C-DOT NSE

INSTALLATION AND USER MANUAL

C-DOT DSS MAX

INSTALLATION AND USER MANUAL

C-DOT DSS MAX

MAINTENANCE ALARMS AND REPORTS

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THIS C–DOT SYSTEM PRACTICE REFERS TO THE C–DOT NETWORK SYNCHRONISATION EQUIPMENT (ABBREVIATED AS C–DOT NSE IN THE REST OF THIS PUBLICATION).

THE INFORMATION IN THIS SYSTEM PRACTICE IS FOR INFORMATION PURPOSES AND IS SUBJECT TO CHANGE WITHOUT NOTICE.

A COMMENT FORM HAS BEEN INCLUDED AT THE END OF THIS PUBLICATION FOR READER'S COMMENTS. IF THE FORM HAS BEEN USED, COMMENTS MAY BE ADDRESSED TO THE DIRECTOR (SYSTEMS), CENTRE FOR DEVELOPMENT OF TELEMATICS, 39, MAIN PUSA ROAD, NEW DELHI - 110 005

Table of Contents

Chapter 1.

Introduction

Network Synchronisation Equipment (NSE) has been developed by C-DOT to fulfill the requirements of synchronising all the level 2 exchanges in the Indian network.

This equipment can be interfaced with E-10B, C-DOT SBM and C-DOT MAX-L exchanges. The input and output interface of NSE are developed as specified by ITU-T Rec G.703. Both E-10B and C-DOT MAX-L exchanges accept 2.048 MHz clocks as specified by G.703/6 Rec. However C-DOT SBMs accept 8.192 MHz clock which is also supplied by NSE.

This equipment has two modes of operation. Selection of a particular mode of operation of NSE is jumper selectable and is explained in Chapter 3 of this document.

a) Level 2 Mode : This mode of NSE is suggested for supplying synchronised output clock of stability 1E-10/day to exchanges (E-10B and C-DOT MAX-L). The equipment is named NSE2 in this mode of operation.

b) Level 4 Mode : This mode of NSE is suggested for supplying synchronised output clock of stability 1E-8/day to exchanges (C-DOT SBMs). The equipment is named NSE4 in this mode of operation).

It may be noted that the NSE2 and NSE4 are the same equipment except that NSE2 has two additional level 2 crystal oscillators mounted for level 2 operation.

Chapter 2.

Product Description

2.1. SYSTEM ARCHITECTURE

The C-DOT Network Synchronization Equipment (NSE) consists of a PC type cabinet which houses duplicated controller and PLL (NCP) cards, duplicated input/output interface (NIO) cards, and one display card, keyboard card and mother board. It has the provision to mount two oven-controlled crystal oscillator 8 (OCXO) required for level 2 operation. The controller card has a software controlled digital Phase Locked Loop (PLL), microprocessor and related memory, output clock interface and the display and keyboard interface. The NSE input/output card has the various types of input interfaces to take in the network clock. It extracts clock from the input digital trunks and provides standard G.703/10 interfaces for the output clocks.

One NCP card and one NIO card form a self-contained security block. It can work with the other copy of these two cards in active/standby mode. Output to/from these cards are connectorised on the motherboard. The user interface panel indicates the presence and absence of input clocks/trunks and the status of the PLL in the cards and the general card status. Each controller card provides two ACIA links, one of which is used for communication with the mate while the other is used to connect a VT-220 terminal for remote operations.

Fig. 2.1 and Fig. 2.2 show the equipment front panel and back panel details.

2.2. INPUT CLOCK SELECTION

The input reference clock selection can be automatic or manual. On power on or reset, the NSE comes up in the automatic mode, wherein it selects one of the input clocks according to a fixed hardwired priority. The order of priority is CLK0, CLK1, CLK2. If none of clocks are present or available for selection, then the NSE goes into the free run mode. The operator can override this selection by going to manual mode and selecting a clock using the keyboard. If the input clock is present, the LED corresponding to it will glow green. The LED corresponding to the selected reference blinks once in 2 seconds (1Hz Freq.).

It may be noted that a clock used as Reference to NSE shall always be taken from a higher level exchange.

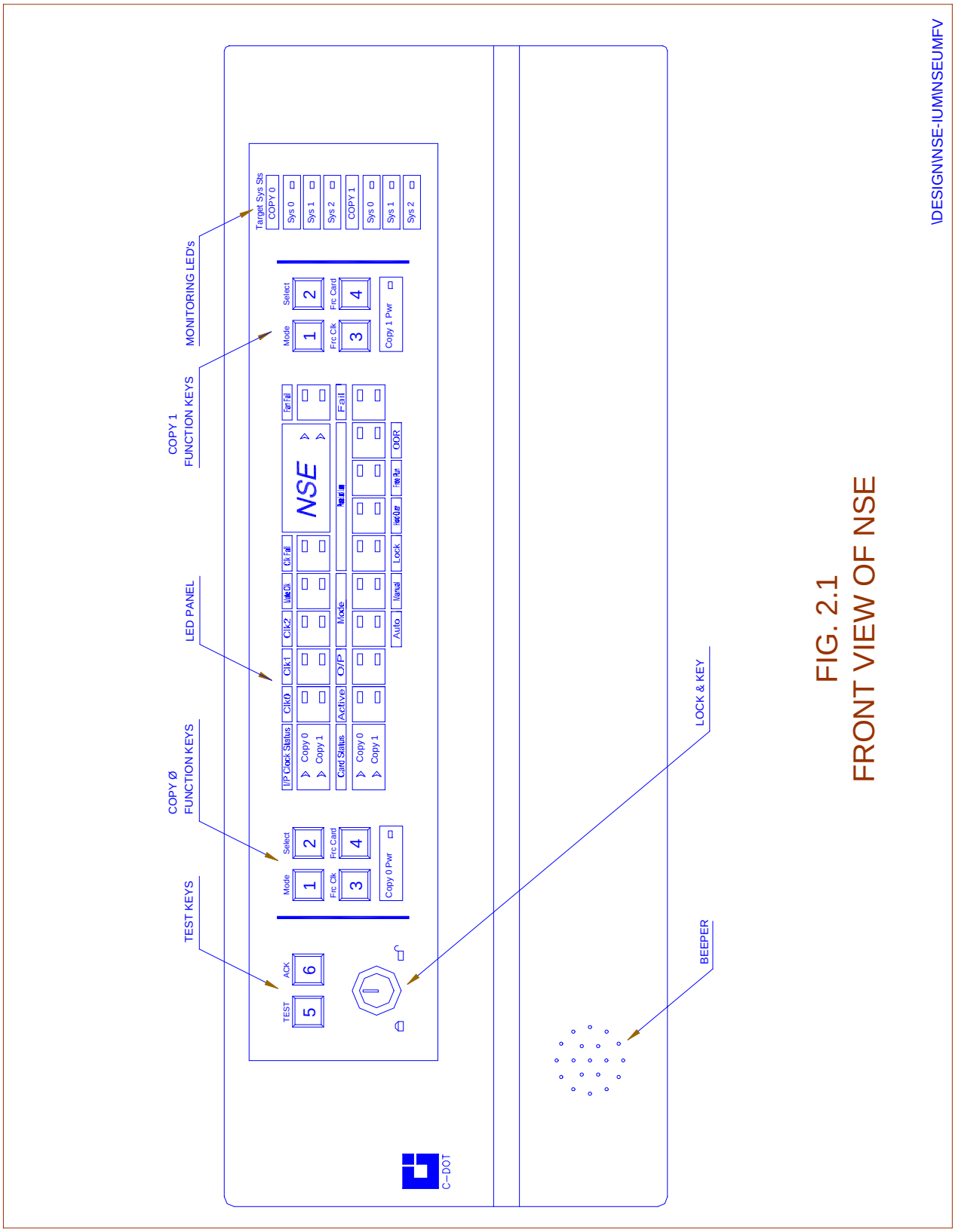

FIG. 2.1
FRONT VIEW OF NSE

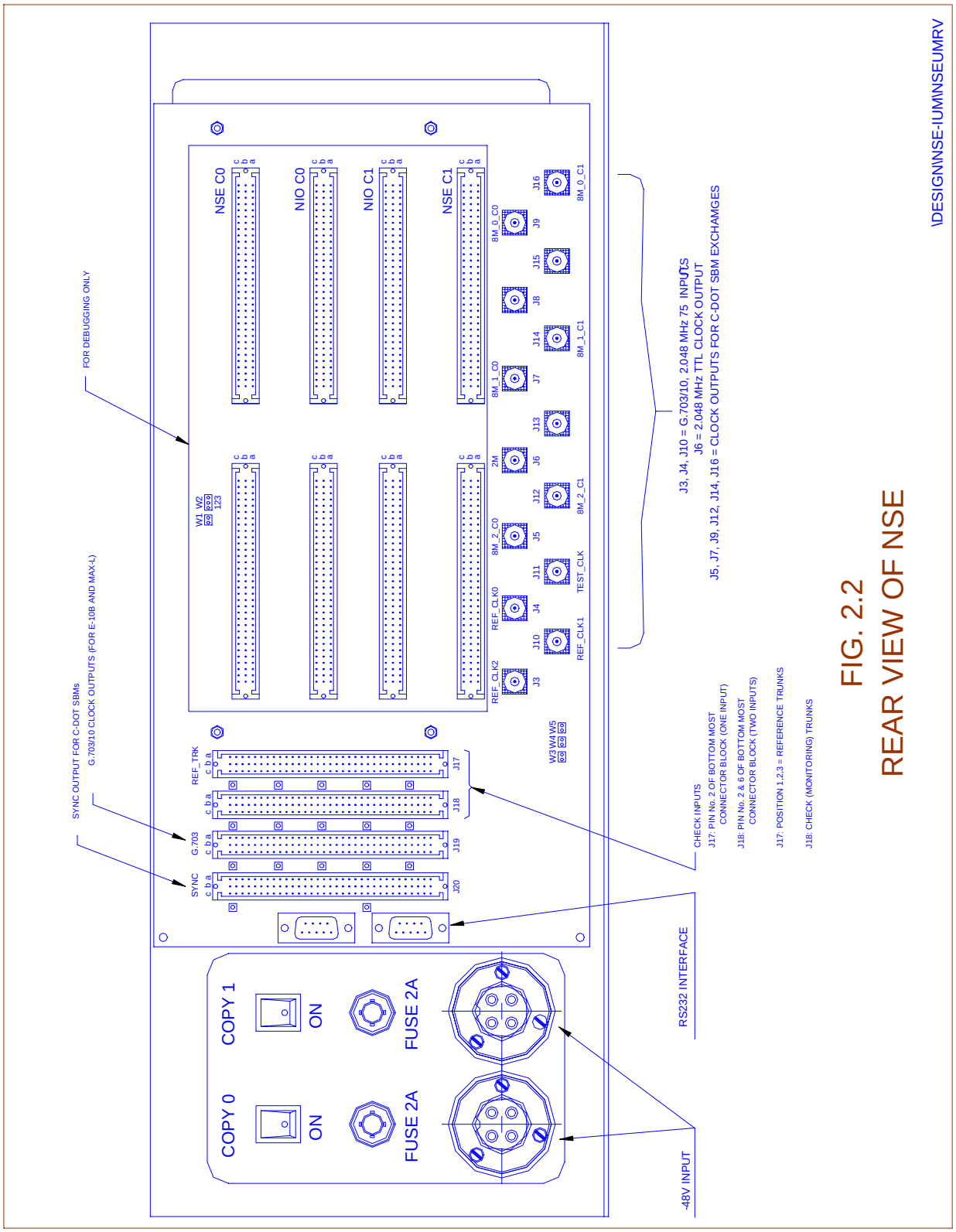

FIG. 2.2
REAR VIEW OF NSE

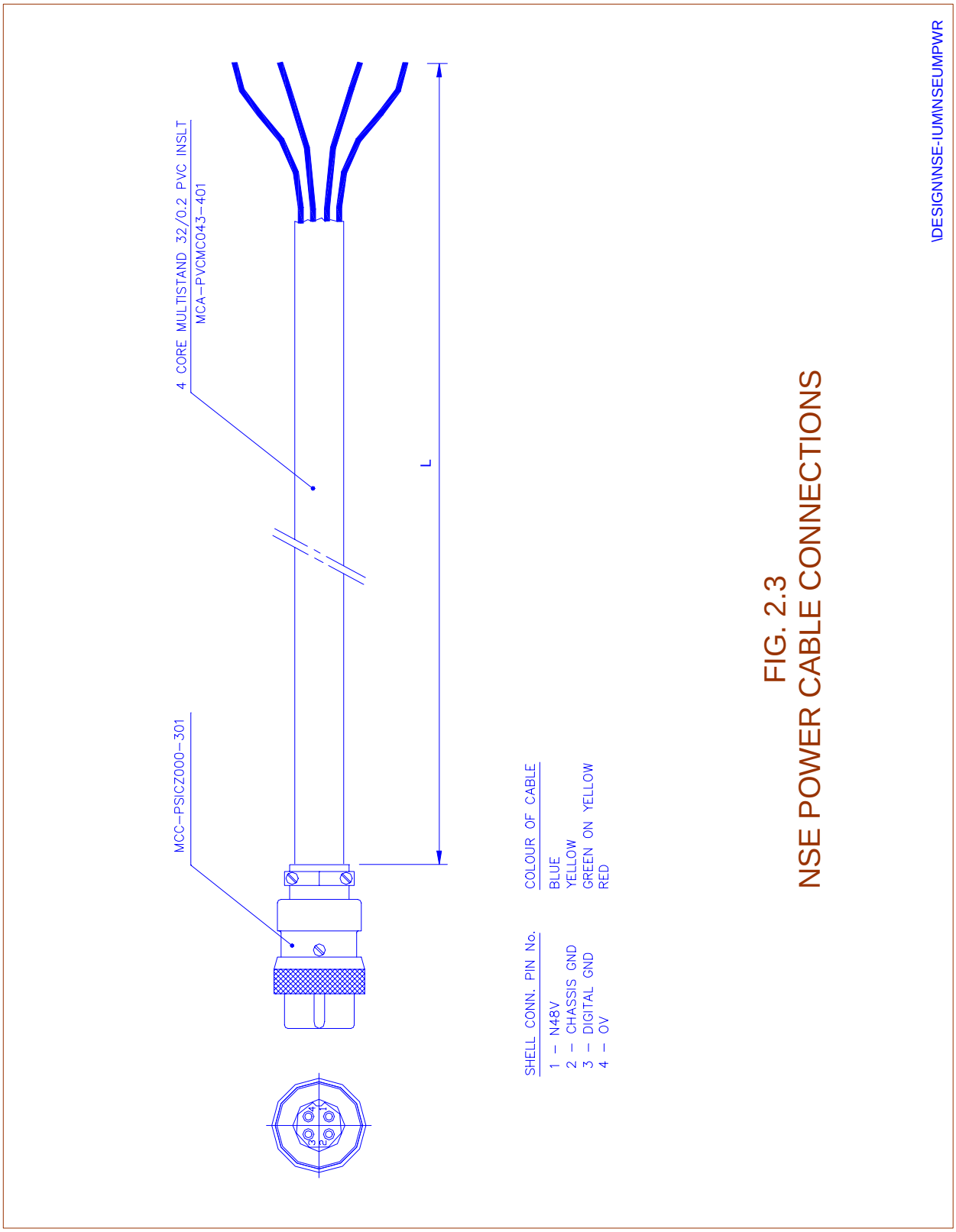

FIG. 2.3
NSE POWER CABLE CONNECTIONS

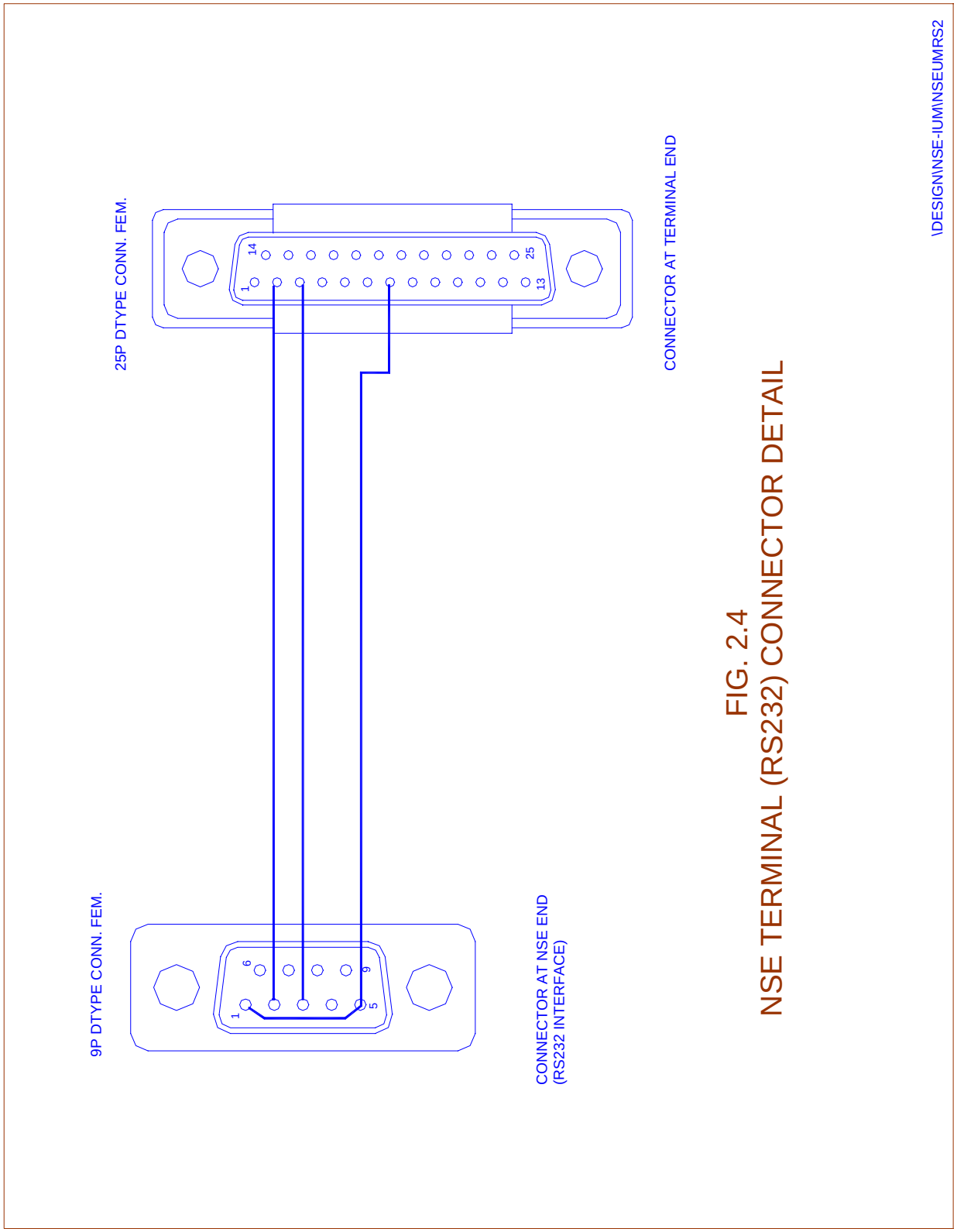

FIG. 2.4
NSE TERMINAL (RS232) CONNECTOR DETAIL

2.3. SYNCHRONISED CLOCK OUTPUTS

The NSE supplies six (6) ITU TG.703/10 (120Ω) output clocks. These can be used for E-10B exchanges and C-DOT MAX-L exchange. In addition to these, it also gives six (6) 8MHz (single ended TTL, 75 ohms) clock output along with accompanying 8KHz sync signals (differential TTL) to be used with C-DOT SBM exchanges.

A unique feature of NSE is that in duplex mode of operation, each copy of NSE supplies half the numbers of output clocks described above and in simplex operation, the only copy supplies all the output clocks required. This is achieved by shorting individual card outputs on the motherboard and selecting outputs via relays. This feature also enables synchronization of exchanges that require duplicated input clocks as reference clocks.

2.4. CHECK INPUTS

The NSE can monitor or check clock outputs of the synchronized (target) exchanges to verify whether they are in synchronisation with the network clock. It can take in three (3) digital trunks (G.703/6) 120Ω and 3 G703/10, 120Ω clocks supplied from the target exchanges for monitoring. The digital trunks are connected to the NSE in non-regenerative mode, i.e., the clock and data information is tapped from the trunks using high impedance terminations. This results in no disturbance in the trunks at the destination exchanges where the trunks are terminated with their characteristic impedance.

2.5. USER INTERFACE PANEL

NSE has a user-friendly display panel and keyboard arrangement. The display panel shows the status of various functional blocks of NSE via a set of different colored LEDs, Alarms are audio-visually indicated, i.e., a beeper accompanies the LED indications. The keyboard is used for manual operations. Remoting of NSE alarms is also possible through an opto-coupled interface. A VT-220 emulation is supported for this purpose. Please refer to Chapter 4 of "C-DOT NSE General Description" document for more details on the NSE user interface.

2.6. NSE TERMINAL INTERFACE

Two RS232 Interface are available for each NSE copy as shown in Fig. 2.2. For debugging purpose a terminal may be connected to NSE as shown in Fig 2.4.

Chapter 3.

NSE Packaging Details

3.1. GENERAL

The NSE card cage houses the following four types of cards

a) NSE Controller and PLL Card (NCP212/H-S01)

b) NSE Input/Output Card (NIO 499/H-S00)

c) NSE Display and Keyboard Card (NSD 463/F-O02)

d) NSE Motherboard Card (NSM 462/F-M02)

NCP and NIO form a single block and can be duplicated to operate NSE in duplex mode of operation. The NCP and NIO cards sit on the NSM in a card cage with the following order.

NCP copy 0 ---------- slot 1 (top)

NIO copy 0 ----------> slot 2

NIO copy 1 ----------> slot 3

NCP copy 1 ----------> slot 4 (bottom)

The NSD card is mounted on the front panel of the NSE and is connected to both copies of NCP through 40 pin FRC connector cables.

3.2. FIRMWARE DETAILS

S.No.	Device	Card	Position	Checksum
1.	EPROM 27C010	NCP	U17	AB23
2.	EPROM 27C010	NCP	U19	2B52
3.	EPLD 7128E	NCP	U56	1B7916
4.	EPLD 7128E	NIO	U22	1A6DC5
5.	EPLD 7128E	NIO	U12	1660D9
6.	EPLD 7128E	NIO	U13	1660D9

S.No.	Device	Card	Position	Checksum
7.	PAL 22VI0	NIO	U19	3F84
8.	PAL 22VIO	NIO	U21	53AA
9.	Serial PROM	NIO	U24	F6116

3.3. JUMPER DETAILS FOR NCP CARD

Jumper	Status	Function
W1	Short	Usage of write operation to FLASH PROM possible (U17)
W2	Short	Usage of write operation to FLASH PROM possible (U19)
W3	Short	Connects AGND to Gnd
W4 (1-2)	Short	Connects CLK~as strobe to DS1232 (to be done when emulator is used instead of IMP)
W4 (2-3)	Short	Connect AS~ as strobe to DS1232
W5 (1-2)	**Short**	**For Level 2 operation***
W5 (2-3)	**Short**	**For Level 4 operation***
W6	Open	To use direct clock as Reference 0 to PLL
W6	Short	To use digital trunk as Reference 0 to PLL
W7	Open	To use direct clock as Reference 1 to PLL
W7	Short	To use digital clock as Reference 1 to PLL
W8	Open	To use direct clock as Reference 2 to PLL
W8	Short	To use digital trunk as Reference 2 to PLL
W9 (1-2)	Short	Connect Ext Osc Clock (8600) to PLL
W10	**Short**	**For Level 2 operation***
W10	**Open**	**For Level 4 operation***
W11	**Open**	**For Level 2 operation***
W11	**Short**	**For Level 4 operation***
W12 (1-2)	Short	To disable spare 2 MHz TTL O/P at connector
W12 (2-3)	Short	To enable spare 2 MHz TTL O/P at connector

Jumper	Status	Function
W13 (1-2)	Short	To get 2 MHz Clock O/P at connector J6
W13 (2-3)	Short	To get 16 MHz Clock O/P at connector J6
W14	Short	If PSI is mounted
W14	Open	If PS2 is mounted
W15	Short	If PS2 is mounted
W15	Open	If PS1 is mounted

Note: Position of jumper W5, W10 and W11 decide the level 2 or level 4 operation of NSE.

* Other jumper settings may be left as per factory default settings as shown.

3.4. JUMPER DETAILS FOR NIO CARD

Jumper	Status	Function
W1	Short	To connect Ref-Trk1 (G.703/6) to phase detector
	Open	To connect reference clk 1 to phase detector
W2	Short	To connect Ref-Trk0 (G.703/6) to phase detector
	Open	To connect reference clk 0 to phase detector
W3	Short	To connect Ref-Trk2 (G.703/6) to Phase Detector
	Open	To connect reference clk 2 to phase detector

Note : Position of jumpers W6, W7, W8 on NCP card and W2, W1 and W3 on NIO card decide whether a reference trunk is selected or reference clock is selected by NSE.

Chapter 4.

NSE Integration with Exchange

4.1. INTRODUCTION

NSE can be integrated with E-10B exchanges, C-DOT SBMs and MAX-L exchanges. The connectivity details and procedure of integration is described for each exchange separately in the following sections.

4.2. NSE INTEGRATION WITH E-10B EXCHANGES

4.2.1. General

NSE can supply clock to three E-10B exchange simultaneously at the same location. The connectivity detail is shown in Fig. 4.1.

All E-10B exchanges accept clock input as specified by G.703 recommendation.

4.2.2. Procedure to Integrate NSE with E-10B

a) Make connections as shown in Fig. 4.1(a), 4.1(b), 4.2(d), 4.2(e), 4.2(f) and Fig. 2.3.

b) Power on NSE in level 2 mode and wait for 2 hrs. 'O/P' LED, 'AUTO' LED and 'FREE RUN' LED on NSE display panel shall glow green. This indicates that NSE is ready for use.

c) Connect PCMs (Maximum 3) coming from a TAX at higher level to NSE at Ref-Trk connector [J17]. Let NSE select a PCM as reference and synchronise to it. The maximum synchronisation time can be around 10-12 hrs. NSE in 'SYNCH' mode shall be indicated by the 'LOCK' LED glowing on the display board.

d) Physically connect NSE 2.048 MHz, G.703 output from connector J19 to the top runway tag block at the back of the BT bay of E-10B exchange.

e) Jack in the CIT1 card in the E10B exchange.

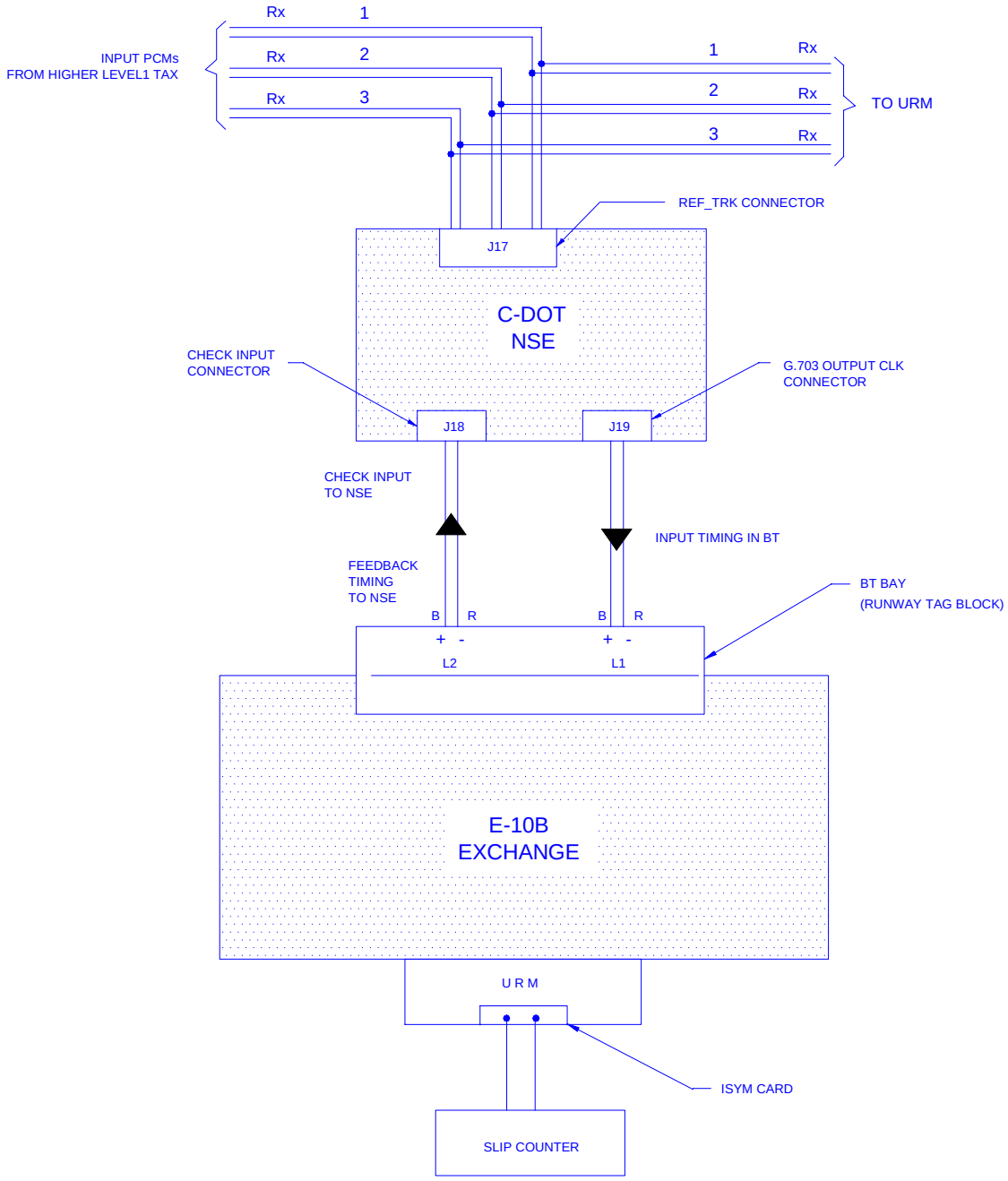

FIG. 4.1a
NSE CONNECTIVITY WITH E-10B EXCHANGE

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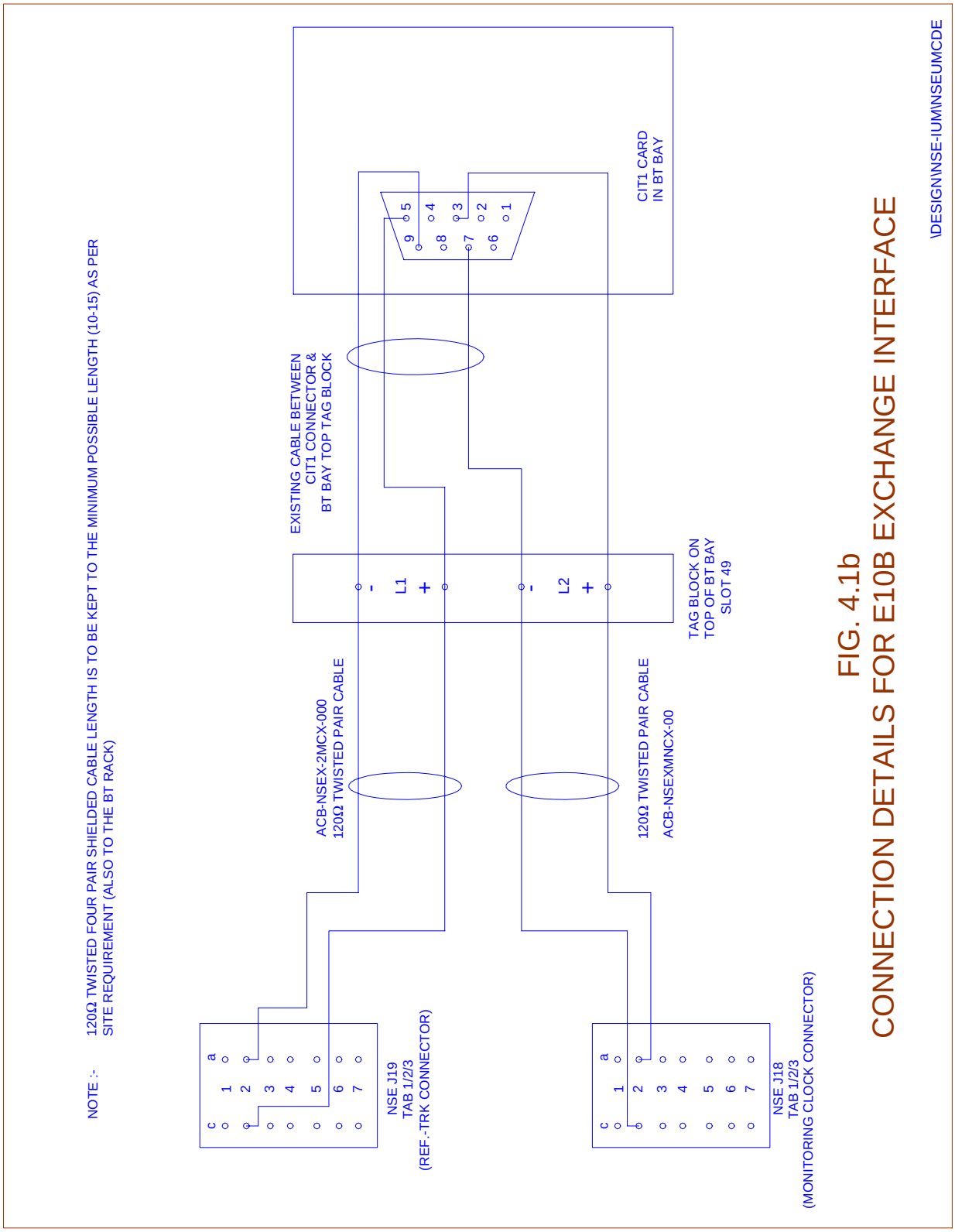


FIG. 4.1b
CONNECTION DETAILS FOR E10B EXCHANGE INTERFACE

f) Change the switch on BT bay from INDEPENDENT mode to SYNC mode. Also reset the button on BT. All the existing non-urgent alarms should disappear on the HASU card of E-10B exchange.

g) To verify that NSE output is supplying clock to the E-10B, connect the Monitoring input (check input) of NSE on connector J18 to the point shown on the BT bay as shown in the Figure 4.1a. The SYS0 LED on NSE display panel shall light up.

h) Slip at E-10B can be monitored by connecting the slip counter at BT bay at the point shown in the figure.

i) The slip values on counter shall be noted on daily basis at a particular time one day before and after synchronisation.

Note :

a) If 'MSEXT' alarm on BT (CIT-1) is red then give a reset to 'HASU' card and press 'RZLP' switch on 'HASU'.

The 'MSEXT' alarm shall be off to show proper operation.

b) ***The NSE 2MHz G.703 output cable length shall be not more than 15 meters.***

c) ***No oscillator drift messages should apear***

4.2.3. Preventive Maintenance at E-10B

E-10B's local clock (given by HOSA cards) may drift with passage of time (oscillator stability 10^{-6}). Therefore, before synchronisation, the HOSA card voltages should be checked on Vas points of all three HOSA cards. The voltage indicated shall be in between 1.45V to 1.55 V D.C.

If voltages are found to be out of the above mentioned range, these should be adjusted with the help of a potentiometer mounted on the cards.

Note: *Tolerance values may vary from card to card. So if FNU alarm on HASU is present after connecting to NSE (ie after switch over from independent to synchronize mode, HASU card can be tuned to match and RZLP pressed to remove the alarm. Tuning to be done to the effect that no alarm is present both in independent & synchronize mode.*

4.3. NSE INTEGRATION WITH C-DOT SBMs

4.3.1. General

C-DOT SBM accept a timing input of 8,192 MHz. NSE4 supplies three duplicated 8.192 MHz TTL clock output along with 8 KHz SYNC signal.

Thus a single NSE can synchronise three co-located C-DOT SBMs simultaneously.

4.3.2. Procedure to Integrate C-DOT SBMs with NSE

a) Set NSE as given in section 3.2, 3.3 & 3.4 in level 4 mode.

b) Power on NSE. NSE shall be ready when AUTO, OUTPUT and FREE RUN LED on NSE display panel get switched on.

c) Make connections as shown in Fig. 4.2(a), 4.2(b), 4.2(c), 4.2(d), 4.2(e), 4.2(f), and 2.3.

d) At CRP terminal of exchange, give command MOD-CLKSRC-EQPAG to equip NSE in the system. Response on the terminal shall indicate equipage of NSE. Also an URGENT alarm shall be raised on OOD terminal and on ADP.

e) Give SEL-CLK-SRC command to select NSE-0 (NSE clock available to TSC-0 of SBM) or NSE-1 (NSE clock available to TSC-1 of SBM). Response shall indicate the selection of NSE-0 or NSE-1 clock. Also the 'URGENT' alarm shall change to 'NORMAL' on OOD and ADP.

f) Give DISPL-CRNT-CLK-SRC command to ensure that NSE-0/NSE-1 is the selected clock in the system.

g) Repeat (f) of 4.3.3.

Note :

Care must be taken that if NSE is to supply output to SBM local exchange, it shall be set in level 4 mode before power on and if NSE is to supply output to a SBM TAX then it shall be set in level 2 mode before power on. The Mode settings are explained in section 3.3.

4.3.3. Procedure for Integration of NSE with C-DOT Exchanges (MAX-L)

a) Make connections as shown in Fig. 4.3(a), 4.3(b), 4.2(d), 4.2(e), 4.2(f), and Fig. 2.3 for MAX-L exchange.

b) At NSE check up the jumper settings at both NIO and NCP cards as described in Chapter 3. Also set NSE in level 2 mode.

c) Power on NSE and wait for 2 hours for warm-up. After 2 hours AUTO, ACTIVE and FREERUN LED shall light up. Connect three reference trunks to NSE at J17 Tab 1/2/3,as shown in Fig. 4.2 (d).

CLK0 and LOCK LED starts blinking indicating that NSE has started locking to CLK0. After 10-12 hours LOCK LED shall become steady

and indicates that NSE is completely locked to the input reference i.e. CLK0.

d) At MAX-L exchange end, the clock cards i.e. SCK-02 cards in both copies need to be replaced with SCK-04 cards for NSE integration. Hence force out standby SCK-02 card and replace it with SCK-04 card. Force in this SCK copy. Now force out the other SCK-02 card and replace it with SCK-04 card. Force in service this SCK copy also.

e) At CRP terminal give the following commands:

1. MOD-CLKSRC-EQPAG to equip NSE clock. The response on CRP terminal shall indicate equipage of NSE clock. Also an urgent alarm on OOD and ADP shall be raised indicating the equipage of NSE clock.

2. SEL-CLK-SRC to select NSE-0 (NSE clock connected to SCK-0 copy) or NSE-1 (NSE clock connected to SCK-1 copy). Urgent alarm from OOD & ADP shall be removed.

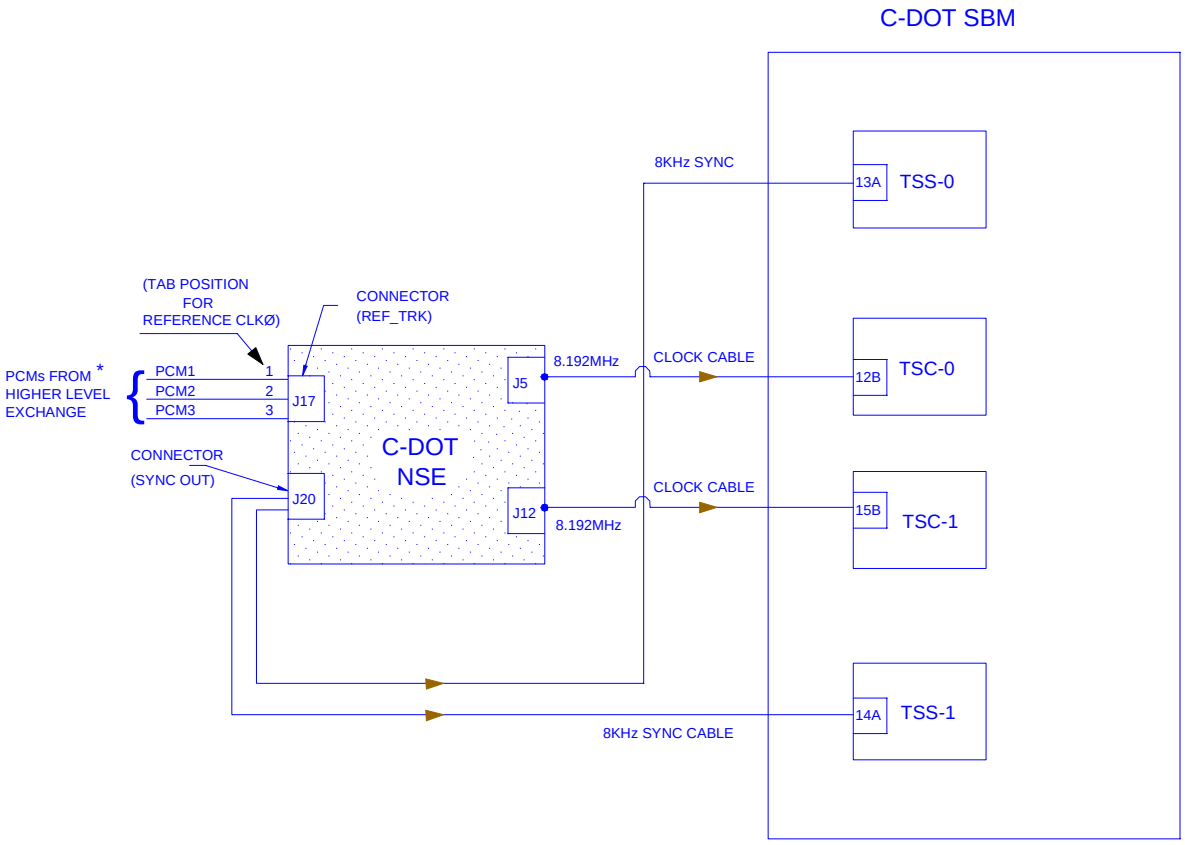
3. DISPL-CRNT-CLK-SRC command to display which clock is selected by the exchange i.e. NSE-0, NSE-1, CLK-0 (SCK-0) or CLK-1 (SCK-1).

f) Connect a cable at DTS monitor port (corresponding to the selected reference at NSE) and the IOP to get slip dumps using PORTMON and SLIP utility as explained in Chapter 7.

Note :

a) Care must be taken that NSE 2 MHz output cable length shall not be more than 10-15 meters.

b) SCK-04 card shall be used only when NSE output is connected to it.



LEGEND

TSS = TIME SWITCH CARD

TSC = TIME SWITCH CONTROLLER CARD

* = REFER FIG. 4.2d AND 4.2e

FIG. 4.2a

NSE CONNECTIVITY WITH C-DOT SBM

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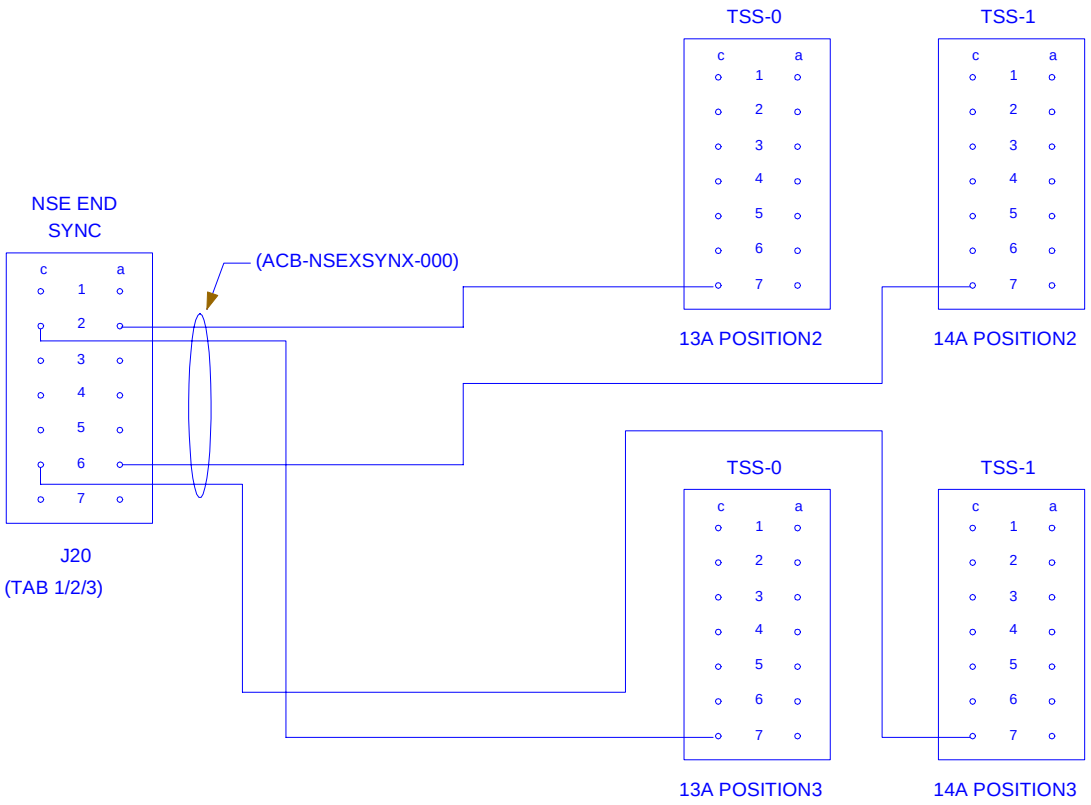

FIG. 4.2b

CONNECTION DETAILS FOR C-DOT SBM EXCHANGE INTERFACE (SYNC CABLE)

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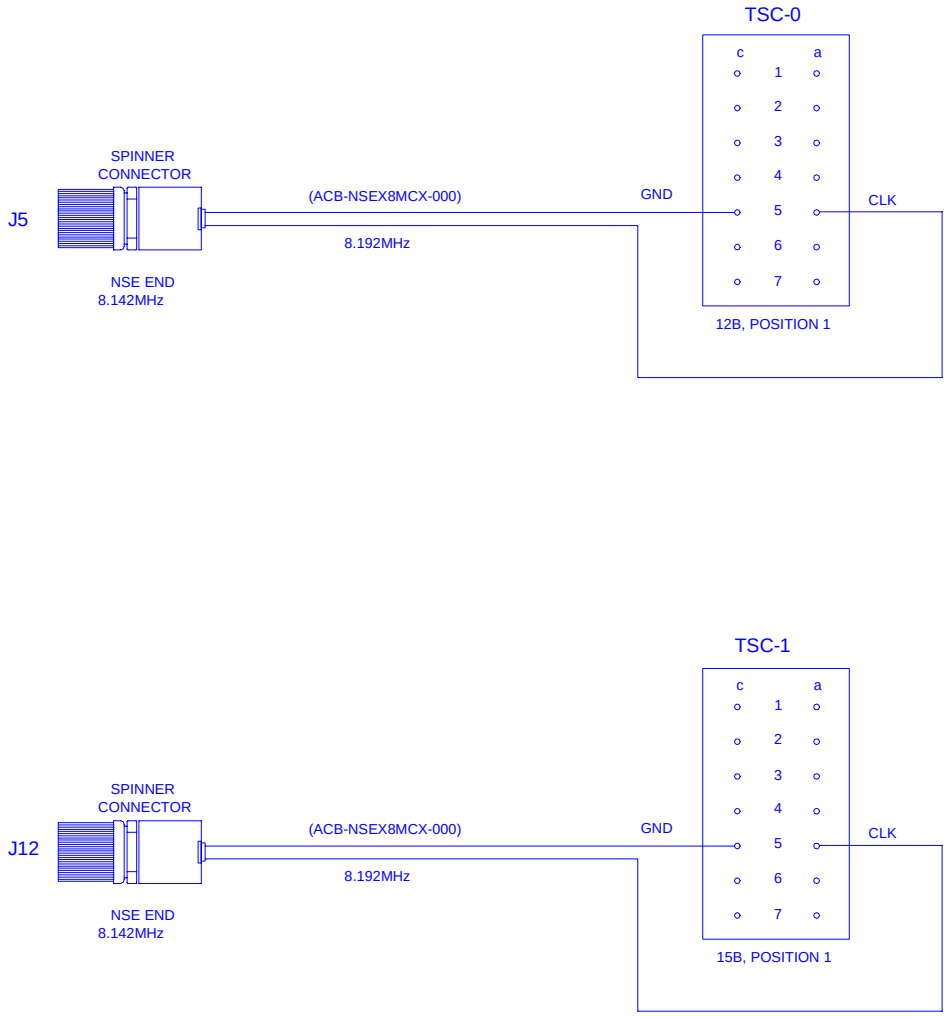

FIG. 4.2c

CONNECTION DETAILS FOR C-DOT SBM EXCHANGE INTERFACE (CLOCK CABLE)

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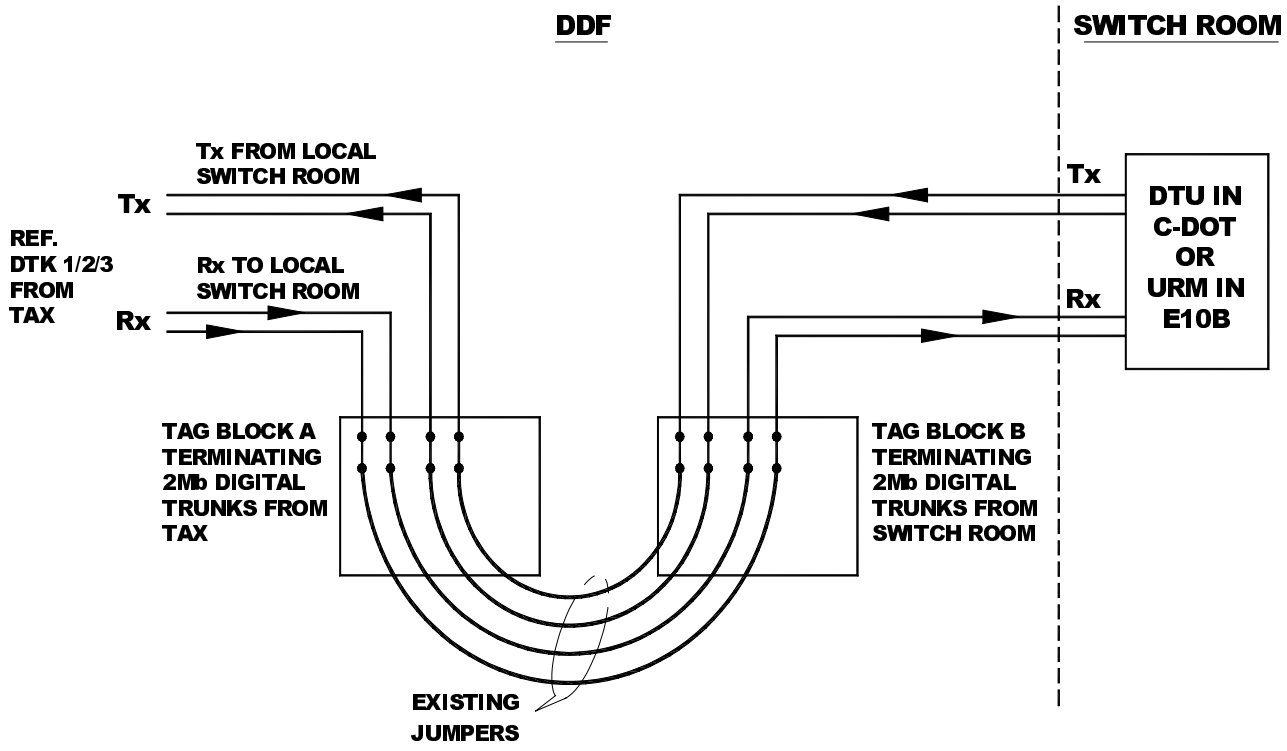


Figure: 4.2d
EXISTING ARRANGEMENT IN DDF BEFORE INSTALLATION OF NSE

Notes: (Refer fig 4.2d and 4.2e)

a) Initially the Tx-Rx exist at DDF as shown in fig 4.2d

b) Rx pair to be isolated and connected to separate tab blocks, i.e. routed in serial mode via NSE as shown in fig 4.2e.

c) Rx pair from distant exchange terminates at NSE on la-lc pair of J 17 tab 1 via DDF and another pair from 5a-5c of J17 tab 1 at NSE (i.e. same 7/2 connector) goes back to DDF and is routed to the exchange via separate termination.

d) 3 nos. of 2 Mb digital trunks from trunk group connected to tax may be chosen as reference digital trunks.

Contd…on page 25

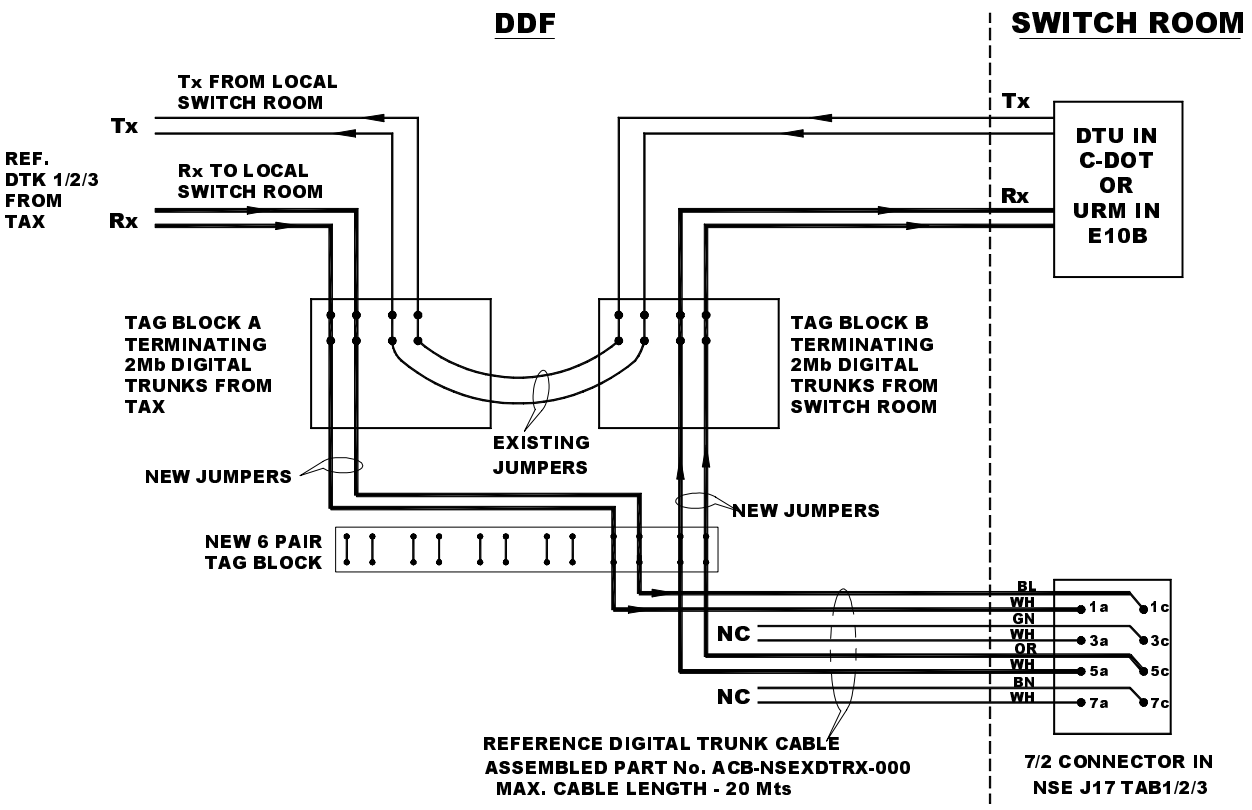


Figure 4.2e
CHANGES TO BE DONE IN DDF FOR ROUTING REFERENCE DIGITAL TRUNK CABLE TO NSE

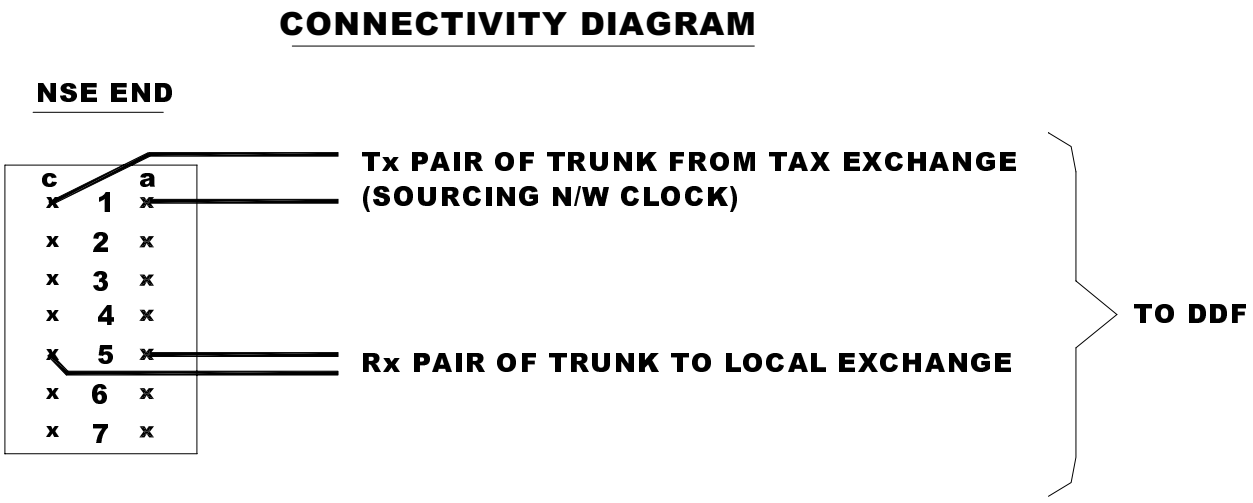
Continued from page 24

NOTE :(Refer figures 4.2d , 4.2e)

e) Reference digital trunks may be terminated on NSE as follows
Ref. DTK1 : NSE J17 tab 1, Ref. DTK2 : NSE J17 tab 3 , Ref. DTK3 : NSE J17 tab 3

f) For terminating reference digital trunks do the following

- Remove existing jumpers from Rx to Rx for ref. digital trunks between tag blocks A & B
- Terminate Rx pairs of ref.digital trunk 1 from tab blocks on 7x2 connector for NSE J17 tab1 as shown in fig.4.2e
- Similarly, terminate Rx pairs of ref.digital trunks 2 & 3 on two different 7x2 connectors for tab 2 & tab 3 of NSE connector J17.
- Keep 7 x 2 connectors always plugged in NSE J17 connector to avoid break in Rx pairs of digital trunks going to switch room.



NOTE: *1) LENGTH OF THE CABLES DEPENDS ON SITE. (NOT MORE THAN 20 MTRS)*

Figure 4.2f

DIGITAL TRUNK CABLE EXTERNAL

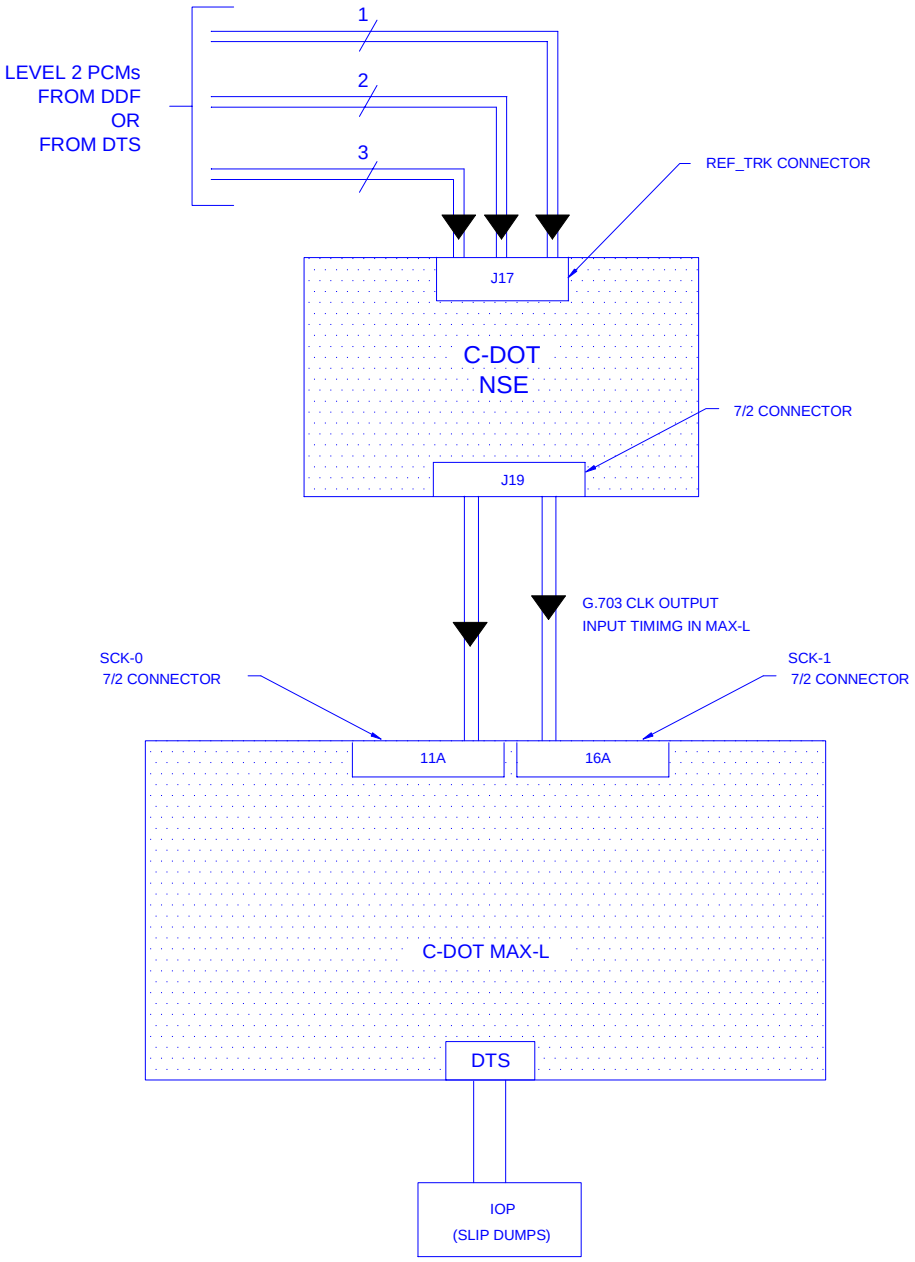


FIG. 4.3a
NSE CONNECTIVITY WITH MAX-L EXCHANGE

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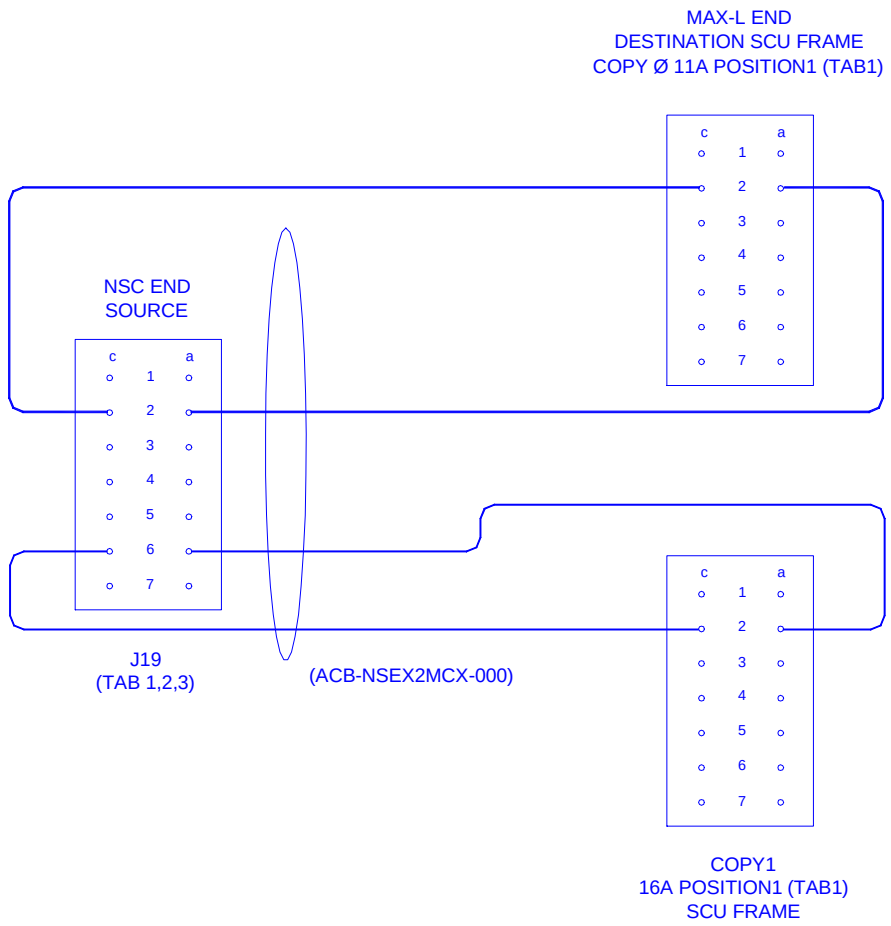

FIG. 4.3b
NSE CONNECTIVITY WITH C-DOT MAX-L EXCHANGE

NOTE:-

IF THE CABLE HAS A CONNECTOR WITH ONLY ONE PAIR FOR CONNECTING TO COPY Ø OF MAX-L (POSITION 11A), CONNECTION SHOWN IN DIAGRAM MAY BE MADE FOR COPY1 ALSO (POSITION 16A) AT SITE.

\DESIGN\NSE-IUM\NSEUMDM

Chapter 5.

Slip Monitoring

5.1. SLIP MONITORING IN C-DOT DSS

5.1.1. Introduction

Slip monitoring is done in C-DOT DSS at the DTS (Digital Trunk Synchronisation) card and slips are dumped and analysed at the IOP using two slip monitoring utilities namely "PORTMON" and "SLIP".

PORTMON is an inherent part of UNIX Release 9.0 and in onward releases and the other utility named SLIP is a post-processing utility and is available in UNIX releases 11.2 and higher.

5.1.2. Prerequisite

Check for the following :

1. DTS card shall be jacked in.
2. A RS232 cable between the selected DTS and IOP. (Please refer to Figures 5a & 5b for connection details when IOP ML / IOPXL is used and figures 5c and 5d for connections when IOPVH is used).

5.1.3. Procedure

(A) PORTMON Utility

1. At IOP prompt make a command file "/tmp/cmd and write the following commands in this file.

   i) Contrl-C (in first line)

   ii) C (in second file)

   Press <enter> and <save> the file

2. Again, at IOP prompt, give -

   Iop5C> echo "N\c">>/cmd and press enter

3. Connect the cable between the DTS card (Monitor port) to any of the icc port at the IOP (i.e. icc5)

   Care must be taken that the action field entry of the selected icc port in /etc/inittab file should be marked "OFF".

4. Invoke PORTMON Utility by giving the following command at IOP prompt

   IOP5C> Portmon –c

   System shall ask for the port number thus enter 5

   System asks for the input file name thus give the full path /tmp/cmd

   System asks for file name where slip values are desired to be dumped give

   /tmp/slip.log

   Now System asks for the baud rate enter 4800

   System asks again for Port No. enter – 1

   The utility shall start dumping slip values in **slip.log** file

   Each line starting from N represent a frame slip hence we can calculate from these values, the number of frame slips occurred every 10 minutes as the time stamp is printed every 10 minutes.

(B) SLIP Utility

This utility will convert the Slip values in hex stored via PORTMON utility to a more user friendly format in decimal.

It may be noted that this utility is an inherent part of UNIX releases after 11.2 and higher.

At IOP prompt, please give one of the following options:

(i) Slip –c –m X <slip.log

(ii) Slip –c –h Y <slip.log

Where 'X' is the time interval in minutes for which slips are to be calculated by the utility (The value of X shall be either 10 or a multiple of 10)

Where 'Y' is time interval in hours for which slip has to be calculated.

Where 'slip.log' is the file available after running PORTMON Utility.

Note :

Tec specifications

a) The output clocks should have a minimum stability of 2x10E-10 per day.

b) The NSE should be able to give audible alarm for various critical and non critical faults.

c) NSE should have fitter absorbtion characteristics and fitter transfer characteristics as specified in ITU g.823 standards.

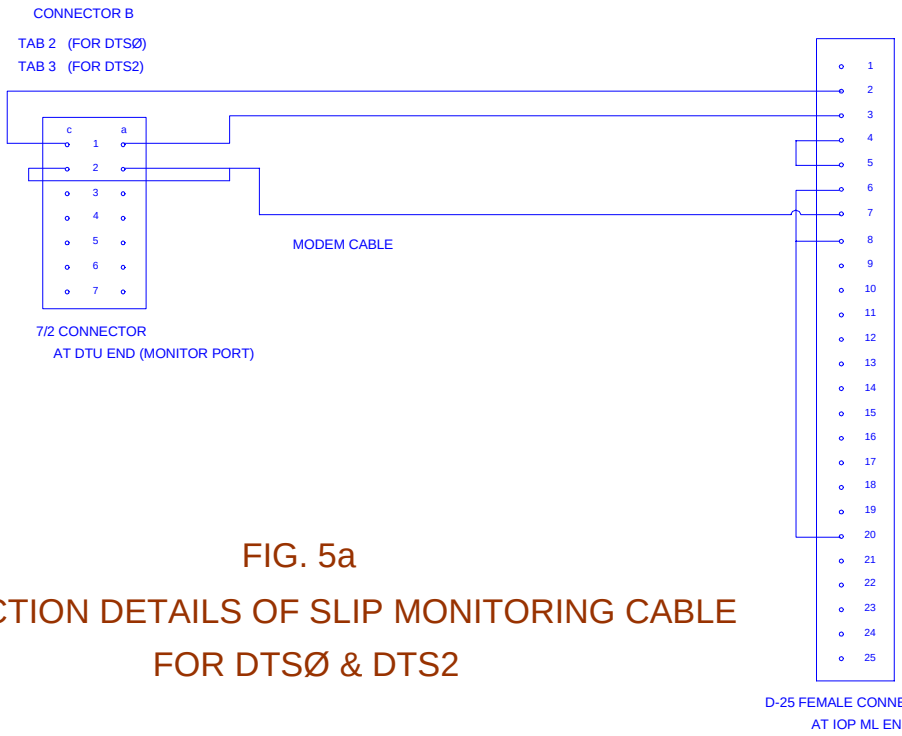

FIG. 5a

CONNECTION DETAILS OF SLIP MONITORING CABLE FOR DTSØ & DTS2

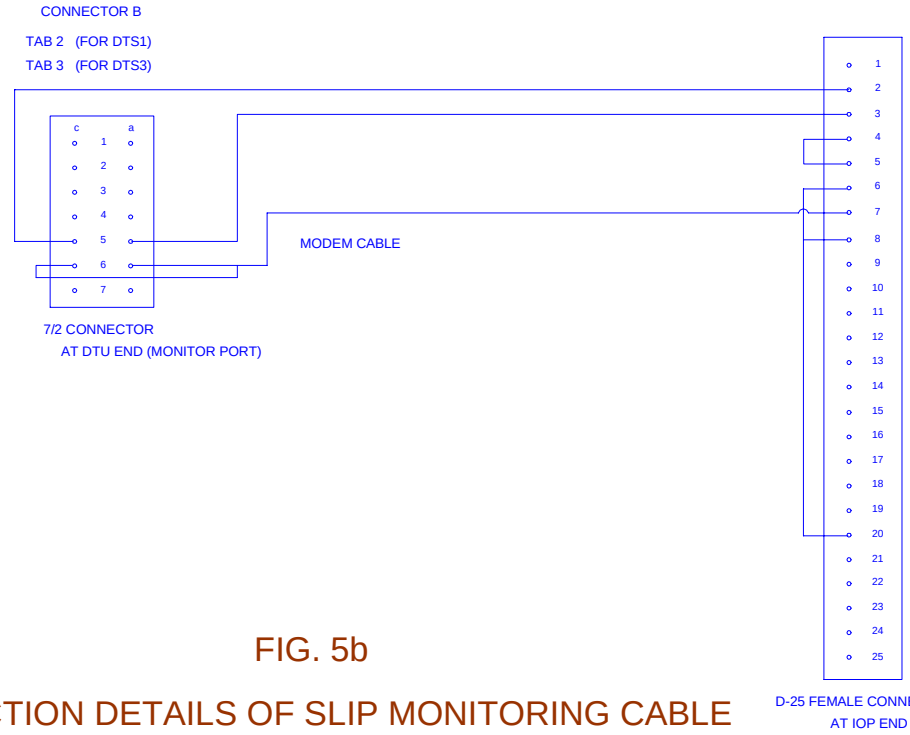

FIG. 5b

CONNECTION DETAILS OF SLIP MONITORING CABLE FOR DTS1 & DTS3

\DESIGN\NSE-IUM\NSEUMMC1

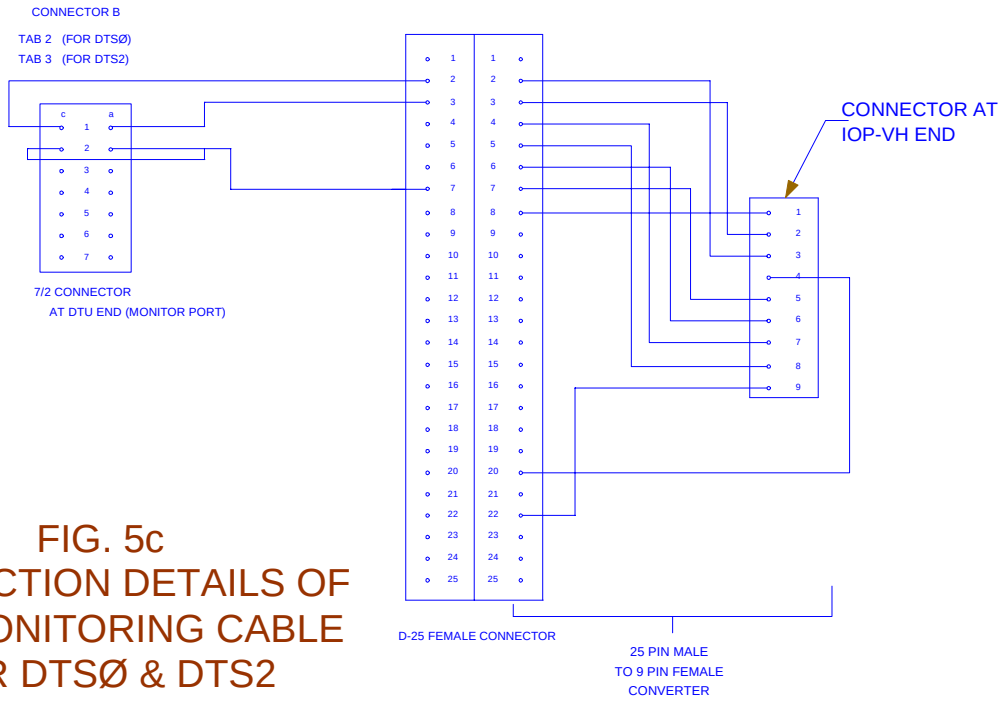

FIG. 5c
CONNECTION DETAILS OF
SLIP MONITORING CABLE
FOR DTSØ & DTS2

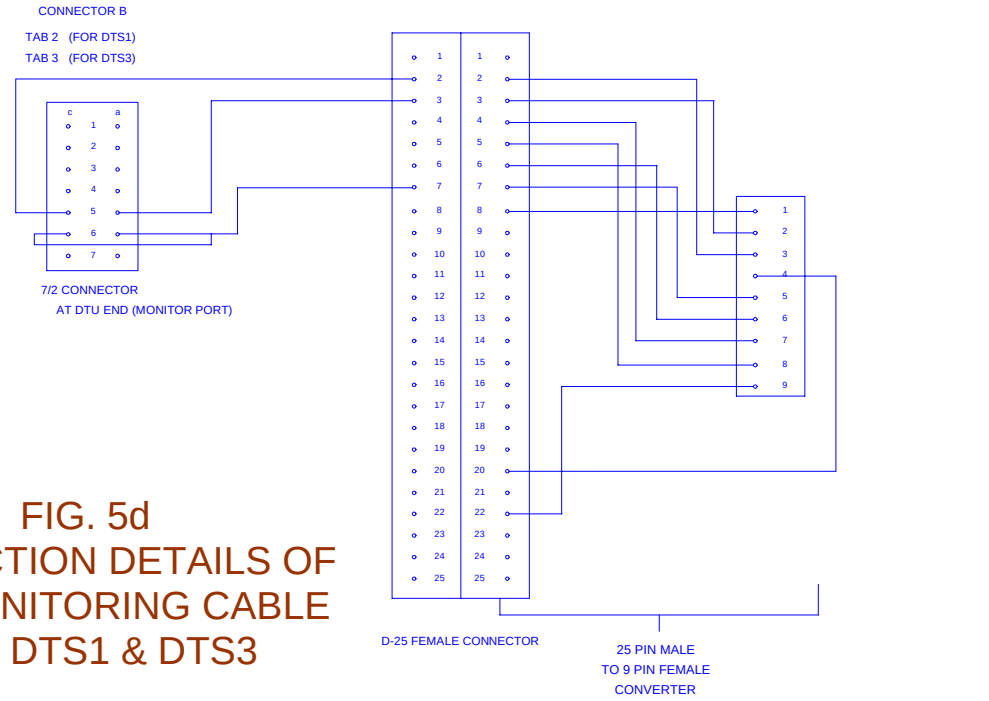

FIG. 5d
CONNECTION DETAILS OF
SLIP MONITORING CABLE
FOR DTS1 & DTS3

\DESIGN\NSE-IUM\NSEUMMC1a

Chapter 6.

Debugging Aids for NSE

- The following table describes the various faults that might develop in NSE cards and also the proposed solution for each case.

No.	Symptom	Possible Reasons	Action
1	RESET LED (ON NCP) glowing Red continuously	(i) EPROMs not mounted properly (ii) Pins of EPROMs bent or broken (iii) Processor not mounted properly (iv) PSU on NCP failed (v) Processor in Halt state due to address error/bus error caused due to short/open in address/data bus	(i) Mount the PROMs as per release information (ii) Check the output voltage at point on NCP card (VCC print).
2	RESET LED glows red intermittently	(i) PSU of NCP card failed (ii) No watchdog signal to DS12320	(i) Noise spikes can be seen in +5V VCC on CRO (ii) Check all jumper settings on NCP card
3	CARD FAIL LED glows	(i) NIO card not jacked in properly (ii) PSU on NIO card facility (iii) Jumper setting on NIO not proper (iv) EPLDs and FPGA in NIO not mounted properly	(i) Check power LED (DS1) on front panel of NCP (ii) Check jumper settings on NIO card

No.	Symptom	Possible Reasons	Action
4	OUTPUT LED fails to glow	(i) Output drivers of 8MHz and 8 KHz sync on NCP card or 2MHz output on NIO card may have gone faulty (ii) EPLD on NCP faulty	(i) Change NCP card if 8 MHz or 8KHz sync signal is found to be missing. (ii) Change NIO card if 2 MHz signal is missing.
5	DIAGNOSTICS on cards fail on POWER ON	(i) PSU onboard NCP may be faulty (ii) Power I/P connections to NSE(-48V) faulty or reversed	(i) Check for +5V on VCC point. If no voltage, change NCP card. (ii) -48V connection shall be as per installation manual
6	FAN FAIL LED glows red	(i) Fan may be faulty (ii) Fan fail circuit in NCP faulty	(i) Replace fan if faulty (ii) Replace NCP card if fan is running
7	Both cards copies come up as active	(i) Mate to mate communication failed due to faulty RS232 drivers in NCP (ii) Reset signal drivers to each card is faulty	(i) Replace NCP card
8	NSE fails to lock with any of reference	(i) Jumper settings not proper in NCP	(i) Check all jumper settings on NIO and NCP card.

सी-डॉट C-DOT **System Practices**	**COMMENTS**

The following comments pertain to:

Document Name ☐

CSP Section ☐☐☐ - ☐☐☐ - ☐☐☐☐

Issue/Draft ☐☐ , ☐☐☐ - ☐☐☐☐

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COMMENTS :

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Please mail your comments to:

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