DATELMUX 5500

CONFIGURATION SHEETS

BRITISH TELECOM

CUSTOMER

ADDRESS:

DATELMUX 5500

As a valued customer of British Telecom we are pleased that you have chosen a network which includes a Datelmux 5500. The multiplexer is a very sophisticated data concentrator exchange which encompasses a powerful statistical multiplexer and data switch combined in one unit.

As the unit is modular in form it is very easy for expansion of your network to be implemented and you will find that the flexibility transparency and ease of use of the device will mean that it should give years of service without becoming outdated. The multiplexer is constantly being updated so that more and more services can be be attached to your network. Your British Telecom Field Sales Officer should be able to keep you up to date on this.

Future developments are :-

1) X25 access-card (for access to Packet Switching)
2) IBM simulator board
3) SDLC protocol synchronous channel card

When the engineers have completed the initial setting up of the network you should have been handed the relevant handbooks apertaining to your multiplexers which should be read carefully.

However, it was found that some of the information was difficult to obtain from the handbook, and therefore the following notes have been produced to assist customers in operating the various controls on the mux.

Part 1) This describes the standard multiplexer and the use of the Mapping and Test Panel.

Part 2) Describes the operations necessary to use the control functions when a USO (user switching option) is being used.

BRITISH TELECOM DATELMUX 5500

GUIDANCE NOTES ON THE STANDARD MULTIPLEXER

Your multiplexer will consist of one or more "frames" of equipment containing various cards plus a Mapping and Test Panel in the "Master Frame". The unit will either be "Free Standing" in its own case or "Rack Mounted".

Types of cards and controls :

```
          1) Channel Cards
          2) Buffer Cards
          3) ARQ Cards (which connect to outside private ccts)
          4) STC Card (always in slot 16)
          5) Bus Extension Module (extends the databus to next shelf)
          6) Bus Termination Module (terminates databus from master bay)
          7) USO Card (user switching option - see selection 2)
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The STC card, buffer cards, USO card, BEM cards, BTM cards have no control on them and should not be interfered with. ON NO ACCOUNT SHOULD THESE CARDS BE REMOVED WITH THE UNIT POWERED UP, otherwise corruption of the mapping details could occur or worse a "software-trap" could be set up blocking the mux.

ARQ CARDS

The ARQ cards link the 5500 to other 5500's or smaller mux's in the network. They allow error protected data with an HDLC line format (X25 LEV2) go back to "n" automatic repeat request retry, to pass over the link. Note Link (1) will always be on the right of the mux (usually slot 16 in the Master Bay).

Controls :

CL - PUSHBUTTON (LATCHING) When pressed in the private circuit will be looped back to "B" end. Also the card will be looped back "TRANS" to "REC" to the mux.

RE - PUSHBUTTON (LATCHING) When pressed resets Error indicator.

UT - PUSHBUTTON (LATCHING) When pressed IN shows current link utilisation as a % figure 1 - 9 ie 10% - 90% on the utilization indicator just below. When OUT shows "PEAK" utilization of link.

It is usually best left IN then the utilization can be seen at a glance.

FAULTS

In normal mode the green "OKY" lamp should be lit plus the V24 monitor LED's (RED).

If ERR lamp lights this means that there have been errors on the line exceeding 1 in 10(5).

If X lamp is lit this means that either the system is not functioning - look for a [sign or] sign on the utilization monitor. Suspect either Composite link fault or perhaps the map has been changed or corrupted.

CHANNEL CARDS   (4 CHANS PER CARD ASYNCH)   (2 CHANS SYNCH)

All channel cards have a rotary thumbwheel switch with 0 - 15 position on it. The 15 positions apply to the 4 channels which are connected to the card as follows.

0	4	8	12	.... VALIDATE
1	5	9	13	.... LOCAL LOOPBACK
2	6	10	14	.... REMOTE LOOPBACK
3	7	11	15	.... ERROR MONITOR

Chan 1   Chan 2   Chan 3   Chan 4

VALIDATE TEST

This validates whether a distant channel is connected and that a path exists to and from it.

Note :- If the switches are set wrongly on the cards the channel will not validate.

LOCAL LOOP BACK

Loops the channel selected "TRANS to REC" back to the multiplexer. Also loops "REC to TRANS" of the incoming terminal or line.

REMOTE LOOP BACK

Forces a Remote Loop to be applied at the distant channel card.

Note :- If a USO is present then this function may not work until the two channels are corrected.

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ERROR MONITOR

The following errors apply if any of the lamps are "blinking" on and off.

LLB + RLB
- Speed/code of device connected to channel does not match speed/code selected by the "DIL-SWITCHES" on the card.

LLB + VAL + RLB
- Suspect faulty channel card.

LLB + VAL
- Buffer overflowed in channel card. Usually caused by incorrect option switches (especially flow control arrangements).

VAL + RLB
- Port reset has occurred. Which means Reset button has been pressed some time.

LLB
- PARITY ERROR. The bit length and parity of device connected to the card does not match the "DIL" switch settings.

To operate any of the above functions turn the thumbwheel switch to the selected channel and test function and then press the reset button. Remember to press reset again afterwards to clear the condition.

THE MAPPING AND TEST PANEL

This consists of a panel of 40 touch contact keys of which 20 have LED displays. An audible "BLEEP" is heard when a key is pressed correctly.

It is unnecessary to go through all the functions in these notes as they are fully covered in the manual but we will go through some of the important ones.

FIRST THING TO REMEMBER!!!!!

If a wrong sequence of keys is pressed the unit will bring up an alarm which consists of loud continuous "BLEEPS".

To stop this noise press "CLEAR"
An error number will still be displayed
PRESS CLEAR AGAIN and you will be back to normal

The following notes describe some of the functions that can be done from the panel.

NOTE - MULTIPLEXER MUST BE IN LOCAL MODE

1) TO CHANGE A RESERVE MAP TO ACTIVE MAP

Your BT engineer will have configured the mux with a "MAP" that
will share out the addresses in the BUFFERS between the channel cards,
ARQ cards, USO cards, etc. This allows connections through the mux to
be made, ie chan to distant mux or chan to chan. It is possible to
configure a reserve map or alternative map in the other store.

NOTE - UNLESS A CORRECT MAP IS INPUTTED INTO THE RESERVE POSITION A
       CHANGEOVER OF MAPS WILL RENDER THE NETWORK UNUSABLE.

OPERATION

PRESS - 1) EDIT
       2) CHANGE NUMBER IN EDIT MAP (BLINKING) BY PRESSING
          EITHER 1 OR 2 TO ACTIVE NUMBER
       3) PRESS ENABLE
       4) PRESS ACTIVE
       5) CHANGE NUMBER IN ACTIVE LAMP (BLINKING)
          TO 1 OR 2 TO RESERVE NUMBER
       6) PRESS ENABLE

THE RESERVE MAP NOW BECOMES THE ACTIVE MAP.

2. DUMP

It is possible to dump the mapping information in HEX code of the EDIT
MAPE. The customer should connect a suitable MICRO or DISC STORAGE
DEVICE, etc. TO THE STC PORT AT THE REAR OF SLOT 17.

OPERATION

    1) PRESS DUMP
    2) A long "BLEEP" will be heard when dump is complete.

3. LOAD

The reverse of the above can be achieved.

OPERATION

    1) PRESS LOAD
    2) A long "BLEEP" will be heard when loading is complete.

Errors in loading leaves "ERROR 98" blinking in DATA LED.

4. TO PUT IN STC PASSWORD

This is used when the mux is accessed from a dial-in modem plugge
into the STC port. To prevent erroneous operation it is advisable t
put in a PASSWORD if this is to be used.

OPERATION

    (1) PRESS - LOG IN
    (2) ENTER - SIX DIGITS AS THE PASSWORD
    (3) PRESS - ENABLE
        PASSWORD IS ACCEPTED

5. TO MASTER-SLAVE TWO 5500'S

It is possible to access a remote 5500 by using this technique.

OPERATION

    (1) MODEM MUST BE CONNECTED TO STC PORT ON LOCAL MUX (PSTN)
    (2) AUTO ANSWER MODEM MUST BE CONNECTED TO STC PORT ON REMOTE
        MUX (PSTN)
    (3) LOCAL MUX MUST BE SWITCHED TO MASTER MODE
    (4) REMOTE MUX MUST BE SWITCHED TO SLAVE MODE
    (5) DIAL UP DISTANT MODEM OVER PSTN NOTE 300 BITS/SEC SPEED
    (6) PRESS LOGON
    (7) ENTER SIX DIGIT PASSWORD

Mapping and Test Panel at Local Mux now looks like Remote Mux and an
function can be carried out.

7. TRANSMIT STATS

Allows throughput and errors statistics in the transmit direction t
be displayed.

OPERATION

    (1) PRESS DEVICE THEN NUMBER OF DEVICE (ARQ) THEN ENABLE
    (2) THE ACTIVE MAP AND EDIT MAP MUST SHOW THE ACTIVE MAP NUMBER
        USE EDIT AND NUMBER AND ENABLE KEYS
        PRESS - TRANS STAT

    LEFT HAND DATA FIELD SHOWS PEAK UTILIZATION
    RIGHT HAND DATA FIELD SHOWS NUMBER OF ERRORS SINCE LAST RESET

8. REC STATS

This follows same procedure as TRANS STATS

OPERATION

Set up as before then

       PRESS - REC STATS

9. RESET STATS

OPERATION

Set up as above then

       PRESS - RESET STATS

10. TO TEST SPEED OF CHANNEL

This test allows the user to check the speed/code of any channel.

OPERATION

       PRESS "CHAN"
       ENTER CHAN NUMBER eg 0.5 or 1.3
       (The first number is the device number second is channel
        number)
       PRESS "ENABLE"
       PRESS " SPEED"

A code is shown in the right hand data field see fig (1) for conversion to speed/code.

11. TO SEND TEST PATTERN GENERATOR

The Mux has an inbuilt test pattern generator that can be sent down a local channel or to a remote channel.

NOTE - ACTIVE AND EDIT MAPS MUST BE THE SAME

OPERATION

       PRESS "CHAN"
       ENTER CHAN NUMBER
       PRESS "ENABLE"
       PRESS "TEST MODE"
       PRESS "RUN"

A CHANGING NUMBER DISPLAY APPEARS IN THE LEFT HAND DATA FIELD.

By using the Local Chan or Remote Chan functions on the Channel Cards it is possible to send this tone around the loops. If the data is received back successfully a changing number display appears in the right hand data display.

TO HALT TEST FUNCTION

      PRESS - HALT - TEST MODE - EDIT

---

12. SENDING INDIVIDUAL ASCII CHARACTERS TO LINE

OPERATION - SET UP MUX AS FOR TEST MODE AS FAR AS PRESSING THE TEST
               MODE BUTTON THEN

         PRESS - "ENTER BYTE"
         ENTER - AN OCTAL CODE BY PRESSING NUMBER KEYS. LEFT HAND DATA
                 FIELD SHOWS CODE. (eg 101 OCTAL WILL SEND THE LETTER
                 "A" IN ASCII.)
                 An octal to ASCII conversion code is in fig 2.
         PRESS - "STEP". A single character sent to line.
         PRESS - "RUN". A stream of the chosen character is sent to
                line.

Using a test monitor (data scope) many faults can be found using this function.

TO EXIT - PRESS - "HALT - ENTER BYTE"
               - "TEST MODE" - "EDIT"

PLEASE NOTE : - IF A USO CARD IS PRESENT THEN THIS MUST BE HALTED TO
                PERFORM THE ABOVE OPERATIONS, ie

        PRESS EDIT - ACTIVE - HALT - ENABLE

This will close the node and links and render the whole mux inoperable
until :-
    (a) USO IS RUN AGAIN - "EDIT" - "ACTIVE" - "RUN" - "ENABLE"
    (b) The supervisor opens the node and links from the terminal.

BRITISH TELECOM DATALMUX 5500 (WITH USO OPTION)

GUIDANCE NOTES FOR CUSTOMERS WHEN USING SUPERVISOR OPTION ON MUX

INSTRUCTIONS FOR SUPERVISOR OPERATORS

1. On any spare channel anywhere in the network off the node to be
    interrogated attach an asynchronous terminal. (using ASCII code or
    equivalent.)

2. Ensure that the speed, code , parity, stop bits etc. of the
    terminal are set on the low speed channel of the mux.

3. Make a connection event to the USO card. (A welcome message should
    appear). Usually by pressing the "break" key and then (CR).
    (Other methods of connecting are possible.)

4. Now follow the following instructions :

    INPUT   - LOGON
    RESULT - I/P LOGIN CODE
    INPUT   - ENTER YOUR PERSONAL SIX DIGIT PASSWORD
    RESULT - SUPERVISOR IN MONITOR MODE AT NODE "X"

    As the supervisor you can now look at a range of options,
    including :

    (a) State of links
    (b) State of ports
    (c) Link statistics
    (d) USO statistics
    (e) List of Names and Addresses
    (f) Ports allocated to addresses
    (g) Display list of unallocated channels
    (h) Display list of pipes (multinode networks only)
    (i) Display list of unqueued ports
    (j) Display list of ROUTES (multinode networks only)
    (k) Display list of Welcome Messages and system messages
    (l) Display the node date and time

Instructions for looking at the above points when in Monitor mode as
Supervisor.

(a) Display characteristics of composite links.

              INPUT   - LI (CR)
              RESULT - The characteristics of all configured links are
                        displayed.

        eg.   STATUS   BASE   SIZE   NETCHN   UTL   SPD
              01 F 0   065   020   005   04   09600
              02 N C   085   030   000   00   09600

(1) STATUS - NUMBER OF LINK
           F = FUNCTIONING   N = NOT FUNCTIONING
           O = OPEN   C = CLOSED (BY SUPERVISOR)

(2) BASE   - Base channel number in device map

(3) SIZE   - Number of max channels allowed without changing device
              map

(4) NET - CHAN - Number of chans currently in use on this link.

(5) UTIL - Average utilization of link as a %

(6) SPEED - Speed of link

(b) State of ports

        INPUT - PO (CR)
        RESULT - List of first 10 ports displayed
        INPUT - (Line-feed)
        RESULT - List of ports 11-20
        INPUT - (Line-feed)
        RESULT - List of ports 21-30
        ETC
        ETC

   eg of port display

   Port No.   Channel Allocated   Open or Closed   Type

     01   0.5   O   N/C
     02   0.6   O   N/C
     03   0.7   O   EV
     04   0.8   C   N/C
     05   0.9   O   N/C
     06   0.10   C   N/C
     07   0.11   O   SPV
     08   0.12   O   QUE
     09   0.13   O   1.1
     10   0.14   O   3.4

EXPLANATION OF TYPE

N/C - PORT NOT CONNECTED AT PRESENT
E/V - EVENT LOG ON THIS PORT
SPV - SUPERVISOR LOGGED ON AT THIS PORT
QUE - PORT IS QUEUED AT PRESENT
1.1 - PORT CONNECTED TO LINK 1 CHANNEL 1
3.4 - PORT CONNECTED TO LINK 3 CHANNEL 4

The last two could also read a node number and port in multinode
networks or a "SHORT FORM ADDRESS".

Also individual Ports can be inspected

    INPUT - PO (SPACE) NN (NNO = NUMBER OF PORT)

    RESULT - A display of port parameters displayed

eg

DEV :	CHAN	PAR	TYPE	SPD	SYSM	ECHO	CNS/DCNX/LUV/NEU/TST	1/A DS
00	009	E	U	F	E	N	2 / 0 / 0 / 0 / 0	

This is explained more fully in UPDATE MODE

(c) LINK STATISTICS

    INPUT - LS (CR)

    RESULT - LINKSTATS OF ALL LINKS ARE DISPLAYED

eg

LINK	STATS START TIME	% IN USE		AVERAGE UT				MAX UTL		MAX ERRS	
		TX	RX	TRUE TX	RX	NON TX	ZERO RX	TX	RX	TX	RX
003	00.00	37	43	07	06	19	14	35	29	11	11

NOTE % in use - % that link was in use from start time until now

Average Utilisation TRUE - True average utilisation whilst link was i
                                      use

Average Utilsation Non Zero - Average Utilisation whilst link was in
                                   use ignoring the times when link was
                                   zero usage.

Max Utilisation - The maximum recorded utilisation of the link

NOTE - Link stats are automatically reset to zero at midnight.

(d) USO stats

    INPUT - ST (CR)

    RESULT - A list of stats for the USO card is displayed

    eg
    015,012,006,004,002,000,000,000,000,000,000,000,000, RBM, TML

This means that the USO has 15 address codes for itself to use. It uses the last two for software and the other 13 channels for connection and disconnection events.

ie only 13 simultaneous events can occur at any one time. In the above eg 15 single events are recorded in channel 1 and channel 5 shows that on two occasions 5 simultaneous events occurred. If any numbers occur in the LAST CHANNEL (in this eg Chan 13) British Telecom should be called in as the USO may need more addresses allocated to it.

(e) List of NAMES and ADDRESSES

Each device or group of channels can be allocated a Name/or short form address and an address number is given to each.

INPUT   - NA (CR)

RESULT - A list of names and addresses is given

eg

NAME	ADDRESS	NAME	ADDRESS	NAME	ADDRESS
FRED	1	HARRY	2	BILL	3

(f) List of Ports allocated to Addresses

INPUT   - AD (CR)

RESULT - A list of addresses with associated ports is given.

eg

AD	PO
1	1 . 1 - 14
2	1 . 15 - 16
3	1 . 9 - 12

1 . 1 - 14 = Node 1 Ports 1 to 14 allocated to address (1) (Named FRED)

1 . 9 - 12 = Node 1 Ports 9 to 12 allocated to address (3) (Named BILL)

(g) Display List of unallocated channels

INPUT   - CH (CR)
RESULT - A list of channels not in use is allocated. These may be allocated by the supervisor in UPDATE MODE see later in text.

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(h) Display List of Pipes (MULTINODE NETWORKS ONLY)

The pipe command is used to group the composite links of a
multinode network into "pipes" to facilitate the specification
of routes to other nodes. All the links configured into one pipe
are considered equal by the USO when routing connections.

INPUT   - Pl (CR)
RESULT - A list of pipes, configured at that node is displayed.

(j) Display list of Routes (Multinode Networks ONLY).
A route is used by the USO to feed information down a specified
pipe or pipes.

Up to 4 alternative routes can be specified from a node.

INPUT   - RO (CR)
RESULT - List of routes to other Nodes in the network

(k) Display list of Queued Ports

INPUT   - QU (CR)
RESULT - Display of up to 15 queue destinations (group addresses/
         single addresses) which have ports queued to them and
         number of ports queued to each.

eg

DEST	QLEN	DEST	QLEN	DEST	QLEN
1.005	002	A01	001	A02	001

A01 and A02 are configured as groups of ports and are shown as
addresses.
QLEN is the number of ports queued to that address/or port.

(l) Display list of Welcome Messages

INPUT   - TE (space) A
RESULT - The announcement text is displayed
INPUT   - TE (space) I
RESULT - The Invitation to select message is displayed.

(m) To display TIME set at USO

INPUT   - TI (CR)
RESULT - Time is displayed

ie YEAR/MONTH/DAY/HOUR/MINUTE/SECOND

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So far the user has only been able to look at information from the system whilst in MONITOR mode as SUPERVISOR. To change any of the parameters he should now follow the instructions below and go into UPDATE MODE

1. Assuming the supervisor is already in Monitor Mode using previous instructions now use :-

2. INPUT   - UPDATE
   RESULT - I/P PASSWORD
        INPUT   - "User password up to 80 Char long". It is vital that the user remembers these Passwords as it would be very difficult for BT engineers to assist, without aborting the network configuration in accessing the system, if the codes were lost.

   RESULT - SUPERVISOR IN UPDATE MODE

   Operations that can be done in UPDATE Mode

   (a) Name nodes
   (b) Name or Rename, Names and Addresses
   (c) Configure or Re-configure Ports
   (d) Change - System Messages
   (e) Reset - Time
   (f) Enable or Disenable Queing
   (g) Configure or change Pipes and Routes
   (h) Open or Close Nodes
   (j) Open or Close Links
   (l) Open or Close Ports

(A) NAME NODES (OR CHANGE NAME)

(1) INPUT - NO (SP)   (NAME)   (CR)

        Note : The name is usually in the form of a number form 1 to 63. Alpha characters are not permissable. It is not normally desirable to change the Node Name.

(B) NAME OR RENAME, NAMES AND ADDRESSES

   It is possible to configure groups of ports which can be accessed by the user on a CONTENTION basis. In order to achieve this the supervisor must NAME these groups. Names can be alpha or numerical or a mix of both. Before the Named groups will work each port must be allocated a SHORT FORM ADDRESS. This address can be used to access individual ports anywhere in the network. If the NAMES and ADDRESSES are not allocated it is still possible to access ports by keying in the NODE and PORT number in the form of

   1 : 20   ie NODE 1   PORT 20

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1) INPUT - NA (SP) (NAME) (CR)

To deconfigure a name just leave a space
Names are shown in the following format :

NAME	ADDRESS	NAME	ADDRESS	NAME	ADDRESS
STOKE	1	B'HAM	2	LONDON	3

2) INPUT - AD (SP)   (ADDRESS_NUMBER)   (CR)

This will display the ports allocated to the particular address.
If you wish to re-configure the Address use the following.

3) INPUT - (NODE NUMBER).   (ADDRESS NUMBERS)   (CR)

The address can be an individual port or more usually a group of
ports ie (1 - 15) so you could input

eg 1. 1 - 15

In monitor mode this may now show

ADDRESS	PORT
1	1 - 15
2	16 - 20
3	21

etc.

C) CONFIGURE OR RE-CONFIGURE PORTS

a) To configure Ports

INPUT   PO (SP) (NUMBER OF PORT) (CR)

You will then receive the format as follows and will be prompted to
input data.

DEV : CHAN PAR   TYP   SPD   SYSM   ECHO   CNS/DCNX/LVL/NEU/TST   1/ADST

PORT NOT CONFIGURED

Explanation

DEV : CHAN - INPUT THE DEVICE NUMBER (local channels are always 0)
                  followed by the actual channel number

             ie 0 : 5

             The colon is important

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PAR - PARITY   0 = ODD
                            E = EVEN
                            M = MARK
                            Z = ZERO (NO PARITY)

                            INPUT ONE OF THE ABOVE

TYP - Type of Port   I = IMP
                     A = AMP
                     U = UMP

                     INPUT ONE OF THE ABOVE

I = INTERNALLY MAPPED PORT ie from point to point with no switching.
    However, will still be rerouted on line failure with multinode
    networks.

A = Automatically. Mapped routes ie Terminal will automatically be
    connected to a group of ports designated by the supervisor.

U = User Mapped Ports - User determined where he wishes to go.
    Supervisor can bar access to certain addresses.

SPD - Type of Speed Matching   F = Fixed Speed

                               D = Down Line Load

                     INPUT - F or D

SYM - System Messages returned to any terminal or printer connected to
      5500

                               INPUT - E for enable or

                               I   - Inhibited

ECHO - Does data need to be echoed back to user when conversing with
       USO card in MUX

                               INPUT - E = Echo required

                               N = Echo not required

    Normally a terminal will require echo when conversing with the
    USO card. A computer card will not normally require echo.

CNX - What type of control signal required for user to connect to MUX

INPUT either 0 = Raise DTR
1 = Carrier Detect is "ON" to the MUX Raised by RTS at terminal
2 = BREAK (most common CNX)
3 = Nil (user cannot connect)
4 = Ring Indicator followed by Carrier Detect (used when connecting Dial - UP Modem to Mux
5 = ASCII "CONTROL T" DC4 control signed from terminal.

DCNX - What type of control signal required for user to disconnect to MUX

INPUT either 0 = DTR OFF
1 = CD OFF
2 = BREAK
3 = NIL
4 = RI OFF FOLLOWED BY CD OFF
5 = ASCII "CONTROL T"

RVL - Allows supervisor to restrict access to users to limited ports

INPUT either 0 = Access permitted to all ports
1 = Access permitted to 0 - 9 and 10 - 19 only
2 = Access permitted to 0 - 9 and 20 - 29 only
3 = Access permitted to 0 - 9 and 30 - 39 only
4 = Access permitted to 0 - 9 and 40 - 49 only
5 = Access permitted to 0 - 9 and 50 - 59 only
6 = Access permitted to 0 - 9 and 60 - 69 only
7 = All short form addresses only (No named group of ports)

Note : always 0 for AMPS

NEU - Always INPUT 0 unless special application

TST - Does your system require MUX to test for DTR

INPUT either 0 = DTR not tested
1 = DTR tested (connection will only be made if ON)

I/A - PST - Destination Port

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INPUT either for UMP . (full stop)
"   "   IMP NODE : PORT NO.
"   "   AMP SHORT FORM ADDRESS

Example of inputs should now look like

DEV	:	CHAN	PAR	TYP	SPD	SYSM	ECHO	ONS/DCNX/LVL/NEU/TST	1/A	D5
00	:	009	Z	U	D	E	E	2/ 0 / 0/ 0/		

Note : when inputting NO SPACES

MUST HAVE / between CNS/DCNX/
LVL/NEU/TST
DON'T FORGET ":" between Device and Channel

RECONFIGURE PORTS

1) Port to be re-configured MUST be closed by Supervisor

2) INPUT PO (SP) (PORT NO)

3) You will then be allowed to change configuration of PORT

(D) CHANGE SYSTEM MESSAGES

INPUT TE (SP) I

The welcome message is displayed and cursor is placed at the start of new line as invitation to change it.

Note : MAX 80 Chars

(E) RESET TIME

INPUT - TI (CR) The real time clock is displayed

To change INPUT : YEAR/MONTH/DAY/HOUR/MINUTE/SECOND

Note : All as 2 digits each - no spaces or / or commas (just ten digits)

Complete with (CR)

(F) ENABLE OR DISENABLE QUEUING

INPUT - QU (SP) E (SP) (CR) TO ENABLE

Ports will now have the ability to queue for engaged ports providing they input a "Q" after a connection event.

INPUT - QU (SP) I (SP) (CR) TO INHIBIT

(G) CONFIGURE OR CHANGE PIPES AND ROUTES

    Note : Multinode Network Only

    INPUT - PI (SP) (No of PIPE) (CR)

    Pipe is now displayed

    INPUT - (LINK NO) (SP) (NEW PIPE NO) (CR)

    Pipe is now reconfigured

    INPUT - RO (SP) (NODE NO) (CR)

    Routes are displayed

    INPUT - (PIPE NO) (SP) (PIPE NO)

    Route is now configured as PRIMARY and SECONDARY pipe numbers

    INPUT - 00

    Route is de-configured

(H) OPEN AND CLOSE NODE

    INPUT - OP (SP) N (CR) Opens Node

    INPUT - CL (SP) N (CR) Closes Node

Note : If multiplexer is powered-down Node and Links will be
automatically closed and will need to be opened by Supervisor on
power-up

(J) OPEN AND CLOSE LINKS

    INPUT - OP (SP) L (SP) (LINK NO) (CR) - Opens Link

    INPUT - CL (SP) L (SP) (LINK NO) (CR) - Closes Link

(K) OPEN AND CLOSE PORTS

    INPUT - OP (SP) PO (CR) Opens all Ports

    INPUT - CL (SP) PO (CR) Closes all Ports

    INPUT - OP (SP) PO (SP) (PORT NO) (CR) - Opens specified Port No

    INPUT - CL (SP) PO (SP) (PORT NO) (CR) - Closes specified Port No

(L) <u>ENABLE ANNOUNCEMENT TEXT</u>

It is possible to give all users an announcement text when they connect to the MUX

eg SYSTEM DOWN UNTIL 18.00 hours

INPUT - AN (CR) The current list of ADDRESSES that will be connected to the announcement text is shown

INPUT - A   (SP) (address) (SP) (address) (SP) etc

INPUT - D   (SP) (address) (SP) (address)   etc

The address will be disconnected from the announcement text.

To set up announcement text :-

INPUT - TE (SP) A (CR)

The announcement text, if any, is displayed and an invitation to change it is offered.

. . . .

It is hoped that these notes are useful to you. However, if you have any difficulties operating the system do not hesitate to contact British Telecom.

END

Jan 1984

20

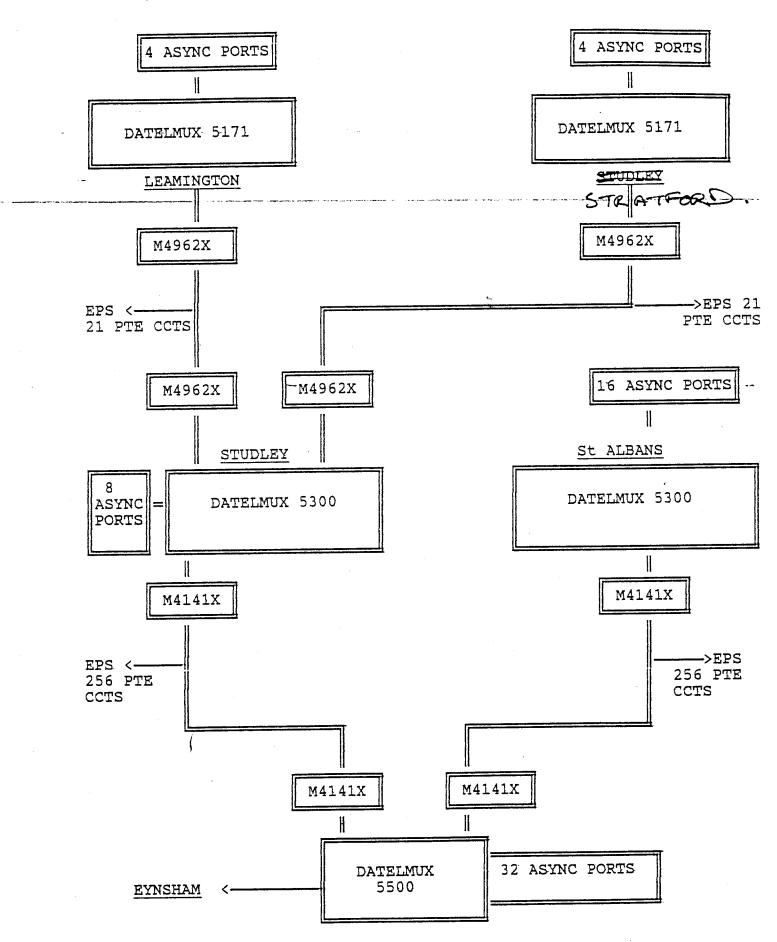|		DATA PLUS STOP BITS				
		5 + 1.5	7 + 1	7 + 2	8 + 1	8 + 2
	50	0	20	40	60	160
	75	1	21	41	61	161
	100	2	22	42	62	162
	110	3	23	43	63	163
	134.5	4	24	44	64	164
	150	5	25	45	65	165
	200	6	26	46	66	166
	300	7	27	47	67	167
	600	10	30	50	70	170
	1200	11	31	51	71	171
	1800	12	32	52	72	172
	2000	13	33	53	73	173

BAUD RATE ADDS 200 TO CODE

		DATA PLUS STOP BITS			
		8 + 1	8 + 1 + C	8 + 2	8 + 2+ C
	2400	14	54	114	154
	3600	34	74	134	174
SPEED	4800	15	55	115	155
	7200	35	75	135	175
	9600	16	56	116	156

SPLIT BAUD RATE ADDS 200 TO CODE C = BIT 6 SET

21

	DISPLAY	ENTER
NO SPEED	. . ⌐ .	. . . . .
CARD IN ABR	37	
CARD IN DLL	377	

OCTAL VAL	0	20	40	60	100	120	140	160
0	NULL	DLE	SP	0	a	P	/	P
1	SOH	DC 1	!	1	A	Q	a	q
2	STX	DC 2	"	2	B	R	b	r
3	ETX	DC 3	#	3	C	S	c	s
4	EOT	DC 4	S	4	D	T	d	t
5	ENQ	NAK	%	5	E	U	e	u
6	ACK	SYN	&	6	F	V	f	v
7	BEL	ETB	'	7	G	W	g	w
10	BS	CAN	(	8	H	X	h	x
11	HT	EOM	)	9	I	Y	i	y
12	LF	SUB	'	:	J	Z	j	z
13	VT	ESC	+	'	K	L	k	{
14	FF	FS	'	~	L	/	l	:
15	CR	GS	-	=	M	⌐	m	}
16	SO	RS	'	~	N	~	n	~
17	SI	WS	/	?	O	~	o	#

```
      ┌─────────────────┐                              ┌─────────────────┐
      │  4 ASYNC PORTS  │                              │  4 ASYNC PORTS  │
      └─────────────────┘                              └─────────────────┘
              ║                                                ║
      ┌─────────────────────┐                      ┌─────────────────────┐
      │                     │                      │                     │
      │  DATELMUX 5171      │                      │  DATELMUX 5171      │
      │                     │                      │                     │
      └─────────────────────┘                      └─────────────────────┘
              LEAMINGTON                               STUDLEY  STRATFORD.
    ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─
      ┌─────────────┐                                ┌─────────────┐
      │   M4962X    │                                │   M4962X    │
      └─────────────┘                                └─────────────┘

    EPS ◄────────────                                        ────►EPS 21
    21 PTE CCTS                                                   PTE CCTS

      ┌─────────────┐      ┌─────────────┐           ┌─────────────────┐
      │   M4962X    │      │   M4962X    │           │  16 ASYNC PORTS │
      └─────────────┘      └─────────────┘           └─────────────────┘
                                                             ║
                    STUDLEY                          St ALBANS
    ┌────────┐ ┌───────────────────────┐      ┌───────────────────────┐
    │  8     │=│                       │      │                       │
    │ ASYNC  │ │   DATELMUX 5300       │      │   DATELMUX 5300       │
    │ PORTS  │ │                       │      │                       │
    └────────┘ └───────────────────────┘      └───────────────────────┘
                          ║                               ║
              ┌─────────────┐                      ┌─────────────┐
              │   M4141X    │                      │   M4141X    │
              └─────────────┘                      └─────────────┘

    EPS ◄────────                                          ────►EPS
    256 PTE                                                     256 PTE
    CCTS                                                        CCTS


              ┌─────────────┐      ┌─────────────┐
              │   M4141X    │      │   M4141X    │
              └─────────────┘      └─────────────┘
                    ║                    ║
              ┌───────────────────────┐  ┌─────────────────┐
              │    DATELMUX           │  │ 32 ASYNC PORTS  │
  EYNSHAM ◄── │    5500               │  └─────────────────┘
              └───────────────────────┘
```

15

BAY	SLOT No.	TYPE OF CARD	BAY	SLOT No.	TYPE OF CARD	REMARKS
===========	====	==========	==========	====	==========	=====================
MASTER	1	5509	EXTN BAY1	10		
"	2	5504	"	11		
"	3	"	"	12		
"	4	"	"	13		
"	5	"	"	14		
"	6	"	"	15		
"	7	"	"	16	BTM	BTM CARD MANDATORY
"	8	"	"	17	BUFF	BUFFCARD MANDATORY
"	9	"	EXTN BAY2	1		
"	10	SPARE		2		
"	11	"		3		
"	12	"		4		
"	13	"		5		
"	14	"		6		
"	15	5507		7		
"	16	"		8		
"	17	STC CARD		9		STC CARD MANDATORY
EXTN BAY1	1			10		
"	2			11		
"	3			12		
"	4			13		
"	5			14		
"	6			15		
"	7			16	BTM	
"	8			17	BUFF	
	9					

16

DEVICE No	BASE	SIZE	DESTINATION OR DEVICE No	REMARKS
===========	======	======	==========================	=========
0	1	48		
1	49	32	STUDLEY	14·4 K MODEM LINK
2	81	32	St ALBANS	14·4 K MODEM LINK
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				Monitor card (always
				size of 1) if used
15				USO card if used (min
				size of 20)

A to B		A		to		B	
CHAN No	CHAN No	PORT	ADDRESS	PORT	ADDRESS
0.1	0.1				
0.2	0.2	BUFFER CARD			
0.3	0.3				
0.4	0.4				
0.5	1.1	5	EYNSHAM	1	STUDLEY
0.6	1.2	6	" "	2	" "
0.7	1.3	7	" "	3	" "
0.8	1.4	8	" "	4	" "
0.9	1.5	9	" "	5	" "
0.10	1.6	10	" "	6	" "
0.11	1.7	11	" "	7	" "
0.12	1.8	12	" "	8	" "
0.13	1.9	13	" "	1	LEAMINGTON (VIA STUDLEY)
0.14	1.10	14	" "	2	" " "
0.15	1.11	15	" "	3	" " "
0.16	1.12	16	" "	4	" " "
0.17	1.17	17	" "	1	STRATFORD (VIA STUDLEY)
0.18	1.18	18	" "	2	" " "
0.19	1.19	19	" "	3	" " "
0.20	1.20	20	" "	4	" " "
0.21	2.1	21	" "	1	ST ALBANS
0.22	2.2	22	" "	2	" "
0.23	2.3	23	" "	3	" "
0.24	2.4	24	" "	4	" "

A to B		A		to	B	
CHAN No	CHAN No	PORT	ADDRESS	PORT	ADDRESS	
0.25	2.5	25	EYNSHAM	5	ST ALBANS	
0.26	2.6	26	" "	6	" "	
0.27	2.7	27	" "	7	" "	
0.28	2.8	28	" "	8	" "	
0.29	2.9	29	" "	9	" "	
0.30	2.10	30	" "	10	" "	
0.31	2.11	31	" "	11	" "	
0.32	2.12	32	" "	12	" "	
0.33	2.13	33	" "	13	" "	
0.34	2.14	34	" "	14	" "	
0.35	2.15	35	" "	15	" "	
0.36	2.16	36	" "	16	" "	
0.37	0.37	37	} SPARE LSC			
"	"		} SLOTS			
0.48	0.48		}			
1.21	1.21		}			
"	"		} SPARE			
1.32	1.32		} "Q" POINTERS			
2.17	2.17		} - SELF			
"	"		} MAPPED			
2.32	2.32		}			

LINKS   NODE......1......

DEV/LINK	TYPE OF MODEM/ DIGITAL SERVICE	SPEED	TYPE OF DISTANT MULTIPLEXER	ADDRESS OF DISTANT MUX	REMARKS
==========	==============================	=======	=============================	========================	=========
1	DM 4141X	14.4K	DMUX 5300	STUDLEY	
2	DM 4141X	14.4K	DMUX 5300	St ALBANS	
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

NOTE : A maximum of 12 Arq cards is allowed in A5500 MUX with a
       proviso of up to 3 Arq 2 (Kilostream 48-64 Kbit cards).

       ARQ card in slot 16 will always be link 1
       ARQ card in slot 15 will always be link 2 etc.

SPEED/CODE SETTINGS

SLOT No	CHAN	SPEED	CODE	OPTIONS FLOW BUFFER	CONTROL TERMINAL	WARNING YES/NO	MESSAGES PARITY	FLY -BACK
2	5-8	9600	8+1					
3	9-12	9600	8+1					
4	13-16	9600	8+1					
5	17-20	9600	8+1					
6	21-24	9600	8+1					
7	25-28	9600	8+1					
8	29-32	9600	8+1					
9	33-36	9600	8+1					

Note 1 Refer to handbook for DIL Switch Settings
  "   2 In some instances terminal flow control and buffer overflow
         protection options cannot be used together
  "   3 Some terminals/CPU's will not accept in band or out of band

DETAILS OF REMOTE MUXES (OTHER THAN 5500'S)   CONNECTED TO NODE..*1*....

TYPE OF	ADDRESS	No OF CHANS	CHAN No	SPEED/CODE + OPTIONS ETC
5300	STUDLEY	16	1	9600, 8+1
			2	"
			3	"
			4	"
			5	"
			6	"
			7	"
			8	"
	} ONWARD LINKED TO LEAMINGTON		9	"
			10	"
			11	"
			12	"
	} EXTENDED TO LEAMINGTON		13	} EXTENDED
			14	TO LEAMINGTON
			15	NOT USED
			16	
	ONWARD LINKED TO STRATFORD		17	9600, 8+1
			18	"
			19	"
			20	"
	EXTENDED TO STRATFORD		21	} EXTENDED TO
			22	STRATFORD
	NOT USED		23	NOT USED
			24	

Note : Refer to handbooks for individual Dil switch settings