Meridian 1

Circuit card installation and testing

Document Number: 553-3001-211
Document Release: Standard 16.00
Date: June 1999

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Revision history

January 29, 1990

Standard, release 1.0.

July 31, 1990

Standard, release 2.0.

December 20, 1990

Standard, release 3.0. Updated to include the NT6D42 Ringing Generator, QPC442 Tone Detector option settings and a correction to the QPC441 3-Port Extender.

December 1, 1991

Standard, release 4.0. This document is reissued to include technical content updates. Because of the extent of the changes, revision bars are omitted.

December 31, 1992

Standard, release 5.0. New information and changes to technical content are noted by revision bars in the margins.

April 1, 1993

Standard, release 6.0. Changes to technical content are noted by revision bars in the margins.

August 1, 1993

Standard, release 7.0. Changes to technical content are noted by revision bars in the margins.

April 1, 1994

Standard, release 8.0. This document is reissued to include technical information on Meridian 1 option 61C and corrections specified in the Product Bulletin 93062 Rev. 1. Changes to technical content are noted by revision bars in the margins.

December 1994

Standard, release 9.0. This document is reissued to include information on the Small systems Multi-Disk Unit (SMDU), Meridian 1 option 51C, and corrections to switch settings. Changes to technical content are noted by revision bars in the margins.

December 1994

Standard, release 10.0. Reissued for technical content.

July 1995

Standard, release 11.00. This document is reissued to include international information to create a global NTP, Meridian 1 option 81C, and minor text edits. Changes to technical content are noted by revision bars in the margins.

December 1995

Standard, release 12.00. This document is reissued to include information on the NT9D19 Call Processor Card. Changes to technical content are noted by revision bars in the margins.

August 1996

Standard, release 13.00. This document is reissued to include updates to product information. Changes to technical content are noted by revision bars in the margins.

August 1996

Standard, release 14.00. This document is reissued to include further product updates. Changes to technical content are noted by revision bars in the margins.

October 1997

Standard, release 15.00. Changes are noted by revision bars in the margins.

June 1999

Standard, release 16.00. This document is reissued to include updates to product information.

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About this document

This document provides the following:

— a list of compatible slots for circuit cards used in options 21A, 21, 21E, 51, 51C, 61, 61C, 71, 81, and 81C

— a general procedure for initially installing a circuit card

— acceptance tests for circuit cards that provide service functions, network control, and line and trunk connections

— option settings for the PBX circuit cards currently supported by Northern Telecom

Note: For information on equipment used with system option 11, see the appropriate documentation for that product.

— sample option settings for system configurations with NT8D22 System Monitors

For detailed procedures for removing a specific circuit card and installing a replacement, see *Meridian 1 hardware replacement* (553-3001-520).

For option settings on telephones, attendant consoles, or add-on modules, see the appropriate document for that equipment.

For a description of all administration programs and maintenance programs, see the *X11 input/output guide*. For information about system messages, see the *X11 system messages guide* .

Circuit card installation

Card slots—System options 21A, 21, 21E, 51, 51C, 61, 61C, 71, 81, and 81C

The following table in this chapter identifies card slot compatibility in the following modules:

— NT5D21 Core/Network Module
required for options 51C, 61C, and 81C

— NT5K11 Enhanced Existing Peripheral Equipment (EEPE) Module

— NT6D39 CPU/Network Module
required for options 51 and 61

— NT6D60 Core Module
required for option 81

— NT8D11 Common/Peripheral Equipment (CE/PE) Module
required for options 21A, 21, and 21E

— NT8D13 Peripheral Equipment (PE) Module
optional for options 21, 21E, 51, 51C, 61, 61C, 71, 81, and 81C

— NT8D34 CPU Module
required for option 71

— NT8D35 Network Module
required for options 71, 81, and 81C, optional for options 21, 21E, 51, 51C, 61, and 61C

— NT8D36 InterGroup Module
required for options 71, 81, and 81C

— NT8D37 Intelligent Peripheral Equipment (IPE) Module
required for options 51, 51C, 61, 61C, 71, 81, and 81C, optional for options 21 and 21E

— NT8D47 Remote Peripheral Equipment (RPE) Module optional for options 21, 21E, 51, 51C, 61, 61C, 71, 81, and 81C

— NT9D11 Core/Network Module required for options 51C and 61C

Table 1
System option 21A, 21, 21E, 51, 51C, 61, 61C, 71, 81, and 81C card slots (Part 1 of 14)

Component	21A	21	21E	51/61	51C/ 61C/81C	71	81
NT1P61 Fibre Superloop Network card	CE/PE: 4–9 (Net)	CE/PE: 4–9 (Net)	CE/PE: 4–9 (Net)	CPU/Net: 1–8	Core/Net: 0–7	Net: 5–12	Net: 5–12
NT1P62 Fibre Peripheral Controller card	—	IPE: “Cont”	IPE: “Contr”	IPE: “Contr”	IPE: “Contr”	IPE: “Contr”	IPE: “Contr”
NT1R52 Remote Carrier Interface	—	IPE: “Contr”	IPE: “Contr”	IPE: “Contr”	IPE: “Contr”	IPE: “Contr”	IPE: “Contr”
NT1R20 Off-Premise Station Line Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: all but “Contr”	CE/PE: 0–9 (PE) IPE: all but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT4D18 Hybrid Bus Terminator	—	—	—	—	Core/Net: between 11 and 12	—	—
NT4D19 and NT4D23 Hybrid Bus Terminators	—	—	—	—	Core/Net: between 0 and 1	—	—
NT4D20 and NT4D22 Hybrid Bus Terminators	—	—	—	—	Core/Net: between 1and 2	—	—
NT5D03 Call Processor Card	—	—	—	—	Core/Net: 15 & 16; except 14 & 15 for NT9D11 see ***Note 2*** and ***Note 8.***	—	Core: 14 & 15; see ***Note 2*** and ***Note 8.***

Note: All notes are displayed at the end of the table; see page 17.

Table 1
System option 21A, 21, 21E, 51, 51C, 61, 61C, 71, 81, and 81C card slots (Part 2 of 14)

Component	21A	21	21E	51/61	51C/ 61C/81C	71	81
NT5D10 Call Processor Card	—	—	—	—	Core/Net: 15 & 16; except 14 & 15 for NT9D11: see ***Note 2*** and ***Note 8.***	—	Core: 14 & 15; see ***Note 2*** and ***Note 8.***
NT5D11 and NT5D14 Line side T1 Line Card	—	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT5D12AA Dual DTI/PRI Card	—	CE/PE: 4–9 (Net)	CE/PE: 4–9 (Net)	CPU/Net: 1–8	Core/Net: 0–7	Net: 5–12	Net: 5–12
NT5D61 IODU/C	—	—	—	—	Core/Net: 16, 17 & 18 for NT9D11; and 17, 18 & 19 for NT5D21: see ***Note 2*** and ***Note 8.***	—	—
NT5D20 IOP/CMDU	—	—	—	—	Core/Net: 17. Except: see ***Note 1***	—	Core: 16
NT5D51 MICB	—	—	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT5G11 MICA	—	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT5K02 Analog Line Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
Note: All notes are displayed at the end of the table; see page 17.							

Table 1
System option 21A, 21, 21E, 51, 51C, 61, 61C, 71, 81, and 81C card slots (Part 3 of 14)

Component	21A	21	21E	51/61	51C/ 61C/81C	71	81
NT5K07 Universal Trunk Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT5K09 Quad Density Digitone Receiver	—	EEPE Slot 2 of section A or B at rear of module	EEPE Slot 2 of section A or B at rear of module	EEPE Slot 2 of section A or B at rear of module	EEPE Slot 2 of section A or B at rear of module	EEPE Slot 2 of section A or B at rear of module	EEPE Slot 2 of section A or B at rear of module
NT5K10 Dual Loop Buffer	—	NT5K10 Dual Loop Buffer	NT5K10 Dual Loop Buffer	NT5K10 Dual Loop Buffer	NT5K10 Dual Loop Buffer	NT5K10 Dual Loop Buffer	NT5K10 Dual Loop Buffer
NT5K12 Enhanced Peripheral Equipment Power Supply	—	NT5K12 EPE Power Supply	NT5K12 EPE Power Supply	NT5K12 EPE Power Supply	NT5K12 EPE Power Supply	NT5K12 EPE Power Supply	NT5K12 EPE Power Supply
NT5K17 Direct Dial Inward Trunk Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT5K18 Central Office Trunk Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT5K19 E&M Trunk Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT5K36 Direct Inward/Dire ct Outward Dial Trunk Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
Note: All notes are displayed at the end of the table; see page 17.							

Table 1
System option 21A, 21, 21E, 51, 51C, 61, 61C, 71, 81, and 81C card slots (Part 4 of 14)

Component	21A	21	21E	51/61	51C/ 61C/81C	71	81
NT5K35 NT6D11AC D-Channel Handler Interface	—	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”
NT5K70 Central Office Trunk Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT5K71 Central Office Trunk Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT5K72 E&M Trunk Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT5K82 Central Office Trunk Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT5K83 E&M Trunk Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT5K84 Direct Inward Dial Trunk Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT5K90 Central Office Trunk Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
Note: All notes are displayed at the end of the table; see page 17.							

Table 1
System option 21A, 21, 21E, 51, 51C, 61, 61C, 71, 81, and 81C card slots (Part 5 of 14)

Component	21A	21	21E	51/61	51C/ 61C/81C	71	81
NT5K93 Central Office Trunk Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT5K96 Analog Line Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT5K99 Central Office Trunk Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT5K20 Extended Tone Detector	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT6D6003 Core Bus Terminator	—	—	—	—	Core/Net: 13 (only for NT9D11)	—	Core: 13
NT6D63 I/O Processor Card	—	—	—	—	Core/Net: 16 & 17 (only for NT9D11) see ***Note 2***	—	Core: 16 & 17; see ***Note 2***
NT6D64 Core Multi Drive Unit	—	—	—	—	Core/Net: 18 (only for NT9D11) see ***Note 2***	—	Core: 18
NT6D65 Core to Network Interface	—	—	—	—	51C/61C Core/Net: 12 81C Core/Net: 12–14	—	Core: 8-10

Note: All notes are displayed at the end of the table; see page 17.

Table 1
System option 21A, 21, 21E, 51, 51C, 61, 61C, 71, 81, and 81C card slots (Part 6 of 14)

Component	21A	21	21E	51/61	51C/ 61C/81C	71	81
NT6D66 Call Processor Card	—	—	—	—	Core/Net: 15 & 16; except 14 & 15 for NT9D11 see ***Note 2*** and ***Note 8.***	—	Core: 14 & 15; see ***Note 2*** and ***Note 8.***
NT6D70 S/T Interface Line Card	—	—	CE/PE: 0–9 (PE) IPE: all but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT6D71 U Interface Line Card	—	—	CE/PE: 0–9 (PE) IPE: all but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT6D72 Basic Rate Signal Concentrator Card	—	—	CE/PE: 0–9 (PE) IPE: all but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT6D73 Multi-purpose ISDN Signaling Processor Card	—	—	CE/PE: 4–9 (Net)	CPU/Net: 1–8	Core/Net: 0–7	Net: 5–12	Net: 5–12
NT6D80 MSDL	—	—	CE/PE: 4–9 (Net)	CPU/Net: 1–8, 13	Core/Net: 0–7	Net: 5–12	Net: 5–12
NT7D16 Data Access Card	CE/PE: 0–9 (PE); see ***Note 3***	CE/PE: 0–9 (PE); see ***Note 3***	CE/PE: 0–9 (PE); see ***Note 3***	IPE: any slot but “Contr”; see ***Note 4***	IPE: any slot but “Contr”	IPE: any slot but “Contr” see ***Note 4***	IPE: any slot but “Contr” see ***Note 4***
NT7R51 Local Carrier Interface	CE/PE: 4–9 (Net)	CE/PE: 4–9 (Net)	CE/PE: 4–9 (Net)	CPU/Net: 1–8	Core/Net: 0–7	Net: 5–12	Net: 5–12
Note: All notes are displayed at the end of the table; see page 17.							

Table 1
System option 21A, 21, 21E, 51, 51C, 61, 61C, 71, 81, and 81C card slots (Part 7 of 14)

Component	21A	21	21E	51/61	51C/ 61C/81C	71	81
NT8D01 Controller Card	—	IPE: “Contr”	IPE: “Contr”	IPE: “Contr”	IPE: “Contr”	IPE: “Contr”	IPE: “Contr”
NT8D02 Digital Line Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT8D03 Analog Line Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT8D04 Superloop Network Card	CE/PE: 4–9 (Net)	CE/PE: 4–9 (Net)	CE/PE: 4–9 (Net)	CPU/Net: 1–8	Core/Net: 0–7	Net: 5–12	Net: 5–12
NT8D09 Analog Message Waiting Line Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT8D14 Universal Trunk Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT8D15 E&M Trunk Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT8D16 Digitone Receiver Card	—	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NT8D17 Confer-ence/TDS Card	CE/PE: 4 (Net)	CE/PE: 4 (Net)	CE/PE: 4 (Net)	CPU/Net: 1–8	Core/Net: 0–7	Net: 5–12	Net: 5–12
NT8D18 Network/ DTR Card	CE/PE: 10 (Net)	CE/PE: 10 (Net)	CE/PE: 10 (Net)	—	—	—	—

Note: All notes are displayed at the end of the table; see page 17.

Table 1
System option 21A, 21, 21E, 51, 51C, 61, 61C, 71, 81, and 81C card slots (Part 8 of 14)

Component	21A	21	21E	51/61	51C/ 61C/81C	71	81
NT8D19 Memory/ Peripheral Signaling Card	CE/PE: 3 (CPU/ Mem)	CE/PE: 3 (CPU/ Mem)	—	—	—	—	—
NT8D41 Dual Port SDI Paddle Board	CE/PE: any rear bkplane slot	CE/PE: any rear bkplane slot	CE/PE: any rear bkplane slot	CPU/Net: rear bkplane 7, 8, 12	Core/Net: 7 and 8	—	—
NT8D68 Floppy Disk Unit	CE/PE: any 2 slots	CE/PE: any 2 slots	—	CPU/Net: 18; see ***Note 2***	—	—	—
NT8D69 Multi Disk Unit	—	—	—	CPU/Net: 18; see ***Note 5***	—	CPU: 15–17; see ***Note 5***	—
NT8D72 Primary Rate Interface Card	CE/PE: 4-8 (Net)	CE/PE: 4-8 (Net) Net: 5-11, 13-14 RPE: 1, 11-12	CE/PE: 4-8 (Net) Net: 5-11, 13-14 RPE: 1, 11-12	CPU/ Net: 3-7 Net: 5-11, 13-14 RPE: 1, 11-12	Core/Net: 0-7 Net: 5-11, 13-14 RPE: 1, 11-12	CPU: 8-12, 15-16 Net: 5-11, 13-14 RPE: 1, 11-12	Core: 0-3 Net: 5-11, 13-14 RPE: 1, 11-12
NT9D19 Call Processor card	—	—	—	—	Core/Net 15 & 16; see ***Note 2***	—	Core: 14 & 15; see ***Note 2***
NT9D33 Small System Multi Disk Unit	—	—	CE/PE: any 2 slots	—	—	—	—
NT9D34 Enhanced Mass Storage Interface Card	—	—	CE/PE: 1 (CPU/ Mem)	CPU/Net: 12	—	CPU: 7	—
NTAG03 Central Office Trunk Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
Note: All notes are displayed at the end of the table; see page 17.							

Table 1
System option 21A, 21, 21E, 51, 51C, 61, 61C, 71, 81, and 81C card slots (Part 9 of 14)

Component	21A	21	21E	51/61	51C/ 61C/81C	71	81
NTAG04 Central Office/Direct Inward Dial Trunk Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NTAG36 MIRAN	—	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NTBK51AA D-Channel Daughterboard	—	On any Dual DTI/ PRI card	On any Dual DTI/ PRI card	On any Dual DTI/ PRI card	On any Dual DTI/ PRI card	On any Dual DTI/ PRI card	On any Dual DTI/ PRI card
NTCK16 Generic Central Office Trunk Card	CE/PE: 0–9 (PE)	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	CE/PE: 0–9 (PE) IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”	IPE: any slot but “Contr”
NTND01 Integrated CPU/ Memory Card	—	—	CE/PE: 2 (CPU/ Mem)	—	—	—	—
NTND02 Misc/SDI/ Peripheral Signaling Card	—	—	CE/PE: 3 (CPU/ Mem)	—	—	—	—
NTND09Bx 6 Mbyte Memory Card	—	—	—	CPU/Net: 17	—	CPU: 1–2; see ***Note 6***	—
NTND09 Cx 12 Mbyte Memory Card	—	—	—	CPU/Net: 17	—	CPU: 2	—
NTND10 Changeover Memory Arbitrator Card	—	—	—	CPU/Net: 16	—	CPU: 3	—
NTND15 Floppy Disk Unit	—	—	CE/PE: any 2 slots	—	—	—	—

Note: All notes are displayed at the end of the table; see page 17.

Table 1
System option 21A, 21, 21E, 51, 51C, 61, 61C, 71, 81, and 81C card slots (Part 10 of 14)

Component	21A	21	21E	51/61	51C/ 61C/81C	71	81
NTND16 Multi Disk Unit	—	—	—	CPU/Net: 18; see ***Note 5***	—	CPU: 15–17; see ***Note 5***	—
QPC43 Peripheral Signaling Card	—	—	—	CPU/Net: 10	Core/Net: 10	Net: 4	Net: 4
QPC62 1.5 Mbyte Converter Card	—	RPE: 2 and 9	RPE: 2 and 9	RPE: 2 and 9	RPE: 2 and 9	RPE: 2 and 9	RPE: 2 and 9
QPC63 Local Carrier Buffer Card	—	RPE: 5–6	RPE: 5–6	RPE: 5–6	RPE: 5–6	RPE: 5–6	RPE: 5–6
QPC65 Remote Peripheral Switch Card	—	RPE: 5–6	RPE: 5–6	RPE: 5–6	RPE: 5–6	RPE: 5–6	RPE: 5–6
QPC66 2 Mbyte Converter Card	—	RPE: 3 and 8	RPE: 3 and 8	RPE: 3 and 8	RPE: 3 and 8	RPE: 3 and 8	RPE: 3 and 8
QPC67 Carrier Maintenance Card	—	RPE: 10	RPE: 10	RPE: 10	RPE: 10	RPE: 10	RPE: 10
QPC71 E&M/DX Trunk Card	—	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”
QPC99 Carrier Interface Card	—	RPE: 4 and 7	RPE: 4 and 7	RPE: 4 and 7	RPE: 4 and 7	RPE: 4 and 7	RPE: 4 and 7
QPC192 Off-Premises Extension Card	—	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”
QPC215 Segmented Bus Extender Card	—	—	—	—	—	CPU: 8–12	—
QPC237 4-Wire E&M/DX Trunk Card	—	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”
QPC250 Release Link Trunk Card	—	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”
Note: All notes are displayed at the end of the table; see page 17.							

Table 1
System option 21A, 21, 21E, 51, 51C, 61, 61C, 71, 81, and 81C card slots (Part 11 of 14)

Component	21A	21	21E	51/61	51C/ 61C/81C	71	81
QPC297 Attendant Console Monitor Card	—	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”
QPC412 InterGroup Switch Card	—	—	—	—	81C only: Core/Net: 8, 9	Net: 2, 3	Net: 2, 3
QPC414 Network Card	CE/PE 4–9 (Net)	CE/PE: 4–9 (Net)	CE/PE: 4–9 (Net)	CPU/Net: 1–8	Core/Net: 0–7	Net: 5–12	Net: 5–12
QPC422 Tone Detector Card	—	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”
QPC430 Asynchronous Interface Line Card	—	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”
QPC432 4-Port Data Line Card	—	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”
QPC441 3-Port Extender Card	—	—	—	CPU/Net: 11	Core/Net: 11	Net: 1	Core: 7 Net: 1
QPC449 Loop Signaling Trunk Card	—	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”
QPC450 CO/FX/WATS Trunk Card	—	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”
QPC471 Clock Controller Card	CE/PE: 4–7 (Net)	CE/PE: 4–7 (Net)	CE/PE: 4–7 (Net)	CPU/Net: 9	51C/61C Core/Net: 9 For 81C: see ***Note 7***	CPU: 14	Core: 6
QPC477 Bus Terminating Units: QPC477A9	—	—	—	CPU/Net: 2/3	Core/Net: 0/1 only in NT9D11	Net: 11/12	Core: 4/5 Net: 11/12

Note: All notes are displayed at the end of the table; see page 17.

Table 1
System option 21A, 21, 21E, 51, 51C, 61, 61C, 71, 81, and 81C card slots (Part 12 of 14)

Component	21A	21	21E	51/61	51C/ 61C/81C	71	81
QPC477B10 (replaces A10)	—	—	—	CPU/Net: 1/2	Core/Net: 1/2 only in NT9D11	Net: 12/13	Core: 5/6 Net: 12/13
QPC477A20 Bus Terminating Unit	—	—	—	—	—	CPU: 13/14	—
QPC477A21 Bus Terminating Unit	—	—	—	—	—	CPU: 13/14	—
QPC477A22 Bus Terminating Unit	—	—	—	CPU/Net: 12/13	—	—	—
QPC513 Enhanced Serial Data Interface Card	CE/PE: 4–9 (Net)	CE/PE: 4–9 (Net)	CE/PE: 4–9 (Net)	CPU/Net: 1–9, 13	Core/Net: 9, 13	CPU: 6, 13 Net: 5–13	Core: 6, 13 Net: 5–13
QPC578 Integrated Services Digital Line Card	—	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”
QPC579 CPU Function Card	—	—	—	CPU/Net: 14	—	CPU: 5	—
QPC580 CPU Interface Card	—	—	—	CPU/Net:1 5	—	CPU: 4	—
QPC581 Changeover Memory Arbitrator Card	—	—	—	CPU/Net: 16	—	CPU: 3	—
QPC583 Memory Card	—	—	—	CPU/Net: 17	—	CPU: 1–2	—
QPC584 Mass Storage Interface Card	—	—	—	CPU/Net: 12	—	CPU: 7	—
QPC594 16-Port 500/2500 Line Card	—	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”
Note: All notes are displayed at the end of the table; see page 17.							

Table 1
System option 21A, 21, 21E, 51, 51C, 61, 61C, 71, 81, and 81C card slots (Part 13 of 14)

Component	21A	21	21E	51/61	51C/ 61C/81C	71	81
QPC659 Dual Loop Peripheral Buffer Card	—	PE: “DLB”	PE: “DLB”	PE: “DLB”	PE: “DLB”	PE: “DLB”	PE: “DLB”
QPC687 CPU Card	CE/PE: 2 (CPU/ Mem)	CE/PE: 2 (CPU/ Mem)	—	—	—	—	—
QPC720 Primary Rate Interface Card	CE/PE: 4–8 (Net)	CE/PE: 4–8 (Net) Net: 5–11, 13–14 RPE: 1, 11–12	CE/PE: 4–8 (Net) Net: 5–11, 13–14 RPE: 1, 11–12	CPU/ Net: 3–7 Net: 5–11, 13–14 RPE: 1, 11–12	Core/Net: 0–7 Net: 5–11, 13–14 RPE: 1, 11–12	CPU:8–12, 15–16 Net: 5–11, 13–14 RPE: 1, 11–12	Core: 0–3 Net: 5–11, 13–14 RPE: 1, 11–12
Note: All notes are displayed at the end of the table; see page 17.							

Table 1
System option 21A, 21, 21E, 51, 51C, 61, 61C, 71, 81, and 81C card slots (Part 14 of 14)

Component	21A	21	21E	51/61	51C/ 61C/81C	71	81
QPC723 RS-232 4-Port Interface Line Card	—	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”
QPC742 Floppy Disk Interface Card	CE/PE: 1 (CPU/ Mem)	CE/PE: 1 (CPU/ Mem)	CE/PE: 1 (CPU/ Mem)	CPU/Net: 12	—	—	—
QPC757 D-Channel Handler Interface Card	—	CE/PE: 4–9 (Net)	CE/PE: 4–9 (Net)	CPU/Net: 1–9, 13	PE: any slot but “DLB”	Net: 5–13	Net: 5–13
QPC775 Clock Controller	CE/PE: 4-7 in Net area	CE/PE: 4-7 in Net area	CE/PE: 4-7 in Net area	CPU/Net: 9	51C/61C Core/Net: slot 14. For 81C: see ***Note 7***	CPU: 14	Core: 14
QPC789 16-Port 500/2500 (Message Waiting) Line Card	—	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”
QPC841 4-Port Serial Data Interface Card	CE/PE: 4–9 (Net)	CE/PE: 4–9 (Net)	CE/PE: 4–9 (Net)	CPU/Net: 1–9, 13	Core/Net: 0-7	Core: None Net: 5–13	Core/Net: 0-7 Net: 5–13
QPC918 High-Speed Data Card	—	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”	PE: any slot but “DLB”

Note 1: In option 61C with NT9D11, use slot 16.

Note 2: The card occupies two slots.

Note 3: This applies to NT8D11BC or NT8D11EC, CE/PE Modules. In NT8D11AC or NT8D11DC modules, use only slot 0.

Note 4: This applies to NT8D37BA or NT8D37EC IPE Modules. In NT8D37AA or NT8D37DC modules, use only slots 0, 4, 8, and 12.

Note 5: This card requires three slots.

Note 6: If only one NTND09 card is used, install it in slot 2 (next to the CMA card).

Note 7: In option 81C, use NT8D35 Net slot 13; in QSD39 shelf, use Net slot 2; in QSD40 shelf, use slot 13.

Note 8: In option 81 or 81C, do not use this card for X11 Release 22.

Note: All notes are displayed at the end of the table; see page 17.

Precautions

To avoid personal injury and equipment damage, review the following guidelines before handling Meridian 1 equipment.

WARNING

Module covers are not hinged; do not let go of the covers. Lift covers away from the module and set them out of your work area.

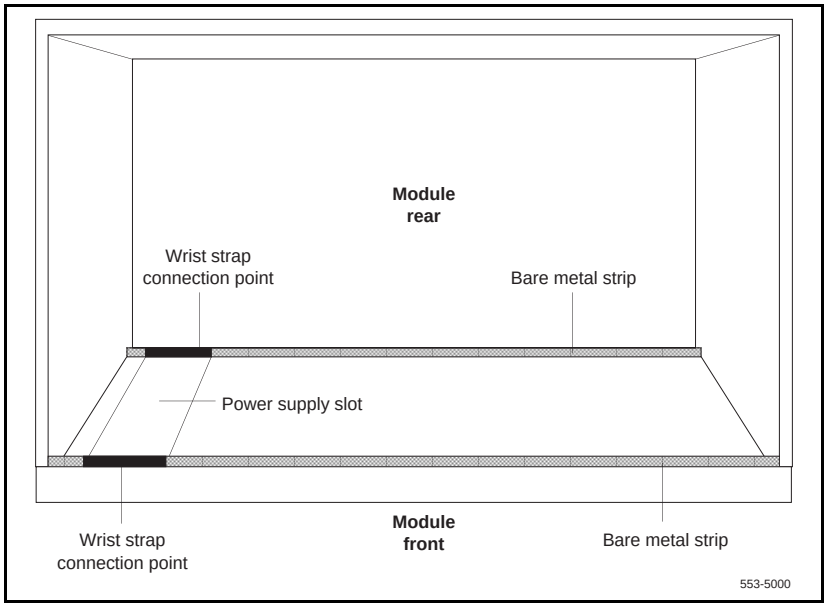
WARNING

Circuit cards may contain a lithium battery. There is a danger of explosion if the battery is incorrectly replaced. Do not replace components on any circuit card; you must replace the entire card.

Dispose of circuit cards according to the manufacturer's instructions.

To avoid damage to circuit cards from static discharge, wear a properly connected antistatic wrist strap when you work on Meridian 1 equipment. If a wrist strap is not available, regularly touch one of the bare metal strips in a module to discharge static. Figure 1 shows the recommended connection points for the wrist strap and the bare metal strips you should touch.

Figure 1
Static discharge points



Handle circuit cards as follows:

— Unpack or handle cards away from electric motors, transformers, or similar machinery.

— Handle cards by the edges only. Do not touch the contacts or components.

— Set cards on a protective antistatic bag. If an antistatic bag is not available, hand-hold the card, or set it in a card cage unseated from the connectors.

— Store cards in protective packing. Do not stack cards on top of each other unless they are packaged.

— Keep cards installed in the system as much as possible to avoid dirty contacts and unnecessary wear.

— Store cards in a cool, dry, dust-free area.

During repair and maintenance procedures do the following:

— Turn off the circuit breaker or switch for a module power supply before the power supply is removed or inserted.

Note: In AC-powered systems, capacitors in the power supply must discharge. Wait five full minutes between turning off the circuit breaker and removing the power supply from the module.

— Software disable cards, if applicable, before they are removed or inserted.

— Hardware disable cards, whenever there is an enable/disable switch, before they are removed or inserted.

— Return defective or heavily contaminated cards to a repair center. Do not try to repair or clean them.

Installing a circuit card

This procedure provides detailed installation instructions for Meridian 1 circuit cards.

WARNING

To avoid personal injury and equipment damage, read all of the guidelines in “Precautions” on page 18 before you begin installation and follow all guidelines throughout the procedure.

Procedure 1
Installation

1 Open the protective carton and remove the circuit card from the antistatic bag. Return the antistatic bag to the carton and store it for future use.

2 Inspect the card components, faceplate, locking devices, and connectors for damage. If damaged, tag the card with a description of the problem and package it for return to a repair center.

3 Refer to the work order to determine the module and slot location for the card.

4 If there is an enable/disable (Enb/Dis) switch on the faceplate, set it to Dis.

5 If there are option switches or jumpers on the card, set them according to the work order (see “Option settings” on page 37).

CAUTION

Incorrectly set switches on common equipment circuit cards may cause a system failure.

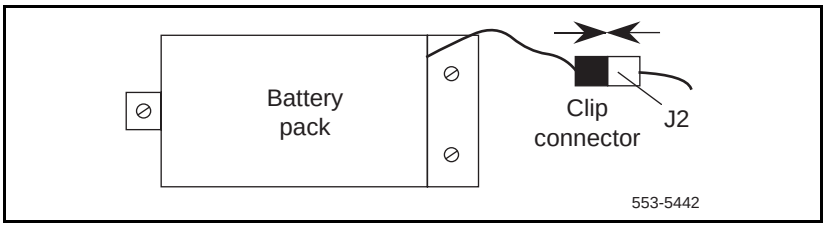
6 If you are installing an NTND02 Misc/SDI/Peripheral Signaling (MSPS) Card, the A0378252 Battery Pack Assembly must be attached:

— Position the battery pack on the component side of the MSPS card. From the back of the card, install the screws that secure the battery pack.

— On the component side of the MSPS card, plug in the clip connector wired to the battery pack. Make sure the connector key is centered on J2 (see Figure 2).

Note: The battery will not be fully charged until 24 hours after installation in a powered system.

Figure 2
Connector for the battery pack assembly



7 If you are installing one of the following cards, the QMM42 Security Data Cartridge must be attached:

— NT6D63 I/O Processor (IOP) Card

— QPC584 Mass Storage Interface (MSI) Card

— NT9D34 Enhanced Mass Storage Interface (EMSI) Card

— QPC742 Floppy Disk Interface (FDI) Card

To install a data cartridge, plug it into the connectors on the component side of the host card and install the screw that secures the data cartridge.

CAUTION
To avoid system failure, the ID number on the data cartridge must match the ID number on the system software diskettes.

8 If you are installing one of the following cards, the associated ROM card must be attached:

— NTND01 Integrated CPU/Memory (ICM) Card—NTND31 ROM

— QPC579 CPU Function (FN) Card—NTND08 or QPC939 ROM

— QPC687 CPU Card—QPC940 ROM

To install a ROM card, plug it into the connectors on the component side of the host card.

Note: For the NTND31 ROM Card, you must also install a screw and washer at each corner of the ROM card.

CAUTION

When you install a ROM card, do not touch other components on the host card.

9 Squeeze the ends of the locking devices on the card and pull the tabs away from the latch posts and faceplate (see Figure 3).

10 Insert the card into the card aligning guides in the card cage. Gently push the card into the slot until you feel resistance. The tip of the locking device must be behind the edge of the card cage (see Figure 3).

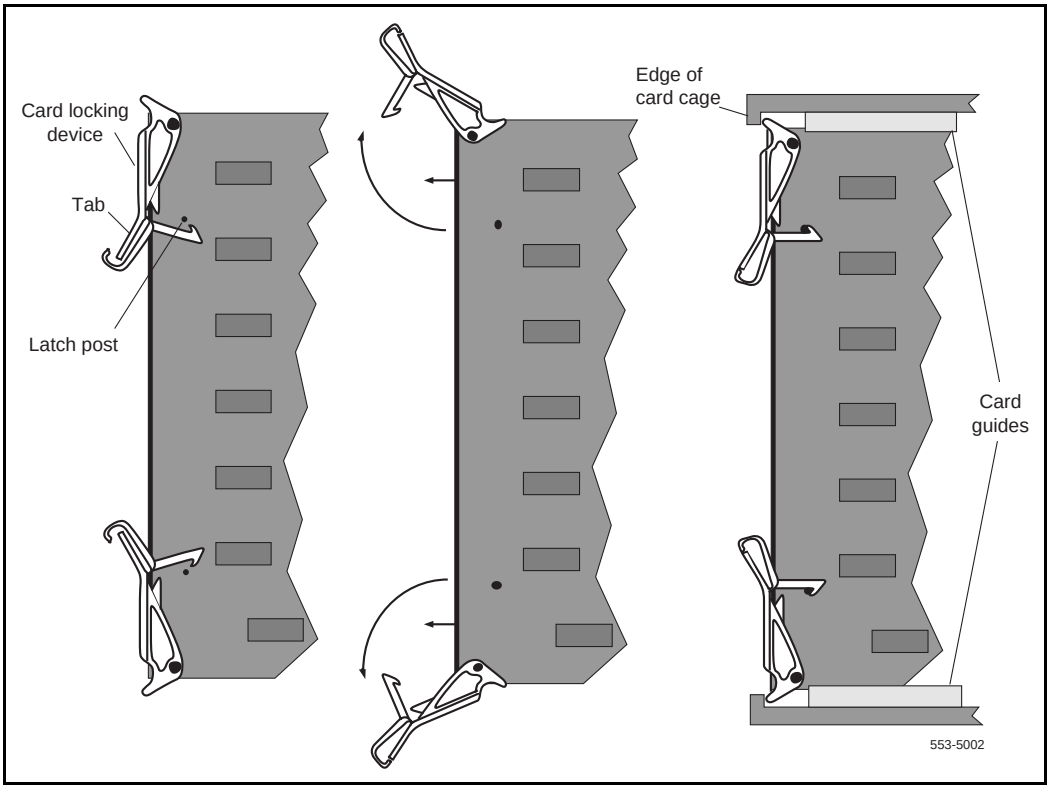
11 Lock the card into position by simultaneously pushing the ends of the locking devices against the faceplate.

Note: When IPE cards are installed, the red LED on the faceplate remains lit for two to five seconds as a self-test runs. If the self-test completes successfully, the LED flashes three times and remains lit until the card is configured and enabled in software, then the LED goes out. If the LED does not follow the pattern described or operates in any other manner (such as continually flashing or remaining weakly lit), replace the card.

12 If there is an enable/disable switch, set it to Enb.

Note: Do not enable the switch on an NT8D04 Superloop Network Card or QPC414 Network Card until network loop cables are installed.

Figure 3
Installing the circuit card in the card cage



13 If you are adding a voice, conference, or tone and digit loop, press the manual initialize (Man Int) button if the card is associated with the active CPU:

— In options 21A and 21, the manual initialize button is on the NT8D19 Memory/Peripheral Signaling Card.

— In option 21E, the manual initialize button is on the NTND01 Integrated CPU/Memory (ICM) Card.

— In options 51, 61, and 71, the manual initialize button is on the QPC580 CPU Interface Card.

— In options 51C, 61C, 81, and 81C, the manual initialize button is on the NT6D66, NT5D10, or NT5D03 Call Processor (CP) Card.

Note: An initialization causes a momentary interruption in call processing.

14 If you are installing the card in a working system, refer to the work order and the *X11 input/output guide* to add the required office data to the system memory.

15 Go to the appropriate test procedure in “Acceptance tests” on page 27.

Acceptance tests

Test procedures for most circuit cards require that internal and external cabling be installed. See the appropriate installation document for your system and *Telephone and attendant console installation* (553-3001-215) for cabling procedures.

Procedure 2
Conference cards

Use this procedure to test a conference card or to test the conference function of an NT8D17 Conference/TDS Card.

1 Log into the system:
LOGI (password)

2 Request the status of a loop on the conference card:
LD 38
STAT loop

Conference status is formatted as follows:

CNFC n DSBL n BUSY
“n” represents the number of conference groups disabled and busy

CHAN n DSBL n BUSY
“n” represents the number of channels disabled and busy

UNEQ
card is not equipped in the system

DSBL
card is disabled in software

3 If the conference card loop is disabled, enable it.

For an NT8D17 Conference/TDS Card, enter:
ENLX loop
(the conference loop is the odd loop of the conference/TDS loop pair)

Note: The conference/TDS card is not enabled automatically when it is inserted. You must enable the card with the command ENLX. (This command is used in LD 34 and LD 46 to address even loops and in LD 38 to address odd loops.) Enabling the loops with the command ENLL does not enable the hardware for the card.

For other than an NT8D17 Conference/TDS Card, enter:
ENLL loop
(the conference loop must be an even loop for cards other than the NT8D17)

If the system response is other than **OK**, see the *X11 input/output guide* to analyze the messages.

4 Test the conference loop for channel, group, and switching faults:
CNFC loop

If the conference loop passes the tests, the output is **OK**.

If the system response is other than **OK**, see the *X11 input/output guide* to analyze the messages.

5 Prepare the system for a manual conference call on a specified loop:
CNFC MAN loop c“c” is the manual conference group (1-15)

A manual conference test is performed by stepping through conference channels and groups, listening for noise that indicates a faulty card.

The manual conference test can be performed through a system terminal or BCS maintenance telephone. If commands are entered from a maintenance telephone, this telephone automatically becomes part of the manual conference call.

Only one manual conference call is allowed at one time. A manual conference consists of only two telephones, where one telephone acts as a signal source while the other acts as a listening monitor.

After you enter the CNFC command, any two telephones (one may already be the maintenance telephone) dialing the special service prefix code (SPRE) and the digits 93 will enter the manual conference call. The prime directory number (PDN) indicator, if equipped, will light on each telephone.

Going on-hook takes the telephone out of the manual conference call, and the test must be restarted.

See “LD38” in the *X11 input/output guide* for more detailed information on using this command.

6 Test various channels and conference groups audibly with the command
CNFC STEP

When stepping through channels and groups, a clicking followed by silence is normal. Any distortion or other noises indicates a faulty card.

Once the CNFC STEP command has been entered, entering **C** on the system terminal or maintenance telephone steps through the conference channels. Entering **G** steps through the conference groups. There are 15 channels per group and 15 groups per conference card.

Entering an asterisk (*****) and END stops the test.

Again, see “LD 38” in the *X11 input/output guide* for detailed information on using this command.

7 End the session in LD 38:
****

Procedure 3
Digitone receiver cards

Use this procedure to test a Digitone receiver (DTR) card, a DTR daughterboard, or the DTR function on the NT8D18 Network/DTR Card.

> ***Note:*** The DTR daughterboard connected to a QPC659 Dual Loop Peripheral Buffer Card cannot be assigned when the peripheral equipment (PE) shelf is used in single loop mode.

1 Log into the system:
LOGI (password)

2 See if the Digitone receiver to be tested is disabled:
LD 34
STAT

The system responds with the terminal number (TN), or numbers, of any disabled Digitone receivers.

3 If the Digitone receiver is disabled, enable it:
ENLR l s c uloop, shelf, card, and unit numbers

4 Test the Digitone receiver:
DTR l s c uloop, shelf, card, and unit numbers

If the system response is other than **OK**, see the *X11 input/output guide* to analyze the messages.

5 End the session in LD 34:
****

Procedure 4
Line cards

Use this procedure to test a line card.

1 Log into the system:
LOGI (password)

2 Perform a network memory test, continuity test, and signaling test on a specific loop and shelf:
LD 30
SHLF l sloop and shelf numbers

If the system response is other than **OK**, see the *X11 input/output guide* to analyze the messages.

3 For a line card on a superloop, perform a signaling test on a specific card or unit:
UNTT l s cloop, shelf, and card numbers

For the NT8D02 Digital Line Card, enter:
UNTT l s c uloop, shelf, card, and unit numbers

If the system response is other than **OK**, see the *X11 input/output guide* to analyze the messages.

4 End the session in LD 30:
****

Procedure 5
Multifrequency sender cards

Use this procedure to test a multifrequency sender (MFS) card or the MFS function of an NT8D17 Conference/TDS Card.

1 Log into the system:
LOGI (password)

2 Test and enable an MFS loop:
LD 46
MFS loop
(on the NT8D17 Conference/TDS Card, the TDS/MFS loop is the even loop of the conference/TDS loop pair)

Note: The conference/TDS card is not enabled automatically when it is inserted. You must enable the card with the command ENLX. (This command is used in LD 34 and LD 46 to address even loops and in LD 38 to address odd loops.) Enabling the loops with the command ENLL does not enable the hardware for the card.

If the system response is other than **OK**, see the *X11 input/output guide* to analyze the messages.

3 Access the system from a maintenance telephone; then enter:
LD 46

Give the system approximately 20 seconds to load the program.

See “Communicating with the Meridian 1” in the *X11 input/output guide* for details on accessing the system from a maintenance telephone.

4 Obtain 10-second bursts of digits 1 to 9, 0, and 11 to 15 (in that order) for all digits on the specified loop:
TONE loop ALL

Each burst should sound different. If the bursts do not sound different, replace the card.

5 End the session in LD 46:
****

Procedure 6
Multifrequency signaling cards

Use this procedure to test a multifrequency signaling card.

1 Log into the system:
LOGI (password)

2 Test and enable the specified unit:
LD 54
ATST l s c uloop, shelf, card, and unit numbers

If the system response is other than **OK**, see the *X11 input/output guide* to analyze the messages.

3 End the session in LD 54:
****

Procedure 7
Network cards

Use this procedure to test a network card.

1 Log into the system:
LOGI (password)

2 Perform a network memory test, continuity test, and signaling test:
LD 30
LOOP loopcan be a specific loop number or ALL

If ALL is specified, all enabled loops (except attendant console loops) and all shelves on each loop are tested.

If only one loop is being tested and it is disabled, enter **ENLL loop** to enable and test a network card associated with the specified loop. (This command cannot enable network cards disabled by LD 32.)

If the system response is other than **OK**, see the *X11 input/output guide* to analyze the messages.

3 End the session in LD 30:
****

Trunk cards

Use the following procedures to test a trunk card.

Procedure 8
Test procedure using a maintenance telephone

1 Access the system from a maintenance telephone.

See “Communicating with the Meridian 1” in the *X11 input/output guide* for details on accessing the system from a maintenance telephone.

2 Test the trunk unit:
LD 36
TRK l s c uloop, shelf, card, and unit numbers

3 If the maintenance telephone is hooked up to a monitor and the system response is other than **OK**, see the *X11 input/output guide* to analyze the messages.

Procedure 9
Test procedure using a system terminal

1 Log into the system:
LOGI (password)

2 Enter:
LD 36

3 To test a trunk from a remote test center, seize a central office (CO) monitor trunk:
CALL
or
CALL l s c u

Seize the automatic number identification (ANI) trunk:
TRK l s c uloop, shelf, card, and unit numbers

When you see the **DN?** prompt, enter the directory number (DN) you want the system to dial.

If the system response is other than **OK**, see the *X11 input/output guide* to analyze the messages.

4 End the session in LD 36:
****

5 Test an automatically identified outward dialing (AIOD) trunk card:
LD 41
AIOD l s cloop, shelf, and card numbers

If the system response is other than **OK**, see the *X11 input/output guide* to analyze the messages.

6 End the session in LD 41:
****

Procedure 10
Tone and digit switch cards

Use this procedure to test a tone and digit switch (TDS) card or to test the TDS function of an NT8D17 Conference/TDS Card.

1 Log into the system:
LOGI (password)

2 Obtain a list of terminal numbers (TNs) for disabled TDS cards:
LD 34
STAD

3 If the TDS loop to be tested is disabled, enable it.

For an NT8D17 Conference/TDS Card, enter:
ENLX loop
(the TDS/MFS loop is the even loop of the conference/TDS loop pair)

Note: The conference/TDS card is not enabled automatically when it is inserted. You must enable the card with the command ENLX. (This command is used in LD 34 and LD 46 to address even loops and in LD 38 to address odd loops.) Enabling the loops with the command ENLL does not enable the hardware for the card.

For other than an NT8D17 Conference/TDS Card, enter:
ENLL loop

4 Test the TDS loop:
TDS loop

If the system response is other than **OK**, see the *X11 input/output guide* to analyze the messages.

5 End the session in LD 34:
****

6 Using a maintenance telephone, log into the system.

See “Communicating with the Meridian 1” in the *X11 input/output guide* for details on accessing the system using a maintenance telephone.

7 From the maintenance telephone, enter:
LD#34##

To test outpulsers and channels for the TDS loop, see Table 2 for a sample of the input commands used with the maintenance telephone. See the *X11 input/output guide* for all tones that can be tested.

8 Exit LD 34 from the maintenance telephone:
****

Table 2
TDS tone tests

Input command	Dial pad equivalent	Description
BSY#loop##	279#loop##	Provides busy tone from TDS loop specified.
C##	2##	Removes any active tone.
DIA#loop##	342#loop##	Provides dial tone from TDS loop specified.
OVF#loop##	683#loop##	Provides overflow tone from TDS loop specified.
RBK#loop##	725#loop##	Provides ringback tone from TDS loop specified.
RNG#loop##	764#loop##	Provides ring tone from TDS loop specified.
****		Exits TDS test program.

Option settings

Circuit card grid

Some circuit cards contain option switches or jumpers, or both, that define specific functions. A switch or jumper may be identified by an alphanumeric coordinate (such as D29) that indicates a location on the card, or by a switch number (such as SW2) printed on the circuit board (see Figure 4). Positions on a switch (for example, positions 1, 2, 3, and 4 on SW2) are labeled on the switch block.

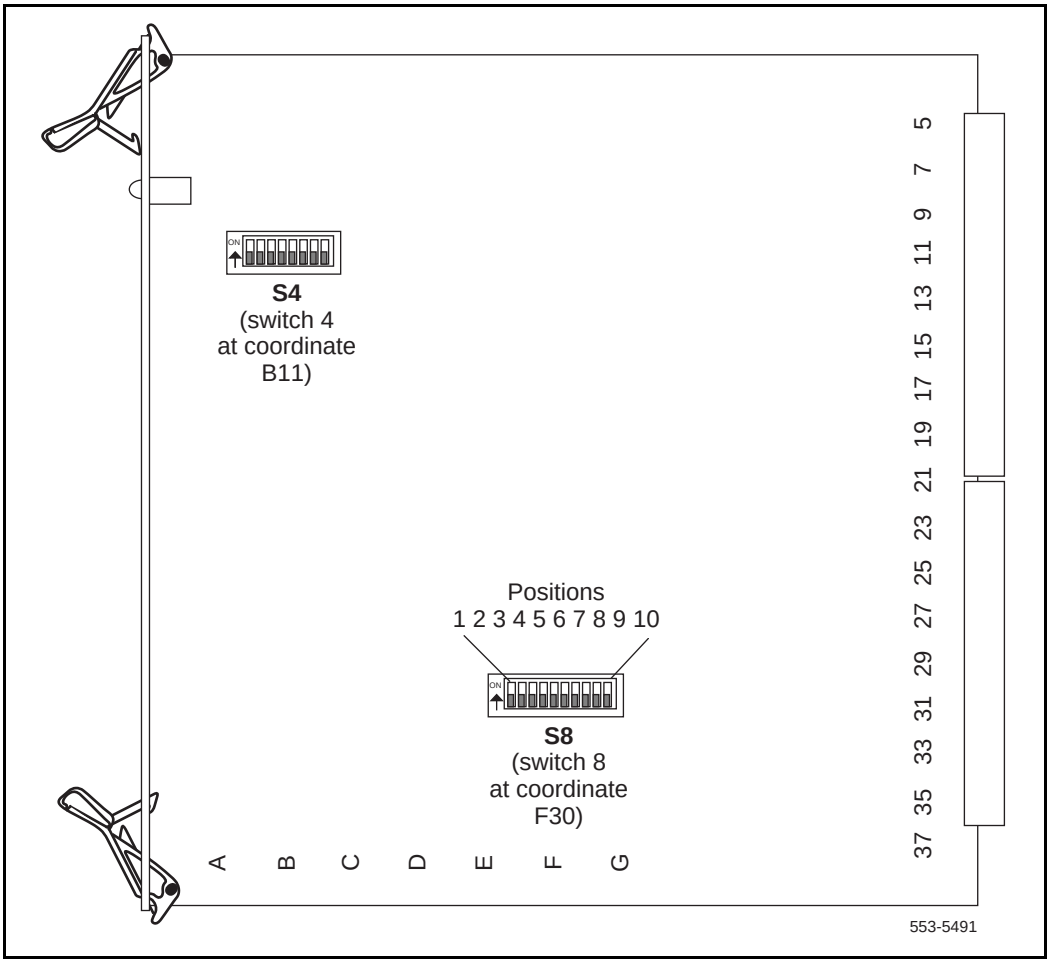
On a circuit card

— ON may be indicated by the word “on,” the word “up,” the word “closed,” the number “1,” an arrow pointing up, or a solid dot (•).

— OFF may be indicated by the word “down,” the word “open,” the number “0,” or an arrow pointing down.

Throughout this document, if neither ON nor OFF is given (there is a blank space) for a position on a switch, that position may be set to either ON or OFF because it has no function for the option described.

Figure 4
Circuit card grid



NT1R20 Off-Premise Station card

The following table lists option settings for the NT1R20 Off-Premise Station analog card.

Table 3
OPS analog line card configuration

Application	On-premise station (ONS)			Off-premise station (OPS)			
Class of Service (CLS) (Note 1)	ONP			OPX			
Loop resistance (ohms)	0–460			0–2300 (Note 2)			
Jumper strap setting (Note 6)	Both JX.0 and JX.1 off			Both JX.0 and JX.1 off		Both JX.0 and JX.1 on	
Loop loss (dB) (Note 3)	0–1.5	>1.5–2.5	>2.5–3.0	0–1.5	>1.5–2.5	>2.5–4.5	>4.5–15
TIMP (Notes 1, 4)	600 ohms	600 ohms	600 ohms	600 ohms	600 ohms	600 ohms	600 ohms
BIMP (Notes 1, 4)	600 ohms	3COM1	3COM2	600 ohms	3COM1	3COM2	3COM2
Gain treatment (Note 5)	No						Yes

Note 1: Configured in the Single-line Telephone Administration program (LD10).

Note 2: The maximum signaling range supported by the OPS analog line card is 2300 ohms.

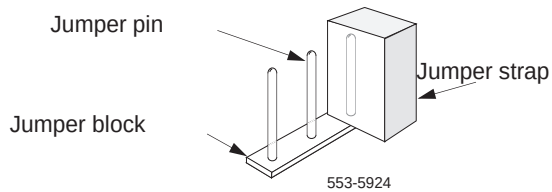
Note 3: Loss of untreated (no gain devices) metallic line facility. Upper loss limits correspond to loop resistance ranges for 26 AWG wire.

Note 4: Default software impedance settings are:

	ONP CLS	OPX CLS
TIMP:	600 ohms	600 ohms
BIMP:	600 ohms	3COM2

Note: Gain treatment, such as a voice frequency repeater (VFR) is required to limit the actual OPS loop loss to 4.5 dB, maximum. VFR treatment of metallic loops having untreated loss greater than 15 dB (equivalent to a maximum signaling range of 2300 ohms on 26 AWG wire) is not recommended.

Note: Jumper strap settings JX.0 and JX.1 apply to all eight units; “X” indicates the unit number, 0–7. “Off” indicates that a jumper strap is not installed across both pins on a jumper block. Store unused straps on the OPS analog line card by installing them on a single jumper pin as shown below:



NT5D12AA Dual DTI/PRI (DDP) card

Switch setting tables for this card are listed in subsections according the their function. Bold font designates factory (default) settings.

General purpose switches

Use switch set SW9 for Trunk 0; use switch set SW15 for Trunk 1.

Table 4
General purpose switch settings

Switch	Description	SW9/SW15 switch setting
1	Framing Mode	**off - ESF** on - SF
2	Yellow Alarm Method	**off - FDL** on - Digit2
3	Zero Code Suppression Mode	**off - B8ZS** on - AMI
4	Unused	**off**

Trunk interface switches

A per trunk switch provides selection of T1 transmission. Use switch SW4 for Trunk 0; use switch SW10 for Trunk 1.

Table 5
Trunk interface transmission mode switch settings

Description	SW4/SW10 switch setting
For future use	off
T1	on

A per trunk set of three switches provides selection of dB values. Use SW5, SW6, and SW7 for Trunk 0; use SW11, SW12, and SW13 for Trunk 1.

Table 6
Trunk interface line build out switch settings

Description	Switch setting		
	SW5/SW11	**SW6/SW12**	**SW7/SW13**
0 dB	off	off	off
7.5 dB	on	on	off
15 dB	on	off	on

A per trunk set of four DIP switches provides selection among three values for receiver impedance. Use SW8 for Trunk 0; use SW14 for Trunk 1.

Table 7
Trunk interface impedance switch settings

Description	SW8/SW14 switch settings			
75 Ω	off	off	on	off
100 Ω	on	off	off	on
120 Ω	off	off	off	on

Ring ground switches

A set of four DIP switches selects which Ring lines are connected to ground.

Table 8
Ring ground switch settings

Switch	Description	S2 switch setting
1	Trunk 0 Transmit	**off - Ring line is not grounded** on- Ring line is grounded
2	Trunk 0 Receive	**off - Ring line is not grounded** on - Ring line is grounded
3	Trunk 1 Transmit	**off - Ring line is not grounded** on - Ring line is grounded
4	Trunk 1 Receive	**off - Ring line is not grounded** on - Ring line is grounded

DCH mode and address select switches

One switch selects betwwen an on-board NTBK51AA D-Channel daughterboard and an external MSDL/DCHI card. Four other switches provide the daughterboard address.

Table 9
DCH mode and address select switch settings

Switch	Description	S3 Switch Setting
1-4	D-Channel daughterboard Address	See the next table.
5-7	For future use	off
8	External DCH or Onboard DDCH	**off - MSDL or DCHI card** on - Onboard DDCH daughterboard

Table 10
NTBK51AA daughterboard address select switch settings

Device Address[1]	Switch Setting			
0[2]	off	off	off	off
1	on	off	off	off
2	off	on	off	off
3	on	on	off	off
4	off	off	on	off
5	on	off	on	off
6	off	on	on	off
7	on	on	on	off
8	off	off	off	on
9	on	off	off	on
10	off	on	off	on
11	on	on	off	on
12	off	off	on	on
13	on	off	on	on
14	off	on	on	on
15	on	on	on	on

Note 1: The maximum number of DCHI, MSDL, and DDCH devices in the system is 16.

The Device Addresses are equivalent to the MSDL DNUM designations. For programming information on the MSDL, refer to NTPs *Multi-purpose Serial Data Link description* 553-3001-195 and *X11 input/output guide*.

Note 2: Device address 0 is commonly assigned to the System Monitor.

Illustrations of switch locations and settings

Figure 5 below displays functional areas for switches on the DDP card.

Figure 5
Switch functions and areas

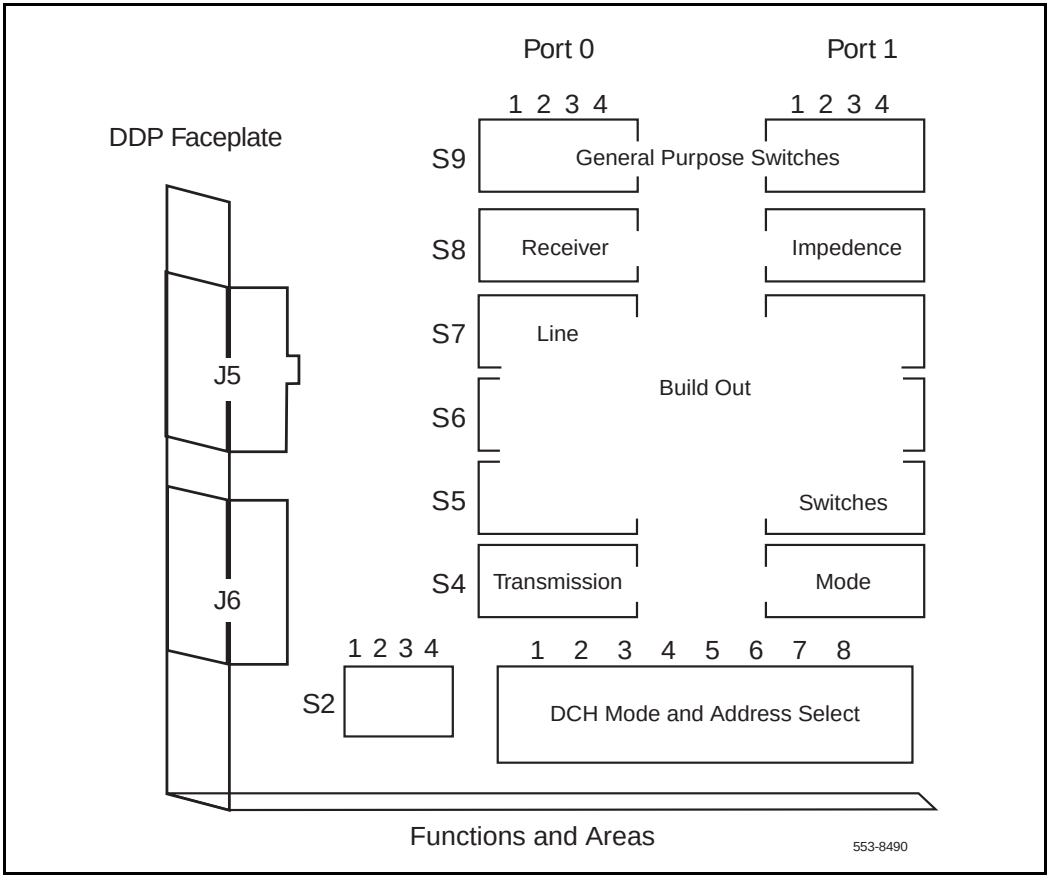
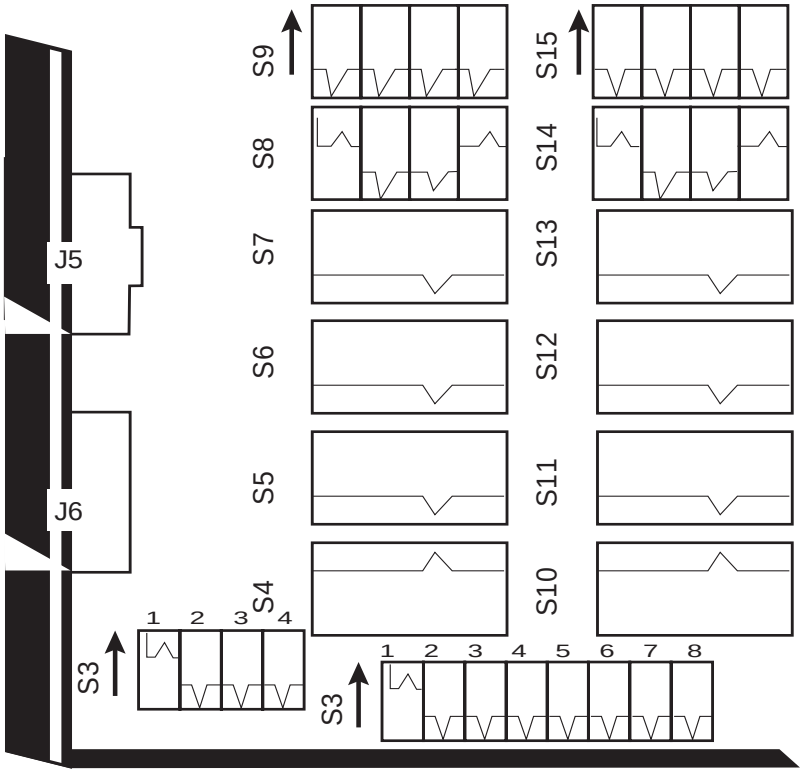


Figure 6 displays default settings for switches on the DPP card.

Figure 6
Switch default settings



Switch Default Setting

553-8491

NT5K12 Enhanced Peripheral Equipment Power Supply

The following tables show the option settings for the NT5K12 Enhanced Peripheral Equipment Power Supply.

Table 11
NT5K12 SW1

Ringing voltage	Message waiting voltage	Switch setting SW1			
		1	2	3	4
86 V ac	–120 V dc	off	off	off	off
86 V ac	–150 V dc	off	off	off	on
80 V ac	–120 V dc	on	off	off	off
80 V ac	–150 V dc	on	off	off	on
75 V ac	–120 V dc	off	on	off	off
75 V ac	–150 V dc	off	on	off	on
70 V ac	–120 V dc	off	off	on	off
70 V ac	–150 V dc	off	off	on	on

Table 12
NT5K12 SW2

Ringing Frequency (Hz)	Switch setting SW2		
	1	2	3
20	on	off	off
25	off	on	off
50	off	off	on

NT6D11and NT5K35 D-Channel Interface Card

The next three tables list option settings for the NT6D11 (vintages AA, AB, and AC) and NT5K35 DCHI Card.

Table 13
NT6D11AA, AB, AC, and NT5K35 jumper settings and group selection

Jumper settings				Address selection			
Option	Port	Socket number		Group number	Switch		
					1	2	3
DTE (terminal)	0 1	U11 U5	U 9 U3	0 1	off off	off off	off on
DCE (modem)	0 1	U12 U6	U10 U4	2 3	off off	on on	off on
RS-232-C interface	0 1	U31 U25	U29 U23	4 5	on on	off off	off on
High-speed interface	0 1	U30 U24	U28 U22	6 7	on on	on on	off on

Note: Group and port numbers combine to define a complete port address. (The following two tables define port numbers.) There are 8 groups and 16 port numbers, for a total of 128 possible ports. Group 0 is the only group supported by Generic X11 Supplementary Features Group F (Phase 6). Therefore, when using Group F software set switches 1, 2, and 3 to OFF.

Table 14
NT6D11AA, AB, and AC port address settings for single port operation

Port number SDI/DCHI (J1/J2)	Switch						
	4	5	6	7	8	9	0
0	off	off	off	off	on	*	off
1	off	off	off	on	on	*	off
2	off	off	on	off	on	*	off
3	off	off	on	on	on	*	off
4	off	on	off	off	on	*	off
5	off	on	off	on	on	*	off
6	off	on	on	off	on	*	off
7	off	on	no	on	on	*	off
8	on	off	off	off	on	*	off
9	on	off	off	on	on	*	off
10	on	off	on	off	on	*	off
11	on	off	on	on	on	*	off
12	on	on	off	off	on	*	off
13	on	on	off	on	on	*	off
14	on	on	on	off	on	*	off
15	on	on	on	on	on	*	off

* Set switch 9 to ON (1) to enable the SDI port and disable the DCHI port. Set switch 9 to OFF (0) to disable the SDI port and enable the DCHI port.

Table 15
NT6D11AA, AB, and AC port settings for dual port operation

Port number		Switch						
SDI (J1)	DCHI (J2)	4	5	6	7	8	9	0
0	1	off	off	off	*	off	*	off
2	3	off	off	on	*	off	*	off
4	5	off	on	off	*	off	*	off
6	7	off	on	on	*	off	*	off
8	9	on	off	off	*	off	*	off
10	11	on	off	on	*	off	*	off
12	13	on	on	off	*	off	*	off
14	15	on	on	on	*	off	*	off

* Switches 7 and 9 do not affect dual port operation; they may be set to ON or OFF.

The next three tables list option settings for the NT6D11 (AD or later) and NT5K35 DCHI Cards.

Protocol selection

SW3 is used to select the D-Channel protocol, as shown below.

Table 16
Protocol selection switch settings

Protocol	Switch setting SW3	
	1	2
DPNSS1/DASS2 (NT5K35/NT5K75 Emulation)	off	off
ISDN (NT6D11AB/AC emulation)	on	on

Port addressing modes

Port 0

Port 0 is used to select whether the asynchronous ESDI port is be disabled or not.

> ***Note:*** The asynchronous ESDI port must be set to “disabled” if operating mode is set to DPNSS1/DASS2.

Table 17
Port 0 mode selection

Protocol	Switch setting SW1	
	1	2
Not used	off	–
Asynchronous ESDI	on	off
Port disabled	on	on

Port 1

The table below shows valid mode combinations. If the port is disabled, it will not be visible to the system CPU.

Table 18
Port 1 settings

Mode	Emulates	Switch setting SW2		Switch setting SW3	
		1	2	1	2
DPNSS1/DASS2	NT5K35AA (Synchronous D-Channel standard addressing)	off	off	off	off
ISDN	NT6D11AB/AC	off	off	on	on
Expanded DPNSS1/DASS2	NT5K75AA (Synchronous D-Channel standard addressing)	off	on	off	off
Port disabled		on	on	–	–
Not used		on	off	–	–

Port address switch settings

Port address switch settings in the standard mode These apply to either SW1 or SW2 when the NT6D11AD/AE is in standard mode.

Note: S1 and S2 should be set to OFF.

Table 19
Port address switch settings in the standard mode

Port address	Switch setting							
	Group number			Device number				
	S3	S4	S5	S6	S7	S8	S9	S10
0	off	off	off	off	off	off	off	x
1	off	off	off	off	off	off	on	x
2	off	off	off	off	off	on	off	x
3	off	off	off	off	off	on	on	x
4	off	off	off	off	on	off	off	x
5	off	off	off	off	on	off	on	x
6	off	off	off	off	on	on	off	x
7	off	off	off	off	on	on	on	x
8	off	off	off	on	off	off	off	x
9	off	off	off	on	off	off	on	x
10	off	off	off	on	off	on	off	x
11	off	off	off	on	off	on	on	x
12	off	off	off	on	on	off	off	x
13	off	off	off	on	on	off	on	x
14	off	off	off	on	on	on	off	x
15	off	off	off	on	on	on	on	x

Port address switch settings in the expanded mode These settings only apply to SW2 (that is, the D-Channel port). Note that addresses 3D00H–3FFFH are never used.

Table 20
Port address switch settings in the expanded mode (Part 1 of 2)

Port address	Switch setting							
	Half group number			Device number				
	S3	S4	S5	S6	S7	S8	S9	S10
0	off	off	off	off	off	off	off	off
1	off	off	off	off	off	off	off	on
2	off	off	off	off	off	off	on	off
3	off	off	off	off	off	off	on	on
4	off	off	off	off	off	on	off	off
5	off	off	off	off	off	on	off	on
6	off	off	off	off	off	on	on	off
7	off	off	off	off	off	on	on	on
8	off	off	off	off	on	off	off	off
9	off	off	off	off	on	off	off	on
10	off	off	off	off	on	off	on	off
11	off	off	off	off	on	off	on	on
12	off	off	off	off	on	on	off	off
13	off	off	off	off	on	on	off	on
14	off	off	off	off	on	on	on	off
15	off	off	off	off	on	on	on	on

Table 20
Port address switch settings in the expanded mode (Part 2 of 2)

Port address	Switch setting							
	Half group number			Device number				
	S3	S4	S5	S6	S7	S8	S9	S10
16	off	off	off	on	off	off	off	off
17	off	off	off	on	off	off	off	on
18	off	off	off	on	off	off	on	off
19	off	off	off	on	off	off	on	on
20	off	off	off	on	off	on	off	off
21	off	off	off	on	off	on	off	on
22	off	off	off	on	off	on	on	off
23	off	off	off	on	off	on	on	on
24	off	off	off	on	on	off	off	off
25	off	off	off	on	on	off	off	on
26	off	off	off	on	on	off	on	off
27	off	off	off	on	on	off	on	on
28	off	off	off	on	on	on	off	off
29	off	off	off	on	on	on	off	on
30	off	off	off	on	on	on	on	off
31	off	off	off	on	on	on	on	on
32–63	off	off	on	Use same settings as for port addr. 0–31				
64–95	off	on	off	Use same settings as for port addr. 0–31				
96–127	off	on	on	Use same settings as for port addr. 0–31				
128–159	on	off	off	Use same settings as for port addr. 0–31				

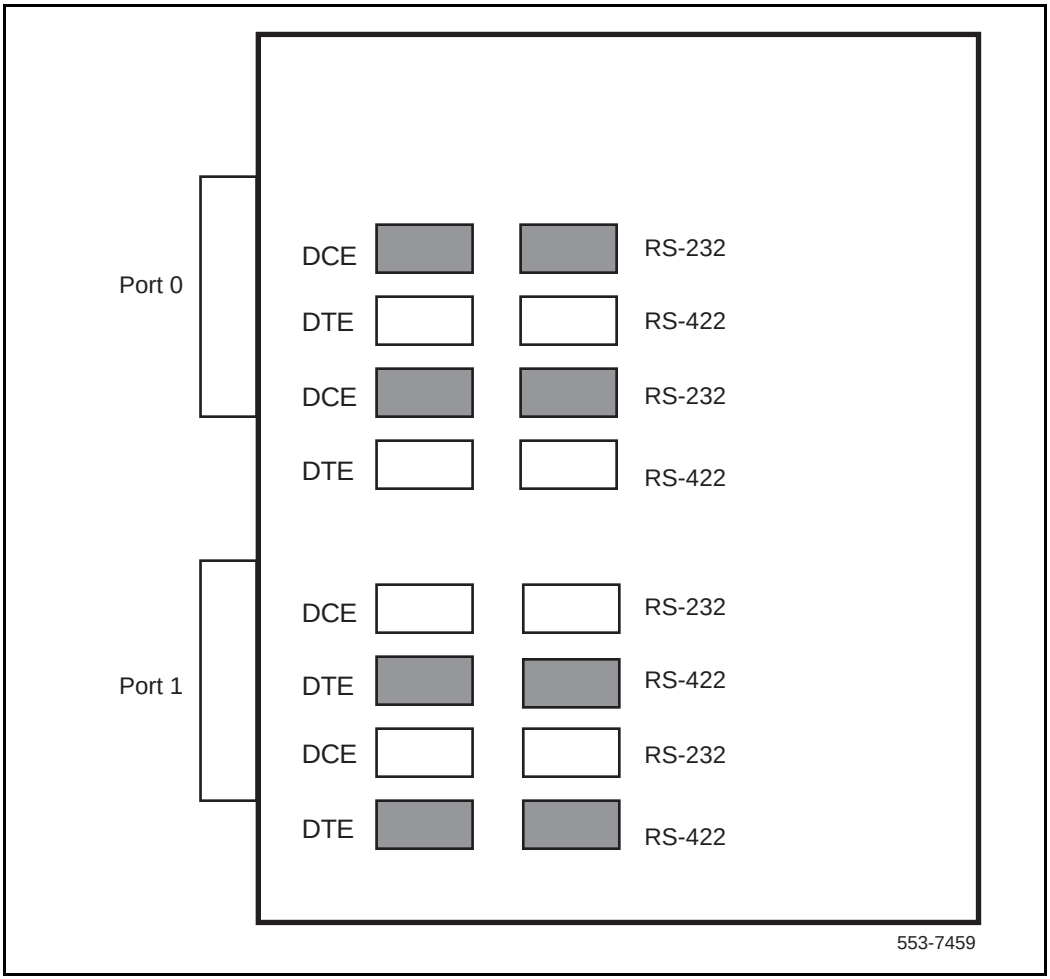
Jumper settings

The NT6D11AD/AE has two banks of option straps, one for each port. These select between DCE and DTE operation and whether the signaling interface is RS232 (APNSS or asynchronous) or RS422 (DPNSS1/DASS2).

DPNSS1/DASS2 configuration

The DPNSS1/DASS2 configuration is shown in Figure 7.

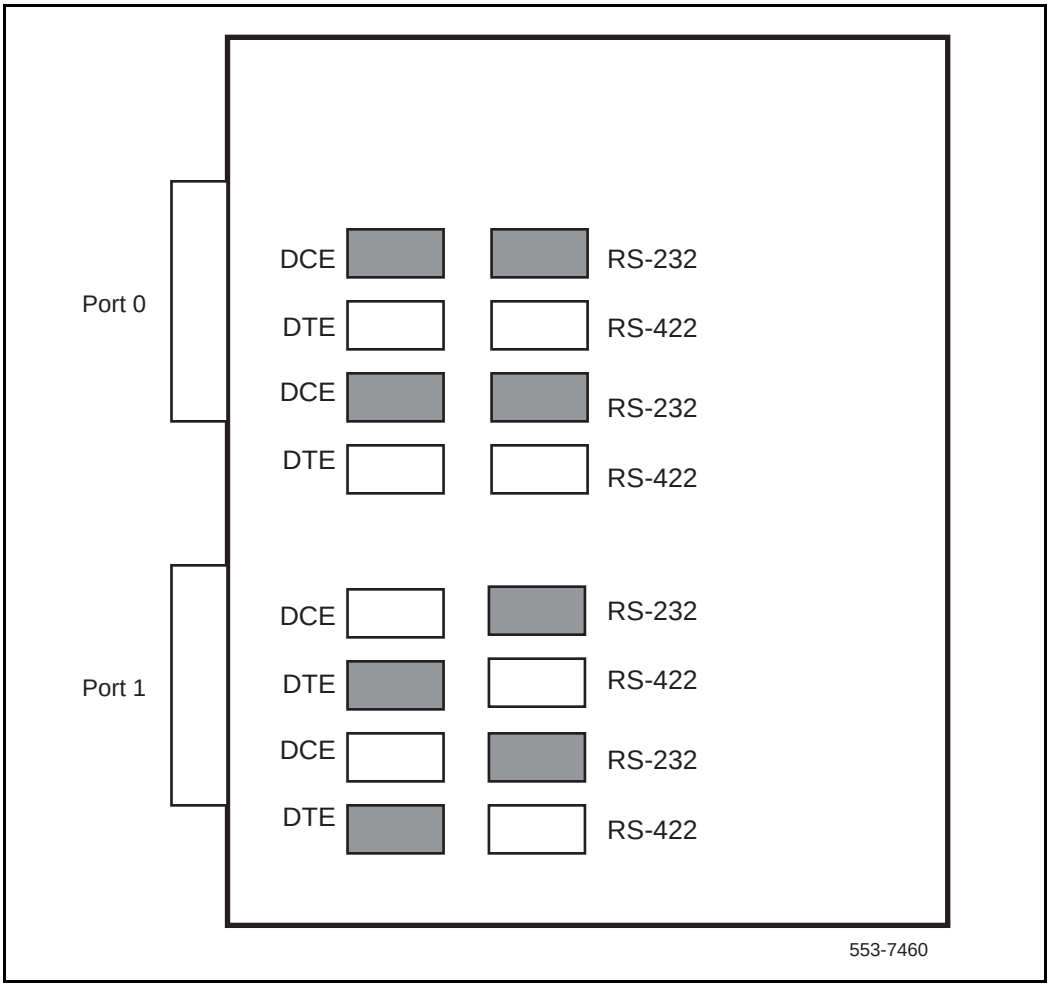
Figure 7
DPNSS1/DASS2 configuration



APNSS configuration

For APNSS via modem low speed and DTE connection, insert Port 1 straps, as illustrated by Figure 8.

Figure 8
APNSS configuration



ISDN PRI Configuration

The following figures illustrate the jumper settings for the NT6D11AD with ISL high-speed programming and ISL low-speed programming, respectively.

Figure 9
ISL high-speed programming

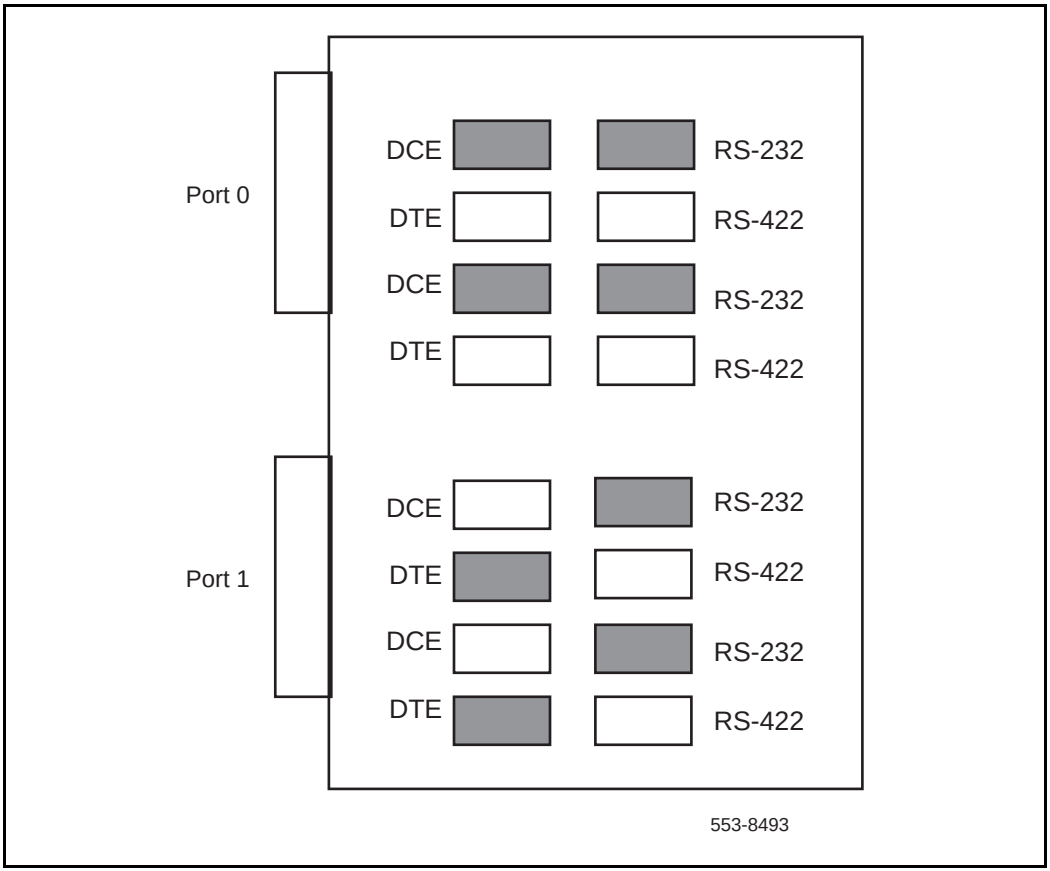
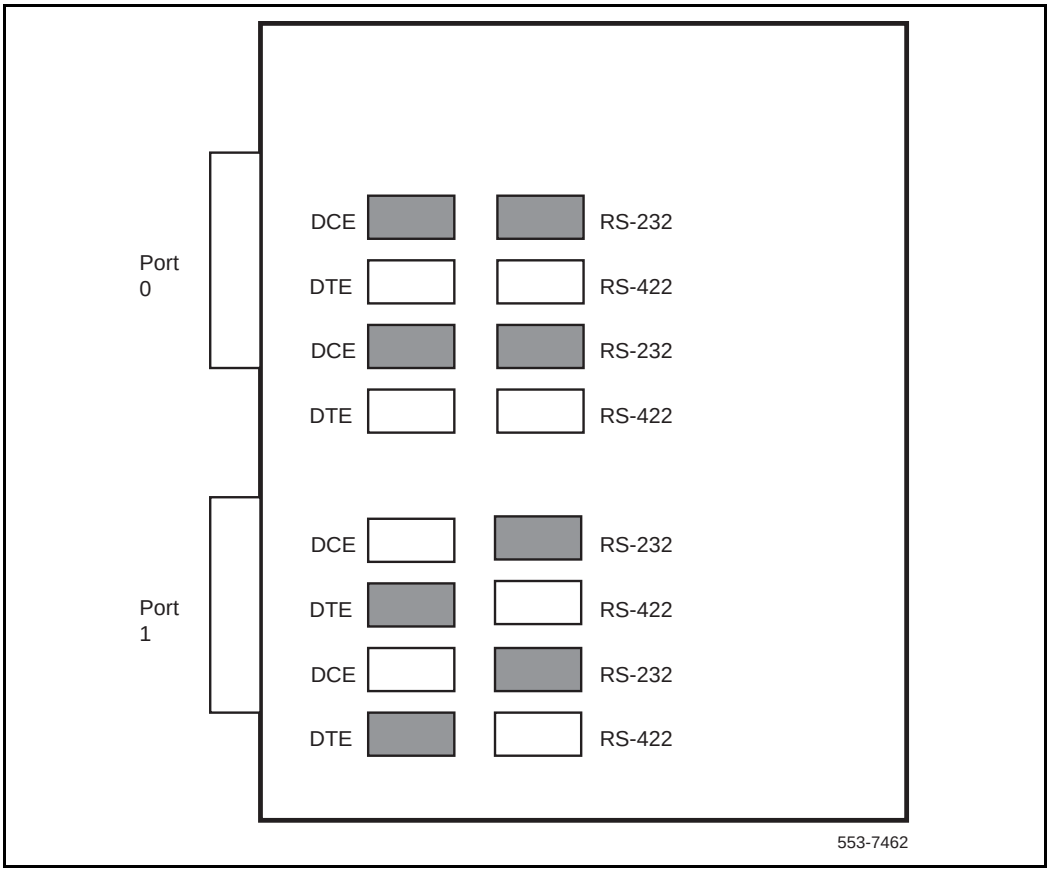


Figure 10
ISL low-speed programming



NT6D42 Ringing Generator DC

The next six tables list option settings for the NT6D42 Ringing Generator.

Table 21
NT6D42 recommended options for North American and British Telecom

Application	Ringing frequency	Ringing voltage	Jumper locations	Ringing output
North America	20 Hz	86 V ac	P5 High voltage message waiting	Low impedance
British Telecom	25 Hz	80 V ac	P4 No high voltage message waiting	Low impedance

Table 22
NT6D42 jumper locations P4 and P5

High voltage message waiting	Pin location
Disable	Jumper in P4
Enable	Jumper in P5
Note: One jumper must be installed.	

Table 23
NT6D42 jumper location J7

Ringing output	Jumper location J7
Low impedance (normal)	Connect pins 1 and 2
High impedance (Australia)	Connect pins 2 and 3

Table 24
NT6D42 SW1

Ringing frequency (Hz)	Position SW1
20	1
25	2
50	3

Table 25
NT6D42CB SW2

Ringing voltage	Message waiting voltage	SW2			
		1	2	3	4
86 V ac	–120 V dc	off	off	off	off
86 V ac	–150 V dc	off	off	off	on
80 V ac	–120 V dc	on	off	off	off
80 V ac	–150 V dc	on	off	off	on
75 V ac	–120 V dc	off	on	off	off
75 V ac	–150 V dc	off	on	off	on
70 V ac	–120 V dc	off	off	on	off
70 V ac	–150 V dc	off	off	on	on

Table 26
Table 27NT6D42CC SW2

Ringing voltage	Message waiting voltage	SW2			
		1	2	3	4
86 V ac	–100 V dc	off	off	off	off
86 V ac	–150 V dc	off	off	off	on
80 V ac	–100 V dc	on	off	off	off
80 V ac	–150 V dc	on	off	off	on
75 V ac	–100 V dc	off	on	off	off
75 V ac	–150 V dc	off	on	off	on
70 V ac	–100 V dc	off	off	on	off
70 V ac	–150 V dc	off	off	on	on

NT6D43 CE/PE Power Supply DC

The next five tables list option settings for the NT6D43 Power Supply.

> ***Note:*** For installations outside of North America, a jumper on the motherboard (at J5) and switches on the daughterboard must be set to select the ringing frequency or voltage and to enable or disable Message Waiting lamps. The daughterboard must be removed to access the switches. To remove the daughterboard, remove the screws on either side of the motherboard and carefully slide out the daughterboard.

Table 28
NT6D43 recommended options for North America and British Telecom

Application	Ringing frequency	Ringing voltage	Message Waiting	Ringing output
North America	20 Hz	86 V ac	Enabled (–150 V dc)	Low impedance
British Telecom	20 Hz	80 V ac	Disabled	Low impedance

Table 29
NT6D43 jumper locations P4 and P5

Message Waiting lamp	Pin location
Enabled	Jumper in E1
Disabled	Jumper in E2
Note: One jumper must be installed.	

Table 30
NT6D43 jumper location J5

Ringing output	Jumper location J5 (motherboard)
Low impedance (normal)	Connect pins 1 and 2
High impedance (Australia)	Connect pins 2 and 3

Table 31
NT6D43 SW1

Ringing frequency (Hz)	SW1		
	1	2	3
20	on	off	off
25	off	on	off
50	off	off	on

Table 32
NT6D43 SW2

Ringing voltage	Message waiting voltage	SW2			
		1	2	3	4
86 V ac	–120 V dc	off	off	off	off
86 V ac	–150 V dc	on	off	off	off
80 V ac	–120 V dc	off	off	off	on
80 V ac	–150 V dc	on	off	off	on
75 V ac	–120 V dc	off	off	on	off
75 V ac	–150 V dc	on	off	on	off
70 V ac	–120 V dc	off	on	off	off
70 V ac	–150 V dc	on	on	off	off

NT5D2101/NT9D1102 Core/Network Module Backplane

Jumper	Location (between slots)	Core/Network 1	Core/Network 0
JB1	14/15	Jumper plug not installed	Plug installed
Note: Berg jumper is located at the bottom of the primary side of the backplane. (This is inside the card cage assembly.)			

NT6D68 Core Module Backplane

Jumper	Location (between slots)	Core 1	Core 0
JB4	9 / 10	Jumper plug not installed	Plug installed
JB3	10 / 11	Plug installed	Plug installed
JB2	11 / 12	Plug installed	Plug installed
JB1	12 / 13	Plug installed	Plug installed
Note: Berg jumpers are located along the bottom of the primary side of the backplane. (This is inside the card cage assembly.)			

NT6D6003 Core Bus Terminator Card

Jumper	Location	Core 1	Core 0
J5	A21	Jumper plug not installed	Jumper plug not installed
J4	A25	Jumper plug not installed	Jumper plug not installed
J3	A28	Jumper plug not installed	Jumper plug not installed
J2	A30	Jumper plug not installed	Jumper plug not installed
J1	A35	Jumper plug not installed	Jumper plug not installed

Note 1: All jumpers are preset to closed (the two pins are connected together by a jumper plug) and must be left closed.

Note 2: Jumper J5 may not be present.

Note 3: There are four LEDs on the component side (not on the faceplate) of the card. In Core 0, all of the LEDs should be off. In Core 1, the top LED should be on and the other three should be off. The pattern of the LEDs matches the jumper settings on the Core Module backplane.

NT6D80 Multi-purpose Serial Data Link Card

	Port 0—SW4	**Port 0—SW8**
RS-232-D DTE or DCE*	all off	all off
RS-422-A DTE (terminal)	all off	all on
RS-422-A DCE (modem)	all on	all off
	Port 1—SW3	**Port 1—SW7**
RS-232-D DTE or DCE*	all off	all off
RS-422-A DTE	all off	all on
RS-422-A DCE	all on	all off
	Port 2—SW2	**Port 2—SW6**
RS-232-D DTE or DCE*	all off	all off
RS-422-A DTE	all off	all on
RS-422-A DCE	all on	all off
	Port 3—SW1	**Port 3—SW5**
RS-232-D DTE or DCE*	all off	all off
RS-422-A DTE	all off	all on
RS-422-A DCE	all on	all off

***** RS-232-D DTE and DCE modes are software configured. RS-422-A DTE and DEC modes are switch configured.

Note: The device number for the MSDL card is configured in LD17 at the prompt DNUM. You must also set the device number, using switches S9 and S10, on the MSDL card. S9 designates ones and S10 designates tens. To set the device number as 14, for example, set S10 to 1 and S9 to 4.

NT7D03 Ringing Generator DC

Frequency Hz	Volts RMS	Switch S300			
		1	2	3	4
20	86	off	off	off	off
20	80	off	off	off	on
25	86	on	off	off	off
25	80	on	off	off	on
25	70	off	on	off	off
50	86	off	on	off	on
50	80	off	off	on	off
50	70	off	off	on	on

NT7D04 CE/PE Power Supply DC

Frequency Hz	Volts RMS	Switch S300			
		1	2	3	4
20	86	off	off	off	*
20	80	on	off	off	*
25	86	off	on	off	*
25	80	on	on	off	*
25	70	off	off	on	*
50	86	on	off	on	*
50	80	off	on	on	*
50	70	on	on	on	*

***** Not applicable, can be ON or OFF.

NT8D14 Universal Trunk Card

The next five tables list option settings for the NT8D14 Universal Trunk Card.

Table 33
NT8D14 vintage AA jumper strap settings

Modes	Location	Jumper strap
Central Office (CO)	J1, J2	off
2-way tie trunk (loop dial repeat)	J1, J2	off
2-way tie trunk (outgoing/incoming dial)	J1, J2	off
Recorded announcement (RAN)	J1, J2	off
Paging trunk	J1, J2	off
Japan CO/DID operation	J1, J2	off
DID operation: loop length > = 2000 ¾	J1, J2	on
DID operation: loop length < 2000 ¾	J1, J2	off

Note 1: off = no strap present.

Note 2: Locations (J1, J2) apply to all eight units.

Table 34
NT8D14 vintages BA/BB jumper strap settings—factory standard

Trunk types	Loop length	Jumper strap settings			
		J1.X	J2.X	J3.X	J4.X
CO/FX/WATS	Zero–1524 m (5000 ft)	Off	Off	1–2	1–2
2-way tie (LDR)					
2-way tie (OAID)					
DID	Zero–600 ohms				
RAN: continuous operation mode	Not applicable: RAN and paging trunks should not leave the building.				
Paging					

Note: Jumper strap settings J1.X, J2.X, J3.X, and J4.X apply to all eight units; “X” indicates the unit number, 0–7. “Off” indicates that no jumper strap is installed on a jumper block. Store unused straps on the universal trunk card by installing them on a single jumper pin as shown below:

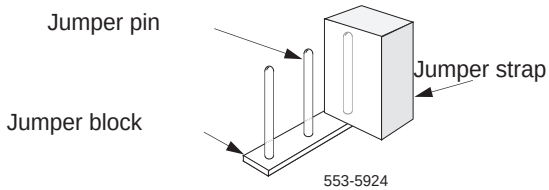


Table 35
NT8D14 vintages BA/BB jumper strap settings—extended range

Trunk types	Loop length	Jumper strap settings			
		J1.X	J2.X	J3.X	J4.X
CO/FX/WATS	> 1524 m (5000 ft)	Off	Off	1–2	2–3
2-way tie (LDR)					
2-way tie (OAID)					
DID	> 600 ohms	On	On	1–2	2–3
RAN: pulse start or level start modes	Not applicable: RAN trunks should not leave the building.	Off	Off	2–3	1–2

Note: Jumper strap settings J1.X, J2.X, J3.X, and J4.X apply to all eight units; “X” indicates the unit number, 0–7. “Off” indicates that no jumper strap is installed on a jumper block.

Table 36
NT8D14 vintages BA/BB trunk types—termination impedance and balance network

Trunk types	Terminating impedance (Note 1)	Balance network for loop lengths (Note 2)		
		Zero–915 m (zero–3000 ft)	915–1524 m (3000–5000 ft)	> 1524 m (> 5000 ft)
CO/FX/WATS	600 or 900 ohms	600 ohms	3COM1	3COM2
2-way tie (LDR)	600 or 900 ohms	600 ohms	3COM1	3COM2
2-way tie (OAID)	600 or 900 ohms	600 ohms	3COM1	3COM2
DID (loop < 600 ohms)	600 or 900 ohms	600 ohms	3COM1	3COM2
DID (loop Š 600 ohms)	600 or 900 ohms	600 ohms	N/A	3COM2
RAN: continuous operation mode	600 or 900 ohms	600 or 900 ohms	N/A	N/A
Paging	600 ohms	600 ohms	N/A	N/A

Note 1: The terminating impedance of each trunk unit is software selectable in LD14 and should match the nominal impedance of the connecting equipment.

Note 2: The balance network of each trunk unit is software selectable between resistive 600 or 900 ohms or 3COM and is jumper selectable between 3COM1 and 3COM2.

Table 37
NT8D14 vintages BA/BB cable loop resistance and loss

Cable length	Cable loop resistance (ohms)			Cable loop loss (dB) (non-loaded at 1kHz)		
	22 AWG	24 AWG	26 AWG	22 AWG	24 AWG	26 AWG
915 m (3000 ft)	97	155	251	0.9	1.2	1.5
1524 m (5000 ft)	162	260	417	1.6	2.0	2.5
2225 m (7300 ft)	236	378	609	2.3	3.0	3.7
3566 m (11700 ft)	379	607	977	3.7	4.8	6.0
5639 m (18500 ft)	600	960	1544	5.9	7.6	9.4

NT8D15 E&M Trunk Card

Jumper (Note 1)	Mode of operation (Note 2)					
	2-wire trunk		4-wire trunk			
	Type I	Paging	Type I	Type II	DX tip & ring pair	
					M—rcv M—xmt	E—rcv M—xmt
J1.X	off	off	off	off	Pins 1–2	Pins 2–3
J2.X	on	on (Note 3)	on	on	off	off
J3.X	off	off	off	off	(Note 4)	(Note 4)
J4.X	off	off	off	off	Pins 2–3	Pins 1–2
J5.X	off	off	off	off	(Note 4)	(Note 4)
J6.X	off	off	off	off	on	on
J7.X	off	off	off	off	on	on
J8.X	off	off	off	off	on	on
J9.X	Pins 2–3	Pins 2–3	Pins 2–3	Pins 2–3	Pins 1–2	Pins 1–2

Note 1: Jumper strap settings J1.X through J9.X apply to all 4 units; “X” indicates the unit number, 0–3.

Note 2: Off indicates that no jumper strap is installed on a jumper block.

Note 3: Paging trunk mode is not zone selectable.

Note 4: Jumper strap installed in this location only if external loop resistance exceeds 2500 ohms.

Note 5: Dot next to the jumper block indicates pin 1.

NT8D17 Conference/TDS Card

Switch and jumper settings are used to select the companding law and to change the conference attenuation PAD levels. These PAD levels are used if prompt CPAD = 1 in LD97. The J1 connector on the faceplate is reserved for future use.

You can enable or disable a warning tone for conference calls. When the option is enabled, the tone lets callers know they are entering a conference call. The switch for this option is preset to disable the warning tone.

Companding law	**Jumper at J3**		
µ-law (North America), A-law	connect pins 2 and 3		
Special cases	connect pins 1 and 2		
Attenuation levels	**SW2 (see Note)**		
	1	**2**	**3**
12.2 db	on	on	on
10.4 db	on	on	off
8.2 db	off	on	on
7.2 db	off	on	off
5.4 db	on	off	on
4.0 db	on	off	off
1.2 db	off	off	on
0 db	off	off	off

Note: Set position 4 to ON to disable the warning tone option. When the warning tone is enabled, select the warning tone level as shown below.

Level	**Jumper at J2**
24 db	connect pins 1 and 2
30 db	connect pins 2 and 3

NT8D21 Ringing Generator AC

Frequency	Amplitude	Settings		
		P1	**P2**	**P3**
20 Hz	86 V ac	open	open	2–5 8–11
25 Hz	70 V ac	open	1–4 7–10	open
25 Hz	80 V ac	open	3–6 9–12	open
25 Hz	86 V ac	open	2–5 8–11	open
50 Hz	70 V ac	1–4 7–10	open	open
50 Hz	80 V ac	3–6 9–12	open	open

NT8D22 System Monitor

The master system monitor, located in the column with CPU 0, must be numbered 0. Slave system monitors are numbered from 1 to 63.

For examples of system monitor option settings in basic configurations, see “Sample settings for NT8D22 System Monitors.”

Configure the system monitor in Remote Peripheral Equipment (RPE) columns as slaves. There is no serial connection between RPE columns.

Table 38
NT8D22 SW1

SW1 function	Position							
	1	2	3	4	5	6	7	8
Hybrid system* Meridian 1 columns only	on off							
Position 1 is OFF (Meridian 1 columns only) Position 1 is ON, all columns are PE Position 1 is ON, master column contains CPU: master slaves		off off on off						
DC-powered system AC-powered system			on off					
PFTU is activated by this column due to over-temperature PFTU is not activated by this column				on off				
Position 1 is OFF (Meridian 1 columns only) Operation with ST, STE, or RT Operation with all other SL-1 systems					off on off			
Position 1 is OFF (Meridian 1 columns only) Operation with ST, STE, or RT Operation with all other SL-1 systems ST, STE, or RT and PE columns (CPU in cabinet) All other SL-1 systems and PE columns (CPU in cabinet) Any hybrid system and CE and PE columns (CPU in Meridian 1 column) Meridian 1 columns only						off on off 	on on off off	on off on off
* Hybrid systems are a combination of SL-1 cabinets and Meridian 1 columns.								

Table 39
NT8D22 SW2

SW2 indication	Position							
	1	2	3	4	5	6	7	8
Master system monitor Slave system monitor	on off							
Operation with ST, STE, or RT All other operation		on off						
For master, indicates total number of slaves			Set 3–8 according to the table titled “NT8D22 settings for total number of slaves—SW2 on master.”					
For each slave, indicates the slave address			Set 3–8 according to the table titled “NT8D22 slave address—SW2 on slave.”					

Table 40
NT8D22 SW3

SW3 indication		Position			
		1	2	3	4
CTA	master slave	on off			
CTR	master slave		on off		
FAIL	master slave			on off	
MAJOR	master slave				on off

Table 41
NT8D22 settings for total number of slaves—SW2 on master

How many slave units	Switch position						How many slave units	Switch position					
	3	4	5	6	7	8		3	4	5	6	7	8
0	on	on	on	on	on	on	32	off	on	on	on	on	on
1	on	on	on	on	on	off	33	off	on	on	on	on	off
2	on	on	on	on	off	on	34	off	on	on	on	off	on
3	on	on	on	on	off	off	35	off	on	on	on	off	off
4	on	on	on	off	on	on	36	off	on	on	off	on	on
5	on	on	on	off	on	off	37	off	on	on	off	on	off
6	on	on	on	off	off	on	38	off	on	on	off	off	on
7	on	on	on	off	off	off	39	off	on	on	off	off	off
8	on	on	off	on	on	on	40	off	on	off	on	on	on
9	on	on	off	on	on	off	41	off	on	off	on	on	off
10	on	on	off	on	off	on	42	off	on	off	on	off	on
11	on	on	off	on	off	off	43	off	on	off	on	off	off
12	on	on	off	off	on	on	44	off	on	off	off	on	on
13	on	on	off	off	on	off	45	off	on	off	off	on	off
14	on	on	off	off	off	on	46	off	on	off	off	off	on
15	on	on	off	off	off	off	47	off	on	off	off	off	off
16	on	off	on	on	on	on	48	off	off	on	on	on	on
17	on	off	on	on	on	off	49	off	off	on	on	on	off
18	on	off	on	on	off	on	50	off	off	on	on	off	on
19	on	off	on	on	off	off	51	off	off	on	on	off	off
20	on	off	on	off	on	on	52	off	off	on	off	on	on
21	on	off	on	off	on	off	53	off	off	on	off	on	off
22	on	off	on	off	off	on	54	off	off	on	off	off	on
23	on	off	on	off	off	off	55	off	off	on	off	off	off
24	on	off	off	on	on	on	56	off	off	off	on	on	on
25	on	off	off	on	on	off	57	off	off	off	on	on	off
26	on	off	off	on	off	on	58	off	off	off	on	off	on
27	on	off	off	on	off	off	59	off	off	off	on	off	off
28	on	off	off	off	on	on	60	off	off	off	off	on	on
29	on	off	off	off	on	off	61	off	off	off	off	on	off
30	on	off	off	off	off	on	62	off	off	off	off	off	on
31	on	off	off	off	off	off	63	off	off	off	off	off	off

Table 42
NT8D22 slave address—SW2 on slave

Slave unit address	Position						Slave unit address	Position					
	3	4	5	6	7	8		3	4	5	6	7	8
1	on	on	on	on	on	off	33	off	on	on	on	on	off
2	on	on	on	on	off	on	34	off	on	on	on	off	on
3	on	on	on	on	off	off	35	off	on	on	on	off	off
4	on	on	on	off	on	on	36	off	on	on	off	on	on
5	on	on	on	off	on	off	37	off	on	on	off	on	off
6	on	on	on	off	off	on	38	off	on	on	off	off	on
7	on	on	on	off	off	off	39	off	on	on	off	off	off
8	on	on	off	on	on	on	40	off	on	off	on	on	on
9	on	on	off	on	on	off	41	off	on	off	on	on	off
10	on	on	off	on	off	on	42	off	on	off	on	off	on
11	on	on	off	on	off	off	43	off	on	off	on	off	off
12	on	on	off	off	on	on	44	off	on	off	off	on	on
13	on	on	off	off	on	off	45	off	on	off	off	on	off
14	on	on	off	off	off	on	46	off	on	off	off	off	on
15	on	on	off	off	off	off	47	off	on	off	off	off	off
16	on	off	on	on	on	on	48	off	off	on	on	on	on
17	on	off	on	on	on	off	49	off	off	on	on	on	off
18	on	off	on	on	off	on	50	off	off	on	on	off	on
19	on	off	on	on	off	off	51	off	off	on	on	off	off
20	on	off	on	off	on	on	52	off	off	on	off	on	on
21	on	off	on	off	on	off	53	off	off	on	off	on	off
22	on	off	on	off	off	on	54	off	off	on	off	off	on
23	on	off	on	off	off	off	55	off	off	on	off	off	off
24	on	off	off	on	on	on	56	off	off	off	on	on	on
25	on	off	off	on	on	off	57	off	off	off	on	on	off
26	on	off	off	on	off	on	58	off	off	off	on	off	on
27	on	off	off	on	off	off	59	off	off	off	on	off	off
28	on	off	off	off	on	on	60	off	off	off	off	on	on
29	on	off	off	off	on	off	61	off	off	off	off	on	off
30	on	off	off	off	off	on	62	off	off	off	off	off	on
31	on	off	off	off	off	off	63	off	off	off	off	off	off
32	off	on	on	on	on	on							

NT8D41AA Dual Port Serial Data Interface Paddle Board

The next three tables list option settings for the NT8D41AA SDI Paddle Board.

Table 43
NT8D41 port addresses

Device number		SW4			
Port 1	**Port 2**	**1**	**2**	**3**	**4**
0	1	off	on	on	on
2	3	off	on	on	off
4	5	off	on	off	on
6	7	off	on	off	off
8	9	off	off	on	on
10	11	off	off	on	off
12	13	off	off	off	on
14	15	off	off	off	off

Table 44
NT8D41 baud rate

Baud rate	Port 1–SW2				Port 2–SW3			
	1	2	3	4	1	2	3	4
150	off	off	on	on	off	off	on	on
300	off	on	off	on	off	on	off	on
600	off	off	off	on	off	off	off	on
1200	off	on	on	off	off	on	on	off
2400	off	off	on	off	off	off	on	off
4800	off	on	off	off	off	on	off	off
9600	off	off	off	off	off	off	off	off

Table 45
NT8D41AA DTE/DCE/Fiber switch setting

Mode	Port 1—SW5						Port 1—SW6					
	1	2	3	4	5	6	1	2	3	4	5	6
DTE (terminal)	on	on	on	on	on	on	off	off	off	off	off	off
DCE (modem)	off	off	off	off	off	off	on	off	on	on	on	on
NT1P61 (Fibre)	on	on	on	on	off	off	off	off	on	on	on	on
	Port 2—SW7						Port 2—SW8					
DTE (terminal)	on	on	on	on	on	on	off	off	off	off	off	off
DCE (modem)	off	off	off	off	off	off	on	off	on	on	on	on
NT1P61 (Fiber)	on	on	on	on	off	off	off	off	on	on	on	on

NT8D41BA Quad Serial Data Interface Paddle Board

Baud rate

Switches SW13, SW10, SW11, and SW12 determine the baud rate for ports 1, 2, 3, and 4, respectively. See the settings for these switches in the following table.

Table 46
NT8D41BA baud rate switch settings

Baud rate	Baud Clock (kHz)	SW13 (port 1), SW10 (port 2), SW11 (port 3), SW12 (port 4)			
		1	2	3	4
150	2.40	on	off	on	on
300	4.80	on	on	off	on
600	9.60	on	off	off	on
1,200	19.20	on	on	on	off
2,400	38.40	on	off	on	off
4,800	76.80	on	on	off	off
9,600	153.60	on	off	off	off
19,200*	307.20	on	on	on	on

* For future use.

Address

Switch SW15 or SW16 and logic on the card always address the four UARTs using a pair of addresses: 0 and 1, 2 and 3 through 14 and 15. The settings for both switches are shown in the following table. To avoid system problems, switches SW15 and SW16 must not be configured identically.

Table 47
NT8D41BA address switch settings

SW15	Port 1	Port 2	Switch settings							
SW16	**Port 3**	**Port 4**	**1***	**2+**	**3**	**4**	**5**	**6**	**7**	**8**
Device pair addresses	0	1	E	X	off	off	off	off	off	off
	2	3	E	X	off	off	off	off	off	on
	4	5	E	X	off	off	off	off	on	off
	6	7	E	X	off	off	off	off	on	on
	8	9	E	X	off	off	off	on	off	off
	10	11	E	X	off	off	off	on	off	on
	12	13	E	X	off	off	off	on	on	off
	14	15	E	X	off	off	off	on	on	on

***** To enable ports 1 and 2, set SW15 position 1 to ON. To enable ports 3 and 4, set SW16 position 1 to ON.
+ For each X, the setting for this switch makes no difference, because it is not used.

DTE/DCE/Fiber mode

Each serial port can be configured to connect to a terminal (DTE equipment), a modem (DCE equipment), or a Fiber Superloop Network card. Instructions for setting the switches SW2, SW3, SW4, SW5, SW6, SW7, SW8, and SW9 are shown in the following table.

Example: Port 1 is changed from DTE to DCE by reversing every switch position on SW3 and SW2; i.e., switches that were off for DTE are turned on for DCE, and switches that were on for DTE are turned off for DCE.

Table 48
NT8D41BA DTE/DCE/Fiber switch settings

Mode	Port 1 — SW 3						Port 1 —SW 2					
	1	2	3	4	5	6	1	2	3	4	5	6
DTE (terminal)	on	on	on	off	on	off	off	on	off	on	off	on
DCE (modem)	off	off	off	on	off	on	on	off	on	off	on	off
NT1P61 (Fiber)	on	on	on	on	on	off	on	on	on	off	on	off
	Port 2 — SW 5						**Port 2 — SW4**					
DTE (terminal)	on	on	on	off	on	off	off	on	off	on	off	on
DCE (modem)	off	off	off	on	off	on	on	off	on	off	on	off
NT1P61 (Fiber)	on	on	on	on	on	off	on	on	on	off	on	off
	Port 3 — SW 7						**Port 3— SW 6**					
DTE (terminal)	on	on	on	off	on	off	off	on	off	on	off	on
DCE (modem)	off	off	off	on	off	on	on	off	on	off	on	off
NT1P61 (Fiber)	on	on	on	on	on	off	on	on	on	off	on	off
	Port 4 — SW 9						**Port 4 — SW 8**					
DTE (terminal)	on	on	on	off	on	off	off	on	off	on	off	on
DCE (modem)	off	off	off	on	off	on	on	off	on	off	on	off
NT1P61 (Fiber)	on	on	on	on	on	off	on	on	on	off	on	off

NT9D34 Enhanced Mass Storage Interface Card

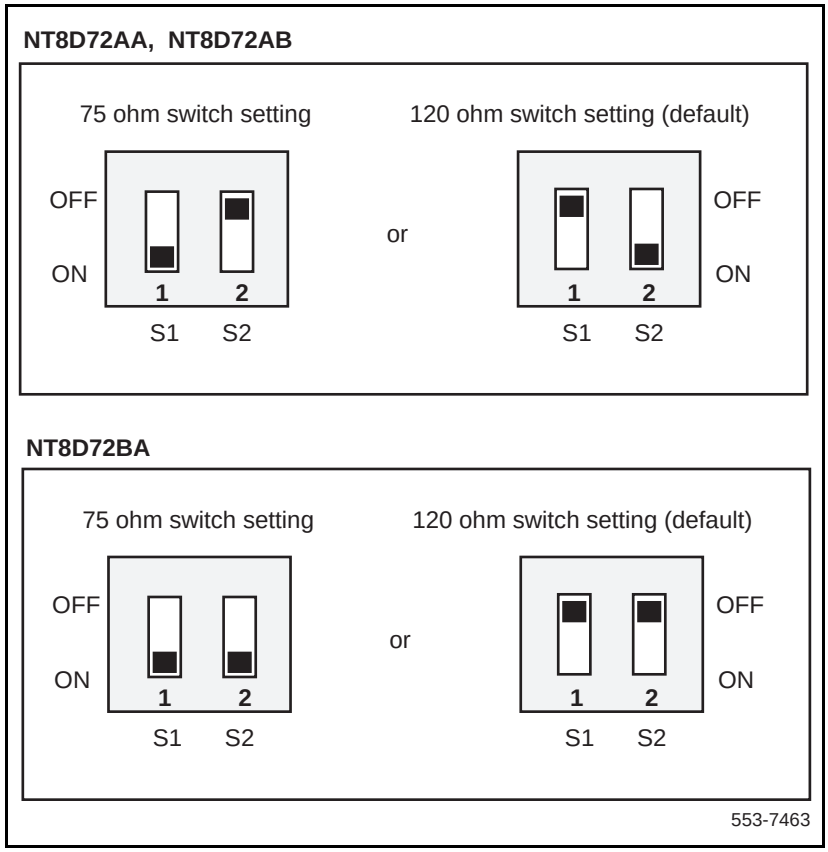
Options	Switch S2							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
3.5-inch disk drives only	on	off	off	off	on	off	*	**
3.5-inch disk drives and the hard drive	on	off	off	on	on	off	*	**

* For 4 Mbyte set to ON.
For 2 Mbyte set to OFF.
**For STE and 21E, set to on when the NTND01 Integrated CPU/Memory (ICM) Card is installed. For all other systems set to off.

NT8D72 Primary Rate Interface Card

The NT8D72 Primary Rate Interface card allows the setting of interface impedance by way of DIP switches.

Figure 11
NT8D72 DIP switch settings



NTND01 Integrated CPU and Memory Card

Options	Jumper at J4
Power direct from the backplane	Jumper pins 1 and 2
Power with battery backup from NTND02 (this is factory default setting)	Jumper pins 2 and 3

NTND02 Misc/SDI/Peripheral Signaling Card

The next four tables list option settings for the NTND02 MSPS Card.

Table 49
NTND02 port addresses

Device number		Even port SW8				Odd port SW9					
		1	2	3	4	1	2	3	4	5	6
0	1	*	off	off	off	off	off	off	on	on	on
2	3	*	off	off	off	off	off	off	on	on	off
4	5	*	off	off	off	off	off	off	on	off	on
6	7	*	off	off	off	off	off	off	on	off	off
8	9	*	off	off	off	off	off	off	off	on	on
10	11	*	off	off	off	off	off	off	off	on	off
12	13	*	off	off	off	off	off	off	off	off	on
14	15	*	off	off	off	off	off	off	off	off	off

* Switch does not affect operation; it may be set to ON or OFF.

Table 50
NTND02 baud rates—switch settings

Baud rate	Even port—SW10				Odd port—SW11			
	1	2	3	4	1	2	3	4
150	*	off	on	on	*	off	on	on
300	*	on	off	on	*	on	off	on
600	*	off	off	on	*	off	off	on
1200	*	on	on	off	*	on	on	off
2400	*	off	on	off	*	off	on	off
4800	*	on	off	off	*	on	off	off
9600	*	off	off	off	*	off	off	off
* Switch does not affect operation; it may be set to ON or OFF.								

Table 51
NTND02 DTE or DCE selection

Mode	Even port—SW4						Even port—SW5					
	1	2	3	4	5	6	1	2	3	4	5	6
DTE (terminal)	off	off	off	off	off	off	on	on	on	on	on	on
DCE (modem)	on	on	on	on	on	on	off	off	off	off	off	off
NT1P61 (Fibre)	off	off	on	on	on	on	on	on	on	on	off	off
	Odd port—SW2						Odd port—SW3					
DTE	off	off	off	off	off	off	on	on	on	on	on	on
DCE	on	on	on	on	on	on	off	off	off	off	off	off

Table 52
NTND02 data format selection

Format	Even port—SW6				Odd port—SW7			
	1	2	3	4	1	2	3	4
7 bits/character		off	on			off	on	
8 bits/character		off	off			off	off	
Odd parity	on			on	on			on
Even parity	on			off	on			off
No parity	off			*	off			*
* Switch does not affect operation; it may be set to ON or OFF.								

NTND10 Changeover and Memory Arbitrator Card

Options	Jumper at J3
1 Mbyte to 12 Mbyte memory	connect pins 1 and 2
768 K memory	connect pins 2 and 3

QMT8 Add-on Data Module

The next five tables list options settings for the QMT8 ADM.

Table 53
QMT8 jumper plugs

Mode	Pin location
ADM connected to DTE (terminal)	Jumpers in U6 and U7
ADM connected to DCE (modem)	Jumpers in U4 and U5

Table 54
QMT8 SW1 (slide switch)

SW1 function	SW1 settings
Set the voice frequency DN (VFDN) for modem pooling only*	Set the required 3- or 4-digit VFDN (example: 2406)
ADM is not connected to any modem	Set the switch to 0000
* The VFDN cannot be set unless jumpers U4 and U6 are plugged. The VFDN must be left-justified on the switch (example: if you select 234 as the VFDN, the switch must be set to 2340).	

Table 55
QMT8 SW2 (rotary dial)

Transmission mode	Transmission speed
Asynchronous	50 to 19200
Synchronous	1.2 K to 56 K

Table 56
QMT8 SW3 (DIP switch)

Transmission mode	Switch settings
Asynchronous	1—inhibit or enable parity 2—even or odd parity 3—HDX or FDX 4—7- or 8-bit code (Note 1) 5—1 or 2 stop bits (Note 2) 6—echo or no echo 7—manual or auto-answer 8—OFF for normal operation, or LOOPBACK test mode (Note 3)
Synchronous	1—not used 2—not used 3—HDX or FDX 4—modem or network (clock) 5—external or internal clock (Note 4) 6—echo or no echo 7—manual or auto-answer 8—OFF for normal operation, or LOOPBACK test mode (Note 3)

Note 1: This setting is overridden when switch SW4 positions 5 and 6 are ON. Use 8 bits/character and no parity for all ASCII terminals.

Note 2: This setting is overridden when switch SW4 position 1 is ON.

Note 3: See *Meridian Data Services operation and tests* (553-2731-300) for information on the use of the LOOPBACK setting.

Note 4: If the synchronous ADM (SADM) is connected to a synchronous terminal (DTE)

— internal clock indicates that the SADM transmits clock to the DTE
— external clock indicates that the SADM receives clock from the DTE

If the synchronous ADM (SADM) is connected to a synchronous modem (DCE)

— internal clock indicates that the SADM receives clock from the DCE
— external clock indicates that the SADM transmits clock to the DCE

Table 57
QMT8 SW4 (DIP switch)

Configuration option	Switch settings			
	1	**2**	**3**	**4**
Normal 7- or 8-bit operation or keyboard dialing	off	off		
Five-bit code (Note 1)	off	on		
Six-bit code (Note 1)	on	off		
Data hotline	on	on		
Digitone receiver required (Note 2)			off (Note 3)	
Digitone receiver not required (Note 2)			on (Note 3)	
Synchronous (Note 4)				on
Asynchronous (Note 4)				off

Note 1: 1.5 stop bits are not supported. These switch positions are not used for synchronous operation.

Note 2:
- If positions 1-3 and the terminal are ON, a carriage return invokes the auto dial operation.
- If positions 1 and 2 are ON with position 3 and the terminal OFF, turning the terminal on invokes hotline.
- If positions 1 and 2 are OFF and position 3 is ON or OFF, a carriage return invokes keyboard dialing. There is no auto-dialing with this mode.
- If position 3 is OFF, a call is terminated if DTR is dropped.

Note 3: Position 3 permits compatibility with a wide range of modems. Position 3 is OFF if the modem is controlled by level type MI/MIC leads. Position 3 is ON if the modem is controlled by pulse type leads.

Note 4: Both ASCII and EBCDIC codes are supported in the asynchronous mode. The synchronous mode operation is code independent. Use the reset button when an installed ADM is switched from asynchronous to synchronous mode.

QMT11 Asynchronous/Synchronous Interface Module

Hotline	on*
Forced DTR (data terminal ready)	on**
FDX (full duplex)	on
SYNC	on
INTernal CLK	on
Modem/Network	modem
Auto-Answer	on
Loopback	off

***** Only one side of the interface should be set to originate the hotline.
****** Forced DTR automatically reinitiates a dropped hotline call.

QPA62 Call Detail Recording 32 K RAM Card

Card vintage	Switch location	Switch settings							
		1	2	3	4	5	6	7	8
C, E, and G	E1	off	off	on	off	off	off	off	off
	G5	off	off	on	off	off	off	off	off
	F18	off	off	on	off	on	off	on	off
D	F5	off	off	on	off	off	off	off	off
	G5	off	off	off	off	off	off	off	off
F and H	F5	off	off	off	off	off	off	off	off
	G5	off	off	off	on	off	off	off	off

QPC30 4 K RAM Card

Device number	E5 switch						Device number	E5 switch					
	2	**3**	**4**	**5**	**6**	**7**		**2**	**3**	**4**	**5**	**6**	**7**
0	off	off	off	off	off	off	24	off	off	off	on	on	off
1	on	off	off	off	off	off	25	on	off	off	on	on	off
2	off	on	off	off	off	off	26	off	on	off	on	on	off
3	on	on	off	off	off	off	27	on	on	off	on	on	off
4	off	off	on	off	off	off	28	off	off	on	on	on	off
5	on	off	on	off	off	off	29	on	off	on	on	on	off
6	off	on	on	off	off	off	30	off	on	on	on	on	off
7	on	on	on	off	off	off	31	on	on	on	on	on	off
8	off	off	off	on	off	off	32	off	off	off	off	off	on
9	on	off	off	on	off	off	33	on	off	off	off	off	on
10	off	on	off	on	off	off	34	off	on	off	off	off	on
11	on	on	off	on	off	off	35	on	on	off	off	off	on
12	off	off	on	on	off	off	36	off	off	on	off	off	on
13	on	off	on	on	off	off	37	on	off	on	off	off	on
14	off	on	on	on	off	off	38	off	on	on	off	off	on
15	on	on	on	on	off	off	39	on	on	on	off	off	on
16	off	off	off	off	on	off	40	off	off	off	on	off	on
17	on	off	off	off	on	off	41	on	off	off	on	off	on
18	off	on	off	off	on	off	42	off	on	off	on	off	on
19	on	on	off	off	on	off	43	on	on	off	on	off	on
20	off	off	on	off	on	off	44	off	off	on	on	off	on
21	on	off	on	off	on	off	45	on	off	on	on	off	on
22	off	on	on	off	on	off	46	off	on	on	on	off	on
23	on	on	on	off	on	off	47	on	on	on	on	off	on

Note: Switch 1 is set to OFF for normal operation and set to ON for card debugging. Switch 8 is set to ON only when the card is used as the spare.

QPC31 8 K RAM Card

Device number	E5 switch						Device number	E5 switch					
	2	**3**	**4**	**5**	**6**	**7**		**2**	**3**	**4**	**5**	**6**	**7**
0	off	off	off	off	off	off	12	off	off	off	on	on	off
1	off	on	off	off	off	off	13	off	on	off	on	on	off
2	off	off	on	off	off	off	14	off	off	on	on	on	off
3	off	on	on	off	off	off	15	off	on	on	on	on	off
4	off	off	off	on	off	off	16	off	off	off	off	off	on
5	off	on	off	on	off	off	17	off	on	off	off	off	on
6	off	off	on	on	off	off	18	off	off	on	off	off	on
7	off	on	on	on	off	off	19	off	on	on	off	off	on
8	off	off	off	off	on	off	20	off	off	off	on	off	on
9	off	on	off	off	on	off	21	off	on	off	on	off	on
10	off	off	on	off	on	off	22	off	off	on	on	off	on
11	off	on	on	off	on	off	23	off	on	on	on	off	on

Note: Switch 1 is set to OFF for normal operation and set to ON for card debugging. Switch 8 is set to ON only when the card is used as the spare.

QPC33 Tape Interface Card

Tape unit	E8 switch (address selection)		
0	off	on	on
1	on	off	on
2	on	on	off
3	off	off	off

Note 1: Main system tape units are assigned as tape unit 0. In dual CPU systems, both QPC33 cards are assigned as tape unit 0.

Note 2: Use tape unit 1 for Mini-Call Detail Recording (CDR) feature.

QPC41 Miscellaneous Card

System type	B5 switch (memory configuration)			
	1	2	3	4
S, MS	on	off	off	on
A with split mode	off	off	on	off
All other systems	off	off	off	on

QPC43 Peripheral Signaling Card

Options (minimum vintage N)	Plug location
QSD39, QSD40, QSP31, QSP32 network shelves NT5D21 Core/Network Module NT6D39 CPU/Network Module NT8D35 Network Module NT9D11 Core/Network Module	F13
Other network shelves	F9

QPC45 Serial Data Interface Card

Address selection				Speed selection				Output device plug location	
Device number	C15 switch			Baud rate	B15 switch				
	4	5	6		1	2	3		
0	on	on	on	110	on	off	off	TTY	A15
1	off	on	on	300	off	off	off		
2	on	off	on	1200	off	off	on	Modem	B5
3	off	off	on	2400	off	on	off		
4	on	on	off	4800	off	on	on	RS-232 data terminal	B10
5	off	on	off						
6	on	off	off						
7	off	off	off						

QPC46, QPC155 Common Equipment Bus Extender Cards

Application	QPC46 A35 switch						QPC155 A35 switch					
	1	2	3	4	5	6	1	2	3	4	5	6
CPU located at extension end of bus	off	off	off	off	off	off	off		off	off	off	off
CPU not located at extension end of bus	off	off	off	off	off	on	on		off	off	off	off
Basic system (QPC155)		on										
Expanded system (QPC155)		off										

QPC62 1.5 Mbaud Converter Card

Carrier A & B options* distance to office repeater bay (ORB)		**Switch settings** SW1 and SW2**								**SW3**
(Feet)	**(Meters)**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
0–150***	0–45	off	off	on	on	off	on	on	off	6 V
151–450	46–147	off	on	on	off	on	on	off	on	12 V
451–750	148–229	on	off	off	on	on	off	on	on	12 V

***** If both cards provided are minimum vintage E, insert the plug-in jumper (U-link) between header pins 1 and 2 (located at B25). If any card provided is vintage D, or an earlier vintage, insert the plug-in jumper (U-link) between header pins 2 and 3. On systems equipped with dual network cards, you must use minimum vintage E.

****** Switch 1 (SW1) is set for carrier A, switch 2 (SW2) is set for carrier B. SW3 refers to the faceplate toggle switch.

******* Set to the 0–150 ft range when interfacing directly with the carrier (without going through an ORB).

QPC66 2 Mbaud Converter Card

With vintage C, insert the plug-in jumper (U-link) between header pins 2 and 3. On systems with dual network cards, you must use minimum vintage D; insert the plug-in jumper (U-link) between header pins 1 and 2 (located at B35).

QPC70, QPC217, QPC293 CO/FX/WATS Trunk Cards

Application	Unit 0 E35 switch						Unit 1 E5 switch					
	1	2	3	4	5	6	1	2	3	4	5	6
Loop start, 24 V CO battery	off	on	on	on	off	on	off	on	on	on	on	off
Loop start, 48 V CO battery	off	off	on	off	off	on	off	on	off	off	on	off
Ground start, 24 V CO battery	on	on	off	on	off	off	on	off	on	on	off	off
Ground start, 48 V CO battery	on	off	off	off	off	off	on	off	off	off	off	off

QPC71, QPC287 E&M/DX Signaling and Paging Trunk Cards

Application	Unit 0 E35 switch								Unit 1 E5 switch							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
E&M	off	off	off	on	off	off	on	off	off	off	off	on	off	off	on	off
Paging	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off
DX 2-wire (conductor loop < 2.5 K ¾)	on	on	off	off	off	on	off	on	on	on	off	off	off	on	off	on
DX 2-wire (conductor loop > 2.5 K ¾)	on	on	on	on	off	on	off	on	on	on	on	on	off	on	off	on
DX 4-wire (conductor loop < 2.5 K ¾)	off	off	off	off	on	on	off	on	off	off	off	off	on	on	off	on
DX 4-wire (conductor loop > 2.5 K ¾)	off	off	on	on	on	on	off	on	off	off	on	on	on	on	off	on

Note: DX trunks must be balanced correctly. If the loop is <2.5 K ¾, far-end balancing is standard. If the loop is >2.5 K ¾, far end balancing requires standard plus 2.5 K ¾. To connect PBX to PBX, switches should be arranged for loops to be >2.5 K ¾ at one end and <2.5 K ¾ at the other. Apply similar treatment when connecting to Pulse QPJ69 trunks.

QPC72, QPC288, QPC449, QPC559, QPC560 Loop Signaling Trunk Cards

The next two tables list option settings for loop signaling trunk cards.

Table 58
QPC72, QPC288, QPC449, QPC559, QPC560 single density

Application	Single density—Unit 0/1 F30/F8* switch					
	1	2	3	4	5	6
Outgoing ANI only:						
loop pulsing	off	off	off	off	off	off
battery and ground pulsing	off	off	off	off	on	off
Other than outgoing ANI	on	off	on	off	on	off
	Jumpers (QPC560) Units 0/1/2/3					
600 ¾ resistive impedance	connect pins 1 and 2					
3-component complex impedance	connect pins 2 and 3					

* On QPC7 vintage 2M (CSA SDT C22.2), the switch location is E27/E11.

Table 59
QPC72, QPC288, QPC449, QPC559, QPC560 double density

Application	Double density—Unit 0/1/2/3 H17/H3/A17/A3 switch					
	1	**2**	**3**	**4**	**5**	**6**
Outgoing ANI only:						
loop pulsing	off	off	off	off	off	off
battery and ground pulsing	off	off	off	off	on	off
Other than outgoing ANI	on	off	on	off	on	off
	Jumpers (QPC560) Units 0/1/2/3					
600 ¾ resistive impedance	connect pins 1 and 2					
3-component complex impedance	connect pins 2 and 3					

QPC73, QPC289 Recorded Telephone Dictation Cards

Application	Unit 0 D35 switch				Unit 1 D5 switch			
	1	2	3	4	1	2	3	4
External resistance < 430 ¾	off	off	off	off	on	off	off	off
External resistance > 430 ¾	off	off	off	off	on	off	off	off

QPC74, QPC290 Recorded Announcement Trunk Cards

Application	Unit 0—C35 switch				Unit 1—F35 switch			
	1	2	3	4	1	2	3	4
Audichron	off	off	on	off	off	off	on	off
Code-A-Phone	off	on	off	off	off	on	off	off
Cook Digital Announcer (continuous run)	off	off	on	off	off	off	on	off
Cook Digital Announcer (start/stop)	off	on	off	off	off	on	off	off
Test or music (600 ¾ source Z)	on	off	off	on	on	off	off	on
	Unit 2—C5 switch				Unit 3—F5 switch			
Audichron	off	off	on	off	off	off	on	off
Code-A-Phone	off	on	off	off	off	on	off	off
Cook Digital Announcer (continuous run)	off	off	on	off	off	off	on	off
Cook Digital Announcer (start/stop)	off	on	off	off	off	on	off	off
Test or music (600 ¾ source Z)	on	off	off	on	on	off	off	on

QPC84 Power Monitor

The next four tables list option settings for the QPC84 Power Monitor.

Table 60
PC84 vintage R and S—switch A4

Options	A4 switch							
	1	2	3	4	5	6	7	8
Option A*	on	off	on					
Option B*	off	on	off					
Monitor FAIL and CTR signal**								
— Defeat monitoring (XN/QCA108 cabinet)								on
— Allow monitoring (all other systems)								off

* Options A and B apply to vintage R only. Switch A4 is set based on the cabinet type and vintage suffix. See the following table for option selection.
** For vintage S, A4 switch 8 must be ON when CTR signal monitoring is required.

Table 61
QPC84 vintage R—options A and B

Cabinet type	Vintage	Option A	Option B
QCA6	all vintages		X
QCA7	all vintages		X
QCA8	all vintages		X
QCA23	all vintages		X
QCA28	all vintages		X
QCA37	all vintages		X
QCA58	vintages A thru E		X
QCA58*	vintage E1 only	X	
QCA58	vintage F1 and later		X
QCA60	all vintages		X
QCA74	vintages A thru E		X
QCA74*	vintage E1 only	X	
QCA74	vintage F1 and later		X
QCA96	all vintages		X
QCA108**	vintages A thru E		X
QCA108*/**	vintage E1 only	X	
QCA108**	vintage F1 and later		X
QCA109	vintage A and later		X

***** If a vintage A QSP43 or QSP44 converter shelf is equipped, the switch must be set in Option B mode.
****** C11 switch 1 must be ON for QCA108 cabinets.

Table 62
QPC84 vintage A to L—switch A5 or D18 (Part 1 of 2)

Options	A5 or D18* switch							
	1	2	3	4	5	6	7	8
86 V ringing generator fails								
Allow alarm and line transfer	on	off						
Allow alarm but defeat transfer	off	off						
Defeat alarm and transfer	off	on						
48 V regulator fails								
Allow alarm and line transfer			off				on	
Allow alarm but defeat transfer			off				off	
Defeat alarm and line transfer			on				off	
With reserve battery								
Allow trip input				on				
Defeat trip input				off				
±10 V fails (CONV 1)								
Allow line transfer					on			
Defeat line transfer					off			
±10 V fails (CONV 2)								
Allow line transfer						on		
Defeat line transfer						off		

* Switch locations depend on card vintages: for vintages A to K the switch is located at A5; for vintage L the switch is located at D18.

Note 1: Alarm refers to QPC84 LEDs, cabinet LEDs, remote alarm, and CE alarm (initiate internal diagnostics).

Note 2: Power, fan, and temperature LEDs are not functional when QPC84 is located in a PE cabinet.

Table 62
QPC84 vintage A to L—switch A5 or D18 (Part 2 of 2)

Options	A5 or D18* switch							
	1	2	3	4	5	6	7	8
Reset button								
Allow reset function								on
Defeat reset function								off

* Switch locations depend on card vintages: for vintages A to K the switch is located at A5; for vintage L the switch is located at D18.

Note 1: Alarm refers to QPC84 LEDs, cabinet LEDs, remote alarm, and CE alarm (initiate internal diagnostics).

Note 2: Power, fan, and temperature LEDs are not functional when QPC84 is located in a PE cabinet.

Table 63
QPC84 vintage P to S—switches D29 and C11 (Part 1 of 3)

Options	D29 switch								C11 switch						
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7
86 V ringing generator fails															
Allow alarm/line transfer	on	off													
Allow alarm, defeat transfer	off	off													
Defeat alarm/line transfer	off	on													
48 V regulator fails															
Allow alarm/line transfer			on				on								
Allow alarm, defeat transfer			on				off								
Defeat alarm/line transfer			off				off								
With reserve battery															

Note 1: Alarm refers to QPC84 LEDs, cabinet LEDs, remote alarm, and CE alarm (initiate internal diagnostics).

Note 2: Power, fan, and temperature LEDs are not functional when QPC84 is located in a PE cabinet.

Note 3: C11 switch 1 must be ON for QCA108 cabinets.

Table 63
QPC84 vintage P to S—switches D29 and C11 (Part 2 of 3)

Options	D29 switch								C11 switch						
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7
Allow trip input			on												
Defeat trip input			off												
±10 V fails (QSP43/44 shelf)															
Allow line transfer				on	on						on	on	off	off	
Defeat line transfer				off	off						off	off	off	off	
±10 V fails (CONV 1)															
Allow line transfer				on							off	off	on		
Defeat line transfer				off							off	off	off		
±10 V fails (CONV 2)															
Allow line transfer						on					off	off		on	
Defeat line transfer						off					off	off		off	
Reset button															
Allow reset								on							
Defeat reset								off							
CE power failure															
Allow remote alarm and SYSLTOUT signal									on						
Defeat remote alarm and SYSLTOUT signal									off						
Monitor FAIL/CTR signal															
Defeat monitoring (QCA58, QCA108, QCA109 cabinets)										on					
Allow monitoring (all other cabinets)										off					

Note 1: Alarm refers to QPC84 LEDs, cabinet LEDs, remote alarm, and CE alarm (initiate internal diagnostics).

Note 2: Power, fan, and temperature LEDs are not functional when QPC84 is located in a PE cabinet.

Note 3: C11 switch 1 must be ON for QCA108 cabinets.

Table 63
QPC84 vintage P to S—switches D29 and C11 (Part 3 of 3)

Options	D29 switch								C11 switch						
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7
Monitor cooling unit failure															
Defeat monitoring (QCA58 or QCA108 cabinets or QCA109 cabinet with half-group configuration)															on
Allow monitoring (all other configurations)															off

Note 1: Alarm refers to QPC84 LEDs, cabinet LEDs, remote alarm, and CE alarm (initiate internal diagnostics).

Note 2: Power, fan, and temperature LEDs are not functional when QPC84 is located in a PE cabinet.

Note 3: C11 switch 1 must be ON for QCA108 cabinets.

QPC99 Carrier Interface Card

The next two tables list option settings for the QPC99 Carrier Interface Card.

Table 64
QPC99 A20 switch and F25 pad switch

Carrier location	Interface equipment	A20 switch						F25 pad switch					
		1	2	3	4	5	6	7	8	9	10	11	12
Local	ORB at local end (pads in)	off	off	off	on	off	on	on	on	on	on	off	off
	Direct to LD-1 or GTE carrier (no ORB at local end) (pads out)	off	off	off	on	on	on	off	off	off	off	on	on
Remote	ORB at remote end (pads in)	on	off	on	off	off	on	on	on	on	on	off	off
	Direct to LD-1 or GTE carrier (no ORB at remote end) (pads out)	on	off	on	off	on	on	off	off	off	off	on	on
Note: Consult manufacturer for switch settings if card interfaces with other type of carrier equipment.													

Table 65
QPC99 S2 switch

Carrier location	Interface equipment	SW2					
		1	2	3	4	5	6
Local	ORB at local end (pads in)	off	off	off	off	on	on
	Direct to LD-1 or GTE carrier (no ORB at local end) (pads out)	on	on	on	on	off	off
Remote	ORB at remote end (pads in)	off	off	off	off	on	on
	Direct to LD-1 or GTE carrier (no ORB at remote end) (pads out)	on	on	on	on	off	off

QPC139 Serial Data Interface Card

The next two tables list option settings for the QPC139 SDI Card.

Table 66
QPC139 address and output device selection

Address selection					Output device		
Device number	F7 switch					Port 1 plug location	Port 2 plug location
	1	2	3	4			
0–1	off	on	on	on	Modem	A13	A25
2–3	off	on	on	off			
4–5	off	on	off	on	RS-232 data terminal	A16	A22
6–7	off	on	off	off			
8–9	off	off	on	on			
10–11	off	off	on	off			
12–13	off	off	off	on			
14–15	off	off	off	off			

Note 1: Switches at D22 and D31 are not used and set to OFF.

Note 2: When connecting to NT1P61 Fibre Superloop Network Card, install DIP switches as follows: location A13=off off on on off on on, A16= on on on on on off off, A22=on on on on on off off, A25=off off on on off on on

Table 67
QPC139 baud rate selection

Baud rate	Port 1 C34 switch				Port 2 C22 switch			
	1	2	3	4	1	2	3	4
110	off	on	on	on	off	on	on	on
150	off	off	on	on	off	off	on	on
300	off	on	off	on	off	on	off	on
600	off	off	off	on	off	off	off	on
1200	off	on	on	off	off	on	on	off
2400	off	off	on	off	off	off	on	off
4800	off	on	off	off	off	on	off	off
9600	off	off	off	off	off	off	off	off

Note: Switches at D22 and D31 are not used and set to OFF.

QPC173 Power Monitor

The next two tables list option settings for the QPC173 Power Monitor.

Table 68
QPC173 vintages A to D

Options Vintages A to D	A31 switch							
	1	2	3	4	5	6	7	8
Option A*	on	off	on					
Option B*	off	on	off					
Allow reset button function (VL only)**					on			
Defeat reset button function (VLE/XL/XN)**					off			
Allow trip input***						on		
Defeat trip input***						off		
Systems with one QCA25 (QCA14) cabinet or QCA55 cabinet equipped with one group							on	on
Systems with two QCA25 (QCA14) cabinets or QCA55 cabinet equipped with two or three groups							on	off

* Options A and B apply to vintage D only. Switch A31 is set based on the cabinet type and vintage suffix. See the following table for option selection.
** Switch 5—Applies to C and later vintages only.
*** Switch 6—If trip input is required, must be ON to allow the -48 V cabinet input switches of QCA24 (QCA10), QCA25 (QCA14), QCA8, and QCA55 cabinets to trip when battery voltage is < 43.5 V. If trip input is not required, switch 6 should be OFF.
Switch 7—Must be ON for temperature monitoring even in a system with two or three groups.
Switch 8—Must be OFF for fan alarm monitoring in a system with more than one group.

Table 69
QPC173 vintage D—options A and B

Cabinet type	Vintage	Option A	Option B
QCA10	all vintages		X
QCA24	all vintages		X
QCA55	vintages A thru E		X
QCA55*	vintage E1 only	X	
QCA55	vintages F1 and later		X

***** If a vintage A QBL21 distribution shelf is equipped, the switch must be set in the Option B mode.

QPC197 Tone Detector Switch Card

Options (minimum vintage C)	Jumper plug locations
SL-1 telephone ringing: Audible ringing of 533/666 Hz modulated at 10 Hz—connect pins 1 and 2 20 Hz—connect pins 2 and 3	 B5 B5
Dial tone level: Low dial tone level, 23 dB below overflow level connect pins 1 and 2 High dial tone level, 19 dB below overflow level connect pins 2 and 3	 B10 B10

QPC214 Memory Controller Card

Memory option	QPC214A, B, or C A35 switch								QPC214D A35 switch			
	1	2	3	4	5	6	7	8	1	2	3	4
A standard	off	on	off	off	off	on	off	off	off	off	on	off
A split store	on	off	off	off	off	on	off	off	on	off	on	off
LE standard	off	off	off	off	off	off	off	off	off	off	off	off
LE split store	on	off	off	off	off	off	off	off	on	off	off	off
VLE, XL standard	off	off	off	off	off	off	off	off	off	off	off	off
M standard	—	—	—	—	—	—	—	—	on	on	off	off

QPC215 Segmented Bus Extender Card

Network group	D3 Switch					D3 Switches 1, 7, 8, 9, and 10 (for QPC215D vintage)
	2	3	4	5	6	
0	off	on	on	on	on	**1**= on (Page 3 memory) **1**= off (Page 7 memory)
1	off	on	on	on	off	**7**= on (S/W Enabled XT/71) **7**= off (H/W Enabled ST/21)
2	off	on	on	off	on	**8**= on (CPU/Master) **8**= off (Remote/Slave)
3	off	on	on	off	off	**9**= on (card is in NT8D35) **9**= off (card is in all others)
4	off	on	off	on	on	**10**= unused
To MGC	off	off	off	off	off	

QPC216 3-Port Extender Card

Application	A20 switch			
	1	2	3	4
Half network group	on	off		
Full network group	off	off		
Page 3 address			on	
Page 7 address			off	
Multi-group systems				on
Single-group systems				off

QPC218, QPC272 CO/FX/WATS Trunk Cards

The next two tables list option settings for the QPC128 and QPC272 trunk cards.

Table 70
QPC218 (other than vintage F) and QPC272 switch settings

Application	Unit 0 E35 switch						Unit 1 E5 switch					
	1	2	3	4	5	6	1	2	3	4	5	6
Loop start	off	off	off	off	off	off	off	off	off	off	off	off
Loop start with automatic guard detection	off	off	on	off	off	off	off	off	on	off	off	off
Ground start	on	off	on	off	off	off	on	off	on	off	off	off

Table 71
QPC218 vintage F

Application	Unit 0 F27 switch								Unit 1 F9 switch							
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
Loop start	off	on	off	off	off	off	off	on	off	on	off	off	off	off	off	on
Loop start with automatic guard detection	off	on	on	off	off	off	off	on	off	on	off	off	off	off	off	on
Ground start	off	on	on	off	off	on	off	on	off	on	off	off	off	on	off	on

QPC219, QPC295 CO/FX/WATS Trunk Cards

Application	Unit 0 E35 switch								Unit 1 E5 switch							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Loop start:																
Third wire battery on M lead	off	off	off	off	on	off			off	off	off	off	on	off		
Third wire ground on M lead	off	off	off	off	off	on			off	off	off	off	off	on		
Second pair (M & MM)	off	off	off	off	off	off			off	off	off	off	off	off		
Automatic guard detection	off	off	on						off	off	on					
Ground Start:																
Third wire battery on M lead	on	off	on	off	on	off			on	off	on	off	on	off		
Third wire ground on M lead	on	off	on	off	off	on			on	off	on	off	off	on		
Second pair (M & MM)	on	off	on	off	off	off			on	off	on	off	off	off		
900 ¾ termination*							on	on							on	on
600 ¾ termination*							off	off							off	off

* Minimum vintage E.
Vintage J has a third switch that must be set as follows:

1	2	3	4	5	6	7	8
on	off	off	off	on	off	on	off

QPC237A, QPC237B, QPC296A, QPC296B 4-Wire E&M/DX Signaling Trunk Cards

The next three tables show option settings for the trunk cards listed above.

Table 72
QPC237 vintage A, QPC237 vintage B, QPC296 vintage A, QPC296 vintage B

Unit 0: **Unit 1:**	**S1 (E34)** **S3 (E4)**						**S2 (F20)** **S4 (F7)**					
Application	**1**	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**	**4**	**5**	**6**
E&M Type I	off	off	on	on	off	off	on	off	on	on	off	on
E&M Type II	off	off	on	off	off	off	on	on	off	off	on	off
DX 4-wire lead A1 to T1, T1 to T2:												
conductor loop < 2.5 K ¾	off	on	off	on	on	off	off	off	off	on	off	off
conductor loop > 2.5 K ¾	on	on	off	on	on	off	on	off	off	on	off	off
DX 4-wire lead A1 to T2, B1 to T1:												
conductor loop < 2.5 K ¾	off	on	off	on	on	off	off	off	off	on	off	off
conductor loop > 2.5 K ¾	on	on	off	on	on	off	on	off	off	on	off	off

Unit 0: **Unit 1:**	**S6 (D31)** **S5 (D3**					
Application	**1**	**2**	**3**	**4**	**5**	**6**
E&M Type I	off	off	off	off		
E&M Type II	off	off	off	off		
DX 4-wire lead A1 to T1, T1 to T2:						
conductor loop < 2.5 K ¾	off	on	off	on		
conductor loop > 2.5 K ¾	off	on	off	on		
DX 4-wire lead A1 to T2, B1 to T1:						
conductor loop < 2.5 K ¾	on	off	on	off		
conductor loop > 2.5 K ¾	on	off	on	off		
Interface:						
carrier interface					on	on
public network					off	off

Table 73
QPC237 vintage C

Unit 0: **Unit 1:**	**S1 (D28)** **S3 (D10)**						**S2 (D31)** **S4 (D7)**					
Application	**1**	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**	**4**	**5**	**6**
E&M Type I	off	off	off	on	off	on	off	off	on	on	off	off
E&M Type II	off	off	off	off	off	on	off	on	off	off	on	off
British Telecom	off	off	off	off	on	on	off	off	on	off	off	off
DX 4-wire lead A1 to T1, B1 to T2		on	on	on	off	off	on	off	on	on	off	off
DX 4-wire lead A1 to T2, B1 to T1		on	on	on	off	off	on	off	on	on	off	off
conductor loop > 2.5 K ¾	on											
conductor loop < 2.5 K ¾	off											

Unit 0: **Unit 1:**	**S6 (E26)** **S5 (E12)**					**S8 (F33)** **S7 (S4)**				
Application	**1**	**2**	**3**	**4**		**1**	**2**	**3**	**4**	
E&M Type I	off	off	off	off						
E&M Type II	off	off	off	off						
British Telecom	off	off	off	off						
DX 4-wire lead A1 to T1, B1 to T2	off	on	off	on		on	on			
DX 4-wire lead A1 to T2, B1 to T1	on	off	on	off		on	on			
Interface:										
carrier interface						on		on		
public network							off		off	

Table 74
QPC237 vintage D, QPC237 vintage E, QPC296 vintage C

Unit 0: **Unit 1:**	**S1 (D33)** **S2 (D5)**									
Application	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
E&M Type I	off	off	off	off	off	off	off	off	on	off
E&M Type II	off	off	off	off	off	off	off	off	on	off
British Telecom	off	off	off	off	off	off	off	off	on	off
DX 4-wire lead M to T1, E to T2	off	on	off	on			on	on	off	on
DX 4-wire lead M to T2, E to T1	on	off	on	off			on	on	off	on
conductor loop > 2.5 K ¾					on	on				
conductor loop < 2.5 K ¾					off	off				

Unit 0: **Unit 1:**	**S3 (E25)** **S5 (E13)**						**S4 (B33)** **S6 (B5)**					
Application	**1**	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**	**4**	**5**	**6**
E&M Type I		on		on	on	on	off	off	on	on	off	off
E&M Type II		on		on	on	off	off	on	off	off	on	off
British Telecom		on		on	on	off	on	off	off	on	off	off
DX 4-wire lead M to T1, E to T2		on		on	off	on	off	off	on	on	off	off
DX 4-wire lead M to T2, E to T1		on		on	off	on	off	off	on	on	off	off
Interface:												
carrier interface	on		on									
public network		off		off								

QPC239 Recorded Telephone Dictation Trunk Card

Transmission during dialing	Unit 0 D33 switch				Unit 1 D8 switch			
	1	2	3	4	1	2	3	4
Yes	off	off	off	off	off	off	off	off
No	on	off	off	off	on	off	off	off

QPC327 Multifrequency Sender/Receiver Card

Options	Jumper plug location
A-Law operation—connect pins 2 and 3	A35
µ-Law operation—connect pins 1 and 2	A35

QPC330, QPC331 Buffered Message Register Trunk Cards

Application	Unit 0 E35 switch						Unit 1 E5 switch					
	1	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**	**4**	**5**	**6**
Loop start (accumulated pulsing):												
Third wire battery on M lead	off	off	off	off	on	off	off	off	off	off	on	off
Third wire ground on M lead	off	off	off	off	off	on	off	off	off	off	off	on
Second pair (M & MM)	off	off	off	off	off	off	off	off	off	off	off	off
Ground start (accumulating):												
Third wire battery on M lead	on	off	on	off	on	off	on	off	on	off	on	off
Third wire ground on M lead	on	off	on	off	off	on	on	off	on	off	off	on
Second pair (M & MM)	on	off	on	off	off	off	on	off	on	off	off	off
Regular CO trunk (same as QPC219)	off	on	off	on	off	off	off	on	off	on	off	off

QPC377, QPC379 Conference Cards

Options	Strap location
Enable warning tone—insert strap from E20 to ENB	D1
Disable warning tone—insert strap from E19 to DIS	D1

QPC387 Peripheral Buffer Card

Ringing voltage	A35 switch			
	5	6	7	8
16 Hz, 86 Vrms superimposed on –48 V	on	off	off	off
20 Hz, 86 Vrms superimposed on –48 V	off	on	off	off
25 Hz, 75 Vrms superimposed on –48 V	off	off	on	off
50 Hz, 70 Vrms superimposed on –48 V	off	off	off	on

QPC390, QPC391 Pulsed E&M Trunk Cards

Table 75
QPC390, QPC391 Pulsed E&M Trunk Cards (Part 1 of 2)

Unit 0: **Unit 1:**	**S1 (D30)** **S3 (D30)**						**S2 (D25)** **S4 (D15)**					
Application	**1**	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**	**4**	**5**	**6**
Pulsed E&M Type I:												
North America	off	off	off	on	off	off	off	off	on	on	off	off
Norway	off	off	on	off	on	off	off	off	on	off	off	off
British Post Office	off	off	off	on	off	on	off	off	on	off	off	off
Pulsed E&M Type II:												
North America	off	off	off	off	off	off	off	on	off	off	on	off
Norway	off	off	on	off	off	off	off	on	off	off	on	off
British Post Office	off	off	off	off	off	off	off	on	off	off	on	off
DX 4-wire lead M to T1, lead E to T2:												
Norway		on	on	off	on	off		off	off	off	off	
British Post Office		on	off	off	on	on		off	off	off	off	
DX 4-wire lead M to T2, lead E to T1:												
Norway		on	on	off	on	off		off	off	off	off	
British Post Office		on	off	off	on	on		off	off	off	off	
DX 4-wire:												
conductor loop < 2.5 K ¾	off						off					
conductor loop > 2.5 K ¾	on						on					
Carrier failure alarm:												
enabled												on
disabled												off
Note: Set all positions on S7 (at B37) to OFF.												

Table 75
QPC390, QPC391 Pulsed E&M Trunk Cards (Part 2 of 2)

Unit 0: **Unit 1:**	**S6 (F35)** **S5 (F5)**					
Application	**1**	**2**	**3**	**4**	**5**	**6**
Pulsed E&M Type I:						
North America	off	off	off	off	off	off
Norway	off	off	off	off	off	off
British Post Office	off	off	off	off	off	off
Pulsed E&M Type II:						
North America	off	off	off	off	off	off
Norway	off	off	off	off	off	off
British Post Office	off	off	off	off	off	off
DX 4-wire lead M to T1, lead E to T2:						
Norway	off	on	off	on	on	on
British Post Office	off	on	off	on	on	on
DX 4-wire lead M to T2, lead E to T1:						
Norway	on	off	on	off	on	on
British Post Office	on	off	on	off	on	on
Note: Set all positions on S7 (at B37) to OFF.						

QPC414 Network Card

Application	Pin connection J3/S2 and J4/S1
Option A: In-house remote peripheral equipment (RPE), microwave, fiber optics	connect pins 2 and 3 (pin 1 is next to the white dot)
Option B: T-1 facilities (including PRI/DTI),* channel service unit	connect pins 1 and 2 (pin 1 is next to the white dot)

***** To connect 1.5M RPE to T-1 through channel service unit, select option B. For 2M RPE, jumper plugs are not used.

Note 1: Possible jumper locations for vintage B (for different styles/series):
J3—E11 or H11
J4—H17 or E7
S1 and S2—E33

Note 2: Possible jumper locations for vintage A (for different styles/series). These cards do not have the option selection and can only be used in the option A setting:
J3—H5 or E11
J4—H17 or E7
S1 and S2—E33

Note 3: Connectors and loop relations:
Even loop: J1 faceplate connector, jumper at J4 or S1
Odd loop: J2 faceplate connector, jumper at J3 or S2

QPC417 Junctor Board

All unused connectors must be terminated with QPF36A Junctor Terminating Plugs. Any group not used requires four of these plugs.

QPC422 Tone Detector Card

Options	Jumper plug connection
A-Law operation	connect center pin to top pin
µ-Law operation	connect center pin to lower pin

QPC423 192 K RAM Card

Application	Memory page	Range	F11 switch (memory configuration)							
			1	2	3	4	5	6	7	8
Single memory card	0	0–32K	off	on	off	on	off	off	off	on
	1	0–64 K								
	2	32–64 K								
	5	0–64 K								
Dual memory card:										
Module 0	0	0–32 K	on	on	off	off	off	off	off	on
	1	0–64 K								
	2	32–64 K								
Module 1*	5	0–64 K	on	on	off	on	off	off	off	on
	6	0–64 K								

* Module 1 can be either a QPC423 or QPC478 RAM Card.

QPC425 CPU Card

The next two tables list option settings for the QPC425 CPU Card.

Table 76
QPC425 address and output device selection

SDI address selection										Output device Plug location	
Device number	A1 switch				Device number	A1 switch					
	1	2	3	4		1	2	3	4		
0	on	on	on	on	8	on	on	on	off	Modem	A7
1	off	on	on	on	9	off	on	on	off		
2	on	off	on	on	10	on	off	on	off	Data terminal	A5
3	off	off	on	on	11	off	off	on	off		
4	off	on	off	on	12	off	on	off	off		
5	on	on	off	on	13	on	on	off	off		
6	on	off	off	on	14	on	off	off	off		
7	off	off	off	on	15	off	off	off	off		
Note: Switches 9 and 10 are available on vintage D.											

Table 77
QPC425 baud rate selection

Baud rate	A1 switch					
	5	**6**	**7**	**8**	**9**	**10**
300	off	off	on	off	on	off
600	off	on	off	on	on	off
1200	on	off	on	on	on	off
1800	off	on	on	on	on	off
2400	off	off	on	off	off	on
4800	off	on	off	on	off	on
9600	on	off	on	on	off	on
Note: Baud rates 2400 and up are available on vintage D.						

QPC426 192 K RAM Card

Application	Memory page	Range	F11 switch (memory configuration)							
			1	2	3	4	5	6	7	8
N, XN	0	0–64 K	off	off	off	off	off	off	off	on
	1	0–64 K								
	2	0–64 K								
	4	0–64 K	off	off	off	on	off	off	off	on
	5	0–64 K								
	6	0–64 K								
XN	8	0–64 K	off	off	on	off	off	off	off	on
	9	0–64 K								
	10	0–64 K								
	12	0–64 K	off	off	on	on	off	off	off	on
	13	0–64 K								
	14	0–64 K								

QPC432 4-Port Data Line Card

	Jumper plugs			
	B6	B10	B24	B27
Inside PVC (24 AWG) Outside PIC (22 AWG)	E1-E2	E4-E5	E7-E8	E10-E11
Inside PVC (26 AWG) Outside PIC (24 and 26 AWG)	E2-E3	E5-E6	E8-E9	E11-E12

QPC441 3-Port Extender Cards

Replace QPC441 vintages as follows: A or B with B1, C with D, E or E1 (series A) with E or E1 (series B), respectively. **For option 51C, 61C and 81C systems, QPC441 vintage F or later must be used in all modules**.

Table 78
QPC441 3PE Card installed in the NT5D21, NT6D39, NT6D60, and NT9D11 Modules

Jumper Settings: Set Jumper RN27 at E35 to “A”.									
Switch Settings									
Module		**D20 switch position**							
NT6D39 (Option 51) and NT5D21and NT9D11 (Option 51C)		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Core/Network		off	on	on	off	on	on	on	on
NT6D39 (Option 61) and NT5D21 and NT9D11 (Option 61C)									
Core/Network 0		off	on	on	off	on	on	on	on
Core/Network 1		off	on	on	off	on	on	on	off
NT6D60 (Option 81)									
Core 0		off	on	on	off	off	on	off	on
Core 1		off	on	on	off	off	on	off	off
NT5D21 (Option 81C)									
Core/Net 0 (Shelf 0)	Group 0	off	on	on	off	on	on	on	on
	Group 1	off	on	on	off	on	on	off	on
	Group 2	off	on	on	off	on	off	on	on
	Group 3	off	on	on	off	on	off	off	on
	Group 4	off	on	on	off	off	on	on	on
Core/Net 1 (Shelf 1)	Group 0	off	on	on	off	on	on	on	off
	Group 1	off	on	on	off	on	on	off	off
	Group 2	off	on	on	off	on	off	on	off
	Group 3	off	on	on	off	on	off	off	off
	Group 4	off	on	on	off	off	on	on	off

Table 79
QPC441 3PE Card installed in modules or shelves *other than* NT5D21, NT6D39, NT6D60, and NT9D11

Jumper Settings								
Set Jumper RN27 at E35 to “A”.								
Switch Settings								
D20 switch position:		**1**	**2**	**3**	**4**			
LE half group		on	off	on	off			
LE full group		off	off	on	off			
RT		on	***Note 1***	on	off			
N, NT		off	***Note 1***	on	off			
51, 61		off	***Note 1***	on	off			
VLE, XL, XN (QCA97)		off	off	on	on			
XN, XT, 71, 81, 81C (Note 2)		off	on	on	on			
Shelf	**Group**	D20 switch position:				**5**	**6**	**7**	**8**
0	0					on	on	on	on
	1					on	on	off	on
	2					on	off	on	on
	3					on	off	off	on
	4					off	on	on	on
1	0					on	on	on	off
	1					on	on	off	off
	2					on	off	on	off
	3					on	off	off	off
	4					off	on	on	off

Note 1: If clock controllers are installed, in an N, NT, RT, 51, or 61, switch position 2 must be set to ON; if not, set to OFF.

Note 2: For option 51C, 61C, and 81C systems, QPC441 vintage F or later must be used in all modules.

QPC446, QPC447 Conference Cards

Options	Action	Strap location
Enable warning tone	Insert strap from E8 to ENB	A37
Disable warning tone	Insert strap from E8 to DIS	A37
Low-tone level (30 dB below digital overload)	Insert strap from E7 to LOW	A37
High-tone level (24 dB below digital overload)	Insert strap from E7 to HIGH	A37

QPC450, QPC528 CO/FX/WATS Trunk Cards

The following five tables list switch and jumper settings for options available on these trunk cards.

Table 80
QPC450A, B, and QPC528 Trunk Cards switch and jumper settings

Switch Settings										
Switch position:	Switch S1 (location A23)									
	1	2	3	4	5	6	7	8		
	on	off	on	off	on	off	on	off		
Switch position:	Unit 0, Switch S2 (Location E29) Unit 1, Switch S3 (Location E9) Unit 2, Switch S4 (Location A28) Unit 3, Switch S5 (Location A10)									
	1	2	3	4	5	6	7	8	9	10
Trunk type:										
Loop start	off	on	off	off	on	off			off	off
Ground start	off	on	on	on	on	off			off	off
Metering:										
Second pair (M, MM) or							off	off		
Third wire, battery on M or							off	on		
Third wire, ground on M							on	off		

Jumper Settings				
	Unit 0 jumper (Location E27) Unit 1 jumper (Location E11) Unit 2 jumper (Location D29) Unit 3 jumper (Location D9)			
Jumper:	**Unit 0 Jumper**	**Unit 1 Jumper**	**Unit 2 Jumper**	**Unit 3 Jumper**
600 ¾ resistive impedance	Pin 1 to 2	Pin 1 to 2	Pin 1 to 2	Pin 1 to 2
3-component complex impedance	Pin 2 to 3	Pin 2 to 3	Pin 2 to 3	Pin 2 to 3

Table 81
QPC450C Trunk Card switch settings

Switch Settings								
	Unit 0, Switch S2 (Location E29) Unit 1, Switch S3 (Location E9) Unit 2, Switch S4 (Location A28) Unit 3, Switch S5 (Location A10)							
Switch position:	1	2	3	4	5	6	7	8
Trunk type:								
Loop start	off	on	off	off	on			off
Ground start	off	on	on	on	on			off
Metering:								
Second pair (M, MM)						off	off	
Third wire, battery on M						off	on	
Third wire, ground on M						on	off	

Table 82
QPC450C1 and D Trunk Cards switch settings

Switch Settings								
	Unit 0, Switch S4 (Location F28) Unit 1, Switch S3 (Location F10) Unit 2, Switch S1 (Location C27) Unit 3, Switch S2 (Location B10)							
Switch position:	1	2	3	4	5	6	7	8
Trunk type:								
Loop start	off	on	off			off	off	on
Ground start	off	on	on			on	off	on
Metering:								
Second pair (M, MM) or				off	off			
Third wire, battery on M or				off	on			
Third wire, ground on M				on	off			

Table 83
QPC450E and F Trunk Cards switch settings

Switch Settings				
	Unit 0, Switch S4 (Location F25) Unit 1, Switch S3 (Location F11) Unit 2, Switch S1 (Location B25) Unit 3, Switch S2 (Location B13)			
Switch position:	1	2	3	4
Trunk type:				
Loop start	off	off		
Ground start	on	on		
Metering:				
Second pair (M, MM) or			off	off
Third wire, battery on M or			off	on
Third wire, ground on M			on	on

Table 84
QPC450G Trunk Card switch settings

Switch Settings						
	Switch S1, Unit 2 (Location B25) Switch S2, Unit 3 (Location B13) Switch S3, Unit 1 (Location F11) Switch S4, Unit 0 (Location F25)					
Switch position:	1	2	3	4	5	6
Trunk type:						
Loop start or	off	off				
Ground start	on	on				
Loop type:						
Short loops (600¾ compromise impedance network) or					on	off
Long loop (EIA-recommended impedance network)					off	on

QPC464 Peripheral Buffer Card

Ringing voltage	D13 or B12 switch					
	1	**2**	**3**	**4**	**5**	**6**
16 Hz, 86 Vrms superimposed on –48 V	on	off	off	off		off
20 Hz, 86 Vrms superimposed on –48 V	off	on	off	off		off
25 Hz, 75 Vrms superimposed on –48 V	off	off	on	off		off
50 Hz, 70 Vrms superimposed on –48 V	off	off	off	on		off
Dual density loops					off	
Quad density loops					on	

QPC471 Clock Controller Card

The next three tables list option settings for the QPC471 Clock Controller Card.

Table 85
QPC471A

System	Switch SW2
N, NT, RT, 51, 61	on
XN, XT, 71	off

Table 86Q
PC471B through G

Switch or Jumper	MS	ST, STE 21A, 21	N, NT, RT, 51, 61	XN, XT, 71
SW1	on	on	on	off
SW2	on	off	off	off
Jumper F38	TP9-TP10	TP8-TP9	TP8-TP9	TP8-TP9
Jumper G38	TP12-TP13	TP11-TP12	TP11-TP12	TP11-TP12

Table 87
QPC471 vintage H

System	SW1				SW2				SW4			
	1	2	3	4	1	2	3	4	1	2	3	4
ST, STE, 21A, 21, 21E	on	on	on	on	off	off	off	off	off	off	off	off
MS, S	on	on	on	on	on	on	on	on	off	off	off	off
RT, N, NT, 51, 51C, 61, 61C	on	on	on	on	off	off	off	off	off	on	*	*
XN, XT, 71, 81	off	off	off	off	off	off	off	off	off	on	*	*
81C	on	off	off	off	off	off	off	off	**	on	*	*
					*Cable length between the J3 faceplate connectors:							
					0–4.3 m (0–14 ft)						off	off
					4.6–6.1 m (15–20 ft)						off	on
					6.4–10.1 m (21–33 ft)						on	off
					10.4–15.2 m (34–50 ft)						on	on

***** If there is only one clock controller card in the system, set to OFF. If there are two clock controller cards, determine the total cable length between the J3 connectors (no single cable can exceed 25 ft.) and set these two switch positions for this cable length, as shown above. Set the switches on both cards to the same settings.

** Set to ON for clock controller 0. Set to OFF for clock controller 1.

QPC472 Digital Trunk Interface Card

Switch setting (transmission equalization)	Distance to repeatered facility	Distance to cross-connect point
5 on	0–45 m (0–150 ft)	0–15 m (0–55 ft)
2, 4, 6 on	45–135 m (150–450 ft)	15–100 m (56–355 ft)
1, 3, 7 on	135–225 m (450–750 ft)	100–200 m (355–655 ft)
Note: Set all switch position to OFF except those shown in the “switch setting” column.		

QPC478 128 K RAM Card

System type		Memory page	Range	F11 switch (memory configuration)							
				1	2	3	4	5	6	7	8
M, MS, S	Module 0	0	0–32 K	on	on	off	off	off	off	off	on
		1	0–64 K								
		2	32–64 K								
M, MS, S	Module 1	5	0–64 K	on	on	off	on	off	off	off	on
		6	0–64 K								
Note: Module 1 can be either a QPC478 RAM or a QPC423 RAM.											

QPC479 128 K RAM Card

System type	Memory page	Range	F11 switch (memory configuration)							
			1	2	3	4	5	6	7	8
LE, N	0 1	0–64 K 0–64 K	on	off	off	off	off	off	off	on
LE, N	5 6	0–64 K 0–64 K	on	off	on	off	off	off	off	on
LE, N	2 6	0–64 K 0–64 K	on	off	on	on	off	off	off	on
LE, N	0 1 2	0–32 K 0–32 K 0–64 K	on	off	off	on	off	off	off	on

QPC503 Common Equipment Backplane

Application	Pin connections		
	P1	**P5**	**P6**
Main CE shelf without remote CE shelf	1–8 3–6	1–8 3–6	1–8 4–5
Main CE shelf with remote CE shelf	1–8 4–5	2–7 4–5	1–8 4–5
Remote CE shelf	1–8 3–6	2–7 4–5	1–8 4–5

Note 1: The option plugs P1, P5, and P6 are 8-pin sockets. To set the required option, connect the pins indicated with the metal straps provided.

Note 2: Option plugs P2, P3, and P4 are set during manufacture and should not be changed.

QPC513 Enhanced Serial Data Interface Card

Program socket selection				Switch S2—Address selection								
Option	Port	Socket number		Device number	Style A				Style B			
					1	2	3	4	1	2	3	4
DTE (terminal)	1	UA10	UA12	0–1	off	off	off	*	off	off	off	*
	2	UA17	UA19	2–3	on	off	off	*	off	off	on	*
DCE (modem)	1	UA9	UA11	4–5	off	on	off	*	off	on	off	*
	2	UA16	UA18	6–7	on	on	off	*	off	on	on	*
RS-232-C interface	1	UB9	UB11	8–9	off	off	on	*	on	off	off	*
	2	UB16	UB18	10–11	on	off	on	*	on	off	on	*
High-speed interface	1	UB10	UB12	12–13	off	on	on	*	on	on	off	*
	2	UB17	UB19	14–15	on	on	on	*	on	on	on	*

***** ON = synchronous mode; OFF = asynchronous mode. (Asynchronous mode is not supported. However, in releases prior to X11 release 18, asynchronous mode may work in some applications. With Release 18 and later, asynchronous mode will not work.)

QPC525, QPC526, QPC527 CO Trunk Card

Application	Switches at E29/E9/A29/A11 Units 0/1/2/3							
	1	2	3	4	5	6	7	8
0 ¾ outpulsing	on	off						off
Standard outpulsing	off	on						off
Ground start			on	on				off
Loop start			off	off				off
Loop start, automatic guard detection			off	on				off
QPC524 not installed					on			off
QPC524 installed					off			off
Battery on M operation						off	on	off
Ground on M operation						on	off	off
Second pair M&MM						off	off	off

QPC550 Direct Inward Dial Trunk Card

The next five tables give the option settings for the QPC550 DID Trunk Card.

Table 88
QPC550 vintages A and B—real/complex balance impedance selection

Device location	Device designation	Switch number	Unit number	Impedance type	
				Real	Complex
F31	S4.0	1	0	on	off
F24	S4.1	1	1	on	off
F16	S4.2	1	2	on	off
F11	S4.3	1	3	on	off

Table 89
QPC550 vintage A—600/900 Ohm impedance selection

Device location	Device designation	Unit number	Impedance (ohms)	Switch number							
				1	2	3	4	5	6	7	8
G29(a)	S3.0	0	600	off	on	on	off	off	on	on	off
			900	on	off	off	on	on	off	off	on
G29(b)	S3.1	1	600	off	on	on	off	off	on	on	off
			900	on	off	off	on	on	off	off	on
G8(a)	S3.2	2	600	off	on	on	off	off	on	on	off
			900	on	off	off	on	on	off	off	on
G8(b)	S3.3	3	600	off	on	on	off	off	on	on	off
			900	on	off	off	on	on	off	off	on

Table 90
QPC550 vintage A—software/hardware control for 2dB pad

Device location	Device designation	Unit number	Switch number	S/W	2 dB pad control H/W	
					(pad in)	(pad out)
F38	S1	0	1	off	off	on
			2	on	off	off
		1	3	on	off	off
			4	off	off	on
F1	S2	0	1	off	off	on
			2	on	off	off
		1	3	on	off	off
			4	off	off	on

Table 91
QPC550 vintage B—attenuation level control

Device location	Device designation	Unit number	Switch number								2 dB option
			1	2	3	4	5	6	7	8	
D39	S2.0/1	0	on		on		on		on		on
		1		off		off		off		off	off
D1	S2.2/3	2	on		on		on		on		on
		3		off		off		off		off	off

Table 92
QPC550 vintage B—software control for 2dB pad

Device location	Device designation	Unit number	Switch number	2 dB pad control H/W	
				(pad in)	(pad out)
F38	S1.0/1	1	1	on	off
			2	off	off
		0	3	off	off
			4	on	off
F1	S1.2/3	3	1	on	off
			2	off	off
		2	3	off	off
			4	on	off

QPC551 Radio Paging Trunk Card

Signal duration on the 18-pair faceplate

	S1 (F33)					
	1	**2**	**3**	**4**	**5**	**6**
Binary value (.1 second)	1	2	4	8	16	32

Note: This switch determines the length of time a signal stays on the 18-pair data bus. The time is set in binary to the nearest tenth second. For example, to keep data on the bus for 5 seconds, the switch settings total 50 by closing S1.2, S1.5, and S1.6.

Signal duration and pause time

	S2 (G33)						
	1	**2**	**3**	**4**	**5**	**6**	**7**
Binary value (.1 second)	1	2	4	8	16	32	64

Note: This switch determines the time data must stay on the 18-pair data bus plus the pause time between the removal of data and the reappearance of subsequent data. The time is set in binary to the nearest tenth second. For example, to keep data on the bus for 5 seconds and have a pause time of 3.2 seconds, the switch settings should total 82 by closing S2.2, S2.5, and S2.7.

Application

				S3 (E2) S4 (F2) Unit 0, Unit 1								
	1	**2**	**Address**	**3**	**4**	**5**	**6**	**Address**	**3**	**4**	**5**	**6**
Paging			0	off	off	off	off	8	off	off	off	on
single	on		1	on	off	off	off	9	on	off	off	on
multiple	off		2	off	on	off	off	10	off	on	off	on
			3	on	on	off	off	11	on	on	off	on
Timer*			4	on	off	on	off	12	on	off	on	on
enabled		on	5	on	on	on	off	13	on	off	on	on
disabled		off	6	off	on	on	off	14	off	on	on	on
			7	on	on	on	off	15	on	on	on	on

* When enabled, this switch prevents a signal from being sent from a paging unit until 5 seconds have elapsed since the beginning of the previous signal on that same unit.

	S5 (E38) Unit 0	S6 (D1) Unit 1
Impedance termination	1	
Real	on	
Complex	off	

QPC574, QPC595 Digitone Receiver Cards

	Location	Connection
12 DTMF tones	E9	Center to E3
16 DTMF tones	E9	Center to E2

QPC577, QPC596 Digitone Receiver Daughterboards

16/12 tone options jumper	Jumper at P1
16 tone (4 x 4)	connect pins 1 and 2
12 tone (3 x 4)	connect pins 2 and 3
Note: When a DTR daughterboard is installed, check YES on the faceplate of the QPC659 Dual Loop Peripheral Buffer.	

QPC584 Mass Storage Interface Card

Options	SwitchS3							
	1	2	3	4	5	6	7	8
5.25-inch disk drives only	on	off	off	off	off	off	off	off
5.25-inch disk drives and 5.25-inch hard drive	on	off	off	on	off	off*	off	off
3.5-inch disk drives only	on	off	off	off	on	off	**	off
3.5-inch disk drives and 3.5-inch hard drive	on	off	off	on	on	off	**	off

Note: Minimum vintage E is required for 3.5 inch drives. Minimum vintage L is required for X11 release 18.

* When a QMM38 MSU is replaced, set switch 6 to ON before the faulty QMM38 is powered down so the disk head will retract (shipping mode). After the replacement MSU is installed, set switch 6 to OFF.

** For 4 Mbyte set to ON.
For 2 Mbyte set to OFF.

QPC650, QPC651 Music Trunk Cards

Channel	Switch location	Switch settings*			
		1	**2**	**3**	**4**
0	F31	x		x	
1	F31		x		x
2	F9	x		x	
3	F9		x		x
4	C31	x		x	
5	C31		x		x
6	C9	x		x	
7	C9		x		x

* Set x to OFF if the impedance of the announcement source is 2 or 4 ¾.
Set x to ON if the impedance of the announcement source is 600 ¾.

QPC659 Dual Loop Peripheral Buffer Card

Options	Switch settings								
	U25				U3	U9	U10	U14	U22
	1	2	3	4	(all)	(all)	(all)	(all)	(all)
± 10 V monitor									
disables circuit	off								
enables circuit	on								
Ringing select									
20 Hz and 25 Hz		off							
50 Hz		on							
Quad									
double density			off						
quad density			on						
Loop									
dual				on	off	off	off	on	off
single				off	on	on	on	off	on

QPC672 512 K Memory Card

System type	Memory page	Range	F11 switch (memory configuration)							
			1	2	3	4	5	6	7	8
N, XN, LE, VLE, XL, N(QCA96) and XN(QCA97)	0	0–64 K	off	off	on	off	off	off	off	on
	1	0–64 K								
	2	8–64 K								
	4	0–64 K								
	5	0–64 K								
	6	0–64 K								
	8	0–64 K								
	9	0–64 K								
Note: Switch 8 must be OFF for non-CE shelf.										

QPC673 512 K Memory Card

System type	Memory page	Range	F11 switch (memory configuration)							
			1	2	3	4	5	6	7	8
MS, S, ST	0	0–64 K	off	off	on	off	off	off	off	on
	1	0–64 K								
	2	8–64 K								
	4	0–64 K								
	5	0–64 K								
	6	0–64 K								
	8	0–64 K								
	9	0–64 K								
Note: Switch 8 must be OFF for non-CE shelf.										

QPC674 256 K Memory Card

System type	Memory page	Range	F11 switch (memory configuration)							
			1	2	3	4	5	6	7	8
MS, S	0	0–32 K	off	off	off	off	off	off	off	on
	1	0–64 K								
	2	32–64 K								
	5	0–64 K								
	6	0–64 K								

Note 1: This card responds to both module 0 and module 1 in existing software.

Note 2: No software change is required if configuration for two 128 K modules was used.

QPC687 CPU Card

Address selection B1 switch					Speed selection B1 switch*							Output device		
Device number	**1**	**2**	**3**	**4**	**Baud rate**	**5**	**6**	**7**	**8**	**9**	**10**			
0	on	on	on	on	300	off	off	on	off	on	off	QPC687A Port	Plug location	
1	off	on	on	on	600	off	on	off	on	on	off			
2	on	off	on	on	1200	on	off	on	on	on	off	Modem	A7	
3	off	off	on	on	1800	off	on	on	on	on	off	EIA data terminal	A5	
4	on	on	off	on	2400	off	off	on	off	off	on			
5	off	on	off	on	4800	off	on	off	on	off	on	QPC687B Port	Switch location	
6	on	off	off	on	9600	on	off	on	on	off	on			
7	off	off	off	on									A23	B23
8	on	on	on	off									S1	S2
9	off	on	on	off								Modem	All on	All off
10	on	off	on	off								EIA data terminal	All off	All on
11	off	off	on	off										
12	on	on	off	off										
13	off	on	off	off										
14	on	off	off	off										
15	off	off	off	off										

* On vintage B, the option plug has been replaced with two switches (S1 and S2) in locations A23 and B23.

QPC699 Common Equipment Backplane

Application	Pin connections		
	P1	**P5**	**P6**
Network slot	1–8 3–6	1–8 3–6	1–8 4–5
Segmented bus extender—main shelf	1–8 4–5	2–7 4–5	1–8 4–5
Segmented bus extender—remote shelf	1–8 3–6 4–5	2–7 4–5	1–8

Note 1: The option plugs P1, P5, and P6 are 8-pin sockets. To set the required option, connect the pins indicated with the metal straps provided.

Note 2: Option plugs P2, P3, and P4 are set during manufacture and should not be changed.

QPC720 Primary Rate Interface Card

Switch S2 settings	To repeatered facility	To cross-connect point
5 on	0–45 m (0–150 ft)	0–30 m (0–100 ft)
2, 4, 6 on	46–135 m (151–450 ft)	31–100 m (101–355 ft)
1, 3, 7 on	136–225 m (451–750 ft)	101–200 m (356–655 ft)

Switch 3 option for DTI with ESF

SW3-1 on = extended superframe format (ESF)
off = superframe format (SF)

Note 1: All positions on S2 (location B22) are OFF except as shown under the column labeled “Switch S2 settings.”

Note 2: The switch 3 option for DTI with ESF applies to only X11 releases 16, 17, and 18. All other positions on the 8-pole SW3 (location E37) should be OFF.

Note 3: Before X11 release 19 (releases 16, 17, and 18), you must set the framing format as ESF with the DLOP prompt in LD17 before you set SW3-1 on the card for the DTI with ESF option.

Note 4: Beginning with X11 release 19, framing format, line encoding, and method of yellow alarm are selectable for both DTI and PRI in LD17 with the DLOP, LCMT, and YALM prompts. All SW3 switch positions should be OFF.

Note 5: QPC720E is a standard product since July, 1993 backwards compatible to X11 release 13 software.

QPC742 Floppy Disk Interface Card

Options	SW3							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
5.25-inch disk drives	on	off	off	off	off	off	off	off
3.5-inch disk drives	on	off	off	off	on	off	*	**

Note: Minimum vintage D is required for 3.5 inch drives. Minimum vintage F is required for X11 release 18.

* For 4 Mbyte set to ON.
For 2 Mbyte set to OFF.

** For STE or 21E, set to ON when the NTND01 Integrated CPU/Memory (ICM) Card is installed.
For all other systems, set to OFF.

QPC757 D-Channel Interface Card

Vintage A socket selection				Address selection				
Option	**Port**	**Socket number**		**Device number**	**S2 switch**			
					1	**2**	**3**	**4**
Data terminal equipment (DTE)	0	UA10	UA12	0–1	off	off	off	off
	1	UA17	UA19	2–3	off	off	on	off
Data communication equipment (DCE)	0	UA9	UA11	4–5	off	on	off	off
	1	UA16	UA18	6–7	off	on	on	off
RS-232-C interface	0	UB9	UB11	8–9	on	off	off	off
	1	UB16	UB18	10–11	on	off	on	off
High-speed interface	0	UB10	UB12	12–13	on	on	off	off
	1	UB17	UB19	14–15	on	on	on	off
Vintage C socket selection				**Address selection**				
DTE	0	U11	U9	0–1	off	off	off	off
	1	U5	U3	2–3	off	off	on	off
DCE	0	U12	U10	4–5	off	on	off	off
	1	U6	U4	6–7	off	on	on	off
RS-232-C interface	0	U31	U29	8–9	on	off	off	off
	1	U25	U23	10–11	on	off	on	off
High-speed interface	0	U30	U28	12–13	on	on	off	off
	1	U24	U22	14–15	on	on	on	on

QPC757 vintage G is a standard product starting 11/93 and it is backwards compatible with X11 release 14 and higher software. It has the same socket and address selection as vintage C.

QPC775 Clock Controller Card

The next two tables give option settings for the QPC775 Clock Controller card.

Table 93
QPC775 (before vintage E) switch settings

	SW2				SW3				SW4			
	1	2	3	4	1	2	3	4	1	2	3	4
XN, XT, 71, 81, 81C	off	off	off	off	off	off	off	off	on	on	on	on
N, NT, RT, ST, STE, 21A, 21, 21E, 51, 51C, 61, 61C	on	on	on	on	off	off	off	off	on	on	on	on
MS, SN	on	on	on	on	on	on	on	on	off	off	off	off

Table 94
QPC775 vintage E switch settings

System	SW1				SW2				SW4			
	1	2	3	4	1	2	3	4	1	2	3	4
ST, STE, 21A, 21, 21E	on	on	on	on	off	off	off	off	off	off	off	off
MS	on	on	on	on	on	on	on	on	off	off	off	off
RT, N, NT, 51, 51C, 61, 61C	on	on	on	on	off	off	off	off	off	on	*	*
XN, XT, 71, 81	off	off	off	off	off	off	off	off	off	on	*	*
81C	on	off	off	off	off	off	off	off	**	on	*	*
					*Cable length between the J3 faceplate connectors:							
					0–4.3 m (0–14 ft)						off	off
					4.6–6.1 m (15–20 ft)						off	on
					6.4–10.1 m (21–33 ft)						on	off
					10.4–15.2 m (34–50 ft)						on	on

* If there is only one clock controller card in the system, set to OFF. If there are two clock controller cards, determine the total cable length between the J3 connectors (no single cable can exceed 25 ft.) and set these two switch positions for this cable length, as shown above. Match the settings on the two cards.

** Set to ON for clock controller 0. Set to OFF for clock controller 1.

QPC841 4-Port Serial Data Interface Card

The next four tables list option settings for the QPC841 4-Port SDI Card.

Table 95
QPC841 port 1 and 2 address selection

Device number		SW14							
Port 1	**Port 2**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0	1	off	off	off	off	off	on	on	on
2	3	off	off	off	off	off	on	on	off
4	5	off	off	off	off	off	on	off	on
6	7	off	off	off	off	off	on	off	off
8	9	off	off	off	off	off	off	on	on
10	11	off	off	off	off	off	off	on	off
12	13	off	off	off	off	off	off	off	on
14	15	off	off	off	off	off	off	off	off

Note 1: On SW16, positions 1, 2, 3, and 4 must be OFF.

Note 2: To avoid address conflicts, SW14 and SW15 can never have identical setting.

Note 3: To disable ports 1 and 2, set SW14 position 1 to ON.

Table 96
QPC841 port 3 and 4 address selection

Device number		SW15							
Port 3	**Port 4**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0	1	off	off	off	off	off	on	on	on
2	3	off	off	off	off	off	on	on	off
4	5	off	off	off	off	off	on	off	on
6	7	off	off	off	off	off	on	off	off
8	9	off	off	off	off	off	off	on	on
10	11	off	off	off	off	off	off	on	off
12	13	off	off	off	off	off	off	off	on
14	15	off	off	off	off	off	off	off	off

Note 1: On SW16, positions 1, 2, 3, and 4 must be OFF.

Note 2: To avoid address conflicts, SW14 and SW15 can never have identical setting.

Note 3: To disable ports 3 and 4, set SW15 position 1 to ON.

Table 97
QPC841 baud rate

Baud rate	Port 1 SW10				Port 2 SW11				Port 3 SW12				Port 4 SW13			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
150	off	off	on	on	off	off	on	on	off	off	on	on	off	off	on	on
300	off	on	off	on	off	on	off	on	off	on	off	on	off	on	off	on
600	off	off	off	on	off	off	off	on	off	off	off	on	off	off	off	on
1200	off	on	on	off	off	on	on	off	off	on	on	off	off	on	on	off
2400	off	off	on	off	off	off	on	off	off	off	on	off	off	off	on	off
4800	off	on	off	off	off	on	off	off	off	on	off	off	off	on	off	off
9600	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off

Table 98
QPC841 DTE or DCE selection

Mode	Port 1—SW8						Port 1—SW9					
	1	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**	**4**	**5**	**6**
DTE (terminal)	on	on	on	on	on	on	off	off	off	off	off	off
DCE (modem)	off	off	off	off	off	off	on	on	on	on	on	on
NT1P61 (Fibre)	on	off	off	on	off	off	on	off	off	off	on	on
	Port 2—SW6						**Port 2—SW7**					
DTE	on	on	on	on	on	on	off	off	off	off	off	off
DCE	off	off	off	off	off	off	on	on	on	on	on	on
NT1P61 (Fibre)	on	off	off	on	off	off	on	off	off	off	on	on
	Port 3—SW4						**Port 3—SW5**					
DTE	on	on	on	on	on	on	off	off	off	off	off	off
DCE	off	off	off	off	off	off	on	on	on	on	on	on
	Port 4—SW2						**Port 4—SW3**					
DTE	on	on	on	on	on	on	off	off	off	off	off	off
DCE	off	off	off	off	off	off	on	on	on	on	on	on

Sample settings for NT8D22 System Monitors

This chapter gives examples of system monitor option settings for basic system configurations. (See Tables 99 to 108.) These configurations are only samples; you may have a variety of complex configurations. See “NT8D22 System Monitor” on page 73 for detailed information.

Meridian 1 systems

The master system monitor must be configured in the CPU column. In options 71 and 81, the master must be configured in the column containing CPU 0, and slave unit 1 must be configured in the column containing CPU 1. Any other system monitors are slaves.

Table 99
Master system monitor switch settings

Switch	1	2	3	4	5	6	7	8
SW1	off	off	*	on**	off	off	off	off
SW2	on	off	(For switches 3 to 8, see “NT8D22 settings for total number of slaves—SW2 on master” in option settings.)					
SW3	on	on	on	on				

* Set to ON for DC-powered systems, OFF for AC-powered systems.
** PFTU enabled because of over-temperature in column with master system monitor.

Table 100
Slave system monitor switch settings

Switch	1	2	3	4	5	6	7	8
SW1	off	off	*	**	off	off	off	off
SW2	off	off	(For 3–8, see “NT8D22 slave address—SW2 on slave” in option settings)					
SW3	off	off	off	off				

* Set to ON for DC-powered systems, OFF for AC-powered systems.
** Set to ON to enable PFTU during over-temperature condition.
Set to OFF to disable PFTU during over-temperature condition.

ST, STE, and RT systems with Meridian 1 upgrades

The following tables give examples of option settings for the following:

— ST, STE, or RT with peripheral equipment (PE) upgrade

— ST, STE, or RT with common equipment (CE) upgrade

ST, STE, or RT with PE upgrade

Configure the system monitor in one PE column as the master. Configure any other system monitors as slaves. If there are CE *and* PE modules, use the option settings for CE upgrades.

Table 101
Master system monitor switch settings

Switch	1	2	3	4	5	6	7	8
SW1	on	off	*	**	on	on	on	on
SW2	on	on	(For switches 3 to 8, see “NT8D22 settings for total number of slaves—SW2 on master” in option settings)					
SW3	on	on	on	on				

* Set to ON for DC-powered systems, OFF for AC-powered systems.
** Set to ON to enable PFTU during over-temperature condition.
Set to OFF to disable PFTU during over-temperature condition.

Table 102
Slave system monitor switch settings

Switch	1	2	3	4	5	6	7	8
SW1	on	off	*	**	on	on	on	on
SW2	off	on	(For switches 3 to 8, see “NT8D22 slave address— SW2 on slave” in option settings)					
SW3	off	off	off	off				

* Set to ON for DC-powered systems, OFF for AC-powered systems.
** Set to ON to enable PFTU during over-temperature condition.
Set to OFF to disable PFTU during over-temperature condition.

ST, STE, RT with CE upgrade

Configure the system monitor in the CPU column as the master. Configure any other system monitors as slaves.

Table 103
Master system monitor switch settings

Switch	1	2	3	4	5	6	7	8
SW1	on	on	*	on**	on	on	off	on
SW2	on	on	(For switches 3 to 8, see “NT8D22 settings for total number of slaves—SW2 on master” in option settings)					
SW3	on	on	on	on				

* Set to ON for DC-powered systems, OFF for AC-powered systems.
** PFTU enabled because of over-temperature in column with master system monitor.

Table 104
Slave system monitor switch settings

Switch	1	2	3	4	5	6	7	8
SW1	on	off	*	**	on	on	off	on
SW2	off	on	(For switches 3 to 8, see “NT8D22 slave address— SW2 on slave” in option settings)					
SW3	off	off	off	off				

* Set to ON for DC-powered systems, OFF for AC-powered systems.
** Set to ON to enable PFTU during over-temperature condition.
Set to OFF to disable PFTU during over-temperature condition.

NT and XT systems with Meridian 1 upgrades

The following tables give examples of option settings for

— NT or XT with PE upgrade

— NT or XT with CE upgrade

NT or XT with PE upgrade

Configure the system monitor in one PE column as the master. Configure any other system monitors as slaves. If there are CE *and* PE modules, use the option settings for CE upgrades.

Table 105
Master system monitor switch settings

Switch	1	2	3	4	5	6	7	8
SW1	on	off	*	**	off	off	on	off
SW2	on	off	(For switches 3 to 8, see “NT8D22 settings for total number of slaves—SW2 on master” in option settings)					
SW3	on	on	on	on				

* Set to ON for DC-powered systems, OFF for AC-powered systems.
** Set to ON to enable PFTU during over-temperature condition.
Set to OFF to disable PFTU during over-temperature condition.

Table 106
Slave system monitor switch settings

Switch	1	2	3	4	5	6	7	8
SW1	on	off	*	**	off	off	on	off
SW2	off	off	(For switches 3 to 8, see “NT8D22 slave address— SW2 on slave” in option settings)					
SW3	off	off	off	off				

* Set to ON for DC-powered systems, OFF for AC-powered systems.
** Set to ON to enable PFTU during over-temperature condition.
Set to OFF to disable PFTU during over-temperature condition.

NT or XT with CE upgrade

Configure the master system monitor in the column containing CPU 0. Configure the system monitor in the column containing CPU 1 as slave unit 1. Configure any other system monitors as slaves.

Table 107
Master system monitor switch settings

Switch	1	2	3	4	5	6	7	8
SW1	on	on	*	on**	off	off	off	on
SW2	on	off	(For switches 3 to 8, see “NT8D22 settings for total number of slaves—SW2 on master” in option settings)					
SW3	on	on	on	on				

* Set to ON for DC-powered systems, OFF for AC-powered systems.
** PFTU enabled because of over-temperature in column with master system monitor.

Table 108
Slave system monitor switch settings

Switch	1	2	3	4	5	6	7	8
SW1	on	off	*	**	off	off	off	on
SW2	off	off	(For switches 3 to 8, see “NT8D22 slave address— SW2 on slave” in option settings)					
SW3	off	off	off	off				

* Set to ON for DC-powered systems, OFF for AC-powered systems.
** Set to ON to enable PFTU during over-temperature condition.
Set to OFF to disable PFTU during over-temperature condition.

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Publication number: 553-3001-211
Document release: Standard 16.00
Date: June 1999
Printed in the United States of America

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