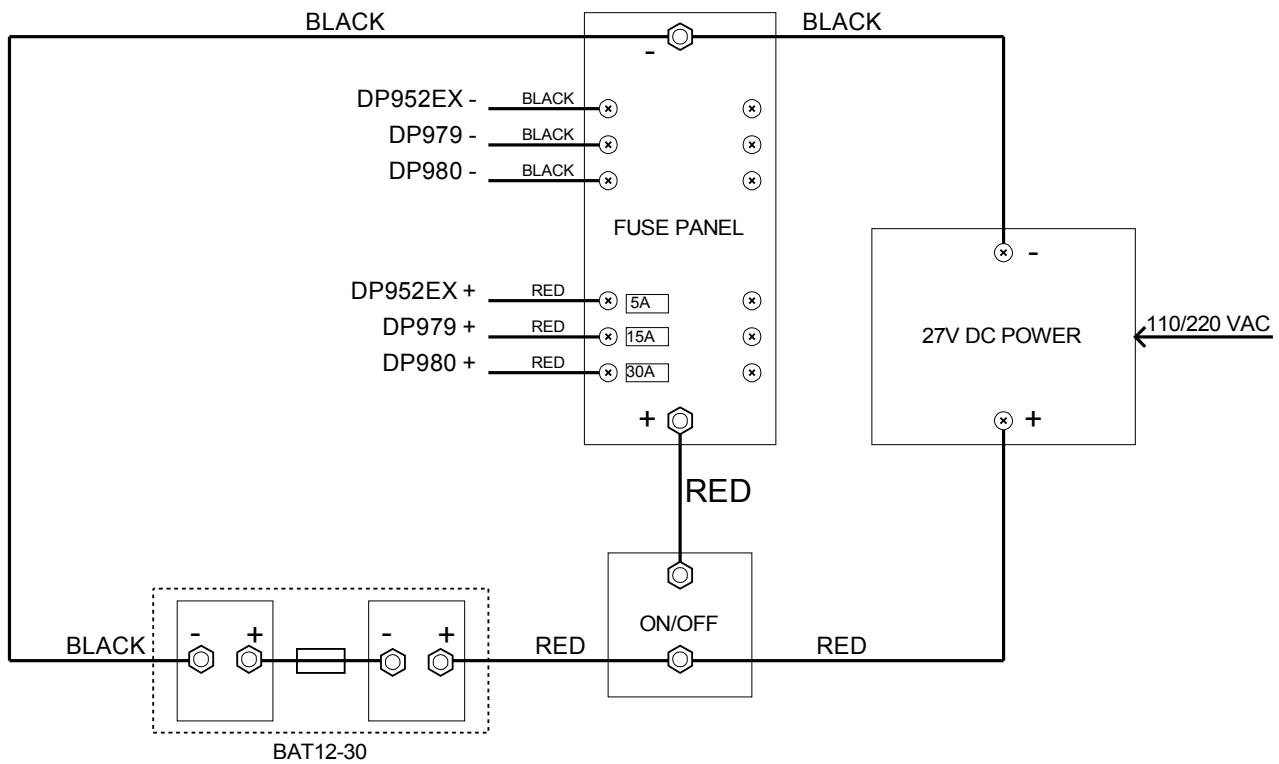
TECHNICAL SPECIFICATIONS

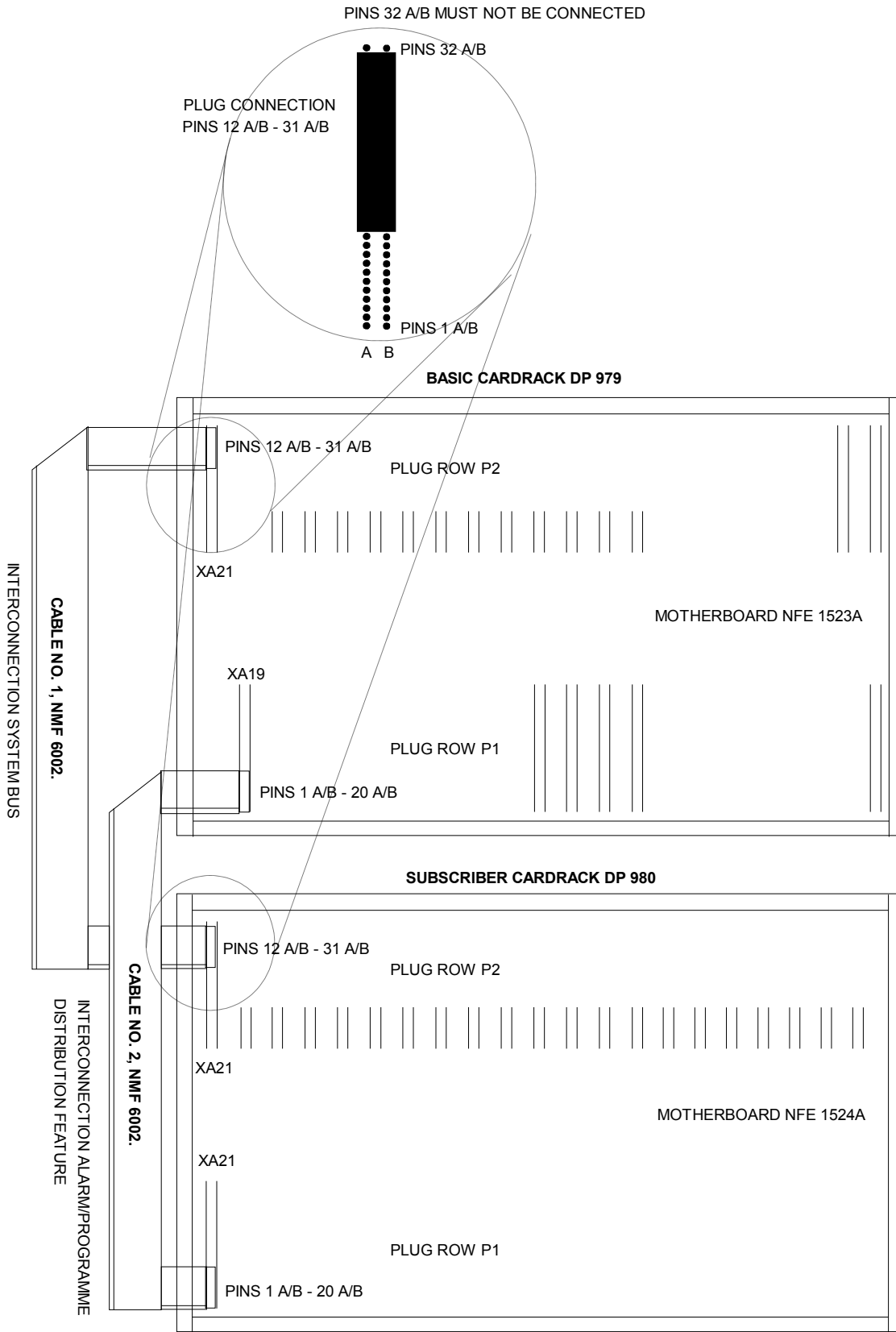
Power requirements:	27V DC regulated
Internal operating voltages:	
CMOS integrated circuits:	+/- 5V reg.
TTL integrated circuits:	+/- 5V reg.
Power consumption, Basic Cardset DP 952EX	1 amp.
Power consumption, subscriber card:	100 mA per card
Max. power consumption:	approx, 50W
Cable specifications:	
2 individual leads per station for speech and signalling 2 leads for power supply. Normal telephone cable, twisted pairs, standard 0,5 - 0,6 mm/22 gauge	
Line specifications:	
Frequency range:	300-5000 Hz
Galvanic:	0 dBm (1 mW/600 ohm)
Speech level, normal:	- 12 dBm
Speech level, max:	+ 4 dBm
Tone signalling level:	- 10 dBm
Tone signalling frequencies in accordance with CCITT norms	
Switching principle:	Time Division Multiplex (TDM) with analog transmission based on Pulse Amplitude Modulation (PAM)
Programme organization:	Microprocessor (MPU) 16 bit processor MC68HC11.
Memories:	
FLASH	32 kbyte
RAM	32 kbyte
Cassette dimensions (complete with cover):	
Height:	265 mm - 10.4"
Width:	483 mm - 19.0"
Depth:	262 mm - 10.3"

CB901 POWER LAYOUT

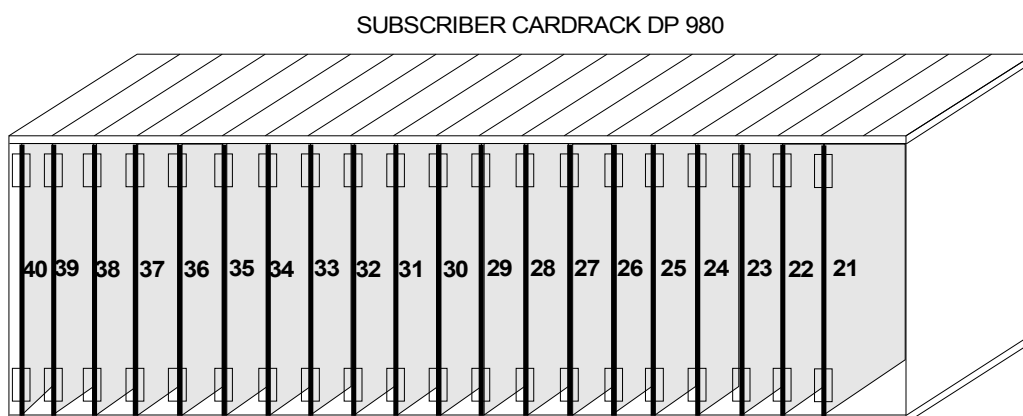
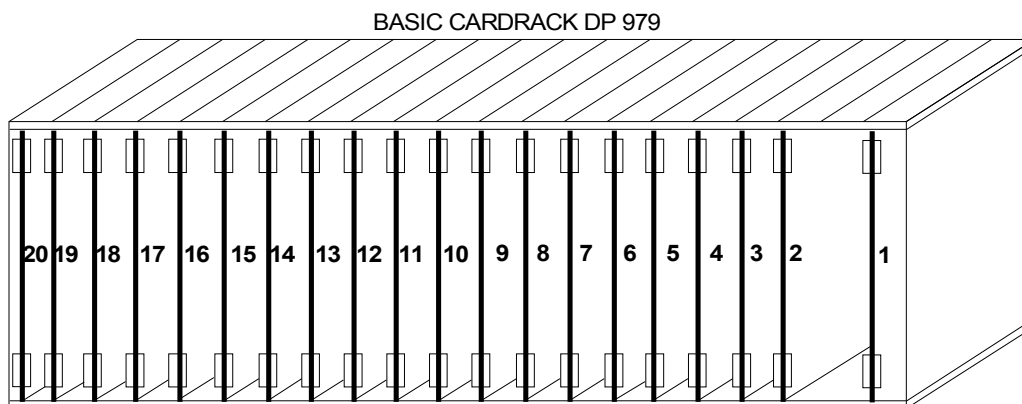


CAS901 POWER DISTRIBUTION



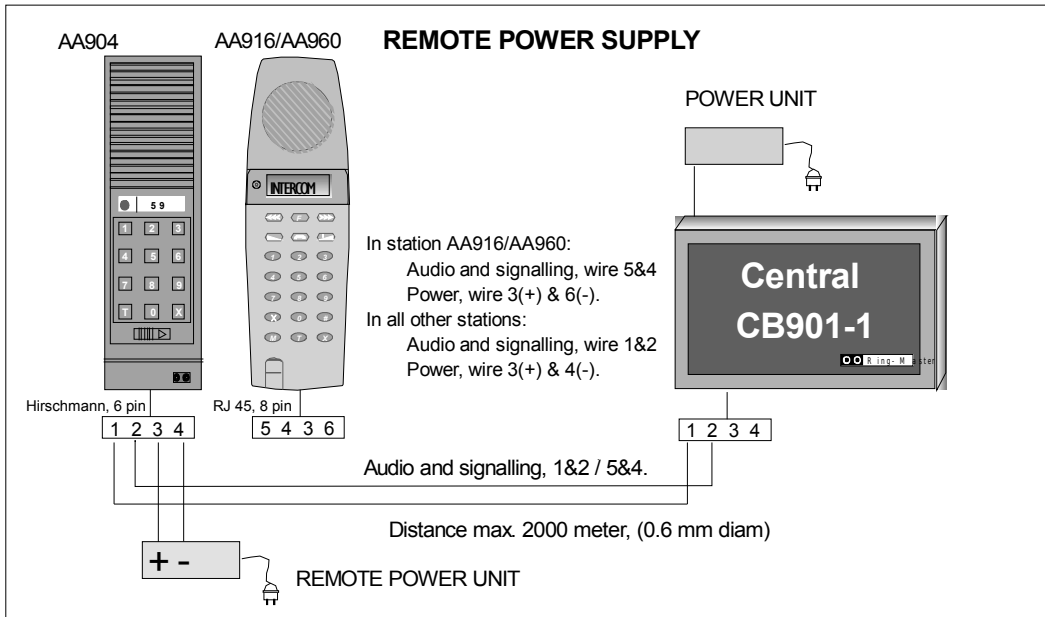
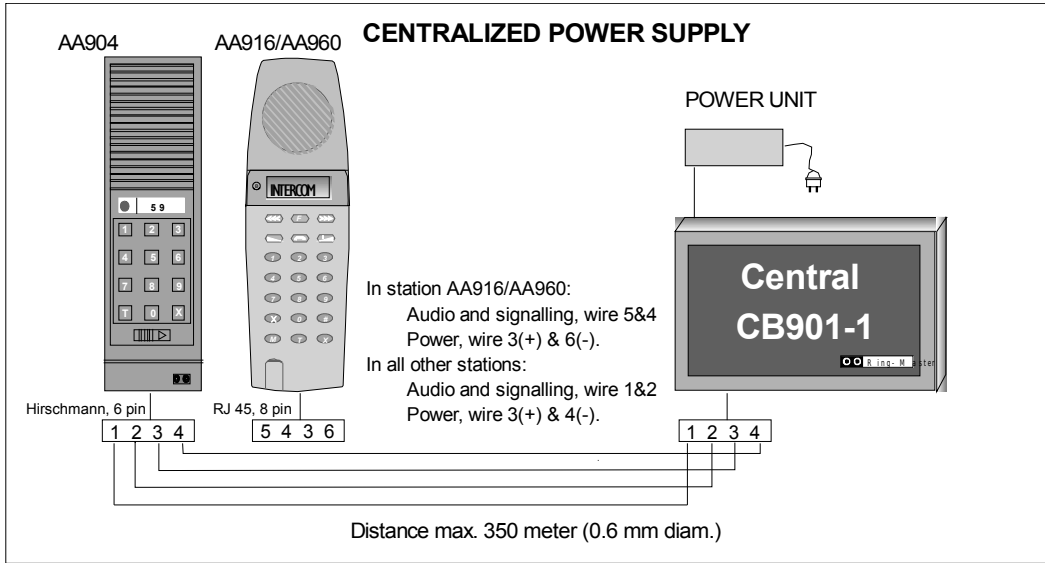


REAR VIEW OF CARD RACKS DP 979 AND DP 980

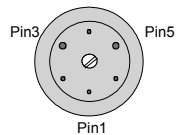


CARD				CARD			
POS.	PCB-CODE	DESCRIPT.	SUB.POS.NOS.	POS.	PCB-CODE	DESCRIPT.	SUB.POS.NOS.
1	NFE 1528	POWER CARD		21	NFE 1625	SUBSCR.CARD	50-57
2	NFE 1625	SUBSCR.CARD	00-07	22	NFE 1625	SUBSCR.CARD	58-5F
3	NFE 1625	SUBSCR.CARD	08-0F	23	NFE 1625	SUBSCR.CARD	60-67
4	NFE 1625	SUBSCR.CARD	10-17	24	NFE 1625	SUBSCR.CARD	68-6F
5	NFE 1625	SUBSCR.CARD	18-1F	25	NFE 1625	SUBSCR.CARD	70-77
6	NFE 1625	SUBSCR.CARD	20-27	26	NFE 1625	SUBSCR.CARD	78-7F
7	NFE 1625	SUBSCR.CARD	28-2F	27	NFE 1625	SUBSCR.CARD	80-87
8	NFE 1625	SUBSCR.CARD	30-37	28	NFE 1625	SUBSCR.CARD	88-8F
9	NFE 1625	SUBSCR.CARD	38-3F	29	NFE 1625	SUBSCR.CARD	90-97
10	NFE 1626	SUBSCR.CARD	40-47	30	NFE 1625	SUBSCR.CARD	98-9F
11	NFE 1625	SUBSCR.CARD	48-4F	31	NFE 1625	SUBSCR.CARD	A0-A7
12	NFE 1625	SUBSCR.CARD	50-57	32	NFE 1625	SUBSCR.CARD	A8-AF
13	NFE 1625	SUBSCR.CARD	58-5F	33	NFE 1625	SUBSCR.CARD	B0-B7
14	NFE 1521	LINK CONTROL CARD		34	NFE 1625	SUBSCR.CARD	B8-BF
15	NFE 1521	LINK CONTROL CARD		35	NFE 1625	SUBSCR.CARD	C0-C7
16	NFE 1607	AUDIO CONTROL CARD		36	NFE 1625	SUBSCR.CARD	C8-CF
17	PCB1019	PROCESSOR CARD		37	NFE 1625	SUBSCR.CARD	D0-D7
18	PCB957X	STRAP Card (1606)		38	NFE 1625	SUBSCR.CARD	D8-DF
19	PCB957Y	STRAP Card (1683)		39	NFE 1625	SUBSCR.CARD	E0-E7
20				40	NFE 1625	SUBSCR.CARD	E8-EF

PROGRAMME DISTRIBUTION CARD NFE 1626 WILL OCCUPY ONE SUBSCRIBER CARD POSITION, 10, 11, 12 OR 13. NORMALLY CARD POSITION 10 IS USED, BUT IF THE CENTRAL IS FULLY EQUIPPED (30 SUBSCRIBER CARDS) USE 12 OR 13.

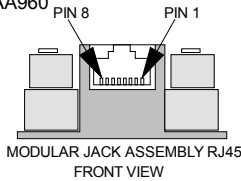


Termination to installation cable:
 Stations using 6 pin Hirschmann plug:
 AA904, AB911, AB917, AB918
 and AB919.

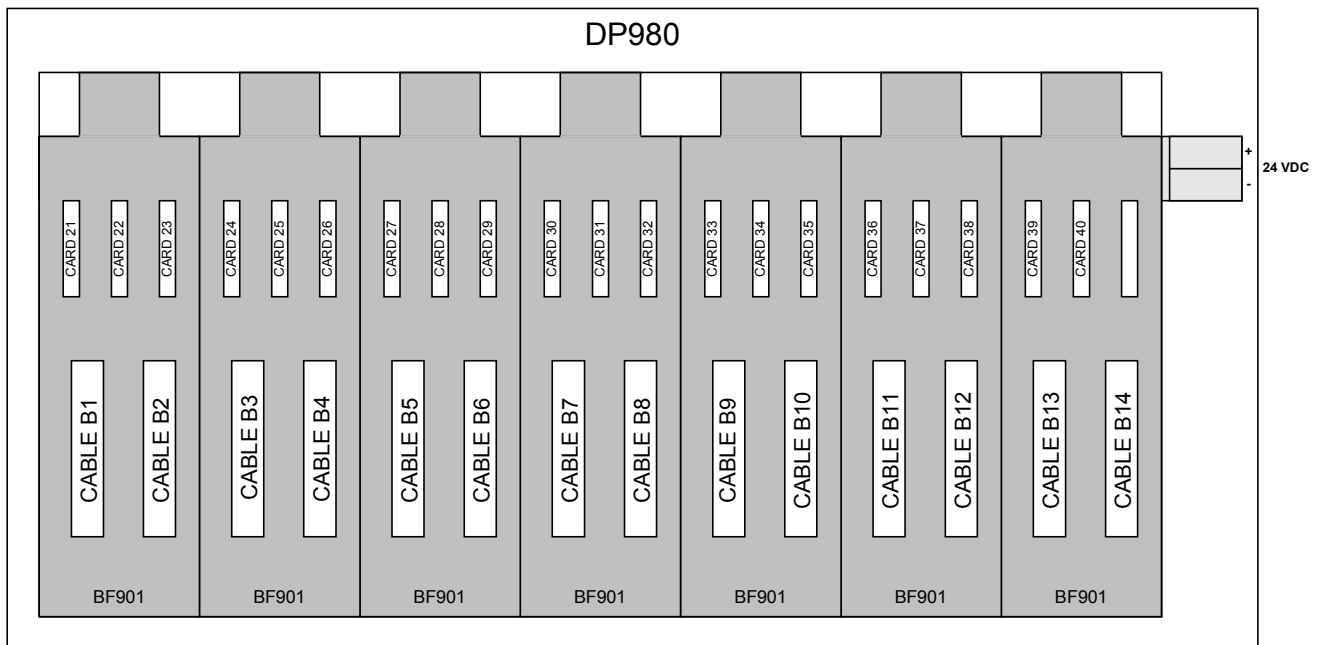
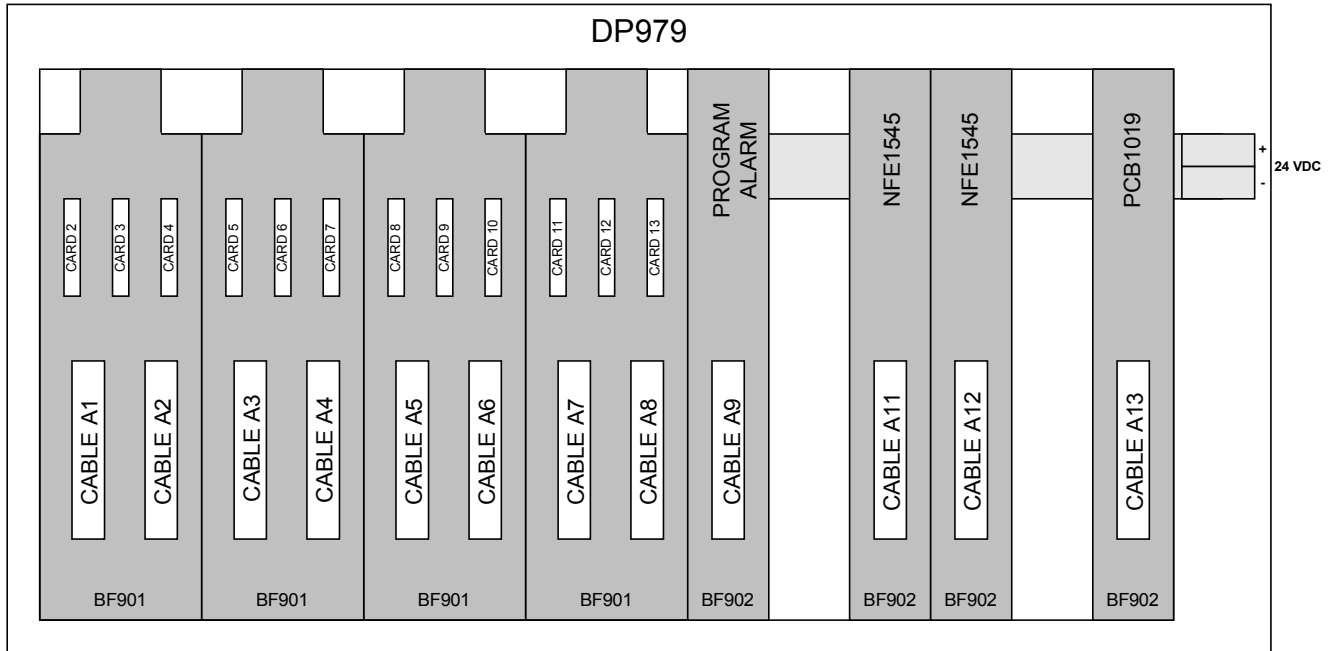


- Pin 1: wire 1, audio & signalling
- Pin 2: wire 2, audio & signalling
- Pin 3: wire 3, power 24VDC, (+)
- Pin 4: wire 4, power 24VDC, (-)
- Pin 5: external loudspeaker
- Pin 6: external loudspeaker

Termination to installation cable:
 Stations using 8 pin modular RJ45 plug:
 AA916/AA960



- Pin 1: external loudspeaker
- Pin 2: external loudspeaker, remote output
- Pin 3: wire 3, power 24VDC (+), remote input
- Pin 4: wire 2, (B), audio & signalling
- Pin 5: wire 1, (A), audio & signalling
- Pin 6: wire 4, power 24VDC, (-)
- Pin 7: remote output
- Pin 8: remote input



MDF Cable A3 DP979 MDF Cable A4

CARD	HEX	CALL	PIN	COLOR	CARD	HEX	CALL
5	18	124	a 26	White-Blue	6	24	136
			b 1	Blue-White			
			+ 27	White-Orange			
			- 2	Orange-White			
5	19	125	a 28	White-Green	6	25	137
			b 3	Green-White			
			+ 29	White-Brown			
			- 4	Brown-White			
5	1A	126	a 30	White-Slate	6	26	138
			b 5	Slate-White			
			+ 31	Red-Blue			
			- 6	Blue-Red			
5	1B	127	a 32	Red-Orange	6	27	139
			b 7	Orange-Red			
			+ 33	Red-Green			
			- 8	Green-Red			
5	1C	128	a 34	Red-Brown 7	28	140	
			b 9	Brown-Red			
			+ 35	Red-Slate			
			- 10	Slate-Red			
5	1D	129	a 36	Black-Blue	7	29	141
			b 11	Blue-Black			
			+ 37	Black-Orange			
			- 12	Orange-Black			
5	1E	130	a 38	Black-Green	7	2A	142
			b 13	Green-Black			
			+ 39	Black-Brown			
			- 14	Brown-Black			
5	1F	131	a 40	Black-Slate	7	2B	143
			b 15	Slate-Black			
			+ 41	Yellow-Blue			
			- 16	Blue-Yellow			
6	20	132	a 42	Yellow-Orange	7	2C	144
			b 17	Orange-Yellow			
			+ 43	Yellow-Green			
			- 18	Green-Yellow			
6	21	133	a 44	Yellow-Brown	7	2D	145
			b 19	Brown-Yellow			
			+ 45	Yellow-Slate			
			- 20	Slate-Yellow			
6	22	134	a 46	Violet-Blue	7	2E	146
			b 21	Blue-Violet			
			+ 47	Violet-Orange			
			- 22	Orange-Violet			
6	23	135	a 48	Violet-Green	7	2F	147
			b 23	Green-Violet			
			+ 49	Violet-Brown			
			- 24	Brown-Violet			
No Connection			50	Violet-Slate	No Connection		
No Connection			25	Slate-Violet	No Connection		

MDF Cable A5				DP979	MDF Cable A6			
CARD	HEX	CALL	PIN	COLOR	CARD	HEX	CALL	
8	30	148	a 26	White-Blue	9	3C	160	
			b 1	Blue-White				
			+ 27	White-Orange				
	-	2		Orange-White				
8	31	149	a 28	White-Green	9	3D	161	
			b 3	Green-White				
			+ 29	White-Brown				
			- 4	Brown-White				
8	32	150	a 30	White-Slate	9	3E	162	
			b 5	Slate-White				
			+ 31	Red-Blue				
			- 6	Blue-Red				
8	33	151	a 32	Red-Orange	9	3F	163	
			b 7	Orange-Red				
			+ 33	Red-Green				
			- 8	Green-Red				
8	34	152	a 34	Red-Brown	40	164		
			b 9	Brown-Red				
			+ 35	Red-Slate				
			- 10	Slate-Red				
8	35	153	a 36	Black-Blue	10	41	165	
			b 11	Blue-Black				
			+ 37	Black-Orange				
			- 12	Orange-Black				
8	36	154	a 38	Black-Green	10	42	166	
			b 13	Green-Black				
			+ 39	Black-Brown				
			- 14	Brown-Black				
8	37	155	a 40	Black-Slate	10	43	167	
			b 15	Slate-Black				
			+ 41	Yellow-Blue				
			- 16	Blue-Yellow				
9	38	156	a 42	Yellow-Orange	10	44	168	
			b 17	Orange-Yellow				
			+ 43	Yellow-Green				
			- 18	Green-Yellow				
9	39	157	a 44	Yellow-Brown	10	45	169	
			b 19	Brown-Yellow				
			+ 45	Yellow-Slate				
			- 20	Slate-Yellow				
9	3A	158	a 46	Violet-Blue	10	46	170	
			b 21	Blue-Violet				
			+ 47	Violet-Orange				
			- 22	Orange-Violet				
9	3B	159	a 48	Violet-Green	10	47	171	
			b 23	Green-Violet				
			+ 49	Violet-Brown				
			- 24	Brown-Violet				
			50	Violet-Slate			No Connection	
			25	Slate-Violet			No Connection	



MDF Cable A7

DP979

MDF Cable A8

CARD	HEX	CALL	PIN	COLOR	CARD	HEX	CALL
11	48	172	a 26	White-Blue	12	54	184
			b 1	Blue-White			
			+ 27	White-Orange			
			- 2	Orange-White			
11	49	173	a 28	White-Green	12	55	185
			b 3	Green-White			
			+ 29	White-Brown			
			- 4	Brown-White			
11	4A	174	a 30	White-Slate	12	56	186
			b 5	Slate-White			
			+ 31	Red-Blue			
			- 6	Blue-Red			
11	4B	175	a 32	Red-Orange	12	57	187
			b 7	Orange-Red			
			+ 33	Red-Green			
			- 8	Green-Red			
11	4C	176	a 34	Red-Brown 13	58	188	
			b 9	Brown-Red			
			+ 35	Red-Slate			
			- 10	Slate-Red			
11	4D	177	a 36	Black-Blue	13	59	189
			b 11	Blue-Black			
			+ 37	Black-Orange			
			- 12	Orange-Black			
11	4E	178	a 38	Black-Green	13	5A	190
			b 13	Green-Black			
			+ 39	Black-Brown			
			- 14	Brown-Black			
11	4F	179	a 40	Black-Slate	13	5B	191
			b 15	Slate-Black			
			+ 41	Yellow-Blue			
			- 16	Blue-Yellow			
12	50	180	a 42	Yellow-Orange	13	5C	192
			b 17	Orange-Yellow			
			+ 43	Yellow-Green			
			- 18	Green-Yellow			
12	51	181	a 44	Yellow-Brown	13	5D	193
			b 19	Brown-Yellow			
			+ 45	Yellow-Slate			
			- 20	Slate-Yellow			
12	52	182	a 46	Violet-Blue	13	5E	194
			b 21	Blue-Violet			
			+ 47	Violet-Orange			
			- 22	Orange-Violet			
12	53	183	a 48	Violet-Green	13	5F	195
			b 23	Green-Violet			
			+ 49	Violet-Brown			
			- 24	Brown-Violet			
No Connection			50	Violet-Slate	No Connection		
No Connection			25	Slate-Violet	No Connection		

PROGRAM/ALARM FUNCTION	DP979	MDF Cable A9	
		PIN	COLOR
	26	White-Blue	
	1	Blue-White	
	27	White-Orange	
	2	Orange-White	
	28	White-Green	
	3	Green-White	
	29	White-Brown	
	4	Brown-White	
	30	White-Slate	
	5	Slate-White	
	31	Red-Blue	
	6	Blue-Red	
	32	Red-Orange	
	7	Orange-Red	
Battery Operation +	33	Red-Green	
Battery Operation -	8	Green-Red	
Alarm 2 Enable +	34	Red-Brown	
Alarm 2 Enable -	9	Brown-Red	
Alarm 1 Enable +	35	Red-Slate	
Alarm 1 Enable -	10	Slate-Red	
Program Channel 1 a	36	Black-Blue	
Program Channel 1 b	11	Blue-Black	
Program Channel 2 a	37	Black-Orange	
Program Channel 2 b	12	Orange-Black	
Program Channel 3 a	38	Black-Green	
Program Channel 3 b	13	Green-Black	
Program Channel 4 a	39	Black-Brown	
Program Channel 4 b	14	Brown-Black	
Program Channel 5 a	40	Black-Slate	
Program Channel 5 b	15	Slate-Black	
Program Channel 6 a	41	Yellow-Blue	
Program Channel 6 b	16	Blue-Yellow	
Program Channel 7 a	42	Yellow-Orange	
Program Channel 7 b	17	Orange-Yellow	
Program Channel 8 a	43	Yellow-Green	
Program Channel 8 b	18	Green-Yellow	
Alarm Channel 1 a	44	Yellow-Brown	
Alarm Channel 1 b	19	Brown-Yellow	
Alarm Channel 2 a	45	Yellow-Slate	
Alarm Channel 2 b	20	Slate-Yellow	
No Connection	46	Violet-Blue	
No Connection	21	Blue-Violet	
No Connection	47	Violet-Orange	
No Connection	22	Orange-Violet	
No Connection	48	Violet-Green	
No Connection	23	Green-Violet	
No Connection	49	Violet-Brown	
No Connection	24	Brown-Violet	
No Connection	50	Violet-Slate	
No Connection	25	Slate-Violet	

NOT USED DP979 MDF Cable A10

FUNCTION

PIN COLOR

NOT USED FUNCTION		PIN	COLOR	
Battery Ground		26	White-Blue	DXB901
Battery Ground		1	Blue-White	DXB901
		27	White-Orange	
		2	Orange-White	
		28	White-Green	
		3	Green-White	
		29	White-Brown	
		4	Brown-White	
		30	White-Slate	
		5	Slate-White	
		31	Red-Blue	
		6	Blue-Red	
		32	Red-Orange	
		7	Orange-Red	
RS485 DATA	-	33	Red-Green	DXB901
RS485 DATA	+	8	Green-Red	DXB901
		34	Red-Brown	
		9	Brown-Red	
		35	Red-Slate	
		10	Slate-Red	
Battery Ground		36	Black-Blue	DXC901
Battery Ground		11	Blue-Black	DXC901
		37	Black-Orange	
		12	Orange-Black	
		38	Black-Green	
		13	Green-Black	
		39	Black-Brown	
		14	Brown-Black	
		40	Black-Slate	
		15	Slate-Black	
		41	Yellow-Blue	
		16	Blue-Yellow	
		42	Yellow-Orange	
		17	Orange-Yellow	
RS485 DATA	-	43	Yellow-Green	DXC901
RS485 DATA	+	18	Green-Yellow	DXC901
		44	Yellow-Brown	
		19	Brown-Yellow	
		45	Yellow-Slate	
		20	Slate-Yellow	
No Connection		46	Violet-Blue	
No Connection		21	Blue-Violet	
No Connection		47	Violet-Orange	
No Connection		22	Orange-Violet	
No Connection		48	Violet-Green	
No Connection		23	Green-Violet	
No Connection		49	Violet-Brown	
No Connection		24	Brown-Violet	
No Connection		50	Violet-Slate	
No Connection		25	Slate-Violet	

MDF Cable A11 DP979 MDF Cable A12
NFE1545 Interlink

FUNCTION	PIN	COLOR	FUNCTION
LINK 8	RX 26	White-Blue	LINK 16
LINK 8	RX 1	Blue-White	LINK 16
LINK 8	TX 27	White-Orange	LINK 16
LINK 8	TX 2	Orange-White	LINK 16
LINK 7	RX 28	White-Green	LINK 15
LINK 7	RX 3	Green-White	LINK 15
LINK 7	TX 29	White-Brown	LINK 15
LINK 7	TX 4	Brown-White	LINK 15
LINK 6	RX 30	White-Slate	LINK 14
LINK 6	RX 5	Slate-White	LINK 14
LINK 6	TX 31	Red-Blue	LINK 14
LINK 6	TX 6	Blue-Red	LINK 14
LINK 5	RX 32	Red-Orange	LINK 13
LINK 5	RX 7	Orange-Red	LINK 13
LINK 5	TX 33	Red-Green	LINK 13
LINK 5	TX 8	Green-Red	LINK 13
	34	Red-Brown	
	9	Brown-Red	
	35	Red-Slate	
	10	Slate-Red	
LINK 4	RX 36	Black-Blue	LINK 12
LINK 4	RX 11	Blue-Black	LINK 12
LINK 4	TX 37	Black-Orange	LINK 12
LINK 4	TX 12	Orange-Black	LINK 12
LINK 3	RX 38	Black-Green	LINK 11
LINK 3	RX 13	Green-Black	LINK 11
LINK 3	TX 39	Black-Brown	LINK 11
LINK 3	TX 14	Brown-Black	LINK 11
LINK 2	RX 40	Black-Slate	LINK 10
LINK 2	RX 15	Slate-Black	LINK 10
LINK 2	TX 41	Yellow-Blue	LINK 10
LINK 2	TX 16	Blue-Yellow	LINK 10
LINK 1	RX 42	Yellow-Orange	LINK 9
LINK 1	RX 17	Orange-Yellow	LINK 9
LINK 1	TX 43	Yellow-Green	LINK 9
LINK 1	TX 18	Green-Yellow	LINK 9
	44	Yellow-Brown	
	19	Brown-Yellow	
	45	Yellow-Slate	
	20	Slate-Yellow	
No Connection	46	Violet-Blue	No Connection
No Connection	21	Blue-Violet	No Connection
No Connection	47	Violet-Orange	No Connection
No Connection	22	Orange-Violet	No Connection
No Connection	48	Violet-Green	No Connection
No Connection	23	Green-Violet	No Connection
No Connection	49	Violet-Brown	No Connection
No Connection	24	Brown-Violet	No Connection
No Connection	50	Violet-Slate	No Connection
No Connection	25	Slate-Violet	No Connection



EXTERNAL DEVICES DP979 MDF Cable A13

FUNCTION	PIN	COLOR	
Battery Ground	26	White-Blue	PCB1019
Battery Ground	1	Blue-White	PCB1019
	27	White-Orange	
	2	Orange-White	
	28	White-Green	
	3	Green-White	
	29	White-Brown	
	4	Brown-White	
	30	White-Slate	
	5	Slate-White	
	31	Red-Blue	
	6	Blue-Red	
	32	Red-Orange	
	7	Orange-Red	
RS485 DATA	- 33	Red-Green	DXB901
RS485 DATA	+ 8	Green-Red	DXB901
	34	Red-Brown	
	9	Brown-Red	
	35	Red-Slate	
	10	Slate-Red	
	36	Black-Blue	
	11	Blue-Black	
	37	Black-Orange	
	12	Orange-Black	
	38	Black-Green	
	13	Green-Black	
	39	Black-Brown	
	14	Brown-Black	
	40	Black-Slate	
	15	Slate-Black	
	41	Yellow-Blue	
	16	Blue-Yellow	
	42	Yellow-Orange	
	17	Orange-Yellow	
	43	Yellow-Green	
	18	Green-Yellow	
	44	Yellow-Brown	
	19	Brown-Yellow	
	45	Yellow-Slate	
	20	Slate-Yellow	
No Connection	46	Violet-Blue	
No Connection	21	Blue-Violet	
No Connection	47	Violet-Orange	
No Connection	22	Orange-Violet	
No Connection	48	Violet-Green	
No Connection	23	Green-Violet	
No Connection	49	Violet-Brown	
No Connection	24	Brown-Violet	
No Connection	50	Violet-Slate	
No Connection	25	Slate-Violet	

MDF Cable B1				DP980	MDF Cable B2		
CARD	HEX	CALL	PIN	COLOR	CARD	HEX	CALL
21	50	180	a 26	White-Blue	22	5C	192
			b 1	Blue-White			
			+ 27	White-Orange			
21	51	181	a 28	White-Green	22	5D	193
			b 3	Green-White			
			+ 29	White-Brown			
21	52	182	a 30	White-Slate	22	5E	194
			b 5	Slate-White			
			+ 31	Red-Blue			
21	53	183	a 32	Red-Orange	22	5F	195
			b 7	Orange-Red			
			+ 33	Red-Green			
21	54	184	a 34	Red-Brown 23	60	196	
			b 9	Brown-Red			
			+ 35	Red-Slate			
21	55	185	a 36	Black-Blue	23	61	197
			b 11	Blue-Black			
			+ 37	Black-Orange			
21	56	186	a 38	Black-Green	23	62	198
			b 13	Green-Black			
			+ 39	Black-Brown			
21	57	187	a 40	Black-Slate	23	63	199
			b 15	Slate-Black			
			+ 41	Yellow-Blue			
22	58	188	a 42	Yellow-Orange	23	64	200
			b 17	Orange-Yellow			
			+ 43	Yellow-Green			
22	59	189	a 44	Yellow-Brown	23	65	201
			b 19	Brown-Yellow			
			+ 45	Yellow-Slate			
22	5A	190	a 46	Violet-Blue	23	66	202
			b 21	Blue-Violet			
			+ 47	Violet-Orange			
22	5B	191	a 48	Violet-Green	23	67	203
			b 23	Green-Violet			
			+ 49	Violet-Brown			
			- 24	Brown-Violet			
No Connection			50	Violet-Slate	No Connection		
No Connection			25	Slate-Violet	No Connection		



MDF Cable B3

DP980

MDF Cable B4

CARD	HEX	CALL	PIN	COLOR	CARD	HEX	CALL
24	68	204	a 26	White-Blue	25	74	216
			b 1	Blue-White			
			+ 27	White-Orange			
			- 2	Orange-White			
24	69	205	a 28	White-Green	25	75	217
			b 3	Green-White			
			+ 29	White-Brown			
			- 4	Brown-White			
24	6A	206	a 30	White-Slate	25	76	218
			b 5	Slate-White			
			+ 31	Red-Blue			
			-- 6	Blue-Red			
24	6B	207	a 32	Red-Orange	25	77	219
			b 7	Orange-Red			
			+ 33	Red-Green			
			- 8	Green-Red			
24	6C	208	a 34	Red-Brown 26	78	220	
			b 9	Brown-Red			
			+ 35	Red-Slate			
			- 10	Slate-Red			
24	6D	209	a 36	Black-Blue	26	79	221
			b 11	Blue-Black			
			+ 37	Black-Orange			
			- 12	Orange-Black			
24	6E	210	a 38	Black-Green	26	7A	222
			b 13	Green-Black			
			+ 39	Black-Brown			
			- 14	Brown-Black			
24	6F	211	a 40	Black-Slate	26	7B	223
			b 15	Slate-Black			
			+ 41	Yellow-Blue			
			16	Blue-Yellow			
24	70	212	a 42	Yellow-Orange	26	7C	224
			b 17	Orange-Yellow			
			+ 43	Yellow-Green			
			- 18	Green-Yellow			
25	71	213	a 44	Yellow-Brown	26	7D	225
			b 19	Brown-Yellow			
			+ 45	Yellow-Slate			
			- 20	Slate-Yellow			
25	72	214	a 46	Violet-Blue	26	7E	226
			b 21	Blue-Violet			
			+ 47	Violet-Orange			
			- 22	Orange-Violet			
25	73	215	a 48	Violet-Green	26	7F	227
			b 23	Green-Violet			
			+ 49	Violet-Brown			
			- 24	Brown-Violet			
			50	Violet-Slate			
No Connection			25	Slate-Violet	No Connection		
No Connection					No Connection		

MDF Cable B5				DP980	MDF Cable B6			
CARD	HEX	CALL	PIN	COLOR	CARD	HEX	CALL	
27	80	228	a 26	White-Blue	28	8C	240	
			b 1	Blue-White				
			+ 27	White-Orange				
27	81	229	a 28	White-Green	28	8D	241	
			b 3	Green-White				
			+ 29	White-Brown				
27	82	230	a 30	White-Slate	28	8E	242	
			b 5	Slate-White				
			+ 31	Red-Blue				
27	83	231	a 32	Red-Orange	28	8F	243	
			b 7	Orange-Red				
			+ 33	Red-Green				
27	84	232	a 34	Red-Brown 29	90	244		
			b 9	Brown-Red				
			+ 35	Red-Slate				
27	85	233	a 36	Black-Blue	29	91	245	
			b 11	Blue-Black				
			+ 37	Black-Orange				
27	86	234	a 38	Black-Green	29	92	246	
			b 13	Green-Black				
			+ 39	Black-Brown				
27	87	235	a 40	Black-Slate	29	93	247	
			b 15	Slate-Black				
			+ 41	Yellow-Blue				
28	88	236	a 42	Yellow-Orange	29	94	248	
			b 17	Orange-Yellow				
			+ 43	Yellow-Green				
28	89	237	a 44	Yellow-Brown	29	95	249	
			b 19	Brown-Yellow				
			+ 45	Yellow-Slate				
28	8A	238	a 46	Violet-Blue	29	96	250	
			b 21	Blue-Violet				
			+ 47	Violet-Orange				
28	8B	239	a 48	Violet-Green	29	97	251	
			b 23	Green-Violet				
			+ 49	Violet-Brown				
			- 24	Brown-Violet				
No Connection			50	Violet-Slate	No Connection			
No Connection			25	Slate-Violet	No Connection			



MDF Cable B7

DP980

MDF Cable B8

CARD	HEX	CALL	PIN	COLOR	CARD	HEX	CALL
30	98	252	a	26 White-Blue	31	A4	264
			b	1 Blue-White			
			+	27 White-Orange			
			-	2 Orange-White			
30	99	253	a	28 White-Green	31	A5	265
			b	3 Green-White			
			+	29 White-Brown			
			-	4 Brown-White			
30	9A	254	a	30 White-Slate	31	A6	266
			b	5 Slate-White			
			+	31 Red-Blue			
			-	6 Blue-Red			
30	9B	255	a	32 Red-Orange	31	A7	267
			b	7 Orange-Red			
			+	33 Red-Green			
			-	8 Green-Red			
30	9C	256	a	34 Red-Brown	32	A8	268
			b	9 Brown-Red			
			+	35 Red-Slate			
			-	10 Slate-Red			
30	9D	257	a	36 Black-Blue	32	A9	269
			b	11 Blue-Black			
			+	37 Black-Orange			
			-	12 Orange-Black			
30	9E	258	a	38 Black-Green	32	AA	270
			b	13 Green-Black			
			+	39 Black-Brown			
			-	14 Brown-Black			
30	9F	259	a	40 Black-Slate	32	AB	271
			b	15 Slate-Black			
			+	41 Yellow-Blue			
			-	16 Blue-Yellow			
31	A0	260	a	42 Yellow-Orange	32	AC	272
			b	17 Orange-Yellow			
			+	43 Yellow-Green			
			-	18 Green-Yellow			
31	A1	261	a	44 Yellow-Brown	32	AD	273
			b	19 Brown-Yellow			
			+	45 Yellow-Slate			
			-	20 Slate-Yellow			
31	A2	262	a	46 Violet-Blue	32	AE	274
			b	21 Blue-Violet			
			+	47 Violet-Orange			
			-	22 Orange-Violet			
31	A3	263	a	48 Violet-Green	32	AF	275
			b	23 Green-Violet			
			+	49 Violet-Brown			
			-	24 Brown-Violet			
				50 Violet-Slate	No Connection		
				25 Slate-Violet	No Connection		

MDF Cable B9				DP980	MDF Cable B10			
CARD	HEX	CALL	PIN	COLOR	CARD	HEX	CALL	
33 B0	276	a	26	White-Blue	34	BC	288	
		b	1	Blue-White				
		+	27	White-Orange				
		-	2	Orange-White				
33 B1	277	a	28	White-Green	34	BD	289	
		b	3	Green-White				
		+	29	White-Brown				
		-	4	Brown-White				
33 B2	278	a	30	White-Slate	34	BE	290	
		b	5	Slate-White				
		+	31	Red-Blue				
		-	6	Blue-Red				
33 B3	279	a	32	Red-Orange	34	BF	291	
		b	7	Orange-Red				
		+	33	Red-Green				
		-	8	Green-Red				
33 B4	280	a	34	Red-Brown	35	C0	292	
		b	9	Brown-Red				
		+	35	Red-Slate				
		-	10	Slate-Red				
33 B5	281	a	36	Black-Blue	35	C1	293	
		b	11	Blue-Black				
		+	37	Black-Orange				
		-	12	Orange-Black				
33 B6	282	a	38	Black-Green	35	C2	294	
		b	13	Green-Black				
		+	39	Black-Brown				
		-	14	Brown-Black				
33 B7	283	a	40	Black-Slate	35	C3	295	
		b	15	Slate-Black				
		+	41	Yellow-Blue				
		-	16	Blue-Yellow				
34 B8	284	a	42	Yellow-Orange	35	C4	296	
		b	17	Orange-Yellow				
		+	43	Yellow-Green				
		-	18	Green-Yellow				
34 B9	285	a	44	Yellow-Brown	35	C5	297	
		b	19	Brown-Yellow				
		+	45	Yellow-Slate				
		-	20	Slate-Yellow				
34 BA	286	a	46	Violet-Blue	35	C6	298	
		b	21	Blue-Violet				
		+	47	Violet-Orange				
		-	22	Orange-Violet				
34 BB	287	a	48	Violet-Green	35	C7	299	
		b	23	Green-Violet				
		+	49	Violet-Brown				
		-	24	Brown-Violet				
No Connection			50	Violet-Slate	No Connection			
No Connection			25	Slate-Violet	No Connection			

MDF Cable B11					DP980	MDF Cable B12		
CARD	HEX	CALL	PIN	COLOR	CARD	HEX	CALL	
36	C8	300	a	26 White-Blue	37	D4	312	
			b	1 Blue-White				
			+	27 White-Orange				
			-	2 Orange-White				
36	C9	301	a	28 White-Green	37	D5	313	
			b	3 Green-White				
			+	29 White-Brown				
			-	4 Brown-White				
36	CA	302	a	30 White-Slate	37	D6	314	
			b	5 Slate-White				
			+	31 Red-Blue				
			-	6 Blue-Red				
36	CB	303	a	32 Red-Orange	37	D7	315	
			b	7 Orange-Red				
			+	33 Red-Green				
			-	8 Green-Red				
33	CC	304	a	34 Red-Brown	38	D8	316	
			b	9 Brown-Red				
			+	35 Red-Slate				
			-	10 Slate-Red				
36	CD	305	a	36 Black-Blue	38	D9	317	
			b	11 Blue-Black				
			+	37 Black-Orange				
			-	12 Orange-Black				
36	CE	306	a	38 Black-Green	38	DA	318	
			b	13 Green-Black				
			+	39 Black-Brown				
			-	14 Brown-Black				
36	CF	307	a	40 Black-Slate	38	DB	319	
			b	15 Slate-Black				
			+	41 Yellow-Blue				
			-	16 Blue-Yellow				
37	D0	308	a	42 Yellow-Orange	38	DC	320	
			b	17 Orange-Yellow				
			+	43 Yellow-Green				
			-	18 Green-Yellow				
37	D1	309	a	44 Yellow-Brown	38	DD	321	
			b	19 Brown-Yellow				
			+	45 Yellow-Slate				
			-	20 Slate-Yellow				
37	D2	310	a	46 Violet-Blue	38	DE	322	
			b	21 Blue-Violet				
			+	47 Violet-Orange				
			-	22 Orange-Violet				
37	D3	311	a	48 Violet-Green	38	DF	323	
			b	23 Green-Violet				
			+	49 Violet-Brown				
			-	24 Brown-Violet				
No Connection			50	Violet-Slate	No Connection			
No Connection			25	Slate-Violet	No Connection			

MDF Cable B13				DP980	MDF Cable B14			
CARD	HEX	CALL	PIN	COLOR	CARD	HEX	CALL	
39	E0	324	a	26	White-Blue	40	EC	336
			b	1	Blue-White			
			+	27	White-Orange			
39	E1	325	a	28	White-Green	40	ED	337
			b	3	Green-White			
			+	29	White-Brown			
39	E2	326	a	30	White-Slate	40	EE	338
			b	5	Slate-White			
			+	31	Red-Blue			
39	E3	327	a	32	Red-Orange	40	EF	339
			b	7	Orange-Red			
			+	33	Red-Green			
39	E4	328	a	34	Red-Brown			
			b	9	Brown-Red			
			+	35	Red-Slate			
39	E5	329	a	36	Black-Blue			
			b	11	Blue-Black			
			+	37	Black-Orange			
39	E6	330	a	38	Black-Green			
			b	13	Green-Black			
			+	39	Black-Brown			
39	E7	331	a	40	Black-Slate			
			b	15	Slate-Black			
			+	41	Yellow-Blue			
40	E8	332	a	42	Yellow-Orange			
			b	17	Orange-Yellow			
			+	43	Yellow-Green			
40	E9	333	a	44	Yellow-Brown			
			b	19	Brown-Yellow			
			+	45	Yellow-Slate			
40	EA	334	a	46	Violet-Blue			
			b	21	Blue-Violet			
			+	47	Violet-Orange			
40	EB	335	a	48	Violet-Green			
			b	23	Green-Violet			
			+	49	Violet-Brown			
			-	24	Brown-Violet			
No Connection			50	Violet-Slate	No Connection			
No Connection			25	Slate-Violet	No Connection			

CONFIGURATION

One DNA100 is used as a programming interface to the CB901EX. The DNA100 has one RS232 port for connection to dumb terminal or a PC running PROCOM+ emulating WYSE50 or VT100. Select main menu “6-COMMUNICATION LINK” on the DNA100 to sets up a link between the PC and the CB901EX (consult the DNA100 manual on the procedure to set up the communication link). The Configuration is done from the PC and the information is stored in battery RAM in the EX901. When the system is first installed the RAM must be reset before the system is configured. After configuring the system the DNA100 may be removed.

SYNTAX

TYPEFONTS

boldface type _{cr}	indicates user input
Courier font	indicates output

COMMAND

The command consists of a command word plus one or more parameters.
The command may be entered on one line with the parameters separated by spaces.
>**command par1 par2 par3**_{cr}

The command may be entered in prompt mode with parameters separated by carriage return. The prompt will indicate what type of parameter value is required.

```
>commandcr
Prompt>par1cr
Prompt>par2cr
Prompt>par3cr
>
```

PROMPT

< >	Angle brackets enclose input parameters.
\$	Hexadecimal value (default is decimal).
-	Range of values may be entered.
..	Periods indicate that only ONE value is required from the range of values.
*	Wild card means all values in a range of values.
/	Optional input selection separator.
U	Undefined

ERROR HANDLING

Misspelled command input will give the following error message:

Unknown Command

Parameter errors will print `ERROR:` and then prompt for the parameter again.

HELP

HELP COMMANDS

Help lists all help commands in the Configuration program. Type HELP, H or ?.

>**HELP**_{cr}

EX901 Command Summary:

=====

HELP Help
H Help
? Help
HS Help Set Commands
HL Help List Commands
HPT Help Privilege Types

>

LIST COMMANDS

>**HL**_{cr}

EX901 List Commands:

=====

LCN List Call Number
LDA List Direct Access
LDD List Direct Dial
LGCM List Group Call Members
LTN List Transfer Numbers
LLE List Line Equipment
LPT List Privilege Type
LST List Subscriber Timers
LSD List Speed Dial Numbers

>

SET COMMANDS

>**HS**_{cr}

EX901 Set Commands:

```
=====
SAP   Set Alarm Priority
SCN   Set Call Number
SCNU  Set Call Number Undefined
SCP   Set Call Priority
SCID  Set Caller ID
SDA   Set Direct Access
SDD   Set Direct Dial
SDT   Set Device Type
SGCM  Set Group Call Members
STN   Set Transfer Number
STD   Set Transfer Delay
SNA   Set Network Address
SPT   Set Privilege Type
SQP   Set QUE Program Channel
SST   Set Subscriber Timer
SSD   Set Speed Dial Number
>
```

PRIVILEGE TYPES

>**HPT**_{cr}

ID Privilege

```
=====
1 Simplex Always
2 Voice Control A
3 DTMF Device
4 All Call Access
5 Group Call Access
6 Conference Initiator
7 Personal Queue
8 Automatic Answer
9 Priority Access
10 Line Supervision
11 Silent Ring
>
```

LINE EQUIPMENT

The Line Equipment Number is the location of the intercom station in the central exchange. The number is hexadecimal in the range \$00-\$3D (62 subscribers). All individual station programming is done to this line equipment number. The programmed information may be listed by Line Equipment Number or by Call Number.

COMMANDS

- LLE List Line Equipment (sorted by Line Equipment Number)
- LCN List Call Number (sorted by Call Number)

Example:

```
>LLEcr
Line Equipment Number <$00-$3D/*> : 00-06cr
```

Line Equ.	Call Number	Caller ID	Type	In QUE	Priority Alarm	Call Display	Network Address Printer	Address Video	Remote NET	LEQ
\$00	10	Lobby	ICM	RING	1	3	0A	0B	...	...
\$01	11	Car 1A	ICM	....	1	5	...	0B	...	...
\$02	12	Car 1B	ICM	....	1	5	...	0B	...	...
\$03	13	Car 2A	ICM	....	1	5	...	0B	...	...
\$04	14	Car 2B	ICM	....	1	5	...	0B	...	...
\$05	15	MotorRoom	ICM	RING	1	3	...	0B	...	...
\$06	16	Phone Line	PTT	RING	1	3	...	0B	...	...

>

CALL NUMBER

Call numbers are assigned to all Line Equipment Numbers when the system is defaulted (network address set to \$00). The first Line Equipment will be call number 10, 100 or 1000 depending on the number of call digits in the system. All remaining line equipment numbers are assigned consecutive call numbers. These call numbers may be reassigned.

PROGRAMMING

The following commands are used for this feature:

- SCNU Set Call Number Undefined
- SCN Set Call Number

Example: Change the call numbers from default 100-155 to 200-255. This is useful when two or more exchanges are connected via Tie-line. Use the R(range) option to assign call numbers to a range of line equipment numbers.

>**SCN**_{cr}

Call Number <100-999/*> : **200-255**_{cr}

Line Equipment Number (R=range, S=single) <R/S> : **R**_{cr}

Line Equipment Number <\$00..\$4F> : **00**_{cr}

>**LLE**_{cr}

Line Equipment Number <\$00-\$3D/*> : **00-03**_{cr}

Line Equ.	Call Number	Caller ID	Type	In QUE	Priority Alarm	Call	Network Display	Address Printer	Video	Remote NET	LEQ
\$00	200		ICM	RING	1	3	...	...	...	...	...
\$01	201		ICM	RING	1	5	...	...	...	...	...
\$02	202		ICM	RING	1	5	...	...	...	...	...
\$03	203		ICM	RING	1	5	...	...	...	...	...

>

Example: Connect a Tie-line unit from the other exchange (100-155) to Line Equipment 00.
Use the S(single) option to assign call numbers to a single line equipment number (the Tie-line).

>**SCN**_{cr}

Call Number <100-999/*> : **100-155**_{cr}

Line Equipment Number (R=range, S=single) <R/S> : **S**_{cr}

Line Equipment Number <\$00..\$4F> : **00**_{cr}

>**LLE**_{cr}

Line Equipment Number <\$00-\$3D/*> : **00-03**_{cr}

Line Equ.	Call Number	Caller ID	Type	In QUE	Priority Alarm	Call	Network Display	Address Printer	Video	Remote NET	LEQ
\$00	100--155		ICM	RING	1	3	...	...	...	...	...
\$01	201		ICM	RING	1	5	...	...	...	...	...
\$02	202		ICM	RING	1	5	...	...	...	...	...
\$03	203		ICM	RING	1	5	...	...	...	...	...

>

When calls are made to call numbers between 100 and 155 the Tie-line will send the calls to the other exchange.

CALLER ID

Each subscriber in the system has 12 alphanumeric characters for identification. This ID is available for display on the called station (DAD104) and for Event Logging (DNA100). Default is all spaces.

PROGRAMMING

The following commands are used for this feature:

SCID Set Caller ID

LCN List Call Number

Example: Set Caller ID for call number 14 to "Lobby".

>**SCID**_{cr}

Call Number <10-99/*> : **14**_{cr}

Caller ID <alphanumeric> : **Lobby**_{cr}

>**LCN**_{cr}

Call Number <10-99/*> : **14**_{cr}

Line Equ.	Call Number	Caller ID	In Type	Priority QUE	Alarm Call	Network Address Display	Printer	Video	Remote NET	LEQ
\$04	14	Lobby	ICM RING	1	5	...	...	...	...	...

DEVICE TYPE

The device type defines the operation of intercom stations.

Type0 = Undefined

Type1 = SUB (DC shift substation)

Type2 = ICM (Master station or substation using speed-dial)

Type3 = PTT (Telephone line)

Type4 = TIE (Intersystem Tie-line)

Type5 = REM (Remote subscriber)

Type6 = ILK (Interlink)

Type7 = DAM (Direct Acces Master)

PROGRAMMING

The following commands are used for this feature.

SDT Set Device Type

LCN List Call Number

```

>SDTcr
Call Number <10-99/*> : 11-14cr
Device Type(0=U 1=SUB 2=ICM 3=PTT 4=TIE 5=REM 6=ILK)<0..6> : 1cr
>LCNcr
Call Number <10-99/*> : 11-14cr

```

Line Equ.	Call Number	Caller ID	Type	IN QUE	Priority Alarm	Call	Network Display	Address Printer	Video	Remote NET	LEQ
\$01	11	Car 1A	SUB	RING	1	5	...	0B	...	...	...
\$02	12	Car 1B	SUB	RING	1	5	...	0B	...	...	...
\$03	13	Car 2A	SUB	RING	1	5	...	0B	...	...	...
\$04	14	Car 2B	SUB	RING	1	5	...	0B	...	...	...

PRIVELEGE TYPE

Privileges are assigned to each subscriber number for access to features of the system. Default has no privileges enabled.

PROGRAMMING

The following commands are used for this feature:

```

HPT    Help Privilege Types
SPT    Set Privilege Type
LPT    List Privilege Types

```

Display all Privilege Types

```
>HPTcr
```

```

ID  Privilege
====  =====
 1  A,B Simplex Always
 2  A   Voice Control
 3  B   DTMF Device
 4  A   All   Call Access
 5  A   Group Call Access
 6  A   Conference Access
 7  B   Personal Queue
 8  B   Automatic Answer
 9  A   Priority
10   Line Supervision
11  B   Silent Ring

```

Example: Add All Call Access (Privilege 4) for Subscriber number 11.

```
>SPTcr
Call Number <10-99/*> : 11cr
Privilege ID <1..9> : 4cr
<+/-/=> : +cr
>
```

Display the result.

```
>LPTcr
Call Number <10-99/*> : 11cr
Privelege ID <1-9/*> : 4cr
```

```
Call Number  ID Privelege
=====
      11      4  All Call Access
```

>

PRIVILEGE DEFINITIONS

1 Simplex Always A,B:

This privilege will force simplex mode operation when this intercom is initiating or receiving a call. The initiator of the call will start in receive mode.

2 Voice Control:

The initiator of the call can use the *-key (DTMF) to control the speech direction. Each time the *-key is momentarily hit the speech direction changes. This is useful when telephones needs to control the simplex function.

10 Line Supervision:

A intercom station (ICM and SUB) with this privilege will be monitored. A fault is activated with open or shorted wires or loss of power to the intercom station. The fault is sent to the direct acces number programmed for this station.



DIRECT ACCESS

There is one direct dial access number for each subscriber (DC shift).

PROGRAMMING

The following commands are used for this feature.

SDA Set Direct Access
LDA List Direct Access

Example 1: Set direct access for subscriber 12 to dial subscriber 18.

>**SDA**_{cr}

Call Number <10-99/*> : **12**_{cr}

Call Number to be dialed <10..99/U> : **18**_{cr}

>**LDD**_{cr}

Call Number <10-99/*> : **12**_{cr}

Call Number	DA	DD-0	DD-1	DD-2	DD-3	DD-4	DD-5	DD-6	DD-7	DD-8	DD-9
=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
12	18										

>

DIRECT DIAL

There are 10 direct dial numbers for each subscriber (key 0-9).

PROGRAMMING

The following commands are used for this feature.

SDD Set Direct Dial
LDD List Direct Dial

Example 1: Set direct dial for subscriber 14 key #5 to dial subscriber 23.

>**SDD**_{cr}

Call Number <10-99/*> : **14**_{cr}

Key Number <0..9> : **5**_{cr}

Call Number to be dialed <10..99/U> : **23**_{cr}

>**LDD**_{cr}

Call Number <10-99/*> : **14**_{cr}

Call Number	DA	DD-0	DD-1	DD-2	DD-3	DD-4	DD-5	DD-6	DD-7	DD-8	DD-9
=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
14								23			

>

SUBSCRIBER TIMERS

There are 8 timers that can be set individually for each subscriber. A timer value of 0 means no time limit.

PROGRAMMING

The following commands are used for this feature.

- SST Set Subscriber Timer
- LST List Subscriber Timers

Example: Set warning tone length (timer 2) to 1 sec. when subscriber 15 receives calls .

```
>SSTcr
Call Number <10-99/*> : 15cr
Timer ID <1..8> : 2cr
Timer Value <0....50> :10cr
>LSTcr
Call Number <10-99/*> : 15cr
Timer ID <1..8> : *cr
```

Call Number	ID	Timer		Setting	Resolution	Limit
=====	=====	=====	=====	=====	=====	=====
14	1	Direct Dial	(A)	12	0.1 sec	30
	2	Warning Tone	(B)	10	0.1 sec	50
	3	Call Length	(A)		1.0 sec	240
	4	Group Call	(A)	60	1.0 sec	600
	5	All Call	(A)	60	1.0 sec	600
	6	PQUE Ring Delay	(B)	2	1.0 sec	240
	7	Camp on Privacy	(A)	15	1.0 sec	240
	8	Camp on Busy	(A)	20	1.0 sec	240

>



PERSONAL QUEUE

Each intercom station has a Personal Queue. This queue is activated with Privilege ID number 7. All received calls are put in personal que and the intercom station will ring (2 sec on, 3 sec off) until the call is answered by pressing the 0 key. When the call is cancelled (X) the next call in queue starts ringing after 2 seconds. This time is programmable (Timer ID number 6).

Calls are inserted to the personal queue on a first in first out within each priority level (1-9). The priority level is the Call Priority of the calling station (level 1 is highest priority). The calling station may be connected to Ringing Tone, Program Channel or silence when in que.

PROGRAMMING

The following commands are used for this feature

SPT	Set Privelege Type
SST	Set Subscriber Timer
SQP	Set Que Program Channel
SCP	Set Call Priority
LPT	List Privelege Type
LST	List Subscriber Timer
LCN	List Call Number

Example: Intercom station 10 is using personal queue to receive calls with 1 second delay between calls. Intercom stations 11-14 will get ringing tone when they call intercom 10. Intercom 11 will get calling priority 3 and intercom 12-14 will get priority level 4.

```
>SPTcr
Call Number <10-99/*> : 10cr
Privelege ID <1..7> : 7cr
<+/-/=> : +cr
>SSTcr
Call Number <10-99/*> : 10cr
Timer ID <1..8> : 6cr
Timer Value <0....240> :1cr
>SQPcr
Call Number <10-99/*> : 11-14cr
Program Channel in QUE (0=None, 1=Program, 2=Ringback) <0..2> : 2cr
>SCPcr
Call Number <10-99/*> : 11cr
Priority Level <1..9> : 3cr
>SCPcr
Call Number <10-99/*> : 12-14cr
Priority Level <1..9> : 4cr
>
```

TRANSFER

Call Transfer is used to distribute incoming calls to additional intercom stations. Each subscriber has 7 transfer numbers. Transfers are processed sequentially, transfer 1 must activate before transfer 2 is activated and transfer 3 will not activate until transfer 2 is activated and so on. With each transfer there is a delay before the call is transferred. The delay is in increments of 6 seconds :

- 00 = no delay,
- 01 = 6 second delay
- 20 = 2 minute delay
- 98 = 9 minutes 48 seconds
- 99 = infinite delay

If a transfer station is in privacy then the delay to that station is set to 0 and the call will transfer instantly (used for night transfer). Personal Queue is always used when calls transfer to another intercom station.

When a call transfers it also remains in queue of the transferring station. The call can then be answered by the transferred station or by the transferring station .

PROGRAMMING

The following commands are used for this feature.

- STN Set Transfer Number
- STD Set Transfer Delay
- LTN List Transfer Numbers

Example: Make calls to subscriber 14 transfer to subscribers 20 and 21 if subscriber 14 does not answer the call within 60 seconds.

```
>STNcr
Call Number <10-99/*> : 14cr
Transfer Number <1..7> : 1cr
Call Number to be dialed <10..99/U> : 20cr
>STN 14 2 21cr
>STDcr
Call Number <10-99/*> : 14cr
Transfer Number <1..7> : 1cr
Transfer Delay(6 sec) <00..99> : 10cr
>LTNcr
Call Number <10-99/*> : 14cr
```

```
Call Number TRFR: 1 TRFR: 2 TRFR: 3 TRFR: 4 TRFR: 5 TRFR: 6 TRFR: 7
(CN) DLY--CN DLY--CN DLY--CN DLY--CN DLY--CN DLY--CN DLY--CN
=====
14 10---20 -----21 -----
>
```



ANNUNCIATOR DISPLAY

Any intercom station in the system may use an annunciator display (DAD104) to display and answer calls in the personal queue. Each DAD104 is assigned to only one intercom station.

PROGRAMMING

The following commands are used for this feature.

SNA Set Network Address
LCN List Call Number

Example: Subscriber 10 is assigned to the DAD104 with network address 0A (hex). The network address is set with DIP-switch in the DAD104.

>**SNA**_{cr}

Call Number <10-99/*> : **10**_{cr}

Node Type (1=Annunciator 2=Printer 3=Video 4=RemoteNet 5=RemoteLEQ) <1..5> : **1**_{cr}

Network Address <\$00..\$FF> : **0A**_{cr}

EVENT LOG PRINTER

The event log printer is connected to the system using one dedicated DNA100. The printer will print events for all intercom stations that have been assigned to this printer.

PROGRAMMING

The following commands are used for this feature.

SNA Set Network Address
LCN List Call Number

Example: Subscribers 10-17 are assigned to log events to the printer with network address 0B (hex). The network address is set with DIP-switch in the DNA100.

>**SNA**_{cr}

Call Number <10-99/*> : **10-17**_{cr}

Node Type (1=Annunciator 2=Printer 3=Video) <1..3> : **2**_{cr}

Network Address <\$00..\$FF> : **0B**_{cr}

CAMERA SWITCHER

The camera switcher is connected to the system using one dedicated DNA200. The camera switcher will connect a camera to a video monitor when the call is answered by the intercom station equipped with a video monitor. Intercom stations with monitors are programmed with the address of the DNA200. Monitor address and camera address are programmed inside the DNA200 (see separate documentation).

PROGRAMMING

The following commands are used for this feature.

SNA Set Network Address
LCN List Call Number

Example: Subscribers 10 and 17 with monitors are assigned to camera switcher with network address 0C (hex). The network address is set with DIP-switch in the DNA200.

```
>SNAcr
Call Number <10-99/*> : 10cr
Node Type (1=Annunciator 2=Printer 3=Video) <1..3> : 3cr
Network Address <$00..$FF> : 0Ccr
>SNA 17 3 0Ccr
```

```
>LCNcr
Call Number <10-99/*> : 10-17cr
```

Line Equ.	Call Number	Caller ID	Type	IN QUE	Priority Alarm	Call	Annunciator	Printer	Video
\$00	10	Lobby	ICM	RING	1	3	0A	0B	0C
\$01	11	Car 1A	ICM	....	1	5	...	0B	...
\$02	12	Car 1B	ICM	....	1	5	...	0B	...
\$03	13	Car 2A	ICM	....	1	5	...	0B	...
\$04	14	Car 2B	ICM	....	1	5	...	0B	...
\$05	15	MotorRoom	ICM	RING	1	4	...	0B	...
\$06	16	Phone Line	PTT	RING	1	4	...	0B	...
\$07	17	Security	ICM	RING	1	2	...	0B	0C

>

To remove an Annunciator, Printer or Video Monitor from an intercom station, set the network address of the device to 00.

BATTERY CHARGE MONITOR

The CB901EX battery voltage is monitored. If the input voltage is higher than 25 Volt then the battery is being charged and D6 is ON. If AC power is lost or the battery charger fails then the battery voltage will fall below the 25 Volt and D6 will turn OFF. At the same time Power Fail Alarm may be sent to the DAD104 (if programmed) and the system is running on battery power. This alarm can only be cleared by restoring the battery voltage to 25 Volt or higher.

PROGRAMMING

The following commands are used for this feature.

SCN Set Call Number
 SCID Set Caller ID
 SNA Set Network Address
 LCN List Call Number

Example: Subscribers 10 has a DAD104 with network address 09 (hex). Power Fail Alarms from the EX500 are to be sent to this DAD. First we assign call number 00 to the EX500 at Line Equipment Number 4F(hex).

```
>SCNcr
Call Number <10-99/*> : 00cr
Line Equipment Number <$00..$3F> : 4Fcr
>SCID 00 EX500cr
>SNAcr
Call Number <10-99/*> : 00cr
Node Type (1=Annunciator 2=Printer 3=Video) <1..3> : 1cr
Network Address <$00..$FF> : 09cr
>LCNcr
Call Number <10-99/*> : 00cr
```

Line Equ. Video	Call Number	Caller ID	In Type	Priority Alarm	Call Annunciator	Printer
\$4F	00	EX500	ICM RING	1	5	
09	...	...		

>

ALL CALL

Allows for one way paging from one station to all other stations in the exchange and will override other calls (they will reconnect when the All Call is completed). The initiating station must have privilege "All Call Access". The duration of the All Call is limited to 60 seconds (programmable subscriber timer). The call number for All Call is 70. The All Call is ended with X for termination or 8 for call back (meet me). One of the stations can then dial 90 to call back to the All Call initiator. The call back is active until one station dials 90 or a new call back is activated from another All Call or Group Call. It is possible to exclude receivers from the All Call. This is done by entering call numbers in the All Call exclusion group (group #0).

GROUP CALL

Allows for one way paging from one station to a group of stations and will override normal calls (they will reconnect when the Group Call is completed). The initiating station must have privilege "Group Call Access". The duration of the Group Call is limited to 60 seconds (programmable subscriber timer). There are 7 Group Calls in the system with access call numbers 71-77. The Group Call is terminated with X or 8 for call back (meet me). One of the stations can then dial 90 to be connected to the Group Call initiator. The call back is active until one station dials 90 or a new call back is activated from another All Call or Group Call. Call number of the receivers are entered in the Group Call groups (group 1-7). All station may be a members of multiple Group Call groups. Only one Group Call can be active at a time. Stations calling Group Call when it is in use may camp on until it is free.

PROGRAMMING

The following commands are used for this feature.

SGCM Set Group Call Members
 LGCM List Group Call Members
 SPT Set Privilege Type

Example 1: Exclude stations 10 and 11 from All Call #0 (70).

```
>SGCMcr
Call Number <10-99/*> : 10-11cr
Group Number <0..7> : 0cr
<+/-/=> : +cr
>
```

Example 2: Include stations 12-26 in Group Call #3 (73).

```
>SGCMcr
Call Number <10-99/*> : 12-26cr
Group Number <0..7> : 3cr
<+/-/=> : +cr
```


>

Example 3: Exclude stations 15 from Group Call #3 (73).

```
>SGCMcr
Call Number <10-99/*> : 15cr
Group Number <0..7> : 3cr
<+/-/=> : -cr
>
```

Example 4: Include stations 18 only in Group Call #6 (76) .

```
>SGCMcr
Call Number <10-99/*> : 18cr
Group Number <0..7> : 6cr
<+/-/=> : =cr
>
```

Example 5: Group Conference for stations 10-16 in Group Call #1 (71) .

```
>SGCMcr
Call Number <10-99/*> : 10-16cr
Group Number <0..7> : 1cr
<+/-/=> : =cr
>SGCPcr
Group Number <0..7> : 1cr
Group Privilege (0=Allcall 1=Global 2=T 3=Conference) <0..3> : 3cr
<+/-/=> : +cr
>SGCPcr
Group Number <0..7> : 1cr
Group Privilege (0=Allcall 1=Global 2=T 3=Conference) <0..3> : 2cr
<+/-/=> : +cr
```

Display the result of example 1 - 5.

```
>LGCMcr
```

Group Number	Call Number	Receivers
0	A 70	10 11
1	TC 71	
2	72	
3	G 73	12 13 14 16 17 19 20 21 22 23 24 25 26
4	74	
5	75	
6	76	18
7	77	

>

GROUP CONFERENCE

Group Conference may be used for Emergency Communication/Paging.

Example:

- 10 AA916 Master station with Annunciator for display of Faults DAD104 (\$09).
- 11-16 GS921DAM Handset Stations with Push ToTalk button.
- 17-20 IF935 Paging Interface.

Programming:

Master station 10.

SNA 10 1 09 (DAD assigned to master station)

SPT 10 7 + (Activate Personal Que)

SPT 10 5 + (Activate Group Call Access)

Handset Stations 11-16.

SDT 11-16 7 (Direct Access Master)

SDA 11-16 10 (Faults are sent to 10)

SPT 11-16 10 + (Line Supervision)

SPT 11-16 5 + (Activate Group Call Access)

SDD 11-16 1 71 (Call Group Call 71 when handset is lifted)

Paging Interface 17-20.

SDT 17-20 1 (Sub)

SDA 17-20 10 (Faults are sent to 10)

SPT 17-20 10 + (Line Supervision)

Group Call 1 (71).

SGCM 10-20 1 + (Include stations 10 -20 in group call #1)

SGCP 1 2 + (T button must be used when talking)

SGCP 1 3 + (Activate Group Conference)

SST 10-20 4 30 (Set Group Call time limit to 30 seconds)

TELEPHONE LINE INERFACE

The interface may be used as a speed dialer to a telephone number used for answering intercom calls from elevator intercoms in a night transfer mode of operation. The device type of the interface is set to PBX. A delay may be entered as P1 for one second delay to P9 for 9 second delay. Example: P29P31234567 will delay 2 seconds (waiting for dial tone), dial 9, delay 3 seconds, then dial 1234567.

PROGRAMMING

The following commands are used for this feature.

SDT	Set Device Type
LCN	List Call Number
SSD	Set Speed Dial Number
LSD	List Speed Dial Number
SPT	Set Privilege Type

Example:

```
>SDT 27 PBX_cr
>SSD 27 P29P31234567_cr
>SPT 27 7+_cr
```

BACKUP

Backup generates programming commands required to restore the configuration of the EX500. These commands may be downloaded and stored in a file on the PC. This file can then be uploaded to restore the configuration of the EX500.

PROGRAMMING

The following command is used for this feature.

BAK	Backup
-----	--------

Example:

```
>BAK_cr
Call Number <100-999/*> : 100-101_cr
!
!   BACKUP START: 2009/08/10
!
! EX901 VERSION: 2009/07/18
!
SCN 10 00
SCID 10 SECURITY
SDT 10 2
SQP 10 2
SAP 10 1
SCP 10 5
```

```
SCN 11 01
SCID 11 EAST GATE
SDT 11 2
SQP 11 2
SAP 11 1
SCP 11 5
!
! END OF TRANSFER
```

Software Version 2007/01/04.

Commands generated by the backup command:

```
SAP    Set Alarm Priority
SCN    Set Call Number
SCP    Set Call Priority
SCID   Set Caller ID
SDT    Set Device Type
SQP    Set QUE Program Channel
```

Commands not generated:

```
SCNU   Set Call Number Undefined
SDA    Set Direct Access
SDD    Set Direct Dial
SGCM   Set Group Call Members
SGCP   Set Group Call Privilege
STN    Set Transfer Number
STD    Set Transfer Delay
SNA    Set Network Address
SPT    Set Privilege Type
SST    Set Subscriber Timer
SSD    Set Speed Dial Number
```

INSTALLATION

The PCB1019 has a one RS485 bidirectional port for communication with Crisis Alert Devices:

DNA100	Used for programming or for interfacing to Log Printer
DNA200	Camera switcher Interace
DNA300	Computer Control Interace
DNA400	Pocket Page Interace
DAD104	Annunicator Display
DS16	Direct select Annunciator, 16 line

The DNA100 can be connected directly to J1 for programming.

The PCB1019 has 3 LEDs for displaying network communication:

M	Master LED.	This LED is ON if the EX901 is the Master on the Network.
T	TX Data.	Blinks when EX901 transmit to the network.
R	RX Date.	Blinks when other devices transmit to the network.

SWITCH PROGRAMMING

SW2 on PCB1019 is the crisis alert network address.

Network 1 Node 0 is normally used (Address \$08):

1	2	3	4	5	6	7	8
OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF

SW4 on PCB1019 is used for selecting number of digits in call numbers when the system is defaulted.:

1	2	
OFF	OFF	Special preprogrammed configuration (Reserved)
OFF	ON	2 Digit Dialing (10-55)
ON	OFF	3 Digit Dialing (100-155)
ON	ON	4 Digit Dialing (1000-1055)

RESET BATTERY RAM

The Battery RAM must be initialized when the system is first installed. All programmable features are set to default and all station are assigned call numbers .

1. Set all 8 dip switches in SW2 (EX500) to OFF.
2. Set SW3 (PCB1019) for number of call digits.
3. Push and release the Reset Switch on EX500 (SW4).

LED M (PCB1019) will blink 4 times during RAM Test (apx. 2 sec.).

The RAM will initialize (1 sec.).

LED M will flash rapidly to indicate that the initialization is complete.

4. Set SW2 (PCB1019) to proper network address (turn switch 4 ON)
5. Push and release the Reset Switch on PCB1019 (SW1).

LED M (EX500) will blink 4 times during RAM Test .

The system is now operational.