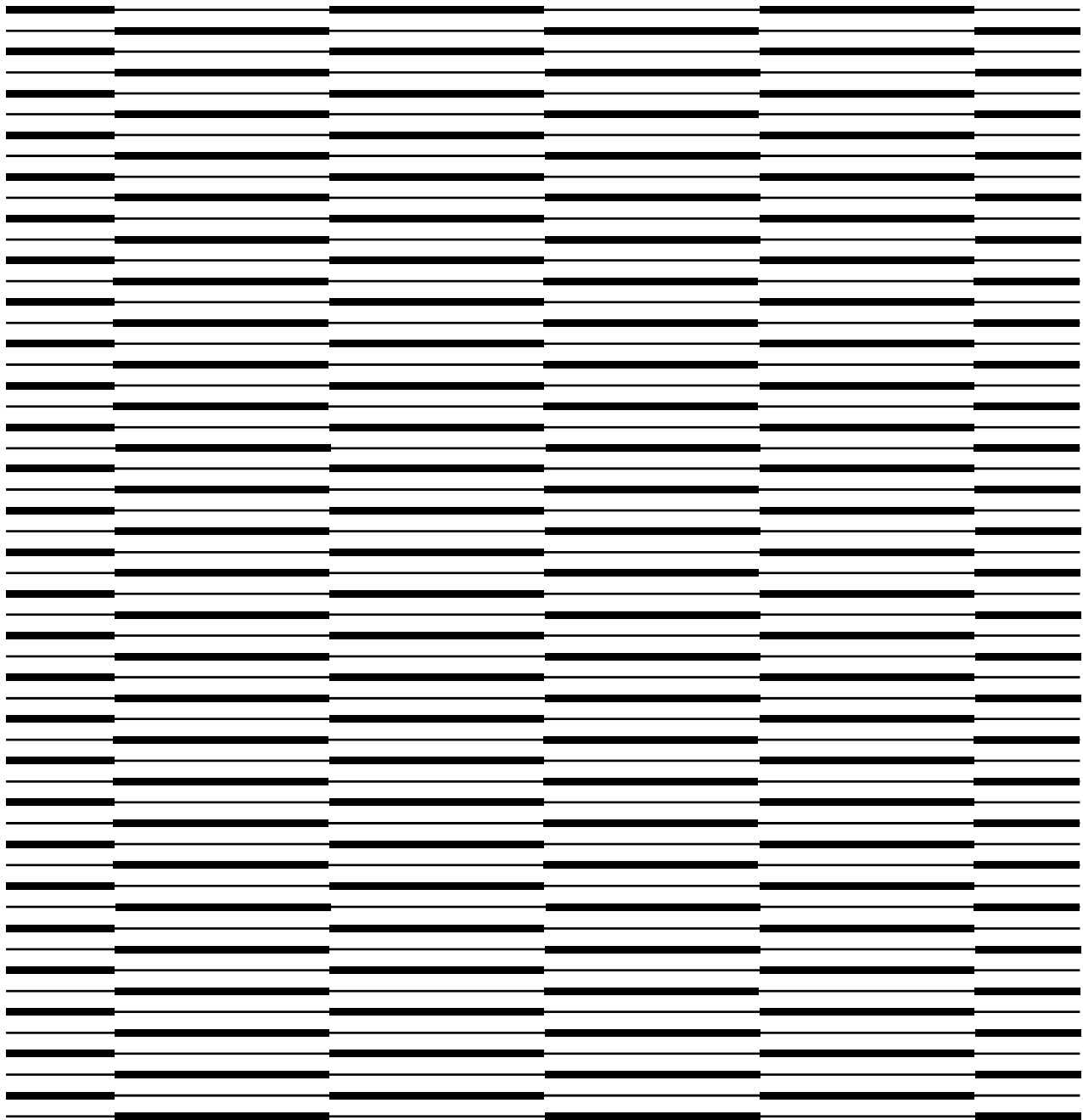


Section 561

AC15 Reference Manual



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About This Manual

Overview

This manual provides an overview of the ICX AC-15 interface card, along with installation and programming instructions. The following table summarises each chapter contained in this manual.

Chapter	Title	Purpose
1	Introduction to the AC-15 private line	Provides an overview of the ICX AC-15 interface card, plus information on pre-installation requirements.
2	Installation	Provides step-by-step instructions on installing the ICX AC-15 hardware.
3	Quick-Start Programming	Summarises the programs that are essential to AC-15 installation.
4	Programming Reference	Contains a complete list of AC-15 programming commands. Each command description includes a list of the available options and the associated programming addresses.
5	Appendix	Describes the new closed number calling and tandem relay service functions when the AC-15 private line is used to configure a network with other ICX or PBX systems.

Related Documents

For general instructions on ICX hardware installation, see the Installation Manual (Section 300). For an introduction to ICX programming, see the Programming Manual (Section 400).

Related Standards

Standards relating to this unit are shown below.

1) BS6450 Part 4, 1993

Technical requested items concerning local switching devices equipped with telecommunications ports

2) BS6328 Part 1, 1985

Apparatus for connection to private circuits run by certain public telecommunications operators

Part 1: Specification concerning apparatus for connection to speechband circuits

3) BTNR 181 Version 6, 1989

British telecommunications network standards

British Telecom Signal Systems SSAC15 Signal Standards

4) BTNR185

Standards for SSMF4 via dedicated lines (MF Signal System No. 4)

Chapter 1. Introduction to the AC-15 Private Line

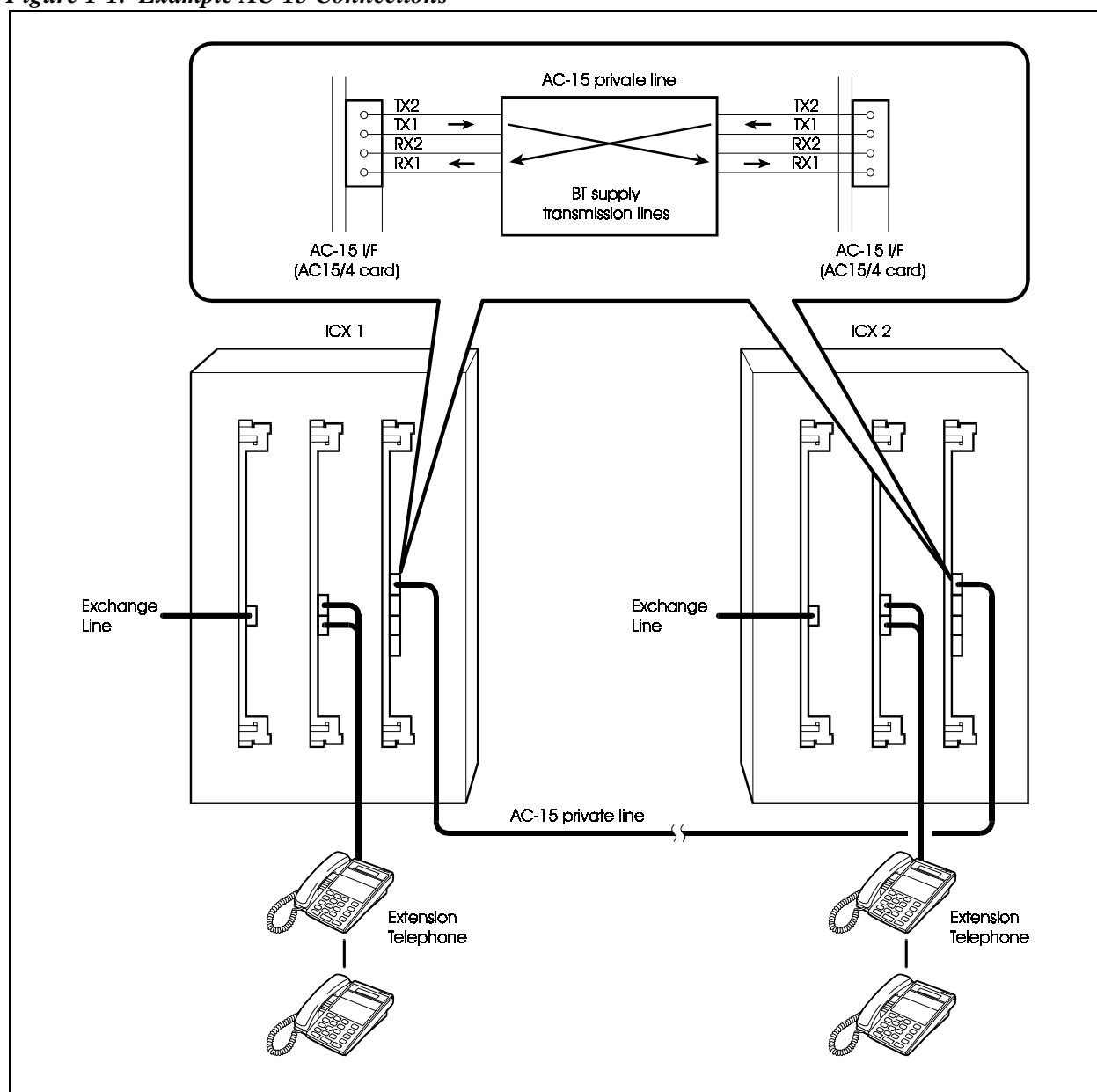
This chapter provides an overview of the ICX AC-15 interface card, plus information on building a network service.

The AC-15 private line

The AC-15 private line is designed to operate with the 2280Hz carrier used in Britain. Each line consists of four signal lines; TX1 and TX2 for transmission, and RX1 and RX2 for reception. A wide-area network can be set up using British Telecom's (BT's) AC-15 transmission lines.

In the ICX system, four AC-15 interface circuits can be accommodated within one AC15/4 card which is installed in the CCU. Figure 1-1 shows example of AC-15 connections when using the AC-15/4 card installed in the ICX.

Figure 1-1. Example AC-15 Connections



Configuring a Network Service

You can use AC-15 lines to connect two or more PBX (ICX) systems to create a wide-area network service.

If you are using a PBX other than the ICX, you will need an interface that can be connected to the AC-15 private line in the same way as the AC15/4 card.

Figures 1-2 to 1-4 show examples of how to set up network services with 2, 3, or 4 PBX systems.

You can also set up network services consisting of five or more PBX systems based on these examples.

Figure 1-2. 2-System PBX Network Configuration

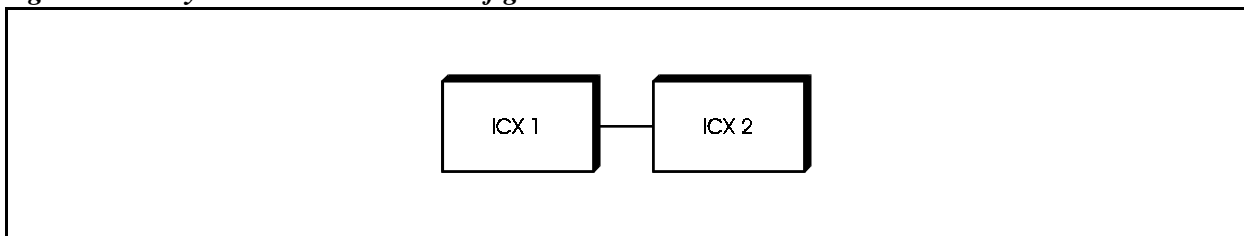


Figure 1-3. 3-System PBX Network Configuration

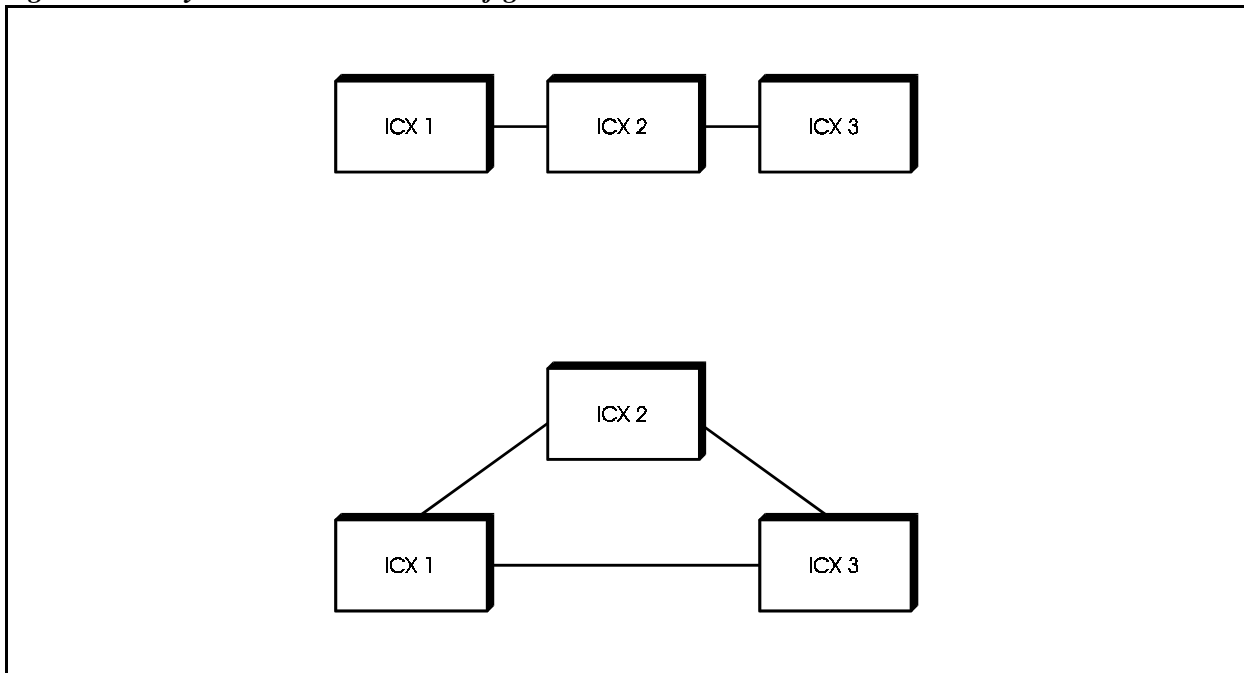
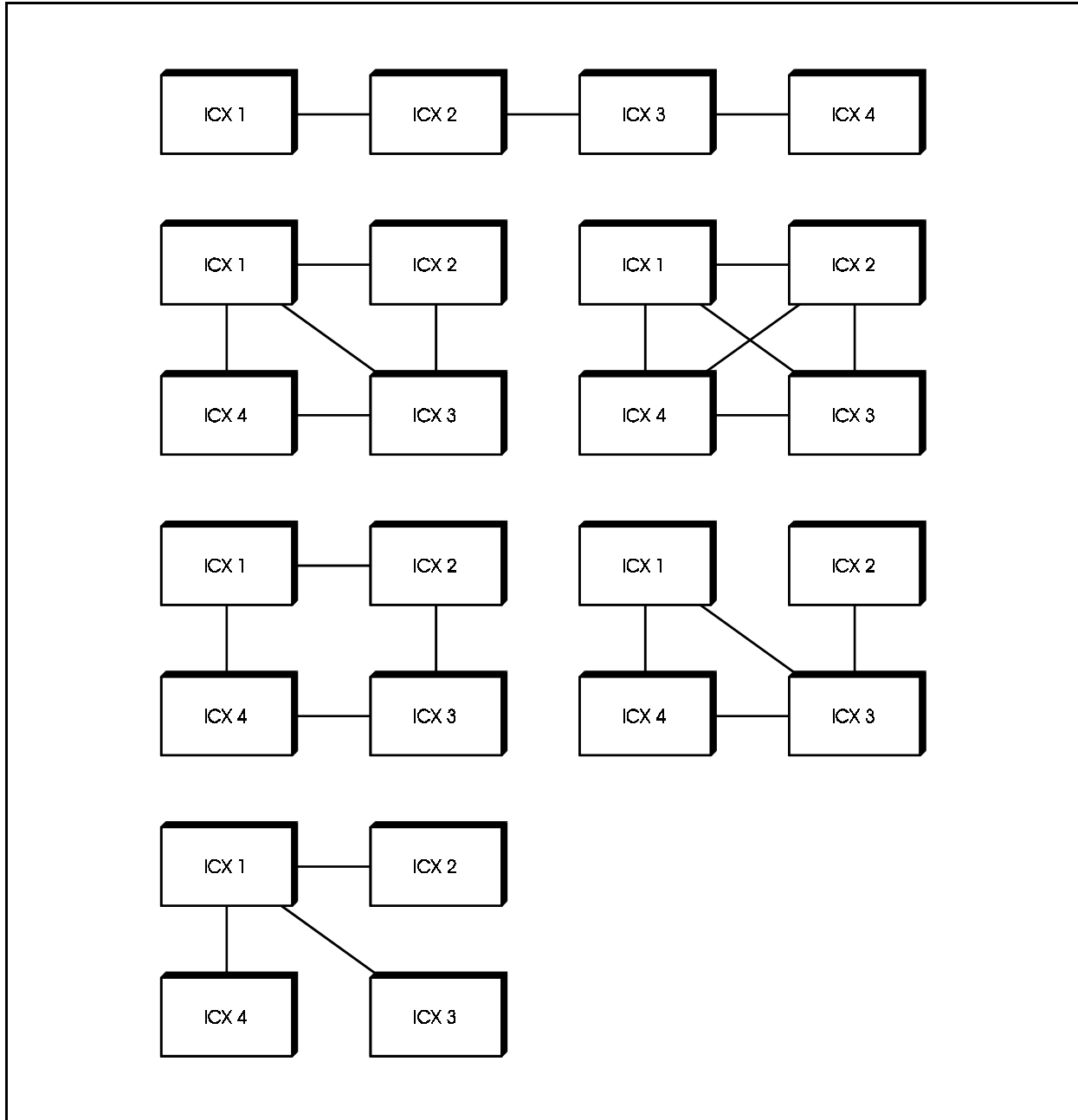


Figure 1-4. 4-System PBX Network Configuration

By connecting two or more PBX systems using AC-15 private lines to configure a network, you can provide a network service between the respective PBXs.

In addition to providing the connection between respective systems (basic private line connection service), the ICX also provides the following new network service functions:

- 1) Closed number calling
- 2) Tandem relay

See Chapter 5, "Appendix" for details of the service functions.

Chapter 2. Installation

Chapter 2 provides AC15/4 card specifications and step-by-step instructions on connecting AC-15 private lines.

Guidelines

- The AC-15 private line is connected to the AC15/4 card. You can connect four AC-15 private lines to each AC15/4 card.
- Connect the AC-15 private lines to the AC15/4 card using the DDK connector.
- Table 2-1 shows the maximum number of cards and lines that can be installed in each system.

Table 2-1. Maximum Number of AC-15 private lines Per System

System Type	Maximum Cards	Maximum Line No.
40 ports (CAB40 x1)	5	1-20
72 ports (CAB40 x2)	9	1-36
96 ports (CAB96 x1)	12	1-48
192 ports (CAB96 + CAB96B)	24	1-96
288 ports (CAB96 + CAB96B x2)	36	1-144
384 ports (CAB96 x2 + CAB96B x2)	48	1-192
480 ports (CAB96 x2 + CAB96B x3)	60	1-240
576 ports (CAB96 x2 + CAB96B x4)	72	1-288

- Table 2-2 shows the pin configuration of the DDK connector (CN3) on the AC15/4 card.

Table 2-2. Pin Configuration of DDK Connector (CN3) on AC15/4 Card

CN No.	Circuit No. (DDK No.)	Terminal No.	Signal name	
CN3	4	1	1	TX2
		2	2	TX1
		3	3	RX2
		4	4	RX1
	3	1	5	TX2
		2	6	TX1
		3	7	RX2
		4	8	RX1
	2	1	9	TX2
		2	10	TX1
		3	11	RX2
		4	12	RX1
	1	1	13	TX2
		2	14	TX1
		3	15	RX2
		4	16	RX1

Installation

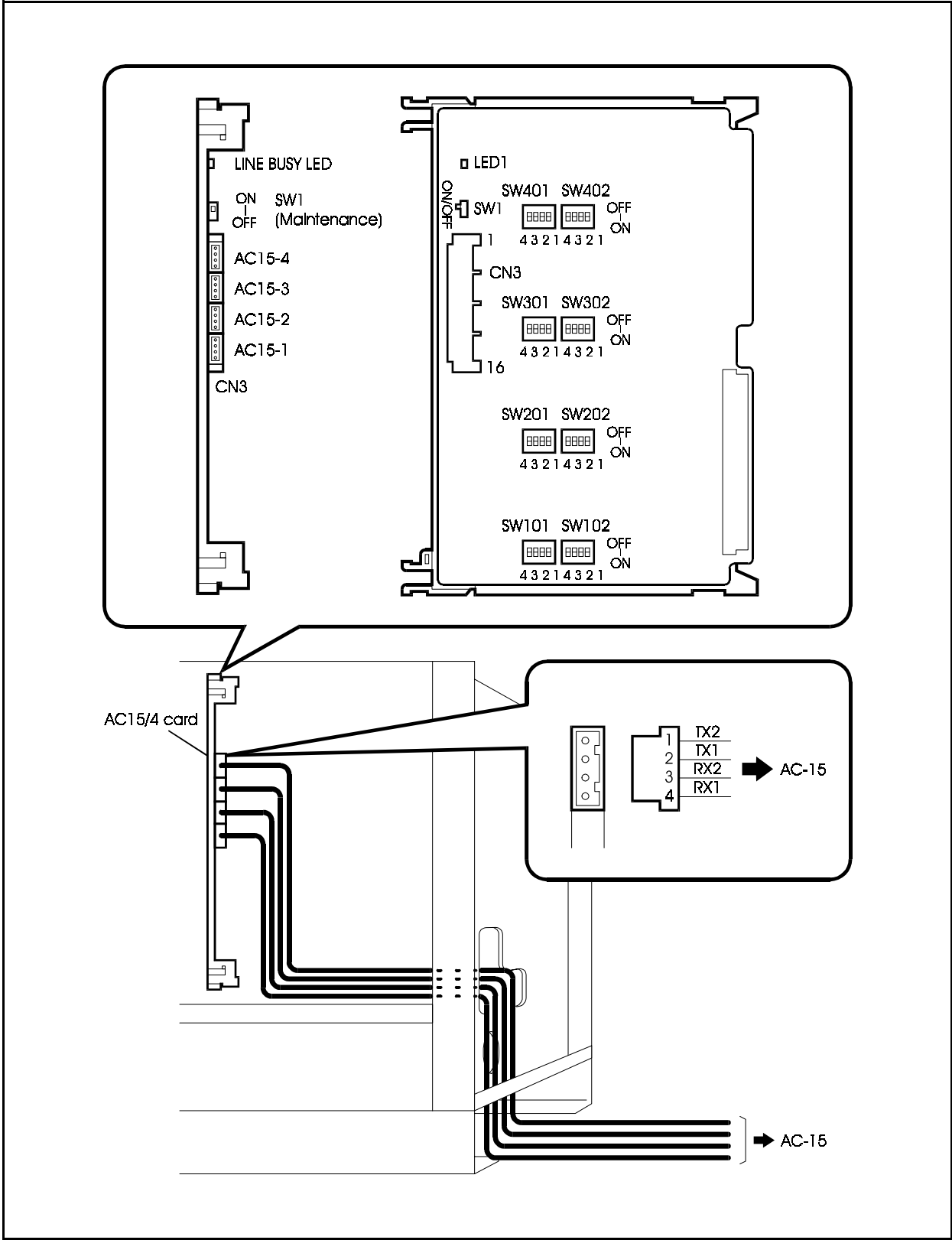
1. Set the dip switches on the AC15/4 card as indicated in Table 2-3.

Table 2-3. AC15/4 Card Dip Switch Settings

Switch No.	Setting					
SW101, SW201, SW301, SW401	For incoming calls loss plan					
	1	2	3	4	Loss plan within card	Remarks
	OFF	OFF	OFF	OFF	+1dB	Initial value
	ON	OFF	OFF	OFF	-1dB	
	OFF	ON	OFF	OFF	-3dB	
	OFF	OFF	ON	OFF	-5dB	
	OFF	OFF	OFF	ON	-7dB	
Note: Gain is obtained in a card only for the amount of wiring loss.						
SW102, SW202, SW302, SW402	For outgoing calls loss plan					
	1	2	3	4	Loss plan within card	Remarks
	OFF	OFF	OFF	OFF	+4dB	Initial value
	ON	OFF	OFF	OFF	+2dB	
	OFF	ON	OFF	OFF	0dB	
	OFF	OFF	ON	OFF	-2dB	
	OFF	OFF	OFF	ON	-4dB	
Note: Gain is obtained in a card only for the amount of wiring loss.						

2. Install the AC15/4 card in any available flexible slot.
3. Attach the DDK connector to the AC-15 private line.
4. Connect the AC-15 private line with the DDK connector attached through the wiring aperture in the CCU to the DDK connector of the AC15/4 card (CN3 connector).

Figure 2-1. Connection of AC-15 private line



Chapter 3. Quick-Start Programming

The AC15 Private Line Interface includes many programming options, which allow you to customise how your AC15 Private Line is used.

In most cases, however, you only need to set a few of the programmes to get your AC15 Private Line online. This chapter summarises the programmes that are essential to AC15 Private Line installation.

The following table shows the programming that are described in this chapter. For detailed descriptions of the rest of the AC15 Private Line programmes, see Chapter 4, “Programming Reference.”

Programming	Page
Flexible slot Assignment	3-3
Exchange Line Numbers	3-3
DTMF/Dial Pulse Dialling	3-4
Tenant Group Number	3-4

Programming Initial AC15 Private Line Options

The following instructions explain the minimum programming required to make the AC15 Private Line operational. Default settings appear in bold.

Free Slot Assignment

101 :1
Card ID # for FS

(all CPCs) - Version 1.0 or higher

Enter the type of card installed in each Free Slot of the Cabinet.

01 (1-6) (01-12) Hold (1-99) Hold

Cabinet No. 1-6 Free Slot No. 1-12 Card Type No.

Notes:

Related Programming:

Card Reset FF8 0 04 0 BSS Hold (0 or 1) (FL/R+Hold)
 Card Type Verification FF8 0 04 1 BSS 00 Hold [01-99 displays]
 Card Version Verification FF8 0 04 1 BSS 00 Hold [Version No. displays]
 Loopback 1 Diagnostics FF8 0 05 3 BSS(C) Hold (0 or 1) Hold
 Loopback 2 Diagnostics FF8 0 05 4 BSS(C) Hold 1 Hold

Exchange Line Numbers

BSSC-00 :
Trunk Number

(all CPCs) - Version 1.0 or higher

Assign Exchange Line numbers for AC15 Private Lines. (Maximum 288 AC15 circuits are available in a 6-cabinet system with a CPC-576 card.)

FF2 0 BSSC 00 Hold (0-576) Hold

BSSC: AC15 Private Line Position
 B=Cabinet no. 1-6
 SS=Slot no. 01-12
 C=Circuit no. 1-8

Exchange Line Number assigned to Exchange line circuit
 (0= no Exchange Line)

default: [no assignment]

Notes:

The range of Exchange Line numbers available for assignment depends on system size:

in a 96-port system: 0-96
 in a 288-port system: 0-288
 in a 576-port system: 0-576

These ranges do not reflect the actual number of AC15 Private Lines circuits available. For example, in a 576-port system the range of available Exchange line *numbers* is 576, but the actual number of *circuits* available is only 288 (each AC15 Trunk Card has only 4 circuits, as opposed to 8 circuits on a regular Analog Trunk Card).

Related Programming:

DTMF/Dial Pulse Dialling

BSSC-0200 :1
Dial Type DP/PB

(all CPCs) - Version 1.0 or higher
 Set the AC15 Private Line for outbound dialing type.

FF2 0 BSSC 02 00 Hold (0 or 1) Hold

↑

BSSC: AC15 Private Line Position
 B=Cabinet no. 1-6
 SS=Slot no. 01-12
 C=Circuit no. 1-4

↑

0=Dial-pulse, at 10 pps
 1=DTMF (default)

Notes:

Related Programming:

Tenant Group

BSSC-05 : 0
Tenant Group

(all CPCs) - Version 1.0 or higher
 Assign the AC15 private Line to a Tenant Group, which will apply when the Exchange Line originates an outbound call (such as DISA).

FF2 0 BSSC 05 Hold (0-72) Hold

↑

BSSC: AC15 Private Line Position
 B=Cabinet no. 1-6
 SS=Slot no. 01-12
 C=Circuit no. 1-4

↑

Tenant Group No. (max. 12 per cabinet)
 in a 96-port system: 0-12
 in a 288-port system: 0-36
 in a 576-port system: 0-72

default: 0[no assignment]

Notes:

Related Programming:

Chapter 4. Programming Reference

This chapter describes programming parameters for the AC15 Private Line Interface.

The descriptions of each parameter include a list of available options and the associated programming address. Default options appear in bold.

This chapter is intended for readers who are familiar with ICX programming. For an introduction to ICX programming, see the *Programming Manual*, Section 400.

System Programming (FF1)

System Common : FF1-0

Step Calling: DISA/AC15 Private Line

(all CPCs) - Version 1.0 or higher

Enable/Disable Step Calling for DISA or AC15 Private Line calls.

0009 :0
TIE Step Call

FF1 0 02 0009 Hold (0 or 1) Hold

0=Disable Step Calling for DISA and AC15 Private Line calls.(default)

1=Enable Step Calling for DISA and AC15 Private Line calls.

Notes:

Step Calling: After dialing one extension, the caller can dial the last digit of another extension to transfer himself to that extension.

Related Programming:

Paging Answer on AC15 private Line

(all CPCs) - Version 1.0 or higher

Set whether the system *receiving* the page will send back an answer signal to the system *originating* the page, on an AC-15 Private Line.

0013 :0
TIE Paging CONT

FF1 0 02 0013 Hold (0 or 1) Hold

0=No answer signal (default)

1=Answer signal is sent to the originating system.

Notes:

To select '1' means; to reply the answer signal to the network from the system which receives page call to adjust the timing to connect speech path.

Related Programming:

Exchange Line COS: Dial Tone to DISA/AC15 Private Line

(all CPCs) - Version 1.0 or higher

0002	:1
01	:DT CONT-TIE

Set whether the system will send dial tone to a DISA/AC15 Exchange Line in this Class of Service (COS) for an incoming call (used in private networking).

FF1 0 04 (00-15) 02 Hold (0 or 1) Hold

Exchange Line COS Nos. 1-16

00=COS 1	08=COS 9
01=COS 2	09=COS 10
02=COS 3	10=COS 11
03=COS 4	11=COS 12
04=COS 5	12=COS 13
05=COS 6	13=COS 14
06=COS 7	14=COS 15
07=COS 8	15=COS 16

0=Disable Dial tone to DISA/AC15 Private Line.

1=Enable Dial Tone to DISA/AC15 Private Line. (default)

Notes:

When '1' is selected, send DT when the other party seize the DISA line or when the 2280Hz signal stops because of the other party hangs up.

Related Programming:

0003 :0
 01 :FBT CONT-TIE

Exchange Line COS: Forced Recovery at Fast-Busy

(all CPCs) - Version 1.0 or higher

Set whether the system will send Fast-Busy Tone or disconnect the line when errors (such as wrong dialling) occur on an AC15 Private Line in this Class of Service (COS).

FF1 0 04 (00-15) 03 Hold (0 or 1) Hold

Exchange Line COS Nos. 1-16 00=COS 1 08=COS 9 01=COS 2 09=COS 10 02=COS 3 10=COS 11 03=COS 4 11=COS 12 04=COS 5 12=COS 13 05=COS 6 13=COS 14 06=COS 7 14=COS 15 07=COS 8 15=COS 16	0=Fast-Busy tone. (default) 1=Line disconnected.
--	---

Notes:

Related Programming:

0005 :1
 01 :Paging TRS

Exchange Line COS: Paging on DISA/AC15 Private Line Call

(all CPCs) - Version 1.0 or higher

Set whether a DISA or incoming caller can page on Exchange Lines in this Class of Service (COS).

FF1 0 04 (00-15) 05 Hold (0 or 1) Hold

Exchange Line COS Nos. 1-16 00=COS 1 08=COS 9 01=COS 2 09=COS 10 02=COS 3 10=COS 11 03=COS 4 11=COS 12 04=COS 5 12=COS 13 05=COS 6 13=COS 14 06=COS 7 14=COS 15 07=COS 8 15=COS 16	0=Do not allow paging during DISA/AC15 Private Line call. 1=Allow paging during DISA/AC15 Private Line call. (default)
--	---

Notes:**Related Programming:****MOH Source for AC15 Private Lines**

0001	:0
Tenant01 TIE MOH	

(all CPCs) - Version 1.0 or higher

Select the Music-On-Hold (MOH) source heard by AC15 Private Line callers on hold, based on the MCO Tenant Group assigned to the Exchange Line.

FF1 0 13 (0001-0072) Hold (0-3) Hold

Address No. for MCO Tenant Group:

0001=MCO Tenant Group 1

0002=MCO Tenant Group 2

.

.

.

0072=MCO Tenant Group 72

0=Internal single tone. (default)

1=External MOH source.

2=(*not available*)

3=Silence.

NOTE: Available range for MCO Tenant Groups depends on system size:

in a 96-port system: Groups 1-12 (0001-0012)

in a 192-port system: Groups 1-24 (0001-0024)

in a 288-port system: Groups 1-36 (0001-0036)

in a 384-port system: Groups 1-48 (0001-0048)

in a 480-port system: Groups 1-60 (0001-0060)

in a 576-port system: Groups 1-72 (0001-0072)

Notes:

Related Programming:

System Timers : FF1-1

Call Duration Timer for Outbound AC15 Private Line Calls (all CPCs) - Version 1.0 or higher

0006 :10
Answer SIG TIE

Set the length of time the system will wait before starting call duration timing for outbound AC15 private Line calls, if the called-party end does not send back an answer signal.

FF1 1 01 0006 Hold (1-255) Hold



1=1 second

2=2 seconds

.

255=255 seconds or 4 minutes/15 seconds

default: 10 seconds

Notes:

Related Programming:

Outpulse Delay Timer for Analog AC15 Private Line Calls (Immediate Start)

0008 :1
Dial Delay A-TIE

(all CPCs) - Version 1.0 or higher

Set the length of a pause before outpulsing dialed digits after an Analog Private Line is accessed for immediate start.

FF1 1 01 0008 Hold (1-255) Hold



1=1 second (default)

2=2 seconds

255=255 seconds or 4 minutes/15 seconds

Notes:

Related Programming:

Wink Wait Timer for Outbound Analog AC15 Private Line Calls

0013 :5
Wink Wait A-TIE

(all CPCs) - Version 1.0 or higher

Set the length of time the system will wait for a wink signal after an Analog AC15 Private Line is accessed for an outbound call.

FF1 1 01 0013 Hold (1-255) Hold



1=1 second

2=2 seconds

.

255=255 seconds or 4 minutes/15 seconds

default: 5 seconds

Notes:**Related Programming:****Paging Timer for AC15 Private Line****0012 :30**
Paging Time TIE

(all CPCs) - Version 1.0 or higher

Set the amount of time the system will allow an AC15 Private Line caller to use paging.

FF1 1 02 0012 Hold (0-255) Hold

(1-255) = no. of seconds



0 = 5 seconds

1 = 1 second

2 = 2 seconds

.

255 = 255 seconds

default: 30 seconds**Notes:****Related Programming:**

Exchange Line Programming (FF2)

AC15 private Lines : FF2-0

AC15 Private Line Signal Type

BSSC-0100 :5
Signal Type

(all CPCs) - Version 1.0 or higher
Set the AC15 Private Line's signaling type.

FF2 0 BSSC 01 00 Hold (0-5) Hold

↑

BSSC: AC15 Private Line Position
B=Cabinet no. 1-6
SS=Slot no. 01-12
C=Circuit no. 1-4

↑

4=AC15 Immediate Start
5=AC15 Wink Start (default for
AC15 Private Line Card)

NOTE: Settings 0-3 apply to **Analog Exchange Lines**.

Notes:

Related Programming:

Ring Detect Timer

BSSC-0105 :0
Ring DET Timer

(all CPCs) - Version 1.0 or higher
Set the amount of time allowed for the system to recognise an incoming call on an AC15 Private Line set for **Immediate Start** signaling (see **AC15 private Line Signal Type**).

FF2 0 BSSC 01 05 Hold (0 or 1) Hold

↑

BSSC: AC15 Private Line Position
B=Cabinet no. 1-6
SS=Slot no. 01-12
C=Circuit no. 1-4

↑

0=48 ms (default)
1=160 ms

Notes:

Related Programming:

AC15 Private Line Signal Type FF2 0 BSSC 01 00 Hold (0-5) Hold

Automatic Answer

BSSC-0106 :0
Auto Detect ANS

(all CPCs) - Version 1.0 or higher

Set whether the system automatically assume that an outgoing call on this Exchange Line has been answered by the other end, without waiting for an answer signal.

FF2 0 BSSC 01 06 Hold (0 or 1) Hold

BSSC: AC15 private Line Position

B=Cabinet no. 1-6

SS=Slot no. 01-12

C=Circuit no. 1-4

0=Disable Auto Answer; wait for answer signal from other end, before opening voice path. (default)

1=Enable Auto Answer; open voice path without waiting for answer signal.

Notes:

Set this to "1" (Enable) only if the other system does not send back an answer signal (typically, it does), or if the Exchange Line is used for paging calls.

Related Programming:

Auto Answer Timer FF2 0 BSSC 01 18 Hold (0-3) Hold

Balance Control

BSSC-0107 :0
Balance Control

(all CPCs) - Version 1.0 or higher

For impedance matching in balanced networks. Controls sidetone level on the Exchange Line, based on the distance between the phone system and the other end.

FF2 0 BSSC 01 07 Hold (0 or 1) Hold

BSSC: AC15 Private Line Position

B=Cabinet no. 1-6

SS=Slot no. 01-12

C=Circuit no. 1-4

0=Long Loop(default)

1=Short end

Notes:

Because there are so many factors involved in choosing **Long Loop** or **Short Loop** (such as what kind of wire/match is used for each connection; distance; Ohms/match; R, L, & C; etc.), this setting should be tested on the exchange line, or changed only if problems occur.

Related Programming:

Pad Control							BSSC-0108 :0 PAD Control	
(all CPCs) - Version 1.0 or higher								
For balanced networks. Controls voice level on the AC15 Private Line, depending on the distance between the phone system and the other end (Central Office or another system).								
		FF2 0 BSSC		01 08		Hold Hold (0 or 1)		Hold
		↑				↑		
BSSC: AC15 Private Line Position				0=Far (default)				
B=Cabinet no. 1-6				1=Near				
SS=Slot no. 01-12								
C=Circuit no. 1-4								

Notes:**Related Programming:**

Ring Frequency							BSSC-0111 :1 Ring Frequency	
(all CPCs) - Version 1.0 or higher								
Set the ring frequency for the AC15 Private Line. Affects ringing pitch on digital phones only.								
		FF2 0 BSSC		01 11		Hold (1-6)		Hold
		↑				↑		
BSSC: AC15 Private Line Position				1=400/562 Hz (default)				
B=Cabinet no. 1-6				2=1000/1340 Hz				
SS=Slot no. 01-12				3=400 Hz				
C=Circuit no. 1-4				4=800/1040 Hz				
				5=1040/1320 Hz				
				6=660/1320 Hz				

Notes:**Related Programming:****Ring Pattern****BSSC-0112 :1**
Ring Cycle PTN**(all CPCs) - Version 1.0 or higher**

Set the ring pattern for incoming calls on the AC15 Private Line; or set the AC15 Private Line to synchronize ringing with the Exchange Line. Affects digital phones only.

FF2 0 BSSC 01 12 Hold (0-12) Hold**BSSC: AC15 Private Line Position**B=Cabinet no. 1-6
SS=Slot no. 01-12
C=Circuit no. 1-4

0=No Ring

1=1on/2off (in seconds) (default)

2=2on/1off

3=1on/1off

4=0.5on/0.5off

5=.25on/2.75off

6=.25on/.25off/.25on/2.25off

7=.25on/.25off/.25on/.25off/.25on/1.75off

8=.75on/.25off/.75on/1.25off

9=1on/.25off/.25on/1.5off

10=1on/.25off/.25on/.25off/.25on/1off

11=1.375on/.125off/.125on/.125off/.125on/.125off

12=Continuous Tone

Notes:**Related Programming:****DTMF On/Off Pattern During Talk****BSSC-0113 :1**
DTMF PTN-Talk**(all CPCs) - Version 1.0 or higher**

Set the DTMF signalling pattern that will apply after the extension user connects to the called party during an Exchange Line call on the AC15 Private Line.

FF2 0 BSSC 01 13 Hold (0-2) Hold**BSSC: AC15 private Line Position**B=Cabinet no. 1-6
SS=Slot no. 01-12
C=Circuit no. 1-4

0=DTMF Pattern #1

1=DTMF Pattern #2 (default)

2=DTMF Pattern #3

Notes:

This address applies to the entry of account codes, selection of voice menu options, etc. during a call.

Related Programming:

DTMF ON: Pattern #1 FF1 1 01 0016 Hold (1-255) Hold
 DTMF OFF: Pattern #1 FF1 1 01 0017 Hold (1-255) Hold
 DTMF ON/OFF: Pattern #2 FF1 1 01 0018 Hold (1-255) Hold
 DTMF ON/OFF: Pattern #3 FF1 1 01 0019 Hold (1-255) Hold

DTMF On/Off Pattern for Outgoing Dialling		BSSC-0114 :0 DTMF PTN-Dial
(all CPCs) - Version 1.0 or higher		
Set the DTMF signalling pattern that will apply to the dialling of outbound phone numbers (DTMF sent to Central Office) on the AC15 Private Line		
FF2 0 BSSC 01 14 Hold (0-2) Hold		
	↑	↑
BSSC: AC15 Private Line Position		0=DTMF Pattern #1 (default)
B=Cabinet no. 1-6		1=DTMF Pattern #2
SS=Slot no. 01-12		2=DTMF Pattern #3
C=Circuit no. 1-4		

Notes:**Related Programming:**

DTMF ON: Pattern #1 FF1 1 01 0016 Hold (1-255) Hold
 DTMF OFF: Pattern #1 FF1 1 01 0017 Hold (1-255) Hold
 DTMF ON/OFF: Pattern #2 FF1 1 01 0018 Hold (1-255) Hold
 DTMF ON/OFF: Pattern #3 FF1 1 01 0019 Hold (1-255) Hold

Disconnect Supervision Timer

BSSC-0115 :0
Disconnect Time

(all CPCs) - Version 1.0 or higher

Set how long the system will wait after detecting a drop in voltage from the Central Office, before recognizing it as a valid disconnect signal.

FF2 0 BSSC 01 15 Hold (0-3) Hold

↑

BSSC:AC15 Private Line Position
 B=Cabinet no. 1-6
 SS=Slot no. 01-12
 C=Circuit no. 1-4

↑

0=160 ms (default)
 1=96 ms
 2=240 ms
 3=800 ms

Notes:

Related Programming:

Auto Answer Timer

BSSC-0118 :0
Auto ANS Timer

(all CPCs) - Version 1.0 or higher

Set how long the system will wait before opening a voice path when the user makes an outgoing call on this AC15 Private Line.

FF2 0 BSSC 01 18 Hold (0-3) Hold

↑

BSSC: AC15 Private Line Position
 B=Cabinet no. 1-6
 SS=Slot no. 01-12
 C=Circuit no. 1-4

↑

0=1 second (default)
 1=2 seconds
 2=3 seconds
 3=4 seconds

Notes:

Whether **Auto Answer** is enabled or disabled on this AC15 Private Line (see FF2 0 BSSC 01 1), the **Auto Answer Timer** will begin after the digits are outpulsed.

* If **Auto Answer** is enabled, the system will wait until the **Timer** expires before opening a voice path.

* If **Auto Answer** is disabled, the system will open the voice path when either: (1) the answer signal is received from the other end, or (2) the **Auto Answer Timer** expires -- whichever occurs first.

Related Programming:

Auto Answer FF2 0 BSSC 01 06 Hold (0 or 1) Hold

Flash Pattern

BSSC-0201 :0
Flash Length

(all CPCs) - Version 1.0 or higher

Set the pattern number that will be used for flash signals to the Central Office on this Exchange Line.

FF2 0 BSSC 02 01 Hold (0 or 1) Hold

BSSC: AC15 Private Line Position

B=Cabinet no. 1-6

SS=Slot no. 01-12

C=Circuit no. 1-4

0=Flash Pattern #1 (default)

1=Flash Pattern #2

Notes:

Related Programming:

Flash Timer 1 for Exchange Line FF1 101 0001 Hold (1-255) Hold

Flash Timer 2 for Exchange Line FF1 101 0002 Hold (1-255) Hold

Exchange Line Connection Type (CO/PBX)

BSSC-0204 :0
TRK Type CO/PBX

(all CPCs) - Version 1.0 or higher

Set whether the AC15 Private Line connects directly to an AC15 Private Line (through the Central Office) or is behind a PBX/Centrex.

FF2 0 BSSC 02 04 Hold (0 or 1) Hold

BSSC: AC15 Private Line Position

B=Cabinet no. 1-6

SS=Slot no. 01-12

C=Circuit no. 1-4

0=AC15 Private Line (default)

1=Behind a PBX/Centrex

Notes:**Related Programming:****Link Control**BSSC-0206 :1
Link Control

(all CPCs) - Version 1.0 or higher

For calls on this Exchange Line using push button (DTMF) SLT phones, set whether DTMF signals can be sent through the system after the called party answers.

FF2 0 BSSC 02 06 Hold (0 or 1) Hold

**BSSC:AC15 Private Line
Position**

B=Cabinet no. 1-6
SS=Slot no. 01-12
C=Circuit no. 1-4

0=Allow DTMF signals to route through the system after the called party answers.

1=**Do not allow DTMF signal routing after the called party answers. (default)**

Notes:

Set this address to "1" (do *not* allow) to prevent double-dialing (making an outgoing call on the same Exchange Line after the called party hangs up, thus by passing TRS restrictions).

Related Programming:**Exchange Line Dial Tone Simulation**BSSC-0207 :0
CO-DT For Tie

(all CPCs) - Version 1.0 or higher

Set whether the system sends a simulated Exchange Line dial tone to an extension seizing this Exchange Line.

FF2 0 BSSC 02 07 Hold (0 or 1) Hold

BSSC:AC15 Private Line Position

B=Cabinet no. 1-6
SS=Slot no. 01-12
C=Circuit no. 1-4

0=**Do not send simulated Exchange Line dial tone to extension. (default)**

1=Send simulated Exchange Line dial tone.

Notes:

Related Programming:

Call Logging for Outbound Calls		BSSC-0209 :1 SMDR Output/Out
(all CPCs) - Version 1.0 or higher		
Set whether <i>outbound</i> calls on the AC15 Private Line will be included in Call Logging records.		
FF2 0 BSSC 02 09 Hold (0 or 1) Hold		
↑ BSSC: AC15 Private Line Position B=Cabinet no. 1-6 SS=Slot no. 01-12 C=Circuit no. 1-4	↑ 0=Do not include in Call Logging. 1=Include in Call Logging. (default)	

Notes:

Related Programming:

Call Logging for Inbound Calls		BSSC-0210 :0 SMDR Output/In
(all CPCs) - Version 1.0 or higher		
Set whether <i>incoming</i> calls on this AC15 Private Line will be included in Call Logging records.		
FF2 0 BSSC 02 10 Hold (0 or 1) Hold		
↑ BSSC: AC15 Private Line Position B=Cabinet no. 1-6 SS=Slot no. 01-12 C=Circuit no. 1-4	↑ 0=Do not include in Call Logging. (default) 1=Include in Call Logging.	

Notes:**Related Programming:**

Flash Key Operation

BSSC-0211 :0
Flash Control

(all CPCs) - Version 1.0 or higher

Set what happens when a digital phone user presses the FL/R key during a call on this AC15 Private Line.

FF2 0 BSSC 02 11 Hold (0 or 1) Hold**BSSC: AC15 Private Line Position**B=Cabinet no. 1-6
SS=Slot no. 01-12
C=Circuit no. 1-4**0=Flash signal is sent to Exchange Line. (default)**

1=Exchange Line is released, then user gets internal dial tone.

Notes:**Related Programming:**

DTMF Switch (Outbound Calls)

BSSC-0215 :0
PB Convert/Out

(all CPCs) - Version 1.0 or higher

Set whether the AC15 Private Line will switch from dial-pulse to DTMF signalling after the called party answers an outgoing call, according to the **Call Duration Timer**.**FF2 0 BSSC 02 15 Hold (0 or 1) Hold****BSSC: AC15 Private Line Position**B=Cabinet no. 1-6
SS=Slot no. 01-12
C=Circuit no. 1-4**0=Do not switch to DTMF signalling. (default)**

1=Switch to DTMF signalling after the outside party answers.

Notes:**Related Programming:**Call Duration Timer for Outbound AC15 Private Line Calls FF1 1 01 0006 Hold (1-255) Hold
DTMF/Dial Pulse Dialing FF2 0 BSSC 02 00 Hold (0 or 1) Hold

DTMF Switch (Incoming Calls)

BSSC-0216 :1
PB Convert/In

(all CPCs) - Version 1.0 or higher

Set whether the AC15 Private Line will switch from dial-pulse to DTMF signalling after the extension user answers an incoming call.

FF2 0 BSSC 02 16 Hold (0 or 1) Hold

BSSC: AC15 Private Line Position

B=Cabinet no. 1-6

SS=Slot no. 01-12

C=Circuit no. 1-4

0=Do not switch to DTMF signalling.

1=Switch to DTMF signalling after extension user answers. (default)

Notes:

Related Programming:

DTMF/Dial Pulse Dialing FF2 0 BSSC 02 00 Hold (0 or 1) Hold

Indirect LCR

BSSC-0217 :0
Indirect LCR

(all CPCs) - Version 1.0 or higher

Enable/Disable the Indirect Least Cost Routing (LCR) function on the AC15 Private Line.

FF2 0 BSSC 02 17 Hold (0 or 1) Hold

BSSC: AC15 Private Line Position

B=Cabinet no. 1-6

SS=Slot no. 01-12

C=Circuit no. 1-4

0=Disable Indirect LCR. (default)

1=Enable Indirect LCR.

Notes:

Indirect LCR: System will send a pre-assigned code (set in the ARS Dial Conversion Tables) when an extension seizes the exchange line to make an outgoing call. This feature is used for sending a system identification PIN number to the Central Office.

U.S.A.: Do not enable this address for MCO access code routing (eg., dialing "9" to get an outside line). Instead, use ARS tables (see FF6) so the system can distinguish intercom calls from outgoing calls.

Related Programming:

FF6 2 05: Dial Conversion Tables

Day1 Ring Type

BSSC-030 :0
Day1 Ring Type

(all CPCs) - Version 1.0 or higher

Set ring type for the AC15 Private Line during Day1 mode.

FF2 0 BSSC 03 0 Hold (0-1) Hold

BSSC: AC15 Private Line Position

B=Cabinet no. 1-6

SS=Slot no. 01-12

C=Circuit no. 1-4

0=Tie Incoming. (default) Check

digits and ring the extension or paging.

1=Tandem. Check digits based on Tandem Table.

Notes:

Related Programming:

FF6 2 08: Tandem Exchange

Day2 Ring Type

BSSC-032 :0
Day2 Ring Type

(all CPCs) - Version 1.0 or higher

Set ring type for the AC15 Private Line during Day2 mode.

FF2 0 BSSC 03 2 Hold (0-1) Hold

BSSC: AC15 Private Line Position

B=Cabinet no. 1-6

SS=Slot no. 01-12

C=Circuit no. 1-4

0=Tie Incoming. (default) Check

digits and ring the extension or paging.

1=Tandem. Check digits based on Tandem Table.

Notes:

Related Programming:

FF6 2 08: Tandem Exchange

Night Ring Type

BSSC-034 :0
Night Ring Type

(all CPCs) - Version 1.0 or higher
 Set ring type for the AC15 Private Line during Night mode.

FF2 0 BSSC 03 4 Hold (0-1) Hold

↑
BSSC:AC15 Private Line Position
 B=Cabinet no. 1-6
 SS=Slot no. 01-12
 C=Circuit no. 1-4

↑
0=Tie Incoming. (default) Check digits and ring the extension or paging.
1=Tandem. Check digits based on Tandem Table.

Notes:

Related Programming:

FF6 2 08: Tandem Exchange

TRS Class (Day)

BSSC-060 :1
Day1/2 TRS CLS

(all CPCs) - Version 1.0 or higher
 Assign a Toll Restriction Service (TRS) class to the AC15 Private Line, applicable during Day1 and Day2 mode when the Exchange Line is the originator of an outbound call (such as DISA).

FF2 0 BSSC 06 0 Hold (1-50) Hold

↑
BSSC: AC15 Private Line Position
 B=Cabinet no. 1-6
 SS=Slot no. 01-12
 C=Circuit no. 1-4

↑
TRS Class No. 1-50 for Day Mode
default: 1

Notes:

Related Programming:

TRS Level for Non-ARS Routing FF6 1 00 (01-50) Hold (0001-0099) Hold (0-9) Hold

TRS Class (Night)

BSSC-061 :1
Night TRS CLS

(all CPCs) - Version 1.0 or higher

Assign a Toll Restriction Service (TRS) class to the AC15 Private Line, applicable during Night mode when the Exchange Line is the originator of an outbound call (such as DISA).

FF2 0 BSSC 06 1 Hold (1-50) Hold

BSSC: AC15 Private Line Position

B=Cabinet no. 1-6

SS=Slot no. 01-12

C=Circuit no. 1-4

TRS Class No. 1-50 for Night Mode

default: 1

Notes:

Related Programming:

TRS Level for Non-ARS Routing FF6 1 00 (01-50) Hold (0001-0099) Hold (0-9) Hold

Exchange Line COS

BSSC-07 :1
Trunk COS

(all CPCs) - Version 1.0 or higher

Assign an Exchange Line Class of Service (COS) to the AC15 Private Line.

FF2 0 BSSC 07 Hold (1-16) Hold

BSSC: AC15 Private Line Position

B=Cabinet no. 1-6

SS=Slot no. 01-12

C=Circuit no. 1-4

Exchange Line Class of Service No. 1-16

default: 1

Notes:

This **Exchange Line COS** assignment is mainly used for network features (see **Exchange Line COS** definitions in FF1 0 04).

Related Programming:

FF1 0 04: Exchange Line Class of Service

Exchange Line Digital Pad Class

BSSC-08 :8
Trunk DPAD CLS

(all CPCs) - Version 1.0 or higher

Assign a Digital Pad Class to the AC15 Private Line.

FF2 0 BSSC 08 Hold (1-16) Hold

BSSC: AC15 Private Line Position

B=Cabinet no. 1-6

SS=Slot no. 01-12

C=Circuit no. 1-4

Exchange Line Digital Pad Class No. 1-16

default: 8

Notes:

Based on this setting, you can assign automatic volume adjustments for different connection types to this Exchange Line (see FF1 8 02).

Related Programming:

Digital Pad Settings for Exchange Line Pad Class 1-16 FF1 8 02 (0001-0480) Hold (0-31) Hold

TRS/ARS (FF6)

Closed Numbering : FF6-207

Table 4-1. Closed Numbering Table for FF6 - 207 addresses

Closed Number Entry No.	Routing Code (0001)	Follow Digits (0002)	TRS Level (0003)	Routing (0004)	Routing Entry (0005)
1	1 to 4 digits long, including 0-9, * and #	0-16 digits can be dialled after Closed Number	0-8	0=Route 1=Route List	1-200 1-100
2	1 to 4 digits long, including 0-9, * and #	0-16 digits can be dialled after Closed Number	0-8	0=Route 1=Route List	1-200 1-100
...					
150	1 to 4 digits long, including 0-9, * and #	0-16 digits can be dialled after Closed Number	0-8	0=Route 1=Route List	1-200 1-100

Closed Number Routing Code

0001 :
C001 Closed #

(all CPCs) - Version 1.0 or higher
Define up to 150 different Closed Numbers.

FF6 2 07 (001-150) 0001 Hold (1-4 digits) Hold

↑

Closed Number Entry:
001=Closed Number #1
002=Closed Number #2
...
150=Closed Number #150

↑

Closed Number (can be 1-4 digits in length, including digits 0-9, * and #)



default: [no assignment]

Important: The closed Number Digits MUST NOT MATCH an extension number.



Notes:

If a "*" is entered in this address, the system will dial it as a "*" (it is not a wild-card character).

Related Programming:

<h2>Closed Number Follow Digits</h2> <p>(all CPCs) - Version 1.0 or higher</p> <p>Specify the maximum number of digits that can be dialed after a Closed Number.</p>		0002 :0 C001 Follow DGT
FF6 2 07 (001-150) 0002 Hold (0-16) Hold		
		
<p>Closed Number Entry: 001=Closed Number #1 002=Closed Number #2 ... 150=Closed Number #150</p>	<p>Maximum Number of Dialed Digits Following the Closed Number</p> <p>default: 0 (no accumulated dial)</p>	

Notes:**Related Programming:**

<h2>Closed Number TRS Level</h2> <p>(all CPCs) - Version 1.0 or higher</p> <p>Assign a TRS Level to each Closed Number.</p>		0003 :0 C001 TRS Level
FF6 2 07 (001-150) 0003 Hold (0-8) Hold		
		
<p>Closed Number Entry: 001=Closed Number #1 002=Closed Number #2 ... 150=Closed Number #150</p>	<p>TRS Level 0-8</p> <p>default: 0 (restrict all outgoing calls)</p>	

Notes:

If a TRS Level is assigned here, the system will check the **TRS Level for ARS** setting (see FF6 1 01).

TRS Level 9 allows all calls, so it is not included here.

Related Programming:

TRS Level for ARS Routing FF6 1 01 (01-50) 0001 Hold (0-9) Hold

Closed Number Routing

0004 :0
C001 Route Type

(all CPCs) - Version 1.0 or higher
Set which table the system will follow when the Closed Number is dialled.

FF6 2 07 (001-150) 0004 Hold (0 or 1) Hold

↑

Closed Number Entry:
001=Closed Number #1
002=Closed Number #2
...
150=Closed Number #150

↑

0=Route (default)
1=Route List

Notes:

The Route or Route List number is assigned in the next address, **Closed Number Routing Entry**.

Related Programming:

Closed Number Routing Entry FF6 2 07 (001-150) 0005 Hold (0-200/100) Hold
 FF6 2 03: Route List Table
 FF6 2 04: Route Tables

Closed Number Routing Entry

0005 :0
C001 Route #

(all CPCs) - Version 1.0 or higher
Assign a Routing table to the Closed Number, depending on the setting in the previous address.

FF6 2 07 (001-150) 0005 Hold (0-200/100) Hold

↑

Closed Number Entry:
001=Closed Number #1
002=Closed Number #2
...
150=Closed Number #150

↑

Route 0-200 or
Route List 0-100

default: 0

Notes:

Related Programming:

Closed Number Routing FF6 2 07 (001-150) 0004 Hold (0 or 1) Hold
 FF6 2 03: Route List Table
 FF6 2 04: Route Tables

Tandem Relay Exchange : FF6-208

Table 4-2. Tandem Relay Exchange Table for FF6 - 208 addresses

Tandem Exchange Entry No.	Tandem Relay Number (0001)	Follow Digits (0002)	Routing (0003)	Route Entry (0004)
1	1 to 4 digits long, including 0-9, * and #	0-16	0=Route 1=Route List 2=To local PBX extension	1-200 1-100
2	1 to 4 digits long, including 0-9, * and #	0-16	0=Route 1=Route List 2=To local PBX extension	1-200 1-100
...				
50	1 to 4 digits long, including 0-9, * and #	0-16	0=Route 1=Route List 2=To local PBX extension	1-200 1-100


Tandem Exchange Numbers

0001 :
T01 Tandem #


(all CPCs) - Version 1.0 or higher

Define up to 50 different Tandem Exchange numbers.

FF6 2 08 (01-50) 0001 Hold (1-4 digits) Hold



Tandem Exchange Entry 1-50



Tandem Exchange Number (can be 1-4 digits long, including digits 0-9, * and #)

default: [no assignment]

Notes:

Tandem Exchange applies to AC15 Private Lines set to “Tandem”.

Related Programming:

- Day1 Ring Type (Analog AC15 Private Lines) FF2 0 BSSC 03 0 Hold (0 or 1) Hold
- Day2 Ring Type (Analog AC15 Private Lines) FF2 0 BSSC 03 2 Hold (0 or 1) Hold
- Night Ring Type (Analog AC15 Private Lines) FF2 0 BSSC 03 4 Hold (0 or 1) Hold

Tandem Exchange Follow Digits

0002 :0
T01 Follow DGT

(all CPCs) - Version 1.0 or higher

Specify the maximum number of digits that can be dialed after a Tandem Exchange number.

FF6 2 08 (01-50) 0002 Hold (0-16) Hold

↑
Tandem Exchange Entry 1-50

↑
Maximum Number of Dialed Digits
Following the Tandem Relay Number

default: 0 (no accumulated dial)

Notes:

Related Programming:

Tandem Exchange Routing

0003 :0
T01 Route Type

(all CPCs) - Version 1.0 or higher

Set which table the system will follow when the Tandem Exchange number is dialed.

FF6 2 08 (01-50) 0003 Hold (0-2) Hold

↑
Tandem Exchange Entry 1-50

↑
0=Route (default)
1=Route List
2=To local PBX extension

Notes:

The Route or Route List number is assigned in the next address.

Related Programming:

Tandem Exchange Routing Entry FF6 2 08 (01-50) 0004 Hold (0-200/100) Hold

Tandem Exchange Routing Entry

0004 :0
T01 Route #

(all CPCs) - Version 1.0 or higher

Assign a Routing table to the Tandem Exchange Number, depending on the setting in the previous address.

FF6 2 08 (01-50) 0004 Hold (0-200/100) Hold

↑
Tandem Relay Entry 1-50

↑
Route 0-200 or
Route List 0-100

default: 0

Notes:

Related Programming:

Tandem Exchange Routing FF6 2 08 (01-50) 0003 Hold (0-2) Hold

Chapter 5. Appendix

This chapter describes the new closed number calling and tandem relay service functions of the ICX.

This chapter assumes that the network is configured using the ICX as the PBX system.

Note that, if you are setting up a network that includes PBX systems other than the ICX, you may not be able to use the closed number calling and tandem relay functions.

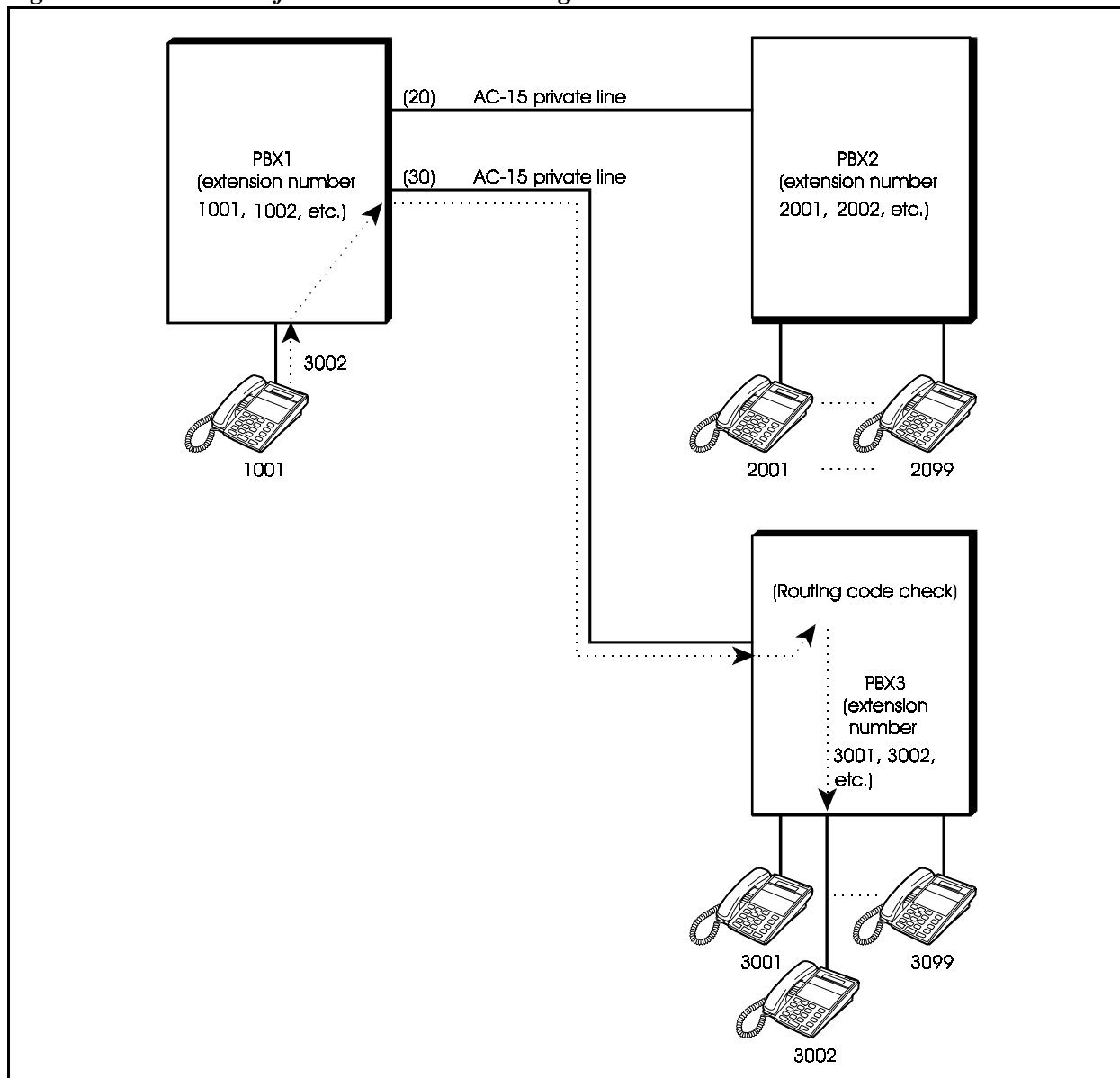
Closed Number Calling

Overview of the Closed Number Calling Service

If you set up a network using the AC-15 private line to connect two or more PBX systems, you can use the closed number calling facility to directly call an extension at one of the other PBXs by specifying the extension number as a closed number.

In the example network in Figure 5-1, you could directly dial extension 3002 of PBX3 from extension 1001 of PBX1.

Figure 5-1. Overview of Closed Number Calling



The following program settings are required to determine where to send the number dialled using closed number calling.

- **Routing code (prefix for closed-number calling):
FF6 207 (001-150) 0001**

Specify code of up to 4 digits consisting of 0 to 9, *, or #. The destination PBX is selected using this routing code.

Note that this system allows up to 150 patterns to be specified as routing codes (remote PBX extension number systems) for closed number calling.

- **Number of following digits: FF6 207 (001-150) 0002**

Paired with the routing code, specify the rest digits of the extension numbers at PBX. Digits of extension number is this following digits plus routing code digits. 0 to 16 digits can be assigned for this following digits.

- **Routing: FF6 207 (001-150) 0004, FF6 207 (001-150) 0005**

Specify a route (either the route number or route list number) for each routing code. When you call a remote PBX, the route is selected using the routing code or the route specified in the route list number.

Let's look at how to make these program settings using the example in Figure 5-1.

- Example settings (PBX1)

Extension No. to be called	:	3002
Routing code setting	:	30 (2 digits)
Number of following digits	:	2 (02)
Route setting	:	route No. (1)
1. Dial 3002 to call extension 3002 of PBX3 from extension 1001 of PBX1.
 2. PBX1 checks if the called number corresponds to the routing code of another PBX.
 3. After PBX1 matches the called number (3002) with the routing code (30), it receives the specified number of following digits (2 digits) and sends the dialled No. 3002 via the specified route to PBX3.
 4. Extension 3002 of PBX3 is called.

As illustrated by this example, by just dialling the extension number on a network made up of two or more PBX systems, the ICX system automatically selects the correct PBX and directly calls the dialled extension.

Using Closed Number Calling

You can use closed number calling in the following cases:

- 1) Calling a closed number from another extension

You can use closed number calling to call an extension of another PBX from the local PBX.

- 2) When calling a closed number from DISA or an AC-15 private line
- 3) When a DDI is specified as a closed number and a DDI is called from exchange line or private line.
- 4) When a DIL is specified as a closed number and a DIL is called from exchange line or private line.

Overview of Programming for Closed Number Calling

The following program settings are required in order to use closed number calling.

Table 5-1 shows the items to be programmed for using the closed number calling function of the ICX. See Chapter 4, "Programming Reference" for program details.

Table 5-1. Program Settings for Closed Number Calling

No.	Designation	Setting
1	Closed numbering	Routing code Specify the routing code (prefix) to be allocated to closed number calling as a maximum of four digits consisting of numbers 0-9, the asterisk (*) or pound sign (#).
2	Closed numbering	Number of following digits Specify 0 to 16 digits as the number of digits following the routing code
3	Closed numbering	TRS level For each routing code, specify the calling control as a level in the range 0 to 9. Call Barring is controlled by the TRS level for the ARS in the TRS class of the call originating extension and the external line. Call Barring in closed number calling is effected as follows: <ul style="list-style-type: none"> • Extensions: An Error Tone (Fast Busy Tone) is output to the calling extension. • AC-15 private Line: An Error Tone is output to the incoming line. • DISA: The same as the extension is busy when receiving a DISA call. • DDI The same as the extension is busy when receiving a DDI call. • When DIL call destination is specified for closed number calling: The same as normal incoming call.
4	Closed numbering	Route For each routing code, specify a route No. or route list No.
5	Closed numbering	Route details Set the detailed data specified by the route identifier. Set the route No. when specifying the No. by the route identifier, and specify the route list No. when specifying the route list No.

Notes on Closed No. Calling

Please note the following limitations that apply to closed number calling.

1. The local PBX analyses dialled Nos. in the following order:
closed number → function setting Nos./extension No.
The routing code could be the same as the extension No. or feature access code. But closed number calling takes precedence.
2. If the number of digits in the extension Nos. of a remote PBX is bigger than the number of digits in the extension Nos. of the local PBX, the number is actually dialled only after storing the full No. of digits in the extension No. of the remote PBX.
3. When a receiving call from an outside line (AC-15 private line, DISA, or DDI) is for a closed number destination, it can be processed as a closed number call.

However, when call barring is applied and the call is subject to that barring, the following should be performed:

- AC-15 private line:
Output an Error Tone to the incoming circuit.
 - DISA:
Perform the same as when the extension is busy on DISA incoming call.
 - DDI:
Perform the same as when the extension is busy on DDI incoming call.
 - When DIL call destination is specified for closed number calling:
The same as normal incoming call.
4. Closed number calling is the extension dialling service at the remote PBX. Closed number calling does not involve a link-up with the remote PBX in which various additional services are activated for the called extension.
 5. When placing a closed number call, the number is stored in the redial memory. The closed number can be called by redialling operation from the extension which is in the internal DT state.
 6. When call forwarding is set, you cannot specify an extension No. at the remote PBX to which the calls are forwarded. If you do so, Error Tone is sent to the extension. However, you can specify a closed number as the destination of call forwarding by storing the extension No. at the remote PBX as one of system speed dialling No., and setting call forward to outside.

Tandem relay

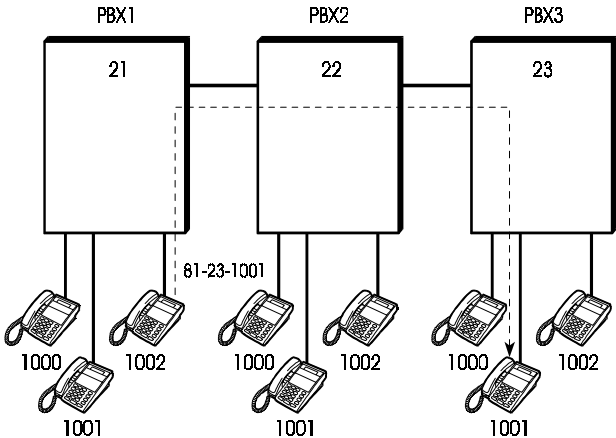
Overview of Tandem Relay Service

With a tandem relay (relay exchange) function, the ICX can place direct calls to extensions at other PBX via several PBX within the private line network.

A tandem relay function also enables the ICX to increase network efficiency, by means of accelerated relay connections which lead to a reduction in the number of private lines and in its cost.

Figure 5-2. Overview of Tandem Relay

ex.) ----->
Ext. 1002 of PBX21 calls
Ext. 1001 of PBX 23



Setting of PBX1

- FF6-208-01-0001-2
 - FF6-208-01-0003-2
 - FF6-208-02-0001-2
 - FF6-208-02-0002-4
 - FF6-208-02-0003-0
 - FF6-208-03-0001-2
 - FF6-208-03-0002-4
 - FF6-208-03-0003-0
- Local PBX
- Remote PBX
- Remote PBX

Setting of PBX2

- FF6-208-01-0001-22
- FF6-208-01-0003-2
- FF6-208-02-0001-21
- FF6-208-02-0002-4
- FF6-208-02-0003-0
- FF6-208-03-0001-23
- FF6-208-03-0002-4
- FF6-208-03-0003-0

Setting of PBX3

- FF6-208-01-0001-23
- FF6-208-01-0003-2
- FF6-208-02-0001-21
- FF6-208-02-0002-4
- FF6-208-02-0003-0
- FF6-208-03-0001-22
- FF6-208-03-0002-4
- FF6-208-03-0003-0

The following settings must be implemented in order to specify the tandem relay destination.

- **Tandem relay number (PBX number): FF6 208 (01-50) 0001**

Specify a code of up to four digits consisting of numbers 0 to 9, the asterisk (*) or pound sign (#). The destination PBX is selected using this tandem relay number.

- **Route selector: FF6 208 (01-50) 0003**

Specify a route selector per tandem relay number, as follows:

- 0: route selection
- 1: route list selection
- 2: Local PBX

- **Number of follow digits: FF6 208 (01-50) 0002**

Specify between 0 and 16 following digits for each tandem relay number. This applies when you need to send an ID code to place a voice-mail call, you can accommodate not only telephone number, but also this ID code.

- The following description is based on the example in Figure 5-2.

Notes on Tandem Relay

Note the following limitations that apply to tandem relay.

- 1) With tandem relay, depending on outside line COS setting, you can restrict outside line connection.
- 2) When a route list number is specified as the route for tandem relay, the following functions do not work:
 - Route selection using ARS level control
 - ARS alarm control: FF6 203 0005
FF6 203 0008
FF6 203 0011
FF6 203 0014
 - ARS queuing when the specified route is busy: FF1 102 0014
- 3) During an incoming call from a tandem relay network, or when a tandem relay is in progress, the outside line lamp of the digital key telephone receiving the outside line incoming (AC-15 private line) will indicate busy.

Overview of Programming for Tandem Relay

The following program settings must be implemented in order to use tandem relay.

Table 5-2 shows the items that must be programmed for tandem relay using the ICX. See Chapter 4, "Programming Reference" for program details.

Table 5-2. Program Settings for Tandem Relay

No.	Designation	Setting
1	Outside line port	Tandem relay line setting Set the incoming processing for each outside line and each operating mode (day 1, day 2, and night) to tandem relay.
2	Outside line port	Dialling method and dialling transmission and reception timing To ensure that dials are sent and received correctly between local and remote PBX systems, specify the dialling method (DP or DTMF) and dial transmission and reception timing (Normal, Immediate, or Wink) for each outside line.
3	System/ outside line COS	Outside line Dial Tone (DT) control Specify whether to use outside line Dial Tone.
4	System/ outside line COS	Outside line recovery control at Error Tone Specify how outside line recovery is to be performed in the event of Error Tone.
5	TRS/LCR	Tandem relay setting (FF6 208) Specify the tandem relay number, number of following digits, and routing code
6	TRS/LCR	Route definition (FF6 204) If you choose the route selector in route selection, specify the route number according to the details of the specified route.
7	TRS/LCR	Route list definition (FF6 203) If you specified the route selector in route list selection, specify the route list number according to the details of the specified route.
8	TRS/LCR	Dial conversion pattern (FF6 205) You can use the LCR function to convert (delete or add) dials received from a tandem relay line. Specify dial conversion using the LCR function.