LIST OF ILLUSTRATIONS

LIST OF TABLES

19.1 CHRT-IDENTIFICATIONS

Type-number: PTS-6832-001
Test-Program: TERTST
Channel: Programmed Channel
Devices: Selector Unit Remote Terminals: PTS-6314-1XX
(XX = configuration Number)
TP71: PTS-6371-1XX (equipped with COMR)
FT80: PTS6282/84
TFU: (Transfer Unit): PTS-6471

Transmission mode: A-synchronous, V24, Modem and telephone lines. Character and/or Block mode, depending on software, with acknowledgement. Full duplex.

Line Speed: Up to 9600 bits per second.

Power-Consumption: +5 Volt, 3,4 Amp.

Note: For short distance it is possible to connect the CHRT direct to the Terminal by means of an extended Modem cable.
Some signals have to be forced to a certain voltage level.

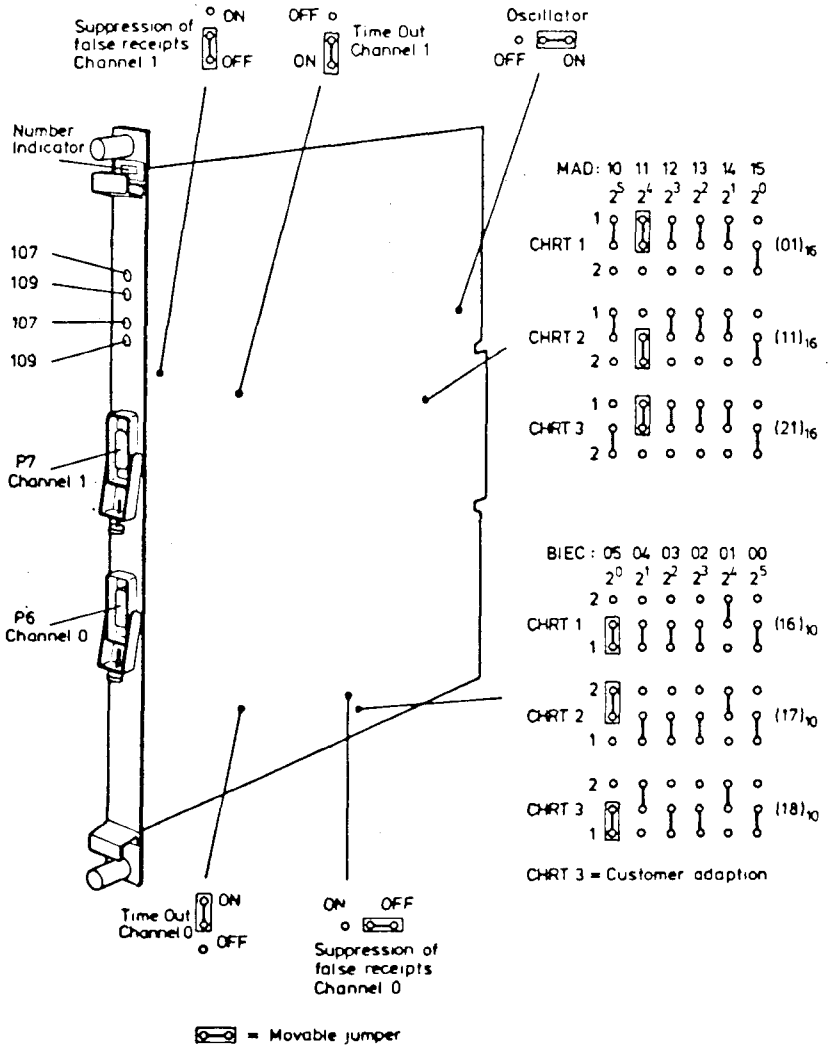
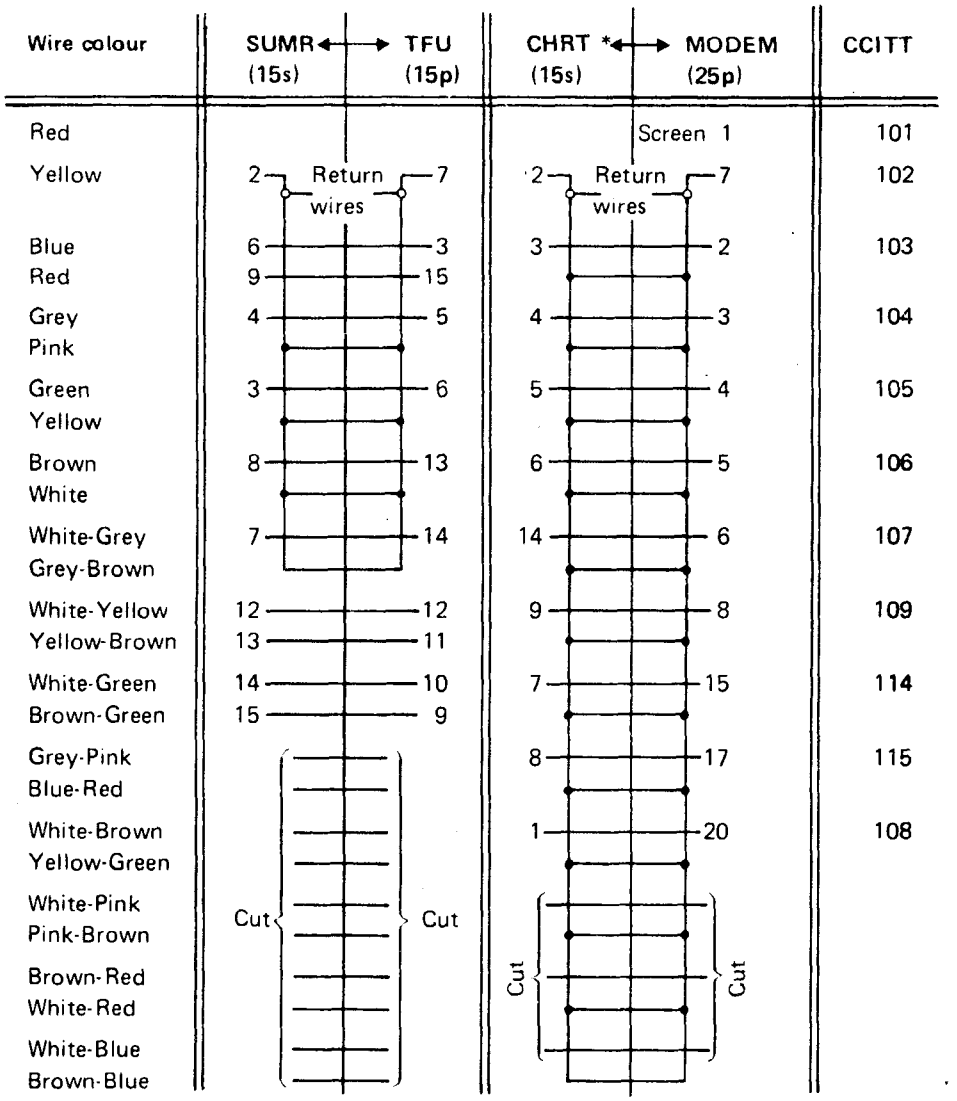


Figure 19.1 STRAP SETTINGS

Number indicator: CHRT1: Slide to show '1': Line numbers 1 and 2
CHRT2: Slide to show '2': Line numbers 3 and 4
CHRT3: Use sticker to indicate CHRT3: Line numbers 5 and 6



* Applicable also for; TFU-Modem, SUMR-Modem

PLEASE NOTE!
The pin numbers given for »Modem» are applicable for ITT GH 2054. If other modem is used, the relation between pin numbers and »CCITT» numbers must be checked (connect against »CCITT» numbers)!

Table 19.1 WIRE CONNECTIONS IN CABLE (5131 191 33712) CHRT/MODEM, SUMR/MODEM, TFU/MODEM, SUMR/TFU

V24 signal lines / name / description. (For PTS use)

101 Safety Earth (terminated)
102 Signal Ground (terminated)
103 TDAT: Transmit Data (source)
104 RDAT: Receive Data (receiver)
105 RTS : Request to Send (Not used between TFU and SUMR)
106 RFS : Ready for Sending(Not used between TFU and SUMR) Used for E-bit
107 DSR : Data Set Ready (from modem to lamp) (Modem is ready to operate)
108 Connect Data Set to Line (CHRT is ready to operate)(Not TFU-SUMR)
109 CAD : Carrier detected (from modem to led. Carrierwave 300 - 3000 Hz)
111 Rate Select (Not used)
114 TET : Transmitter Element Timing (from modem to clock/control CHRT)
115 RET : Receiver Element Timing (from modem to clock/control CHRT)

Note: 108 is in SUMR connected to +5 volts

Table 19.2 DESCRIPTION V24 INTERFACE SIGNALS

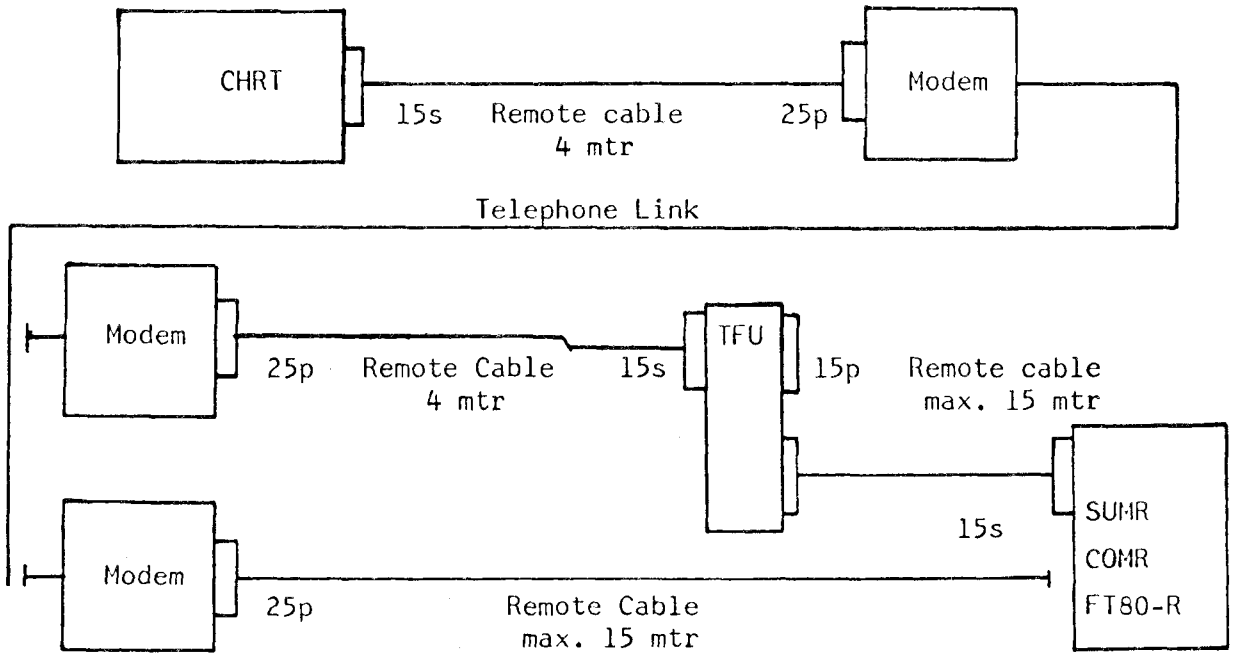


Figure 19.2 CABLE CONNECTIONS PTS REMOTE CONFIGURATION

REMOTE CABLE

For cabling see Chapter 2 " Installation"

If, for some reason, a "remote" 4-m cable must be made up on site, this is easiest made from a prefabricated cable kit. Two kits are available, both giving a 4-m cable with a "modem" connector at one end, but one type has a "15s" connector at the other end while the second has a "25s" connector. These kits are prefabricated up to the point where superfluous wires are to be cut, and where pins and sockets are to be fitted into the connector blocks.

As far as cables TFU-Modem and CRT/CHRT-Modem are concerned, the wiring shown in Table 19.1 is applicable. However, the note on the modem connection is still to be taken into consideration!

The cable kits can be ordered under the following code numbers:

- Kit for a "Modem/15s" cable 5131 191 41700
- Kit for a "Modem/25s" cable 5131 191 41800

The applied connectors are available in kits containing all parts required to mount connectors of one type (excluding cable markers). A kit contains:

- 50 shells (modified)
- 50 connectors
- Relevant number of pins or sockets
- Shrink tubing
- Roll of Copper tape
- Roll of Electro tape
- PVC tubing
- Earthing wire (where applicable).

These kits can be ordered under the following code numbers:

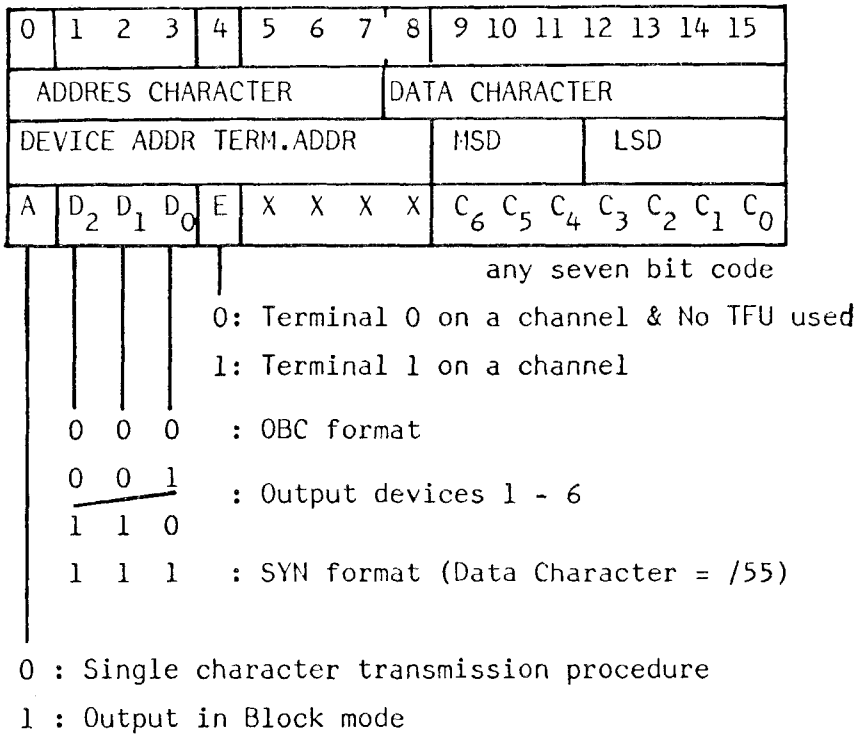
- Kit for 50 connectors "Modem" 5131 191 44200
- Kit for 50 connectors "15s" 5131 191 44300
- Kit for 50 connectors "15p" 5131 191 44400

Note: If the "Cinch" shells are bought from other supplier than Philips, the cable entry hole must be bored out to 12 mm -0 +1 mm.

19.4 HARDWARE/SOFTWARE INTERFACE DETAILS

Output message: (Data & Commands)

BIO-lines:



X : Irrelevant.

—Output message measured on the 103 line:

	ST	d	D_0 D_1 D_2	E	C_0 C_1 C_2 C_3 C_4 C_5 C_6	P	SP SP
OBC	0	0	0 0 0	E	DATA	P	1 1
DOS	0	0	1 -- 6	E	DATA/COMMAND	P	1 1
DOB	0	0	1 -- 6	E	DATA/COMMAND	P	1 1
SYN	0	0	1 1 1	E	1 0 1 0 1 0 1	P	1 1

—Output Receipt message measured on the 103 line:

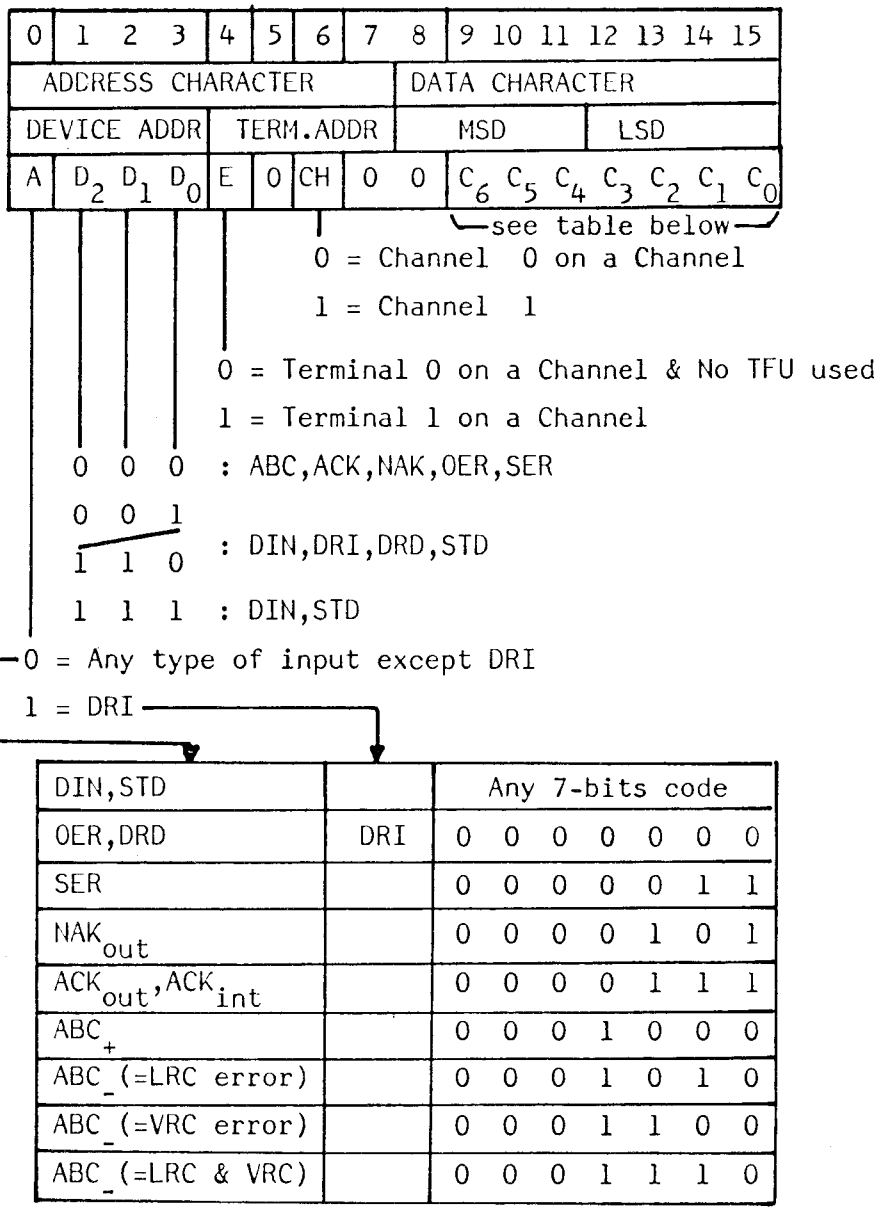
	ST	d	D_0 D_1 D_2	E	P	SP SP
ACK_{in}	0	1	1 1 1	E	P	1 1
NAK_{in}	0	1	0 0 0	E	P	1 1

A = Character or Block mode
d = Message type determinant
DDD = Device Address
E = Terminal Address

ST = Startbit
C--C = Any 7-bits character
P = Parity bit (Odd in Data- and Even in Receipt message)
SP = Stop-bit

Input message: (Data & Status)

BIO-lines:



DIN,STD		Any 7-bits code
OER,DRD	DRI	0 0 0 0 0 0 0
SER		0 0 0 0 0 1 1
NAK_{out}		0 0 0 0 1 0 1
ACK_{out},ACK_{int}		0 0 0 0 1 1 1
ABC_{+}		0 0 0 1 0 0 0
ABC_{-} (=LRC error)		0 0 0 1 0 1 0
ABC_{-} (=VRC error)		0 0 0 1 1 0 0
ABC_{-} (=LRC & VRC)		0 0 0 1 1 1 0

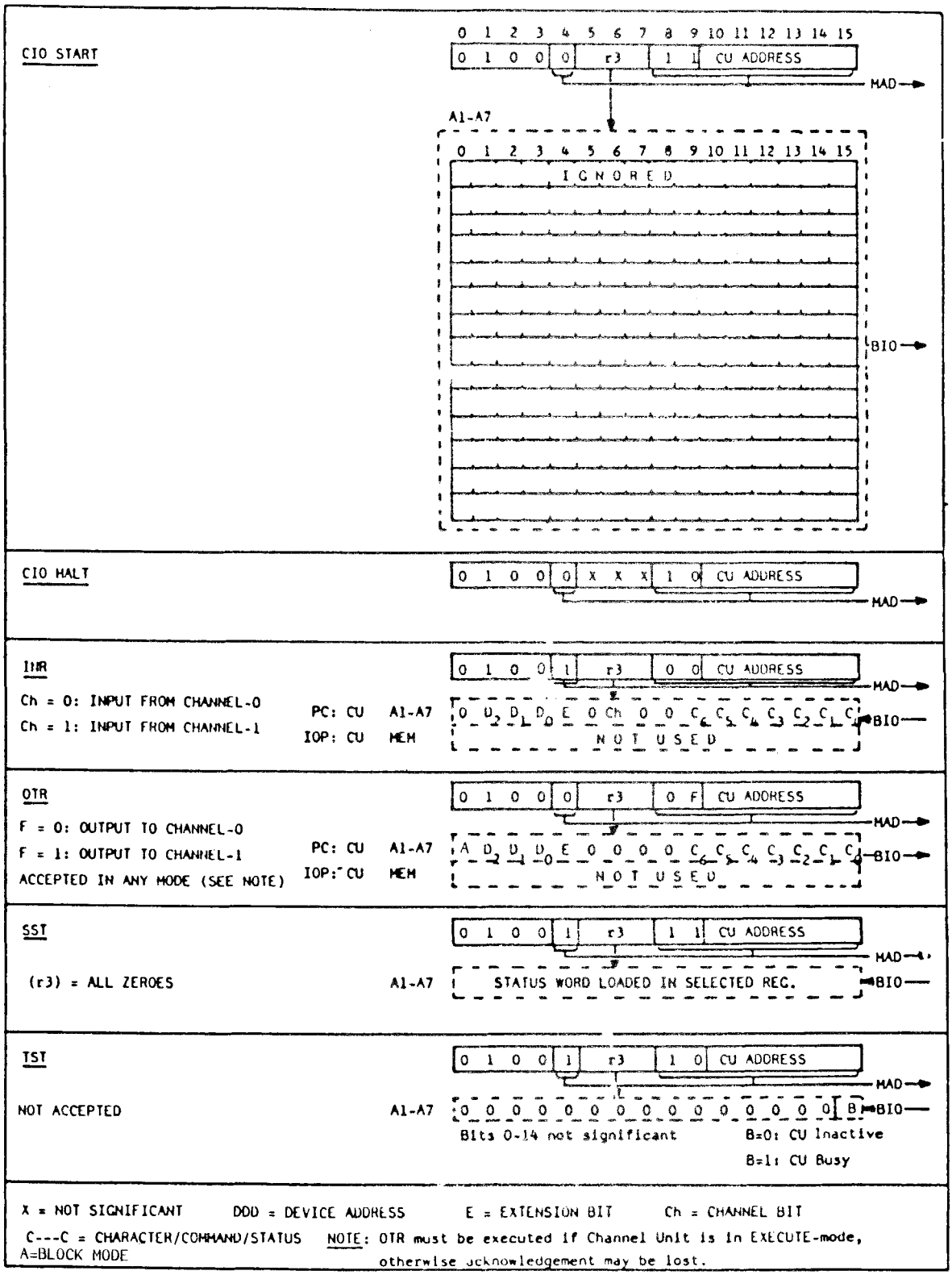
——Input message measured on the 104 line:

	ST	d	D_0 D_1 D_2	E	C_0 C_1 C_2 C_3 C_4 C_5 C_6	P	SP	SP
DIN	0	0	1--7	E	DATA	P	1	1
STD	0	0	1--7	E	STATUS	P	1	1
DRD	0	0	1--6	E	0 0 0 0 0 0 0	P	1	1
ABC *)	0	0	0 0 0	E	/08,/0A,/0C,/0E	P	1	1
SER	0	0	0 0 0	E	1 1 0 0 0 0 0	P	1	1
OER is generated by Channel Unit								

*) Value of the C--C field must be read reversed

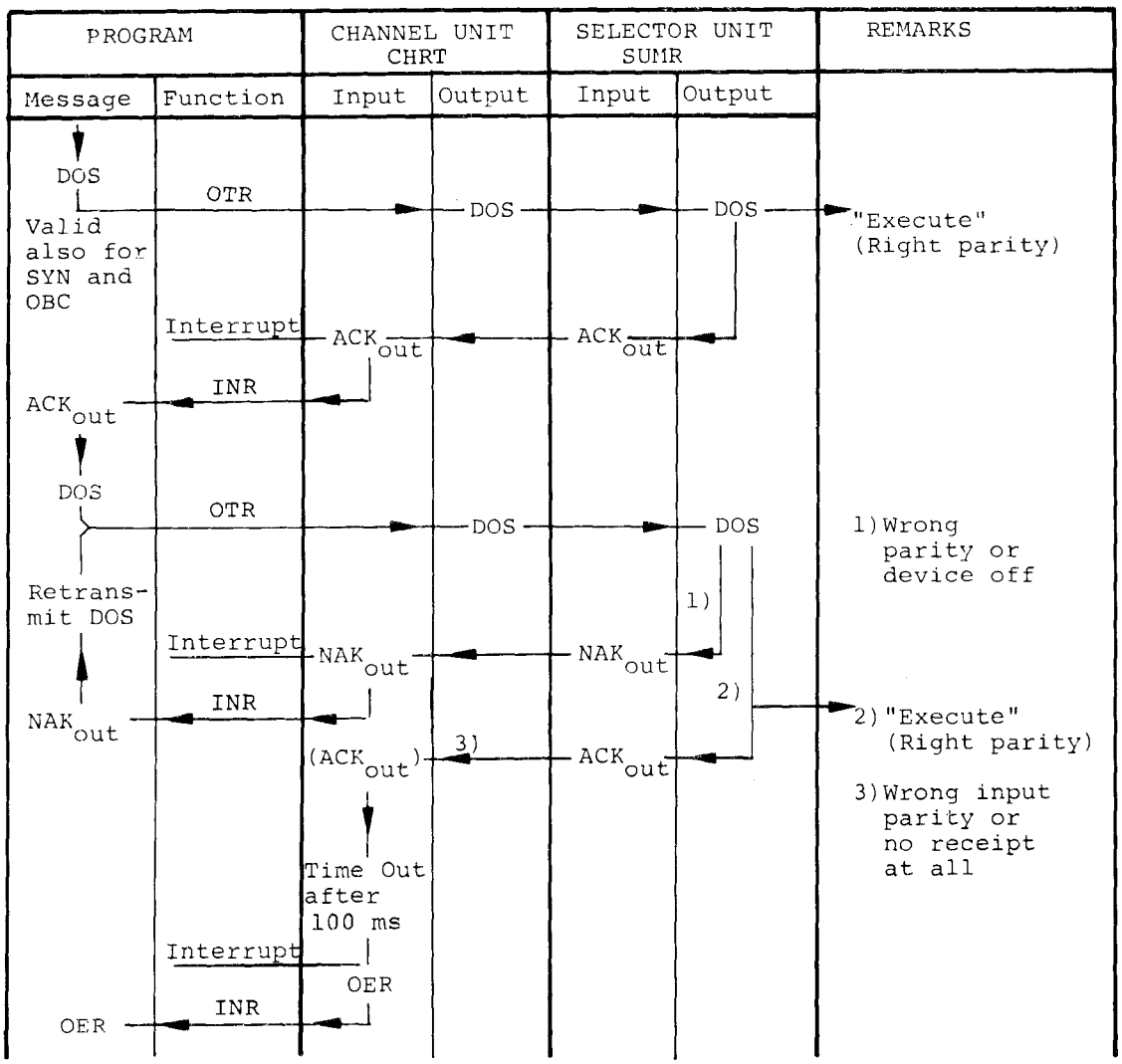
——Input Receipt message measured on the 104 line:

	ST	d	D_0 D_1 D_2	E	P	SP SP
ACK_{out}	0	1	1 1 1	E	P	1 1
NAK_{out}	0	1	0 0 0	E	P	1 1
DRI	0	1	1---6	E	P	1 1
ACK_{int}	Generated by Channel Unit					

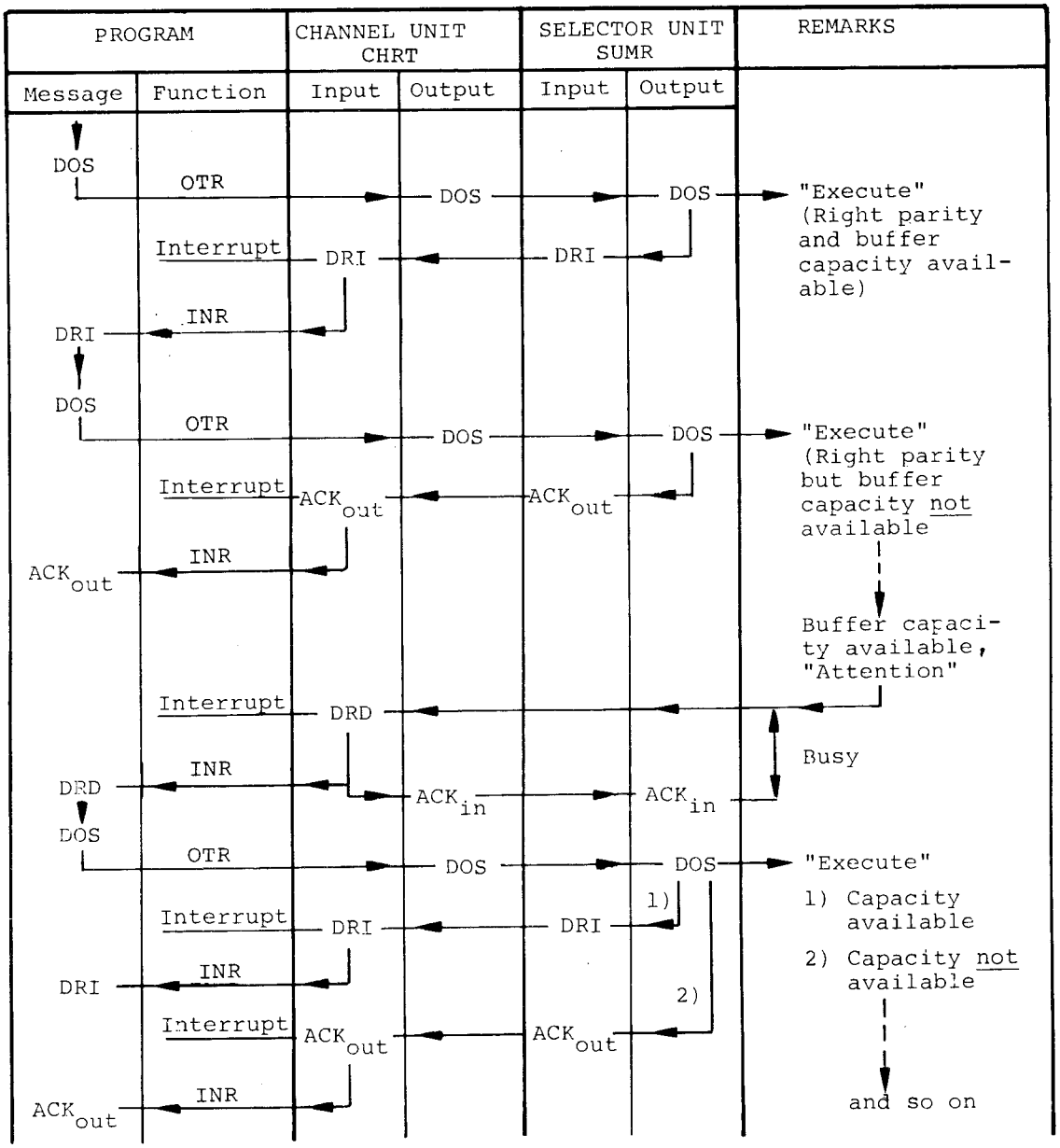


INSTRUCTION-/COMMAND-WORD FORMATS CHRT

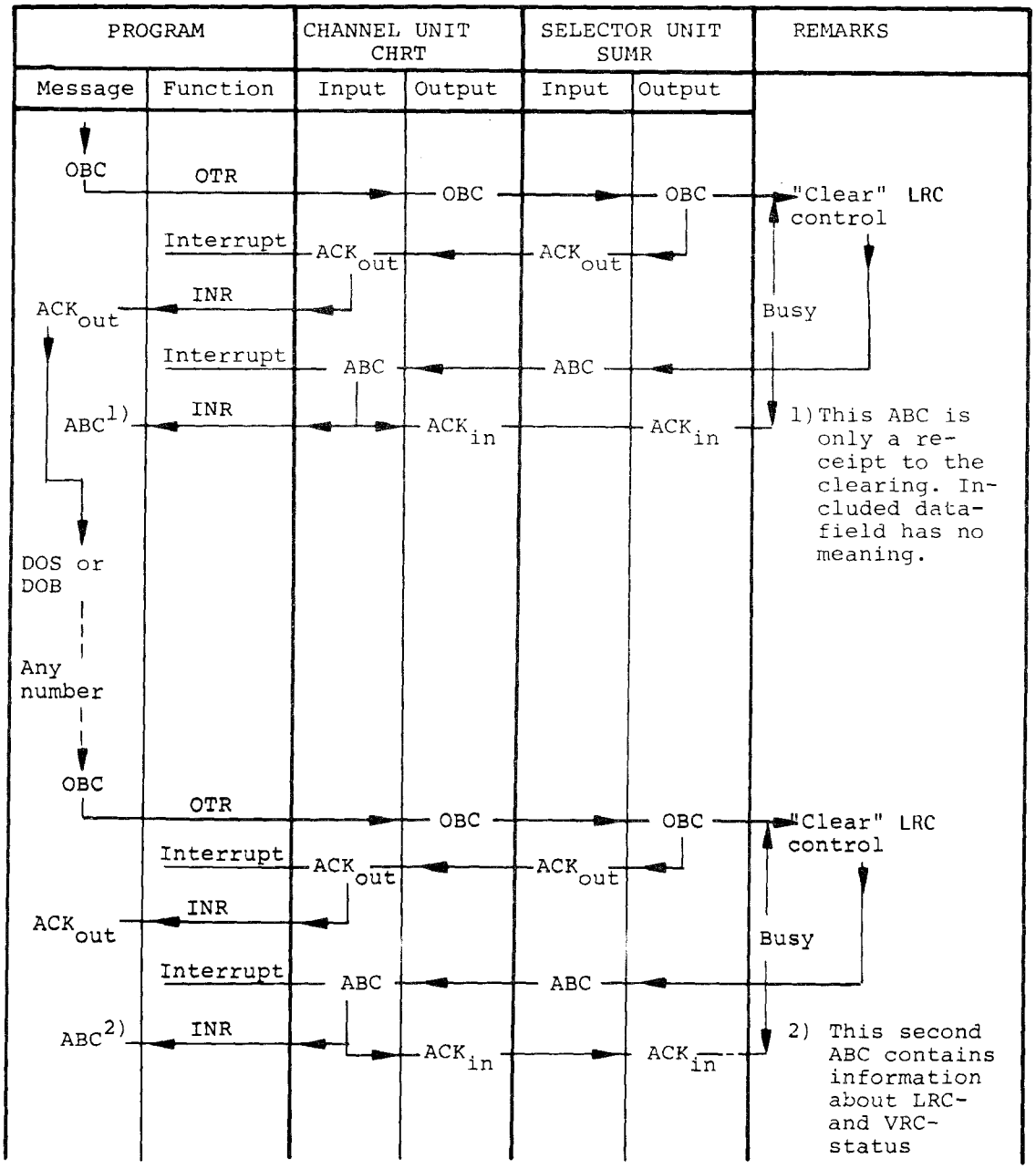
Characterwise output procedure, without data request



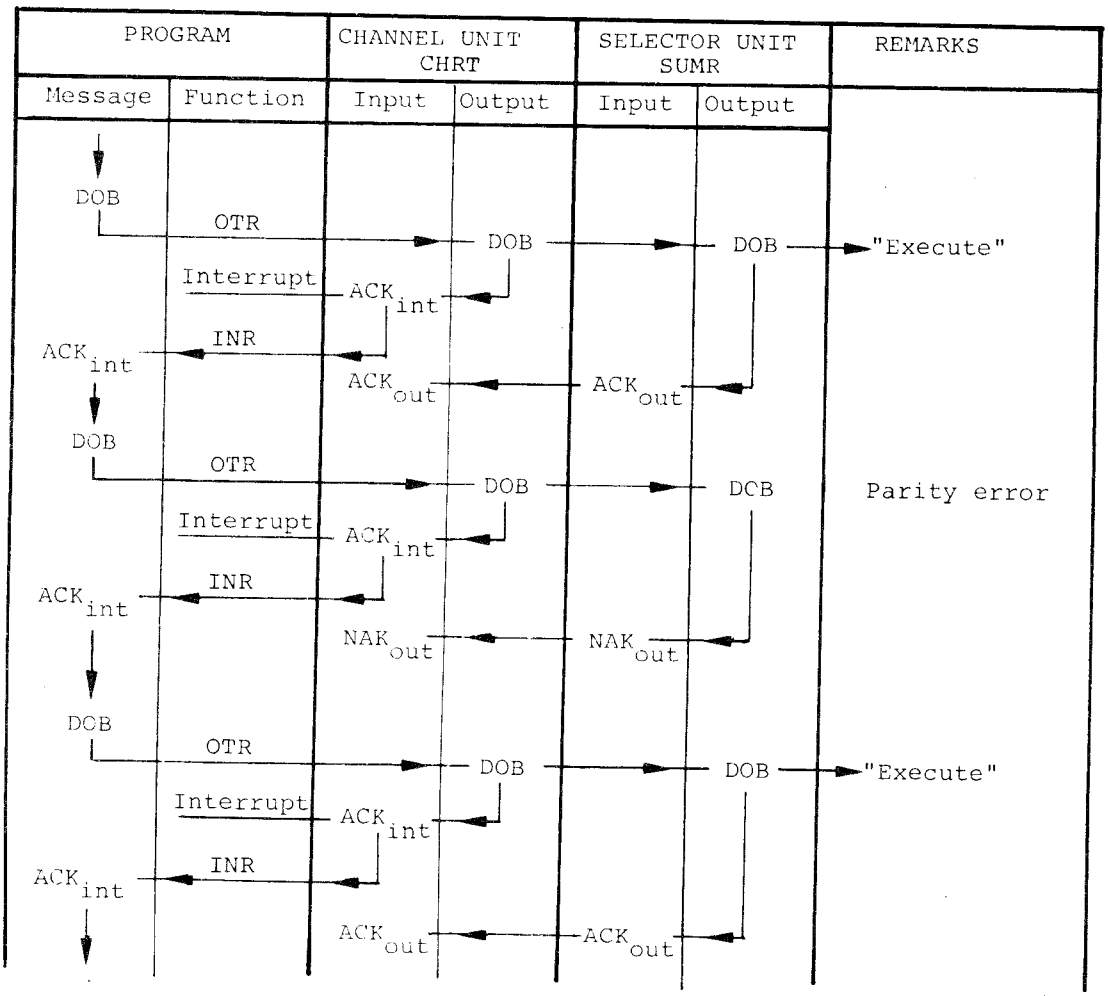
Characterwise output procedure, controlled by data request



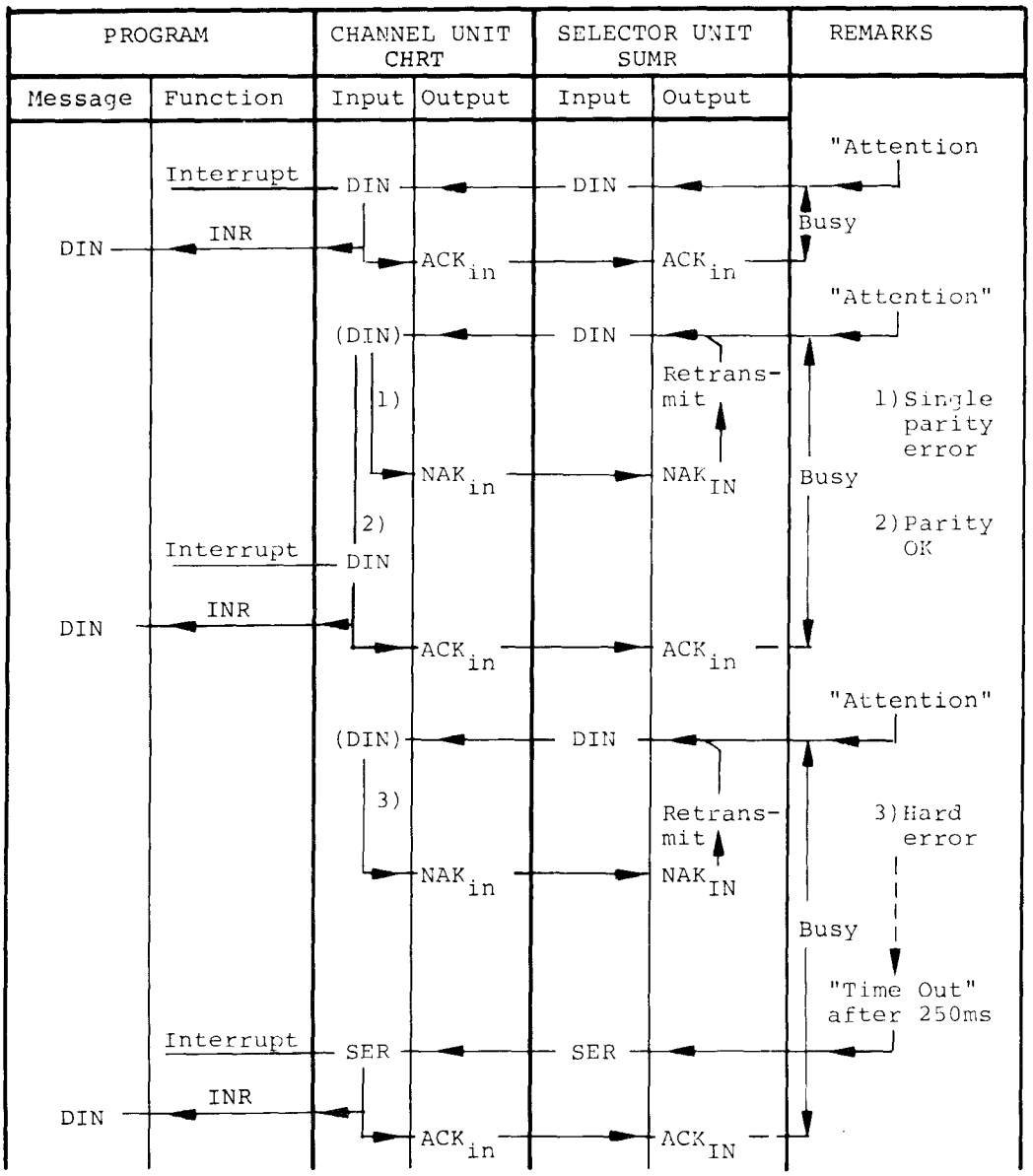
Output procedure, with OBC–ABC



Block output procedure



Characterwise input procedure



MESSAGE TERMS

The procedures are described by use of flow charts and the functions are named as follows:

. SYNC	Synchronization character	Output format used for maintenance of bit synchronization at a channel requiring that (modem V23)
. DOS	Data output, single character	Data to output device, characterwise acknowledge
. DOB	Data output, blockwise	Data to output device, blockwise acknowledged
. DIN	Data input, single char.	Data from input device,
. STD	Device status	Status information from input or output device
. OER	Output error	A message generated in CHRT and sent to CPU if a characterwise output is not received by ACK_{out} NAK_{out} or DRI within 100 ms
. SER	Selector unit error	Status information sent from SUMR when it is in normal function again after power failure or time-out (250 mS)

• DRD	Data request delayed	Data request from output device.
• DRI	Data request immediate	Means ACK_{out} of an output data format and request for a new character to addressed device.
• ACK_{in}	Acknowledge input	Positive acknowledgement of a data input to CHRT
• NAK_{in}	Not acknowledge input	Negative acknowledgement of a data input to CHRT
• ACK_{out}	Acknowledge output	Positive acknowledgement of a data output to SUMR
• NAK_{out}	Not acknowledge output	Negative acknowledgement of a data output to SUMR
• $ACK_{int.}$	Internal acknowledge output	At block output transmission this ACK is generated by the CHRT itself for each transmitted data character in block-mode (A=1). ACk_{int} is equal to ACk_{out}
• OBC	Output block control	This message reads and clears the LRC-logic in SUMR. OBC is used both as start and stop message in as well characterwise as in block transmission. The LRC-SUM calculated by the software must be included in the stop OBC to be compared in SUMR with hardware calculated LRC-SUM.
• ABC	Acknowledge block control	The answer to an OBC-message. ABC contains information about the VRC- and LRC-status in SUMR

19.5 SHORT DESCRIPTION OF TEST-PROGRAM

The CHRT can be tested only in combination with a Terminal, connected either direct or via a Transfer Unit, by means of test-program TERTST. In case a Transfer Unit is used, and activating the Test-switch in this unit, output data can be transferred directly back to the Channel Unit. In this case, the E-bit in the output message must be 0. To execute the test-program, see detailed description.

19.6 SHORT ROUTINES

```
         DATE  82-05-12        IDENT    KBINPR


0000                           IDENT    KBINPR
0001                    *DATE: 820507 FOR PTS
0002                    *PROGRAM FOR INPUT FROM EG A KEYBOARD
0003                    *ON REMOTE AND KEY-CODE DISPLAY ON SOP
0004                           AORG     /80
0005
0006 0080 FFFF 0000            DATA     /FFFF,0
0007 0084 20BF          START  INH                          NO INTERRUPTS
0008 0086 41C1                 CIO      A1,1,1             START CHRT
0009 0088 4A01          INR    INR      A2,0,1             READ KEY
0010 008A 5C04                 RB(NA)   *-2
0011 008C 422E                 OTR      A2,0,/2E           DISPLAY ON SOP
0012 008E 5F08                 RB       INR
0013                           END      START

            SYMBOL TABLE

   INR     0088  A   START   0084  A

            ASS.ERR.    0000
 :EOF
 PROG ELAPSED TIME:  00H-00M-00S-000MS-
```

```
         DATE  82-05-11        IDENT    KBVDUR


0000                           IDENT    KBVDUR
0001                    *DATE: 82 05 07 FOR PTS
0002                    *PROGRAM FOR INPUT FROM KEYBOARD(DA=1) AND OUTPUT ON
0003                    *VDU(DA=4)ON CHRT1
0004                           AORG     /80
0005
0006 0080 FFFF 0000            DATA     /FFFF,0
0007 0084 20BF          START  INH                          NO INTERRUPTS
0008 0086 41C1                 CIO      A1,1,1              START CHRT
0009 0088 0500          ACC    LDK      A5,0                SET OTR ACCEPTED
0010 008A 4A01          IN     INR      A2,0,1              WAIT FOR INPUT
0011 008C 5C04                 RB(NA)   IN
0012 008E 8514                 LDR      A5,A5               IS OTR ACCEPTED?
0013 0090 5002                 RF(Z)    *+4                 YES
0014 0092 820C                 LDR      A2,A3               NO SEND PREVIOUS CHAR
0015 0094 8308                 LDR      A3,A2               FOR ANSWER TO KEYBOARD
0016 0096 A320 F0FF            ANKL     A3,/F0FF            TAKE OUT E AND CH
0017 009A EB20 0007            CWK      A3,7                IS IT ACK?
0018 009E 501C                 RF(E)    NEXT                NOT TO KEYBOARD
0019 00A0 8308                 LDR      A3,A2               REPAIR E AND CH
0020 00A2 0102                 LDK      A1,2                SET CH 1
0021 00A4 3BC6                 SLC      A3,6                IS IT CH0
0022 00A6 5202                 RF(N)    *+4
0023 00A8 0100                 LDK      A1,0                SET CH0
0024 00AA 3BE6                 SRC      A3,6                REPAIR A3
0025 00AC A320 0FFF            ANKL     A3,/FFF             TAKE OUT DA
0026 00B0 9320 1000            ADKL     A3,/1000            PUT IN KEYB AD
0027 00B4 F045 00D4            EX       OTRK,A1             SEND TO KEYBOARD LAMPS
0028 00B8 4C01                 INR      A4,0,1              GET ANSWER
0029 00BA 5C04                 RB(4)    *-2
0030       00BC        NEXT   EQU      *
0031 00BC 422E                 OTR      A2,0,/2E            DISPLAY REC.MES ON SOP
0032 00BE 3AC3                 SLC      A2,3                CHECK IF KEYBOARD INPUT
0033 00C0 5E38                 RB(NN)   IN
0034 00C2 3AE3                 SRC      A2,3                REPAIR A2
0035 00C4 9220 3000            ADKL     A2,/3000            ADD DA FOR VDU
0036                                                       WHEN /3000 IS CHANGED TO OTHER VALUE
0037                                                       OUTPUT IS DONE ON OTHER DEVICE
0038 00C8 F045 00D8            EX       OTR,A1              OUTPUT
0039 00CC 5402                 RF(4)    *+4                 OTR NOT ACC
0040 00CE 5F48                 RB       ACC                 OTR ACCEPTED
0041 00D0 0501                 LDK      A5,1                SET NOT ACCEPTED
0042 00D2 5F4A                 RB       IN
0043 00D4 4301          OTRK   OTR      A3,0,1              OUTP KB CH 0
0044 00D6 4341                 OTR      A3,1,1              OUTP KB CH 1
0045 00D8 4201          OTR    OTR      A2,0,1              OUTP DEV CH 0
0046 00DA 4241                 OTR      A2,1,1              OUTP DEV CH 1
0047
0048
0049                    *      BY CHANGING /3000 TO OTHER VALUE:
0050                    *      OUTPUT CAN BE DONE ON AN OTHER DEVICE
0051                    *EG:   FOR TEP 71
0052                    *      CHANGE TO /1000
0053                    *      TYPE FROM KEYBOARD: /0D,/11,'IT WORKS',/06
0054                    *      AND IT WORKS IS WRITEN ON THE YOURNAL.
0055                    *      TYPE /0F AND THE PRINTERTEST STARTS
0056                    *      TYPE /0C AND THE TEST STOPS
0057
0058
0059                           END      START


          SYMBOL TABLE

  ACC     0088  A   IN      008A  A   NEXT    00BC  A   OTR     00D8  A
  OTRK    00D4  A   START   0084  A

          ASS.ERR.    0000
:EOF
PROG ELAPSED TIME:  00H-00M-15S-500MS-
```

```
          DATE  82-08-12        IDENT    TEPREM


0000                              IDENT    TEPREM
0001                     *DATE: 820812 FOR PTS
0002                     *TEPREM IS A PROGRAM THAT PRINTS LINES OF
0003                     *CHARACTERS ABCDEFG ON JOURNAL
0004                     *
0005                     *OF TEP 71
0006 0000                         RES      /40
0007
0008 0080 FFFF                    DATA     /FFFF
0009 0082 0000                    DATA     0
0010 0084 20BF                    INH                          NO INTERRUPTS
0011 0086 8220 00F4 R             LDKL     A2,DATBUF           ADDR OF DATABUFFER
0012 008A 41C1                    CIO      A1,1,1              START CHRT
0013 008C 4B01           INR      INR      A3,0,1              MESSAGES
0014 008E 5C04                    RB(4)    INR
0015                     *FIND OUT WHAT MESSAGE IS GIVEN
0016 0090 EB21 0707               CCK      A3,/0707            IS IT ACK?
0017 0094 5030                    RF(E)    NEXT                THEN PRINT NEXT CHARACTER
0018 0096 EB21 0505               CCK      A3,/0505            IS IT NACK?
0019 009A 5034                    RF(E)    PREV                PRINT LAST CHAR AGAIN
0020 009C EB21 0303               CCK      A3,/0303            IS IT POWER FAIL?
0021 00A0 5010                    RF(E)    LDR                 THEN LOAD LINENUMBER
0022 00A2 EB21 0000               CCK      A3,0                WAS IT OUTPUT ERROR
0023 00A6 5028                    RF(E)    PREV
0024                                                           AND START PRINTING ON THIS LINE
0025 00A8 432E                    OTR      A3,0,/2E            DISPLAY ANY OTHER MESSAGE ON SOP
0026 00AA 3BC2                    SLC      A3,2                IS IT PRINTER STATUS?
0027 00AC 5602                    RF(NN)   *+4                 YES THEN STOP
0028 00AE 5700                    RF       *+2                 REPLACE BY /207F FOR STOP ON
0029                                                           STATUS MESSAGE FROM TEP
0030 00B0 5F26                    RB       INR
0031                     *LOAD LINENUMBER FROM FOWERFAIL MESSAGE
0032                     *AND PUT IN DEVICE ADDRESS AND FIND OUT CHANNEL
0033 00B2 840C           LDR      LDR      A4,A3
0034 00B4 9420 2000               ADKL     A4,/2000
0035 00B8 0102                    LDK      A1,2                SET CH1
0036 00BA 3BC6                    SLC      A3,6                IS IT CH 1
0037 00BC 5202                    RF(N)    *+4
0038 00BE 0100                    LDK      A1,0                NO SET CH0
0039 00C0 8220 00F4 R             LDKL     A2,DATBUF
0040 00C4 5706                    RF       LCR
0041      00C6           NEXT     EQU      *
0042 00C6 EA20 0100 R             CWK      A2,BUFEND           IS IT FINISHED?
0043 00CA 5610                    RF(NL)   AGAIN              YES,THEN NEXTLINE ON JOURNAL
0044 00CC E428           LCR      LCR      A4,A2               LOAD CHARACTER
0045 00CE 5702                    RF       *+4
0046 00D0 1A01           PREV     SUK      A2,1
0047 00D2 F045 0100 R             EX       OTR,A1              WRITE CHARACTER
0048 00D6 5C4C                    RB(4)    INR
0049 00D8 1201                    ADK      A2,1
0050 00DA 5F50                    RB       INR                 GET ANSWER
0051 00DC 8520 0500      AGAIN    LDKL     A5,/500             TIME DELAY AFTER 1 LINE
0052 00E0 8620 0100      TIMDEL   LDKL     A6,/100
0053 00E4 1E01                    SUK      A6,1
0054 00E6 5C04                    RB(NZ)   *-2
0055 00E8 1D01                    SUK      A5,1
0056 00EA 5C0C                    RB(NZ)   TIMDEL
0057 00EC 5700                    RF       *+2                 CAN BE CHANGED TO HLT /207F TO
0058                                                           STOP AFTER EVERY LINE
0059                                                           STOP AFTER EVERY LINE
0060 00EE 8220 00F4 R             LDKL     A2,DATBUF           LOAD ADDR DATA BUF
0061 00F2 5F28                    RB       LCR                 GOT PRINT NEXT LINE
0062
0063                     *DATA BUFFER
0064 00F4 0D11           DATBUF   DATA     /0D11               CARIAGE RETURN,LINE FEED
0065 00F6 4142 4344               DATA     'ABCDEFGH'
     00FA 4546 4748
0066 00FE 4906                    DATA     /4906               I AND END OF TEXT
0067      0100           BUFEND   EQU      *
0068 0100 4401           OTR      OTR      A4,0,1              OTR FOR CH 0
0069 0102 4441                    OTR      A4,1,1              OTR FOR CH 1
0070                              END      INR-8


          SYMBOL TABLE

  AGAIN   00DC  R   BUFEND  0100  R   DATBUF  00F4  R   INR     008C  R
  LCR     00CC  R   LDR     00B2  R   NEXT    00C6  R   OTR     0100  R
  PREV    00D0  R   TIMDEL  00E0  R

          ASS.ERR.    0000
:EOF
PROG ELAPSED TIME:  00H-00M-20S-120MS-
```