Alpha Communications®

DXC910 OPERATIONS MANUAL

CRISIS ALERT
FOR
RM5000

Contents

INTRODUCTION

A standard RM5000 central is used as a basis for the DXC910 Crisis Alert system.
Some minor modifications are carried out on the NFE1643 board. A new pcb (DXC910) is replacing the old processor on the NFE1643 board. New software has been written for the new processor (68HC11) that includes standard intercom features, a new personal queue (replacement for CAS) and programming from a PC computer.
The DXC910 board includes a two wire data network (RS485) for connection of external annunciators (DAD104), log-printer interface (DNA100), PC interface (DNA100) video switcher interface (DNA200). This data network has capacity of eight devices. All devices are connected in parallel on the data pair (star or loop). Each device must be given a different network address (dip switch programming). The DXC910 sets its address on U49 (on NFE1643), the DAD104 has the switches (S1) located on the back, the DNA100 has the switches (SW2) located on the front panel. A typical system may use address:
08 for the DXC910
09 for the first DAD104
0A for the second DAD104
0B for the DNA100 at the PC
0C for the DNA200
0D for the DNA100 with a log-printer
(see the Network manual for setting network address).
The number of call digits are set by SW1 on the DXC910 card and the Battery RAM must be reset after changing number of call digits. All other programming is done from the PC connected to the DNA100. The PC can run Terminal for Windows 3.11, Hyperterm for Windows 95/98, Procomm + or any other emulation software with VT100 emulation.
When the PC is first connected to the DNA100 the Status Display screen will be displayed. Press CTR X on the PC to go to the main menu and select 6 - COMMUNICATIONS LINK.
You will now be asked for a network address. Enter **08** to program the DXC910 or **0C** to program the DNA200. The network will now set up a transparant link to the device that you want to program. See the apropriate device manual for programming details. Use the **SNA** command to associate an intercom station with a DAD104, printer or video monitor. Programming commands may be put in a text file in the PC and then uploaded to do the programming (> is the pace character).

The following manuals are available:
DXC910, Crisis Alert Interface for RM5000 (This manual)
DNA100, Digital Network Interface
DAD104, Digital Annunciator Dsplay
NETWORK, Specification for the two wire Network

FEATURES

STANDARD FEATURES

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

SYSTEM FEATURES

2 ,3 or 4 Digit call numbers
Program distribution (98)
All Call (70)
7 Group Calls (71-77)
Meet me (8-90)
Battery Charger Alarm
Event log printer interface (RS232)
Video switcher interface (RS232)

INDIVIDUAL FEATURES

Direct access
10 Direct dial
Simplex always
Multiparty conference (using single link)
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)
7 Transfer numbers for each subscriber (with programmable delay)
Priority
Line Supervision

NUMBER PLAN

IDLE:

10-65 Subscriber number 2 digit dial
100-155 Subscriber number 3 digit dial
1000-1055 Subscriber number 4 digit dial
70 All Call
71-77 Group Calls
90 Respond to meet-me
95 Speed dial programming of telephone line interface
98 Program distribution

PRIVACY:

0 Accept call

CONVERSATION (INITIATOR):

X Cancel call
8 Activate meet-me from Group Call or All Call
10-65 Add on conference 2 digit dial
100-155 Add on conference 3 digit dial
1000-1055 Add on conference 4 digit dial

CONVERSATION (RECEIVER):

X Cancel call

FEATURES DESCRIPTION

HANDSFREE/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 (AA904 or 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 are 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 or touching the side strip on the AA904. 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 temporary mute the microphone during conversation, the mute button may be pressed down.

DIRECT DIALLING

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 DC-shift. This type of calling is used with door stations and elevator stations that do not have a tone dialer.

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.

CONFERENCE

When a station has the privilege "Conference Access" a multiparty conference is accomplished by dialling the extension of the party to add to the conference. There is no limit to the number of stations in the conference. The conference is simplex and use only one link. When more than one party is pushing the T-button the last one to push controls the microphone. The conference initiators T-button has priority. Conference participants may leave the conference by pushing X. The initiator may disconnect the last called station by pushing X, or disconnect the whole conference by dialing XX.

CAMP ON BUSY EXTENSION

The caller may camp-on to a busy extension for 15 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 gets 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 privelege "Priority" it may connect to a busy or privacy station by dialling "0" . This is only possible if the busy station does not have Priority privelege.

PERSONAL QUE

Each intercom station has a Personal Queue. This queue is activated with privilege “Personal Queue”. All received calls are then put in the personal que 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 que. 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 que. Each subscriber may be programmed with 7 transfer numbers with delays. When a call is place to a intercom station with “personal queue” the call will be inserted in the personal que of the called station. When the transfer 1 delay expires the call will be placed in the personal que of the transfer 1 intercom station. The transfer 2 delay is then activated and when it expires the call is inserted in the personal que 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 answer 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.

PROGRAM DISTRIBUTION

The system has one program channel for distribution of music or other programs source.
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. The feature is enabled with dip-switch U48 no.3 and 4 on NFE1643.

TWO WAY RADIO

The RM5000 system may be connected to a radio base station for communication on a closed two-way radio network. An interface unit 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 can be supplied to operate between the public telephone network and the RM5000. The interface is used to make calls from any intercom station to the telephone network and to make 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 CO, and the speed dial number is programmed from a telephone calling the interface (or from a AA916 plugget into the port instead of the telephone interface). The feature code for programming is 95 and the speed dial telephone number is then dialed in from the telephone (maximum 16 digits). Dip switch no. 2 on U48 must be on during this programming. A delay may be entered as *1 for one second delay to *9 for 9 second delay. Example: 95*29*31234567 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

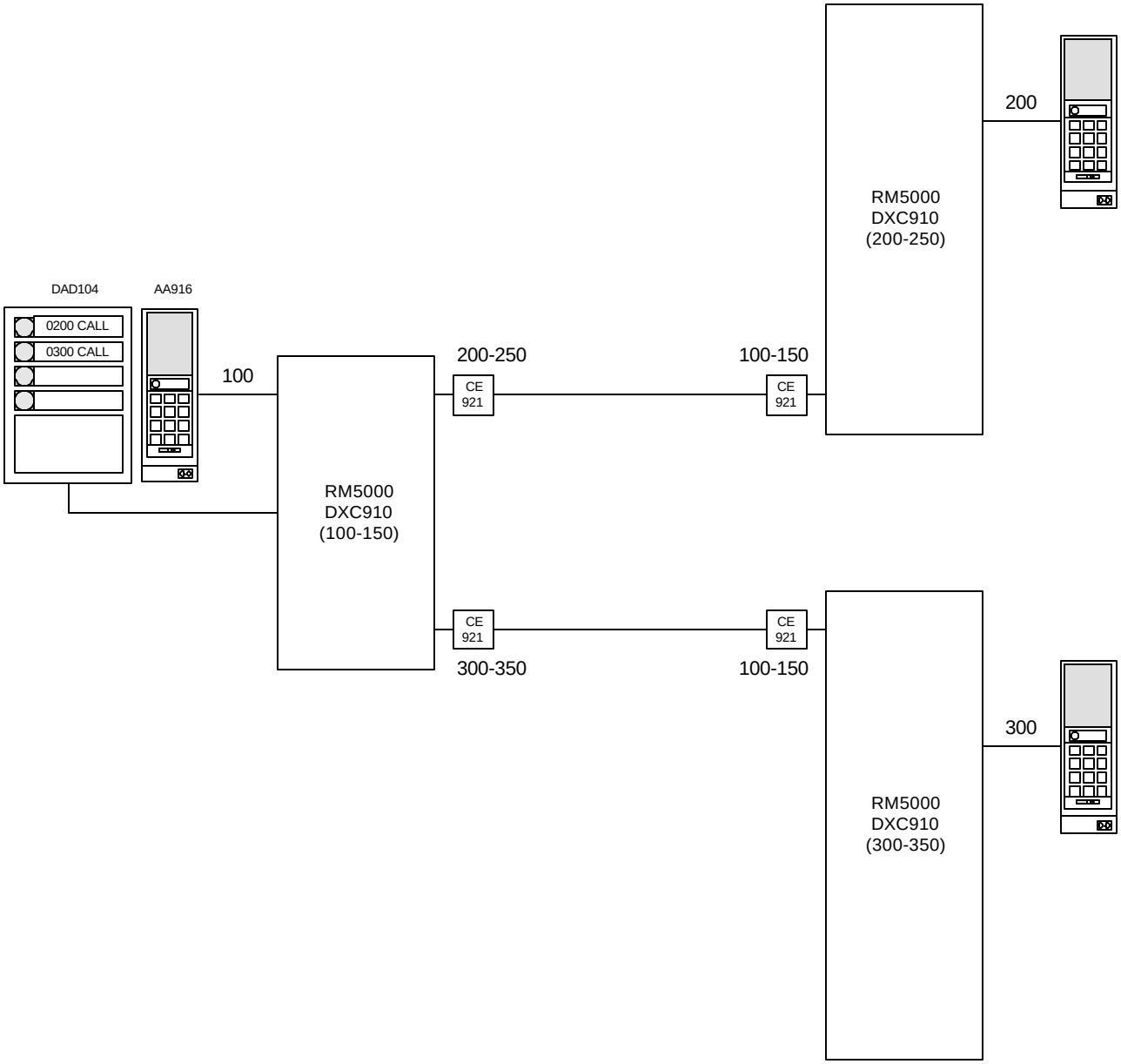
telephone before releasing the connection between the interface and the intercom station. After 2 seconds (programmable subscriber timer) the next call in personal que will repeat the process.
If the interface does not have the privilege "Personal Queue" then calls made to the interface will not activate the dialer and the phone number must be manually dialed. If transfers are activated from other stations (lobby master) , then theses 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 a 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.

INTERSYSTEM TIE-LINE

Two or more RM5000 systems may be interconnected using a tie-line interface at each end of a 4 wire connection (CE921). The connection may be a leased line or a hard wired copper cable. The CE921 may be interfaced to fiber optic cable drivers.

Manual tie-line: The tie-line interface is connected as an ordinary subscriber (devicetype ICM).
To dial a subscriber in the remote RM5000, first dial the call number of the local tie-line then dial the call number of the remote intercom station.

Automatic tie-line: The tie-line is programmed with device type = TIE.
The call numbers in the connected exchanges must be different. A tie-line's call number is the call number range of the call numbers at the other end of the tie-line.
Example: Exchange A may use call numbers 100-150, Exchange B may use call numbers 200-250 and Exchange C may use call numbers 300-350. To dial a subscriber in the remote RM5000, just dial the call number of the remote intercom station (direct access and direct dial may also be used). The call number of the calling station is sent over the tie-line to the receiving station and is displayed on the receiving stations annunciator display (DAD104). Personal que is used when multiple calls are placed to the tie-line. When the call in progress is completed then the next call in personal que automatically dials across the tie-line. When calls are queued up on both sides of a tie-line then call direction will alternate for each call . The tie-line can only handle one call at a time. When multiple calls are queued for the tie-line, only the first call in que will appear on the DAD104 at the other end of the tie-line. When this call is completed then the next call queued to the tie-line will appear on the DAD104. Calls are handled in priority order in the originating exchange.
ALARM's from a station will appear as a "CALL" when received on the remote exchange. FAULTS's are not sent over tie-line and must be handled in the local exchange. Call priority is not transferred over the tie-line. The priority of the tie-line will be used for all calls received on the tie-line. The Calling stations call number is transferred, but alphanumeric text is not transferred. The alphanumeric text of the receiving tie-line is used for display.
Remote control (DTMF number 5) works across the tie-line.


DAD104
AA916
0200 CALL
0300 CALL
100
RM5000
DXC910
(100-150)
200-250
CE
921
100-150
CE
921
RM5000
DXC910
(200-250)
200
CE
921
300-350
CE
921
100-150
RM5000
DXC910
(300-350)
300

CONFIGURATION

One DNA100 is used as a programming interface to the DXC910. 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 DXC910 (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 DXC910. 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

TYPE FONTS

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.

>command$_{cr}$
Prompt>**par1**$_{cr}$
Prompt>**par2**$_{cr}$
Prompt>**par3**$_{cr}$
>

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

DXC910 Command Summary:
====== ======================
HELP  Help
H     Help
?     Help
HS    Help Set  Commands
HL    Help List Commands
HPT   Help Privilege Types
>
```

LIST COMMANDS

```
>HL cr

DXC910 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
>
```

SET COMMANDS

>HS$_{cr}$

```
DXC910 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
>
```

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
>
```

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-$37 (56 stations). 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:

```
>LLE<cr>
Line Equipment Number <$00-$37/*> : 00-06<cr>

Line   Call                    In   Priority
Equ.   Number  Caller ID  Type  QUE Alarm Call Annunciator Printer Video
==== ========= ========== ==== ==== ===== ==== =========== ======= =====
$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..$3F> : 00[cr]
>LLE[cr]
Line Equipment Number <$00-$37/*> : 00-03[cr]

Line   Call                    In   Priority
Equ.   Number  Caller ID  Type  QUE Alarm Call Annunciator Printer Video
==== ========= ========== ==== ==== ===== ==== =========== ======= =====
$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..$3F> : 00[cr]
>LLE[cr]
Line Equipment Number <$00-$37/*> : 00-03[cr]

Line   Call                    In   Priority
Equ.   Number  Caller ID  Type  QUE Alarm Call Annunciator Printer Video
==== ========= ========== ==== ==== ===== ==== =========== ======= =====
$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   Call                  In    Priority
Equ.   Number  Caller ID  Type QUE  Alarm Call Annunciator Printer Video
==== ========= ========== ==== ==== ===== ==== =========== ======= =====
$04    14      Lobby      ICM  RING   1     5      ...       ...    ...
>
```

DEVICE TYPES

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 with speed dial)
Type4 = TIE (Intersystem Tie-line)

PROGRAMMING

The following commands are used for this feature.
SDT Set Device Type
LCN List Call Number

```
>SDT<cr>
Call Number <10-99/*> : 11-14<cr>
Device Type(0=U 1=SUB 2=ICM 3=PTT 4=TIE)<0..3> : 1<cr>
```

```
>LCN cr
Call Number <10-99/*> : 11-14 cr

Line   Call                    IN  Priority
Equ.   Number  Caller ID  Type  QUE Alarm Call Annunciator Printer Video
==== ========= ========== ==== ==== ===== ==== =========== ======= =====
$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    ...
>
```

PRIVILEGE TYPES

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

```
>HPT cr

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

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

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

Display the result.

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

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 th *-key (DTMF) to control the speech direction. Each time the *-key is momentraly hit the speech dirction changes. This is useful when telphones needs to control the simplex function.

10 Line Supervision:
A intercom station 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 .

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

Each intercom station has a Personal Queue. This queue is activated with Privelege 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.

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

TRANSFER

Call Transfer is used to distribute incoming calls to additional intercom station. 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 answerred 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 18 does not answer the call within 60 seconds.

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

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) <1..3> : **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 answerred 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.

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

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

Line   Call                    IN   Priority
Equ.   Number  Caller ID  Type  QUE 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 a Annunciator, Printer or Video Monitor from a intercom station, set the network address of the device to 00.

BATTERY CHARGER MONITOR

When the RM5000 is equipped with battery backup the battery voltage is monitored. A treshold may be set with R6 to apx 25 Volt. If the voltage is higher then this treshold 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 rapidly fall below the treshold and D6 will turn OFF. At the same time an alarm may be sent to the DAD104 (if programmed) that the system is running on battery power. This alarm can only be cleared by restoring the battery voltage to 25 Volt or higer.

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 DXC910 are to be sent to this DAD. First we assign call number 00 to the DXC910 at Line Equipment Number 4F(hex).

```
>SCN<cr>
Call Number <10-99/*> : 00<cr>
Line Equipment Number <$00..$3F> : 4F<cr>
>SCID 01 RM5000<cr>
>SNA<cr>
Call Number <10-99/*> : 00<cr>
Node Type (1=Annunciator 2=Printer 3=Video) <1..3> : 1<cr>
Network Address <$00..$FF> : 09<cr>
>LCN<cr>
Call Number <10-99/*> : 00<cr>

Line   Call                  In    Priority
Equ.   Number  Caller ID  Type QUE  Alarm Call Annunciator Printer Video
==== ========= ========== ==== ==== ===== ==== =========== ======= =====
$4F    00      RM5000      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).

PROGRAMMING

The following commands are used for this feature (see Group Call).
SGCM Set Group Call Members
LGCM List Group Call Members
SPT Set Privilege Type

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
>
```

Display the result of example 1 - 4.

```
>LGCMcr

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

BACKUP

Backup generates programming commands required to restore the configuration of the DXC910. 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 DXC910.

PROGRAMMING

The following command is used for this feature.

BAK Backup

Example:

```
>BAK cr
Call Number <100-999/*> : 100-101 cr
!
!   BACKUP START: 2002/11/22
!
! DXC910 VERSION: 2002/10/04
!
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 2002/10/04.

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
STN   Set Transfer Number
STD   Set Transfer Delay
SNA   Set Network Address
SPT   Set Privilege Type
SST   Set Subscriber Timer
```

INSTALLATION

POWER HOOKUP:

Use DC power supply.

Connect Ground (minus) to TB1 pin 3
Connect +24VDC to TB1 pin 4

CRISIS ALERT NETWORK

The DXC910 has a one pair RS485 bidirectional port for communication with Crisis Alert Devices:

DNA100	Used for programming or for interfacing to Log Printer
DAD104	Annunicator Display
DS16	Direct select Annunciator, 16 line
DNA200	Camera switcher interace

The DXC910 has 3 LEDs for displaying network communication:

D5 Master LED. This LED is ON if the DXC910 is the Master on the Network.
D4 TX Data. Blinks when DXC910 transmit to the network.
D3 RX Date. Blinks when other devices transmit to the network.

SWITCH PROGRAMMING

U49 on NFE1643 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

U48 on NFE1643 has the following feature enabled when set to position ON:

1 Not used
2 Enable speed dial programming from telephone line or master station
3 Enable Program distribution (music)
4 Enable Program distribution (music)

SW1 on PCB500 (DXC910) 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 .

PROCEDURE:

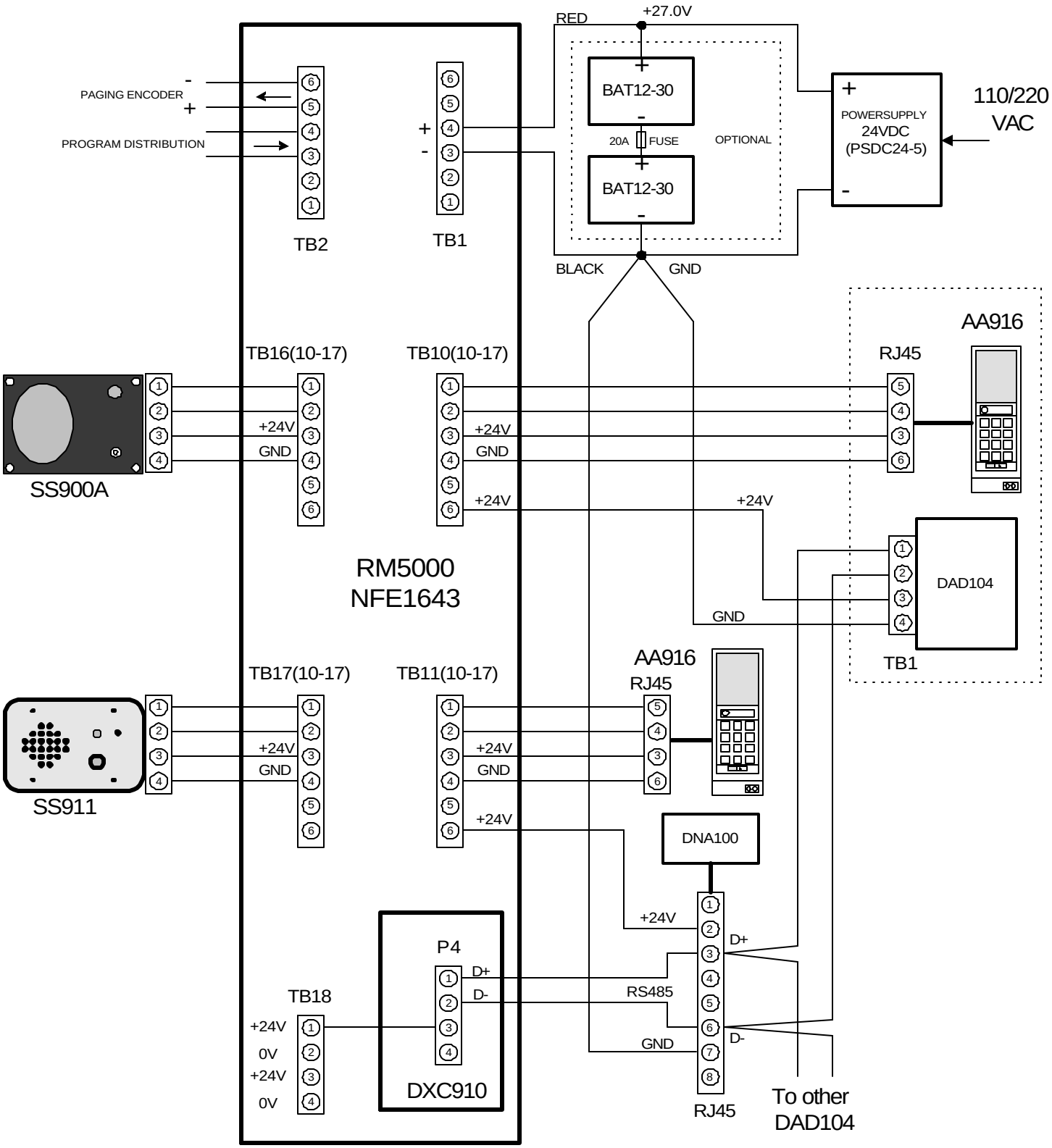
1. Set all 8 dip switches in U49 (NFE1643) to OFF.
2. Set SW1 (DXC910) for number of call digits.
3. Push and release the Reset Switch on NFE1643 (SW2).

LED D5 (DXC910) will blink 4 times during RAM Test (apx. 4 sec.).
The RAM will initialize (2 sec.).
D5 will flash rapidly to indicate that the initialization is complete.

4. Set U49 (NFE1643) to proper network address (turn switch 4 ON)
5. Push and release the Reset Switch on NFE1643 (SW2).

LED D5 (DXC910) will blink 4 times during RAM Test (apx. 4 sec.).
The system is now operational.

RM5000/DXC910 Cabling



PCB500 INSTALLATION

NFE1643 MODIFICATIONS:

Remove Capacitor on U41 pin 14.
Remove U41
Remove U32
Remove wire U41 pin 15 to ST 6
Remove ST4
Cut ST9
Cut Test Pins TP7 and TP8 (interfearance with PCB500)
Bend C48 away from U43 (interfearance with PCB500)
Insert 16 pin IC socket in U41
Insert ST5
Insert ST7
Insert ST8
Disconnect U51 pin 1 from VCC
Disconnect U51 pin1 from U51 pin 28
Connect U51 pin 28 to VCC
Connect U51 pin 1 to Address Line A14 (U32 pin 24)
Replace U51 (Ram) with DS1230 (32Kb)
Replace U50 (EPROM) with 27C256 (32Kb)
Replace R59 with Strap (increase DTMF output in USA)
Strap D15
Place plastic insulator on metal edge next to U41
Insert PCB500 to NFE1643 U32/U41

The Power to the RM5000 must be changed when used with the DXC910.
The Ground in the RM5000 and the Ground to the DNA100 and DAD104 must be common.
Use DC power supply.

Connect Ground (minus) to TB1 pin 3
Connect +24VDC to TB1 pin 4

The Power Switch in the RM5000 will now switch the plus 24V DC instead of the minus.

FINAL STRAP CONFIGURATION:

ST4	ST5	ST6	ST7	ST8	ST9	ST10	ST11
OUT	IN	OUT	IN	IN	OUT	OUT	IN

ADDRESS MAP:

U51	RAM	32K	$0000-$7FFF
U45	DTMF	TX	$8400-$87FF
U31	PIA 1		$8800-$8BFF
U30	PIA 2		$8C00-$8FFF
U50	EPROM	32K	$A000-$FFFF