NT5D97AD 01 -

DDP2 For Global Market.

Installation Instructions

1.0 PRODUCT OVERVIEW:

1.1 Introduction:

The DDP2 (NT5D97AD) is a dual (two loops) 2.048 Mbit Digital Trunk Interface / Primary Rate Interface pack for Meridian 1 / MSL-1 large systems. It integrates functionality of the two QPC536E (DTI2) and QPC414 (ENET) card, and, also, replaces the NTCK43AB Dual PRI card. Each of the two DDP2 loops may be independently configured to provide the DTI2 or the PRI2 interface.

1.2 Applicable Systems:

Table 1: Applicable Systems.

Meridian-1 System	Applicability & Compatibility
Meridian-1 RT	Yes
Meridian-1 XT	Yes
Meridian-1 NT	Yes
Meridian-1 STE	Yes
Meridian-1 ST	Yes
Option 11C	No
Option 21	Yes
Option 21E	Yes
Option 51	Yes
Option 51C	Yes
Option 61	Yes
Option 61C	Yes
Option 61C CPP	Yes
Option 71	Yes
Option 81	Yes
Option 81C	Yes
Option 81C CPP	Yes

Legend:

Yes - Applicable / Compatible.

No - Not Applicable / Not Compatible.

1.3 System Overview:

The DDP2 card integrates the functionality of one ENET card (two terminal loops) and two DTI2 / PRI2 cards on a single CE slot format card.
Each of the two DDP2 loops may be independently configured to provide the 2.048 Mbps Digital Trunk Interface (DTI2) or the Primary Rate Interface (PRI2). The DDP2 card includes the equivalent circuitry of ENET (QPC414), two E1 trunk interface cards (QPC536E or NT8D72BA), an interface to an external D-channel handler card (MSDL NT6D80AB or DCHI NT6D11AF / QPC757 / NT5K75AA / NT5K35AA) and an optional DDCH (NTBK51AA) or DPNSS (NTAG54AA) daughter board. The software treats the card as a combination of the ENET and two DTI2 / PRI2 cards.
The loop interface type the DTI2 or the PRI2 is set using the DIP switch on the card (see "Dip Switches list." on page 5). The DIP switch settings should match the loop definition in the Meridian 1 / MSL-1.

1.4 Assumptions:

The DTI2 / PRI2 loops on the DDP2 pack are configured in the MSL-1 / Meridian 1 using one of the following combinations.

Table 2: DDP2 Loops Configuration*

		Loop0			
Loop1		not configured	DTI2	PRI2	DDCS
	not configured	**V**	**V**	**V**	**V**
	DTI2	**V**	**V**	**V**	**V**
	PRI2	**V**	**V**	**V**	**X**
	DDCS	**V**	**V**	**X**	**V**

* Each loop DPNSS can be defined in either Normal or Extended addressing mode.

Note: *When two PRI2 loops are configured on the same DDP2 pack, and the alarm mode in overlay 73 (LPTI) defined as: ALRM=ALT (Alternate firmware alarm handles - immediate transmission of RAI by firmware) the even PRI2 loop should be enabled before the odd loop.*
If the odd loop is enabled first and then the even loop is enabled, RAI is transmitted from the odd loop.
In this case the two loops should be disabled and enabled again (even loop first and then the odd loop).

2.0 SCOPE:

1.- The NT5D97AD DDP2 card replaced the NTCK43 PRI2 and the QPC536 DTI2 cards.

2.- The NT5D97AD card can be installed in the system as a new one or to replace existing NTCK43 or QPC536 cards.

3.- The installation instruction includes cables connections and the DIP switches setting needed for each case (new or replace).

4.- This installation section is a supplement to and is to be used in conjunction with NTP 553-xxxx-xxx.
These NTP sections will be updated to incorporate this information in the next planned up-issue.

DASS2
553-3911-100
553-3911-200
553-3911-300
553-3911-500

DPNSS1
553-3921-100
553-3921-200
553-3921-300
553-3921-500

Networking
553-2901-201
553-2901-501

3.0 DIP SWITCHES:

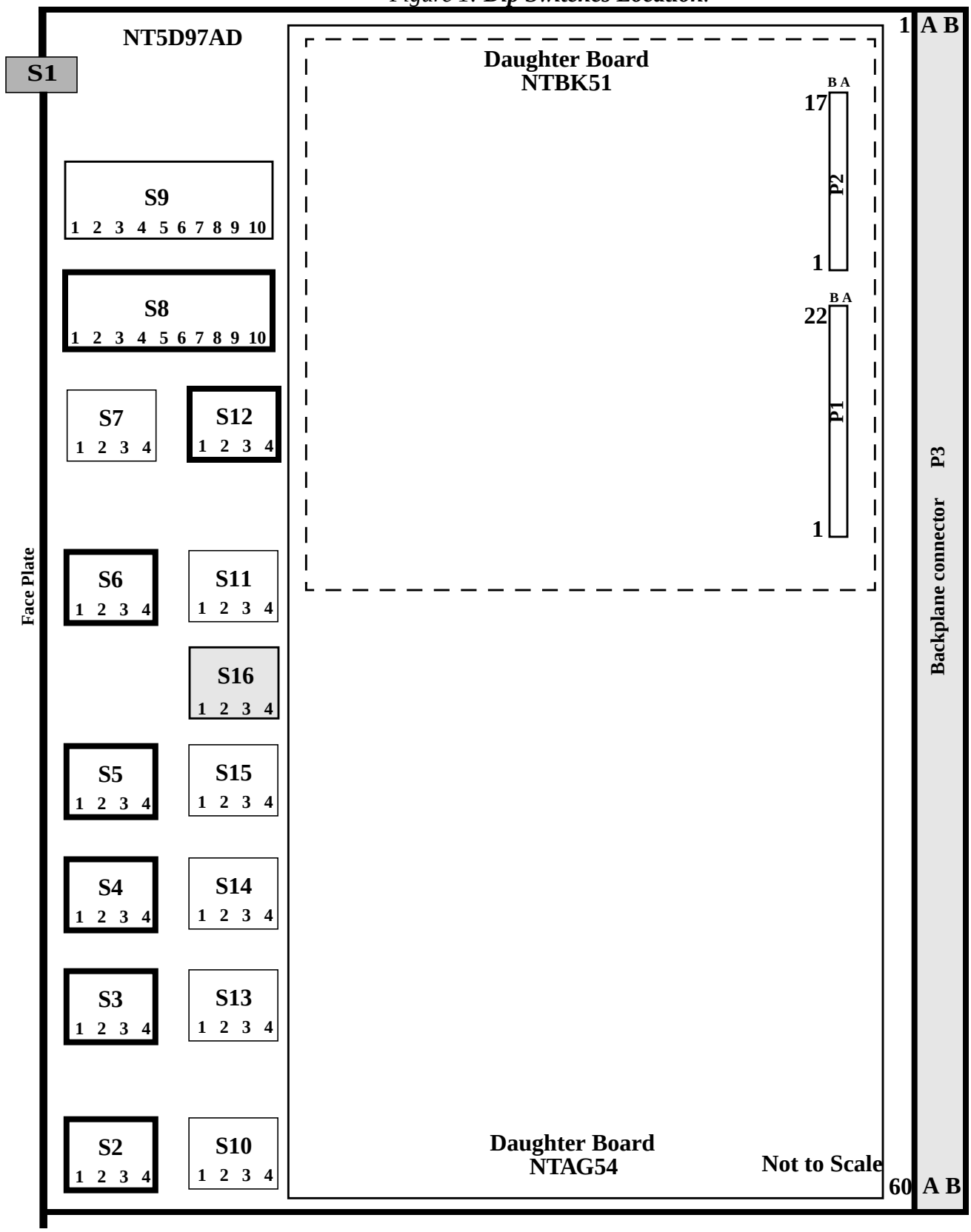
The DIP switches are used for setting of default values of certain parameters. The general purpose switches are read by the firmware which sets the default values accordingly.

	Card	Trunks 0 and 1	Port 0	Port 1	Trunk 0	Trunk 1
ENB/DSB (mounted on the face plate)	S1					
Ring Ground		S16				
DPNSS			S8	S9		
MSDL			S9			
TX Mode					S2	S10
LBO Setting					S3	S13
					S4	S14
					S5	S15
Receiver interface					S6	S11
General Purpose					S12	S7

Table 3: Dip Switches list.

Note: *See Figure 1:Dip Switches Location. on page 6.*

*Figure 1: **Dip Switches Location**.*



The following parameters are being set by the DIP switches. Factory setup is shown in the boldface font.

3.1 Trunk Interface Switches.

3.1.1 Trunk 0 Switches.

Switch **S12** give the MPU information about its environment.

Switch	Name	Description
S12_1	Impedance level.	**OFF - 120 ohm.** ON - 75 ohm.
S12_2	Spare	X
S12_3	Spare	X
S12_4	Unit mode	**OFF: Unit operates in the DTI2 mode.** ON: Unit operates in the PRI2 mode.

Table 4: General Purpose Switches.

Note: *X: don't care.*

Switch **S2** selects the Transmission mode.

TX Mode	S2
E1	**OFF**
Not Used	ON

Table 5: TX Mode Switches.

Switches **S3**, **S4 and S5** select LBO function.

LBO Setting	S3	S4	S5
0dB	**OFF**	**OFF**	**OFF**
7.5dB	ON	ON	OFF
15dB	ON	OFF	ON

Table 6: LBO Switches.

Switch **S6** select the Receiver intrface.

Impedance	S6-1	S6-2	S6-3	S6-4
75ohm	OFF	OFF	ON	OFF
120ohm	**OFF**	**OFF**	**OFF**	**ON**

Table 7: Receiver interface switches.

3.1.2 Trunk 1 Switches.

Switch	Function
S7	**General Purpose** (see Table 4: “General Purpose Switches.,” on page 7)
S10	**TX Mode** (see Table 5: “TX Mode Switches.,” on page 7**)**
S13, S14 &S15	**LBO** (see Table 6: “LBO Switches.,” on page 8)
S11	**RX Impedance** (see Table 7: “Receiver interface switches.,” on page 8)

Table 8: Trunk 1 Switches.

3.1.3 Ring Ground Switches.

Switch **S16** selects which Ring lines are connected to ground. When set to ON the Ring line is grounded.

Switch	Line
S16_1	Trunk 0 Transmit
S16_2	Trunk 0 Receive
S16_3	Trunk 1 Transmit
S16_4	Trunk 1 Receive

Table 9: Ring Ground switch.

3.2 DCH Address Select Switch for NTBK51AA Daughter Board.

Switch **S9** selects the NTBK51AA DCH daughter card address.

Switch **S8** is not used when the NTBK51AA daughter card is used, S8_1-10 can be set to OFF position.

Switch Number	Function
S9_1-4	DCH daughter card address
S9_5-8	Set to OFF
S9_9	Set to ON (NTBK51AA Mode)
S9_10	Set to ON (NTBK51AA Mode)

Table 10: NTBK51AA DCH Switches.

3.3 MDSL External card:

Switch Number	Function
S9_1-10	X
S8_1-10	X

Note: *X: don't care.*

Use the following table to set the card address.

	Switch Setting			
DNUM (LD 17)	**1**	**2**	**3**	**4**
0	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

Table 11: NTBK51AA DCH card address.

3.4 DCH Address Select Switch for NTAG54AA Daughter Board.

3.4.1 Port 0, Normal addressing mode.

Switch **S8** selects Port 0 in the NTAG54AA DCH daughter card.

Switch Number	Function
S8_1	X
S8_2-8	DCH daughter card address
S8_9	Set to ON (NTAG54AA Normal mode)
S8_10	Set to OFF (NTAG54AA Normal Mode)

Table 12: DCH Switches NTAG54AA Normal Mode.

Note:
1. X: don't care.
2. In this document the NTAG54AA reffers to all the vintages (AA, AB, AC).

3.4.2 Port 1, Normal addressing mode.

Switch **S9** selects Port 1 in the NTAG54AA DCH daughter card (see Table 12: "DCH Switches NTAG54AA Normal Mode.," on page 11).

3.4.3 NTAG54AA DCH card address: Normal addressing mode.

Use the following table to set the DCH card address.

	Switch Setting S8 or S9							
DNUM	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0	X	ON	ON	ON	ON	ON	ON	ON
1	X	OFF	ON	ON	ON	ON	ON	ON
2	X	ON	OFF	ON	ON	ON	ON	ON
3	X	OFF	OFF	ON	ON	ON	ON	ON
4	X	ON	ON	OFF	ON	ON	ON	ON
5	X	OFF	ON	OFF	ON	ON	ON	ON
6	X	ON	OFF	OFF	ON	ON	ON	ON
7	X	OFF	OFF	OFF	ON	ON	ON	ON
8	X	ON	ON	ON	OFF	ON	ON	ON
9	X	OFF	ON	ON	OFF	ON	ON	ON
10	X	ON	OFF	ON	OFF	ON	ON	ON
11	X	OFF	OFF	ON	OFF	ON	ON	ON
12	X	ON	ON	OFF	OFF	ON	ON	ON
13	X	OFF	ON	OFF	OFF	ON	ON	ON
14	X	ON	OFF	OFF	OFF	ON	ON	ON
15	X	OFF	OFF	OFF	OFF	ON	ON	ON

Table 13: NTAG54AA DCH card address: Normal mode.

Notes:
1. X: don't care.
2. At the present time, due to a S/W limitations, only DNUM 0 to 15 can be used.

3.5 DCH Address Select Switch for NTAG54AA Daughter Board.

3.5.1 Port 0, Extended addressing mode.

Switch **S8** selects also Port 0 in the NTAG54AA DCH daughter card.

Switch Number	Function
S8_1-8	DCH daughter card address
S8_9	Set to OFF (NTAG54AA Extended mode)
S8_10	Set to OFF (NTAG54AA Extended Mode)

Table 14: DCH Switches NTAG54AA Extended Mode.

3.5.2 Port 1, Extended addressing mode.

Switch **S9** selects Port 1 in the NTAG54AA DCH daughter card (see Table 14: “DCH Switches NTAG54AA Extended Mode.,” on page 13).

3.5.3 NTAG54AA DCH card address: Extended addressing mode.

Use the following table to set the DCH card address.

	Switch Setting S8 or S9							
DDSL	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0	ON	ON	ON	ON	ON	ON	ON	ON
1	OFF	ON	ON	ON	ON	ON	ON	ON
2	ON	OFF	ON	ON	ON	ON	ON	ON
3	OFF	OFF	ON	ON	ON	ON	ON	ON
4	ON	ON	OFF	ON	ON	ON	ON	ON
5	OFF	ON	OFF	ON	ON	ON	ON	ON
6	ON	OFF	OFF	ON	ON	ON	ON	ON
7	OFF	OFF	OFF	ON	ON	ON	ON	ON
8	ON	ON	ON	OFF	ON	ON	ON	ON
9	OFF	ON	ON	OFF	ON	ON	ON	ON
10	ON	OFF	ON	OFF	ON	ON	ON	ON
11	OFF	OFF	ON	OFF	ON	ON	ON	ON
12	ON	ON	OFF	OFF	ON	ON	ON	ON
13	OFF	ON	OFF	OFF	ON	ON	ON	ON
14	ON	OFF	OFF	OFF	ON	ON	ON	ON
15	OFF	OFF	OFF	OFF	ON	ON	ON	ON
16	ON	ON	ON	ON	OFF	ON	ON	ON
17	OFF	ON	ON	ON	OFF	ON	ON	ON
18	ON	OFF	ON	ON	OFF	ON	ON	ON
19	OFF	OFF	ON	ON	OFF	ON	ON	ON
20	ON	ON	OFF	ON	OFF	ON	ON	ON
21	OFF	ON	OFF	ON	OFF	ON	ON	ON
22	ON	OFF	OFF	ON	OFF	ON	ON	ON
23	OFF	OFF	OFF	ON	OFF	ON	ON	ON

Table 15: NTAG54AA DCH card address: Extended mode.

	Switch Setting S8 or S9							
DDSL	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
24	ON	ON	ON	OFF	OFF	ON	ON	ON
25	OFF	ON	ON	OFF	OFF	ON	ON	ON
26	ON	OFF	ON	OFF	OFF	ON	ON	ON
27	OFF	OFF	ON	OFF	OFF	ON	ON	ON
28	ON	ON	OFF	OFF	OFF	ON	ON	ON
29	OFF	ON	OFF	OFF	OFF	ON	ON	ON
30	ON	OFF	OFF	OFF	OFF	ON	ON	ON
31	OFF	OFF	OFF	OFF	OFF	ON	ON	ON
32-63	as DDSL 0 to 31					OFF	ON	ON
64-95	“					ON	OFF	ON
96-127	“					OFF	OFF	ON
128-159	“					ON	ON	OFF
160-191	“					OFF	ON	OFF
192-223	“					ON	OFF	OFF
224-255	“					OFF	OFF	OFF

Table 15: NTAG54AA DCH card address: Extended mode.

3.6 NTAG54AA Daughter Board Port disabled.

3.6.1 Port 0 disabled.

Switch Number	Function
S8_9	Set to OFF
S8_10	Set to ON

Table 16: Port 0 disabled Switches Setting.

3.6.2 Port 1 disabled.

Switch **S9** selects Port 1. (see Table 16: “Port 0 disabled Switches Setting.,” on page 16).

3.7 DPNSS External card.

Switch Number	Function
S8_1-8	X
S8_9	Set to ON
S8_10	Set to OFF
S9_1-8	X
S9_9	Set to ON
S9_10	Set to OFF

Table 17: DPNSS External card Switches Setting.

Notes: X: don’t care.

4.0 CABLES

Four types of cables are used by the DDP2:

1.- **E1 carrier cables** (same cables as for the NTCK43AB card):

- The **NTCK45AA (A0407956)**-120 OHM (8 ft.) cable for M-1 systems equipped with an I/O filter panel, connecting the TRK ports (one D-type 9 pin male) on the DDP2 faceplate to the I/O filter (two D-type 9 pin males).

- The **NTCK78AA (A0618294)**-120 OHM (50 ft.) for connecting the TRK ports (one D-type 9 pin male) on the DDP2 faceplate to the Main Distribution Frame (MDF) (two D-type 15 pin males).The NTCK78AA is used for M-1 systems not equipped with an I/O filter panel.

- The **NTCK79AA (A0618296)**-75 OHM (40 ft.) cable for connecting the TRK ports (one D-type 9 pin male) on the DDP2 faceplate to the Line Terminating Unit (LTU) (four BNC males).

2.- **DDP2 to QPC471/QPC775 Clock Controller Cables** (replacing NTCK47 or NTCK81 cables for NTCK43AB card and NT8D79 cables for QPC536E card), (see **Figure 2:Connection between DDP2 card and Clock Controller on page 18** and **Figure 3:NTCG03 cable on page 19**):

- The **NTCG03AA (14 feet), NTCG03AB (2.8 feet), NTCG03AC (4 feet), or NTCG03AD (7 feet)**, is a DDP2 card to Clock Controller cable, connecting each of the CLK0 or CLK1 ports on the DDP2 face plate (RJ11-4 pin male) to the primary or secondary source ports on Clock Controller card 0 or 1 (one D-type 9 pin male).

3.- **DDP2 to External DCH cables** (same cables as for the NTCK43AB card):

- The **NTCK46AA (6 feet), NTCK46AB (18 feet), NTCK46AC (35 feet), or NTCK46AD (50 feet)**, connect the DDP2 face plate (one D-type High Density 26 pin male) card to the NT6D11AF/NT5K75AA/NT5K35AA D-Channel Handler card.

4.- **DDP2 to External MSDL cables** (same cables as for the NTCK43AB card):

- The **NTCK80AA (6 feet), NTCK80AB (18 feet), NTCK80AC (35 feet), or NTCK80AD (50 feet)**, connect the DDP2 face plate (one D-type High Density 26 pin male) card to the NT6D80AB MSDL card.

Figure 2: Connection between DDP2 card and Clock Controller

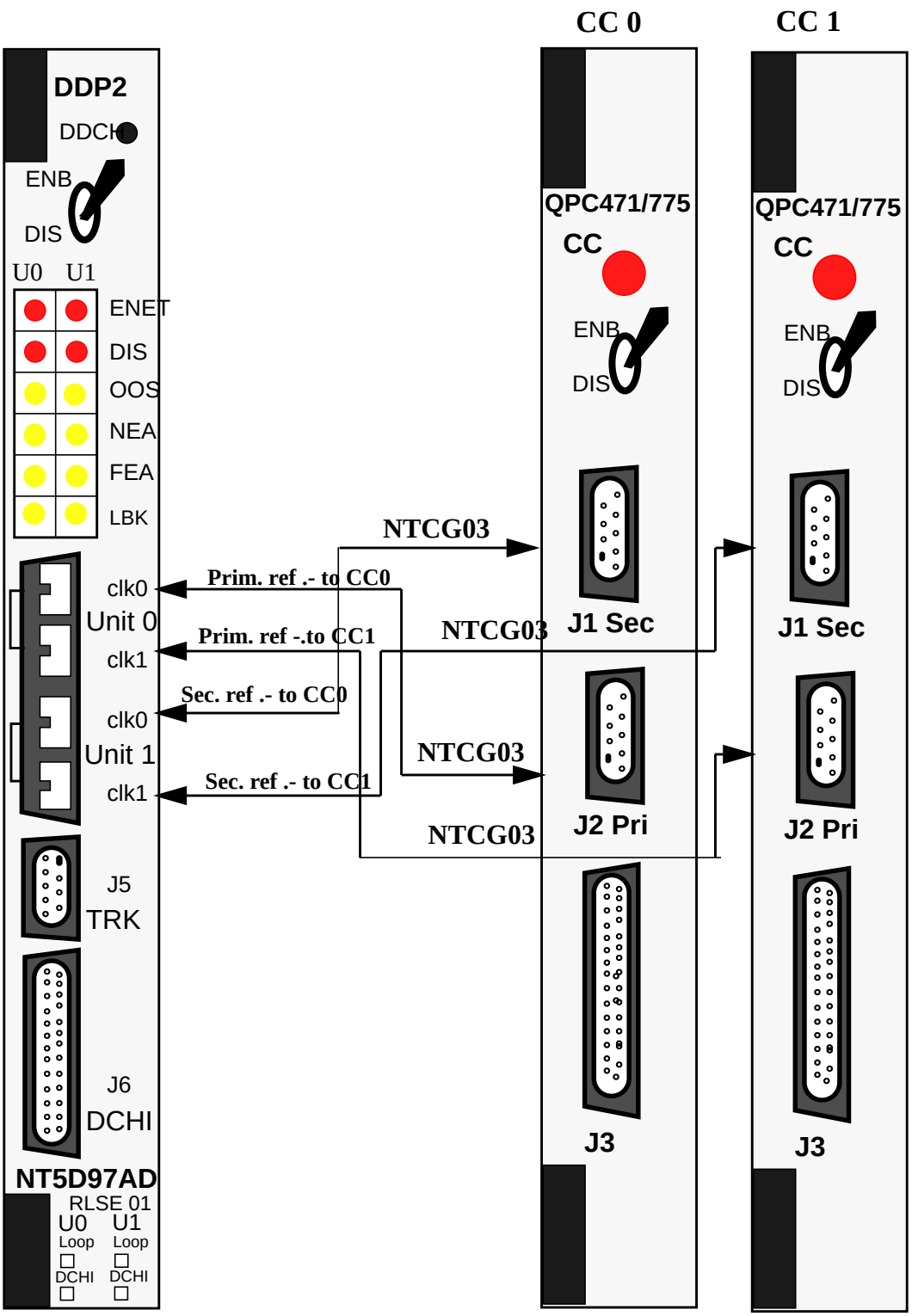


Figure 3: NTCG03 cable