40

POCKET REFERENCE

Scanned

1.13.1

For COMPUTER COMMUNICATIONS using the 40/4 DATA TERMINAL on a MULTI-POINT PRIVATE LINE

TELETYPE

Technical Reference
Part 2, Article 8
Issue 1, April 1976

CONTENTS

Page

General
Foreword 2
Ideas for Simplifying Testing of New Systems 3
Abbreviations, Symbols & Glossary 3

System & Station Configuration
Maxi-Cluster Station Configuration 4
Mini-Cluster Station Configuration 4
Station Identification 5

Computer...
Communications Capabilities 6
Procedures for Line Control 7
Replies and Responses 6

Establishment of Communications
General and Specific Polling 8
Replies to Polling 8
Selection 8
Replies to Selection 8

Message Transfer—40 Sends
Read Modified Message 8
Remote Test Request Message 8
Read All Message 8
Status Message 8
S & S Characters 8
AID Characters 8

Message Transfer—40 Receives
Write Command Message 9
Read/Control Command Message 9
Commands and Orders 9
WCCs & CCCs 9
ACs and option 403 10

Buffer Addresses
AAs, BAs & CAs 11

Message Blocking
ETB, ETX, & BCC 12

Synchronization
SYNs & PADs 12

ASCII Code & Abbreviations 13

Product Service & System Testing Support 14

GENERAL

Foreword This pocket reference contains information that a computer programmer may need in order to implement a computer communications system using Teletype® 40/4 data terminals on multipoint private-line communications facilities.

Only message transfer and communications establishment and termination are covered in this reference. When to poll, select, process and recover are beyond its scope.

It is assumed that the reader has read the 40/4 Catalog which covers features, options and technical facts and the 40/4 Technical Reference which covers system operation; and that the reader will contact the nearest sales representative for any additional information that may be required.

The publisher reserves the right to revise this reference for any reason, including, but not limited to: conformity with standards promulgated by ANSI, EIA or similar agencies, utilization of new advances in the state of technical arts, or to reflect changes in the design of equipment.

Liability for difficulties arising from unknown or unforeseen technical limitations is hereby disclaimed.

© 1976 Teletype Corporation

Ideas for Simplifying the Testing of a New Computer Communications System

When the overall system is designed, sharply distinguish between the data communication and the data processing functions, and write the software so that data processing problems will not affect the testing of communications routines.

When the original communications software is written, incorporate test routines to log the contents of the computer memory before and after each send or receive operation.

Be sure that the options specified for the 40/4 stations perform the desired functions at the time of installation.

Symbols

/ = or
[ ] = optional possibility

Abbreviations

(ASCII Code abbreviations on page 13)

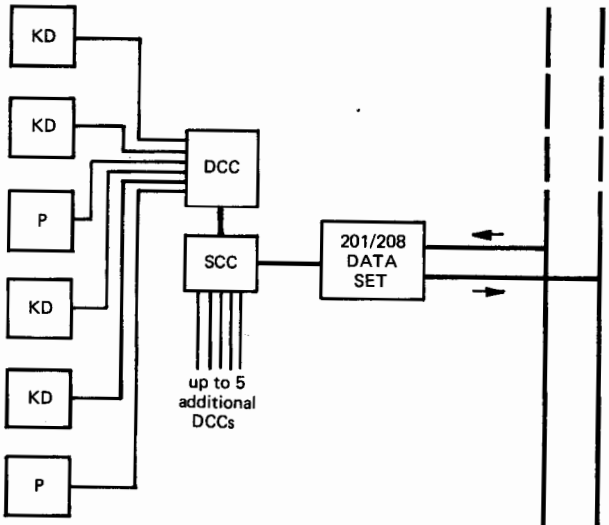
AA1 – Attribute Address +1, 1st char
AA2 – Attribute Address +1, 2nd char
AC – Attribute Character
ACK – Acknowledge = DLE 1/0
AID – Attention Identification
ANSI – American Nat'l Standards Inst
ASCII – American Standard Code for Information Interchange
BA1 – Buffer Address, 1st character
BA2 – Buffer Address, 2nd character
BCC – Block Check Character
Bsy – Busy
C – Specifiable Character
CA1 – Cursor Address, 1st character
CA2 – Cursor Address, 2nd character
CCC – Copy Control Character
Cmd – Command
DA – Device Address
DCC – Device Cluster Controller
DUP – Duplicate
EIA – Electronic Industries Association
EUA – Erase Unprotected to Address
IACK – Incorrect ACK 1/0
IC – Insert Cursor
ITB – End of Intermediate Trans'n Block
KD – Keyboard Display
MCC – Mini-Cluster Controller
Msg – Message
Mod'd – Modified
P – Printer
PAD – Pad
PT – Program Tab
Ptg – Printing
RA – Repeat to Address
Rec – Receive
Rd – Read
Rdy – Ready
RVI – Reverse Interrupt = DLE<
SBA – Set Buffer Address
SCC – Station Cluster Controller
SF – Start Field
SPA – Station Polling Address
Spec – Specific
SS1 – Status & Sense, 1st character
SS2 – Status & Sense, 2nd character
S&S – Status & Sense
SSA – Station Selection Address
Stn – Station
WACK – Wait Acknowledge = DLE ;
WCC – Write Control Character

Glossary

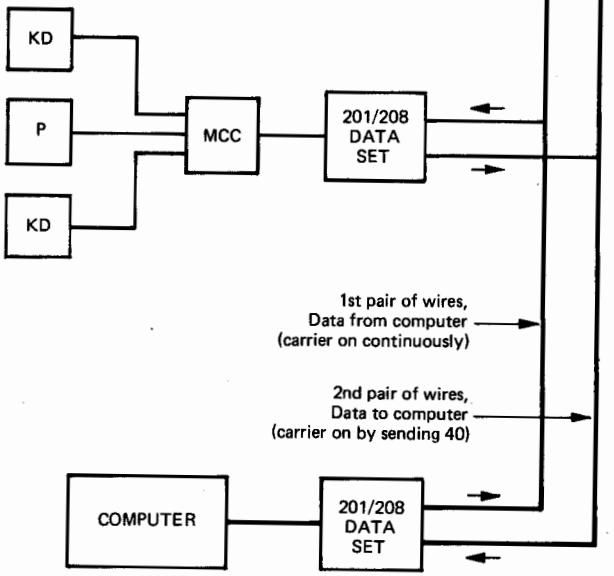
Blink – Flash between normal & intensified
Field – AC and characters following it
General Poll – Causes lowest numbered device with message to send, unless a higher numbered has not had its turn
Hidden – Not displayed/printed
Highlight – Intensify/blink
Intensify – Display above normal brightness
Modify – by operator entry
Numeric – Numbers, –, DUP, . and ,
Protect – from operator entry
Specific Poll – Causes only device polled to send if it has a message

SYSTEM AND STATION CONFIGURATION

Maxi-Cluster 40/4 Configuration



Mini-Cluster 40/4 Configuration



Station Identification

Stn or Dvce No.	SPA	SSA	DA	Stn or Dvce No.	SPA	SSA	DA
0	SP	-	SP	18	K	2	K
1	A	/	A	19	L	3	L
2	B	S	B	20	M	4	M
3	C	T	C	21	N	5	N
4	D	U	D	22	O	6	O
5	E	V	E	23	P	7	P
6	F	W	F	24	Q	8	Q
7	G	X	G	25	R	9	R
8	H	Y	H	26	]	:	]
9	I	Z	I	27	$	#	$
10	[	¦	[	28	*	@	*
11	.	,	.	29	)	'	)
12	<	%	<	30	;	=	;
13	(	_	(	31	^	"	^
14	+	>	+	32			-
15	!	?	!	33			/
16	&	0	&	34			S
17	J	1	J	35			T

COMPUTER...

...Communications Capabilities

Computer can:

Poll & receive a message from a 40 [then send a message to the 40 [and then receive a message from the 40]]

Select & send a message to a 40 [then receive a message from the 40]

Select & receive a message from a 40

Cause re-transmission of any message [block] received with invalid BCC or invalid 8th bit on any character in message [block]

Messages to computer are blocked; messages from computer may be blocked

...Procedures for Line Control

Computer Operations \ Computer Functions	Poll 40, receive reply	Receive next block	Cause 40 to re-send block	Reply not recognized by 40	Cause 40 to abort trans'n	Select 40, rec reply, send msg	Select 40, rec reply, send msg rec msg	Send last block	Send msg, rec reply, rec msg	Cause 40 to re-send reply	Cause 40 to delay sending	Terminate
Write EOT Write ACK 0/1 (DLE 1/0) Write NAK	•	•	•			•	•					
Write RVI (DLE<) Write Select Seq. (pg 8) Write Poll Seq. (pg 9)	•				•	•	•					
Read ENQ Read reply Write WACK						•	•				•	
Write ENQ Read EOT/msg [block] Write message	•	•	•			•	•	•	•	•		
Read reply Read message Write EOT						•	• •	• • •	• •	• •	•	•
Read ENQ Read EOT				•	•							

...Replies & Responses

Computer			
① Sends	② Rec's	③ Sends	④ Rec's
Gen'l or Spec Poll Sequence	Msg/Msg block end'g in ETX/ETB BCC	ACK 0/1* BCC good	next block ②
			EOT ①
		NAK/IACK BCC bad ‡	msg/msg block again ②
		EOT BCC bad again ①	
		RVI can't rec more	EOT ①
		Write/Ctrl Cmd Msg ⑤ if BCC good	
		reply not rec'd by 40	ENQ ③
	EOT	next poll ①	
	no/bad reply	Poll again ①	
	no/bad reply again	EOT ①	
Select Sequence	ACK 0 40 rdy to rec	Write/Ctrl Cmd Msg ⑤	
		Read Cmd Msg ⑤	
	WACK 40 bsy	EOT ①	
	RVI 40 has s & s	Spec Poll ①	
	no/bad reply	Select again ①	
	no/bad reply again	EOT ①	

Computer		
⑤ Sends	⑥ Rec's	⑦ Sends
Write/Ctrl Cmd Msg/Msg block end'g in ETX/ETB BCC	ACK 0/1* BCC good	EOT ①
		next block ⑤
		Read Cmd Msg ⑤
	WACK BCC good but can't rec more, bsy ptg msg/block	EOT ①
	NAK/IACK BCC bad ‡	msg/msg block again ⑤
	NAK/IACK again	EOT ①
	EOT has s & s	Spec Poll ①
	no/bad reply	ENQ ⑥
	no/bad reply again	EOT ①
Read Cmd Msg end'g in ETX BCC	Msg/Msg block ②	③ but not to ⑤†
	NAK/IACK BCC bad ‡	Read Cmd Msg again ⑤
	EOT has s & s	Spec Poll ①
	no/bad reply	ENQ ⑥
	no/bad reply again	EOT ①

Tables adjacent show automatic responses generated by 40 and typically generated by computer. Situations not included require manual intervention and/or error recovery routine.

ACK 0/1 = DLE 0/1 IACK = wrong DLE 0/1
RVI = DLE< WACK = DLE ;

◯ = go to column whose number is inside ◯

* Reply alternates between ACK 0 & ACK 1 for successive blocks, beginning with ACK 1 for the 1st block.

† Only one two-way message transfer permitted between 40 and computer per poll/selection unless there is an intervening ACK 0/1.

‡ Or invalid 8th bit on a char in msg/msg block.

ESTABLISHMENT OF COMMUNICATIONS

	Control Sequences (from computer)		Reply Sequences (from 40)	
	type	character	type	char
40 to Send	General* Poll	EOT SPA SPA " " ENQ	rdy to send†	msg
	Specific Poll	EOT SPA SPA DA DA ENQ	not rdy to send†	EOT
40 to Receive	Selection	EOT SSA SSA DA DA ENQ	ACK 0 rdy to rec	DLE 0
			WACK not rdy to rec, busy	DLE ;
			RVI not rdy to rec. Poll for status msg	DLE <

*lowest numbered device sends 1st unless a higher numbered has not taken its turn. Only 1 device can send per poll.

†Applies equally to general and specific poll.

MESSAGE TRANSFER—40 SENDS

Message Format		Key Depressed	AID
type	character sequence		
Rd Mod'd† if S/R or PF key depressed	STX SPA DAID CC A1A2 DC1 A1A2 data in field (less NULs) ETX BCC (for ea mod'd field*)	S/R	'
		PA1	%
		PA2	>
Rd Mod'd† if PA or CLEAR key depressed	STX SPA DAID AID EOH TCX BCC	R/TST	0
		PF1	1
		PF2	2
		PF3	3
		PF4	4
Rmte Test Rqst† (R/TST key depressed)	\ SOH %/TX SDC1 A1A2 AA data in field (less NULs) ETX BCC (for ea mod'd field*)	PF5	5
		PF6	6
		PF7	7
		PF8	8
Read All (in reply to read all cmd)	STX SPA DAID CC A1A2 GSC AA data in field (plus NULs) ETX BCC (for ea field**)	PF9	9
		PF10	:
		PF11	#
		PF12	@
Status (in reply to poll if S&S) Takes priority over other msgs	SOH %/RTX SPA DAS1S2 STX ETX BCC	CLEAR	_
		none, KD	-
		none, P	Y

†Sent in reply to poll or read modified command
*if no fields, data in buffer (less NULs) sent
**if no fields, data in buffer (plus NULs) sent

Status & Sense (S&S)					
Only on Specific Poll	S S1	S S2	On Gen'l/Spec Poll	S S1	S S2
Invalid Command	SP	A	Device No Longer Busy	B	SP
Device Unavailable	SP	&	Printer Paper Out	B	&
Command not Valid for Device	SP	-	Internal Timing Error	SP	B
Device Busy	H	SP	Block Forward Abort	SP	D
From Device Busy	H	A			
From Device Unavailable	SP	J			
Locked Buffer	D	A			

MESSAGE TRANSFER—40 RECEIVES

Write Command Message			
STX	write or erase-write command	data and/or orders	ETX BCC
Read/Control Command Message			
STX	erase all unprotected, copy, read modified or read all command		ETX BCC

Command	
Write	ESC 1 WCC
Erase-Write	ESC 5 WCC
Erase All Unprotected	ESC ?
Copy	ESC 7 CCC D*A
Read Modified	ESC 6
Read All	ESC 2

Orders	
Set Buffer Address	DC1 BA1 BA2
Start Field	GSC A
Insert Cursor	DC3
Program Tab	HT
Repeat to Address	DC4 BA1 BA2 C
Erase Unprotected to Address	DC2 BA1 BA2

*Copying and copied device must share same DCC or MCC. Copying and copied device can be the same device.

WCC†							
Start Printer	Sound KD Tone	Put KD in LOCAL	Reset ACs to Unmodified	Print: NL char/line	40 char/line	64 char/line	80 char/line
				SP	&	-	0
			•	A	J	/	1
		•		B	K	S	2
		•	•	C	L	T	3
	•			D	M	U	4
	•		•	E	N	V	5
	•	•		F	O	W	6
	•	•	•	G	P	X	7
•				H	Q	Y	8
•			•	I	R	Z	9
•		•		[	]	¦	:
•		•	•	.	$	,	#
•	•			<	*	%	@
•	•		•	(	)	_	'
•	•	•		+	;	>	=
•	•	•	•	!	^	?	"

CCC†								
Start Printer	Sound KD Tone	Copy: ACs	Copy: Protected Data	Copy: Unprotected Data	Print: NL char/line	40 char/line	64 char/line	80 char/line
		•			SP	&	-	0
		•		•	A	J	/	1
		•	•		B	K	S	2
		•	•	•	C	L	T	3
	•	•			D	M	U	4
	•	•		•	E	N	V	5
	•	•	•		F	O	W	6
	•	•	•	•	G	P	X	7
•		•			H	Q	Y	9
•		•		•	I	R	Z	9
•		•	•		[	]	¦	:
•		•	•	•	.	$	,	#
•	•	•			<	*	%	@
•	•	•		•	(	)	_	'
•	•	•	•		+	;	>	=
•	•	•	•	•	!	^	?	"

†device ignores [portions of] commands it cannot perform; without causing a status message to be generated

Specify Field as					AC option 403a or b*			
Protected†	Numeric	Hidden	Highlighted*	Modified				
				•	SP	D	B	F
			•		A	E	C	G
			•	•	H	[		
		•			I	.		
		•		•	<	+		
		•	•		(	!		
	•				&	M	K	O
	•			•	J	N	L	P
	•		•		Q	]		
	•		•	•	R	$		
	•	•			*	;		
	•	•		•	)	^		
•					-	U	S	W
•				•	/	V	T	X
•			•		Y	¦		
•			•	•	Z	,		
•		•			%	>		
•		•		•	_	?		
•	•				0	4	2	6
•	•			•	1	5	3	7
•	•		•		8	:		
•	•		•	•	9	#		
•	•	•			@	=		
•	•	•		•	'	"		

Specify Field as						AC option 403c†			
Protected†	Numeric	Hidden	Blinked†	Intensified†	Modified				
					•	SP	D	B	F
				•		A	E	C	G
				•	•	H			
			•			I			
			•		•	[			
			•	•		.			
		•				<	+		
		•			•	(	!		
	•					&	M	K	O
	•				•	J	N	L	P
	•			•		Q			
	•			•	•	R			
	•	•				]			
	•	•			•	$			
	•	•		•		*	;		
	•	•		•	•	)	^		
•						-	U	S	W
•					•	/	V	T	X
•				•		Y			
•				•	•	Z			
•			•			¦			
•			•		•	,			
•		•				%	>		
•		•			•	_	?		
•	•					0	4	2	6
•	•				•	1	5	3	7
•	•			•		8			
•	•			•	•	9			
•	•		•			:			
•	•		•		•	#			
•	•	•				@	=		
•	•	•			•	'	"		

Options 403a, b & c affect all KDs coupled to the same DCC or MCC.

*Highlighted fields are intensified or blinked, according to whether option 403a or 403b is elected, respectively.

†Fields specified as blinked cause fields specified as intensified to be blinked if displayed at the same time on the same display.

†A protected alphanumeric AC at BA_1 BA_2 = SP SP location prevents local print-out.

*†In systems where some displays employ option 403c & others 403a or b, elect characters in the 1st column in preference to those in other columns. Otherwise the same character will have different effects depending on the option elected for the display receiving it.

BUFFER ADDRESSES

Two-character buffer addresses for all 1920 possible display/print positions (24 rows, 80 columns) are determined left to right and top to bottom by combining each character in the adjacent table with itself and all other characters in the table. e.g. the buffer addresses for row 1, columns 1, 2 & 3 are SP SP, SP A & SP B, respectively.

However, since there are only 64 characters in the adjacent table but 80 columns in each row, the table below is needed to determine when the 1st character in the buffer address changes to the next one as you proceed from row 1 column 1 to row 24 column 80.

Also, the table below relates display/print columns, 16 at a time, to columns of 16 characters in the adjacent table, in order to determine the 2nd character in the buffer address. e.g. the buffer address for R1 C8 is SP G, for R6 C13 is F * and for R24 C80 is) "

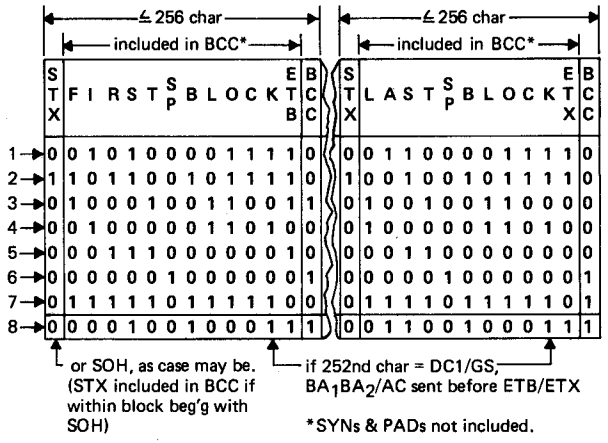
1st	2nd	3rd	4th
SP	&	-	0
A	J	/	1
B	K	S	2
C	L	T	3
D	M	U	4
E	N	V	5
F	O	W	6
G	P	X	7
H	Q	Y	8
I	R	Z	9
[	]	¦	:
.	$	,	#
<	*	%	@
(	)	_	'
+	;	>	=
!	^	?	"

Row	A A A_1A_2	B B A_1A_2		C C A_1A_2	
	Column				
	01 to 16	17 to 32	33 to 48	49 to 64	65 to 80
01	SP, 1st	SP, 2nd	SP, 3rd	SP, 4th	A, 1st
02	A, 2nd	A, 3rd	A, 4th	B, 1st	B, 2nd
03	B, 3rd	B, 4th	C, 1st	C, 2nd	C, 3rd
04	C, 4th	D, 1st	D, 2nd	D, 3rd	D, 4th
05	E, 1st	E, 2nd	E, 3rd	E, 4th	F, 1st
06	F, 2nd	F, 3rd	F, 4th	G, 1st	G, 2nd
07	G, 3rd	G, 4th	H, 1st	H, 2nd	H, 3rd
08	H, 4th	I, 1st	I, 2nd	I, 3rd	I, 4th
09	[, 1st	[, 2nd	[, 3rd	[, 4th	., 1st
10	., 2nd	., 3rd	., 4th	<, 1st	<, 2nd
11	<, 3rd	<, 4th	(, 1st	(, 2nd	(, 3rd
12	(, 4th	+, 1st	+, 2nd	+, 3rd	+, 4th
13	!, 1st	!, 2nd	!, 3rd	!, 4th	&, 1st
14	&, 2nd	&, 3rd	&, 4th	J, 1st	J, 2nd
15	J, 3rd	J, 4th	K, 1st	K, 2nd	K, 3rd
16	K, 4th	L, 1st	L, 2nd	L, 3rd	L, 4th
17	M, 1st	M, 2nd	M, 3rd	M, 4th	N, 1st
18	N, 2nd	N, 3rd	N, 4th	O, 1st	O, 2nd
19	O, 3rd	O, 4th	P, 1st	P, 2nd	P, 3rd
20	P, 4th	Q, 1st	Q, 2nd	Q, 3rd	Q, 4th
21	R, 1st	R, 2nd	R, 3rd	R, 4th	], 1st
22	], 2nd	], 3rd	], 4th	$, 1st	$, 2nd
23	$, 3rd	$, 4th	*, 1st	*, 2nd	*, 3rd
24	*, 4th	), 1st	), 2nd	), 3rd	), 4th

MESSAGE BLOCKING

Occurs if message is to computer and is greater than 252 chars.
May also occur on messages from computer.

Each block begins with STX (1st may begin with SOH) & ends with ETB BCC (last ends with ETX BCC). BCC halts transmission & requires reply per table on page 6.



Each BCC bit = 1/0 according to whether the number of 1 bits in the corresponding row for the characters included in the block is odd/even, respectively.

Each character's 8th (parity) bit = 1/0 according to whether the number of 1 bits in the char is even/odd, respectively.

SYNs & PADS

Transmissions to computer begin with 4 SYNs (01101000) & end with 1 PAD (11111111). Transmissions from computer must begin with at least 2 SYNs & end with 1 PAD (which can be 11111111 or 11111110). Also, 2 SYNs are sent once each second during transmission.

EOT is teated as a transmission in itself, even when followed by other chars. i.e. 2 SYNs & 1 PAD precede & follow EOT & precede & follow the chars following EOT.

ASCII CODE WITH ODD PARITY

(Bits are sent in sequence 1 through 8)
(ASCII bits 87654321 = EBCDIC bits 01234567)

	Binary Bits 87654321	ASCII Hex 7654321	EBCDIC Hex 01234567		Binary Bits 87654321	ASCII Hex 7654321	EBCDIC Hex 01234567
NUL	10000000	00	00	@	01000000	40	7C
SOH	00000001	01	01	A	11000001	41	C1
STX	00000010	02	02	B	11000010	42	C2
ETX	10000011	03	03	C	01000011	43	C3
EOT	00000100	04	37	D	11000100	44	C4
ENQ	10000101	05	2D	E	01000101	45	C5
ACK	10000110	06	2E	F	01000110	46	C6
BEL	00000111	07	2F	G	11000111	47	C7
BS	00001000	08	16	H	11001000	48	C8
HT	10001001	09	05	I	01001001	49	C9
NL	10001010	0A	15	J	01001010	4A	D1
VT	00001011	0B	0B	K	11001011	4B	D2
FF	10001100	0C	0C	L	01001100	4C	D3
CR	00001101	0D	0D	M	11001101	4D	D4
SO	00001110	0E	0E	N	11001110	4E	D5
SI	10001111	0F	0F	O	01001111	4F	D6
DLE	00010000	10	10	P	11010000	50	D7
DC1	10010001	11	11	Q	01010001	51	D8
DC2	10010010	12	12	R	01010010	52	D9
DC3	00010011	13	13	S	11010011	53	E2
DC4	10010100	14	3C	T	01010100	54	E3
NAK	00010101	15	3D	U	11010101	55	E4
SYN	00010110	16	32	V	11010110	56	E5
ETB	10010111	17	26	W	01010111	57	E6
CAN	10011000	18	18	X	01011000	58	E7
EM	00011001	19	19	Y	11011001	59	E8
SUB	00011010	1A	3F	Z	11011010	5A	E9
ESC	10011011	1B	27	[	01011011	5B	
FS	00011100	1C	1C	\	11011100	5C	
GS	10011101	1D	1D	]	01011101	5D	
RS	10011110	1E	1E	^	01011110	5E	
US	00011111	1F	1F	_	11011111	5F	6D
SP	00100000	20	40	`	11100000	60	
!	10100001	21	5A	a	01100001	61	81
"	10100010	22	7F	b	01100010	62	82
#	00100011	23	7B	c	11100011	63	83
$	10100100	24	5B	d	01100100	64	84
%	00100101	25	6C	e	11100101	65	85
&	00100110	26	50	f	11100110	66	86
'	10100111	27	7D	g	01100111	67	87
(	10101000	28	4D	h	01101000	68	88
)	00101001	29	5D	i	11101001	69	89
*	00101010	2A	5C	j	11101010	6A	91
+	10101011	2B	4E	k	01101011	6B	92
,	00101100	2C	6B	l	11101100	6C	93
-	10101101	2D	60	m	01101101	6D	94
.	10101110	2E	4B	n	01101110	6E	95
/	00101111	2F	61	o	11101111	6F	96
0	10110000	30	F0	p	01110000	70	97
1	00110001	31	F1	q	11110001	71	98
2	00110010	32	F2	r	11110010	72	99
3	10110011	33	F3	s	01110011	73	A2
4	00110100	34	F4	t	11110100	74	A3
5	10110101	35	F5	u	01110101	75	A4
6	10110110	36	F6	v	01110110	76	A5
7	00110111	37	F7	w	11110111	77	A6
8	00111000	38	F8	x	11111000	78	A7
9	10111001	39	F9	y	01111001	79	A8
:	10111010	3A	7A	z	01111010	7A	A9
;	00111011	3B	5E	{	11111011	7B	C0
<	10111100	3C	4C	¦	01111100	7C	6A
=	00111101	3D	7E	}	11111101	7D	D0
>	00111110	3E	6E	~	11111110	7E	A1
?	10111111	3F	6F	DEL	01111111	7F	07

NUL =	Null	FF =	Form Feed	ETB =	End of Trans'n Block
SOH =	Start of Heading	CR =	Carriage Return	CAN =	Cancel
STX =	Start of Text	SO =	Shift-Out	EM =	End of Media
ETX =	End of Text	SI =	Shift-In	SUB =	Substitute
EOT =	End of Trans'n	DLE =	Data Link Escape	ESC =	Escape
ENQ =	Enquiry	DC1 =	Device Control 1	FS =	Field Separator
ACK =	Acknowledge	DC2 =	Device Control 2	GS =	Group Separator
BEL =	Bell	DC3 =	Device Control 3	RS =	Record Separator
BS =	Back Space	DC4 =	Device Control 4	US =	Unit Separator
HT =	Horizontal Tab	NAK =	Negative Acknowledge	SP =	Space
NL =	New Line	SYN =	Synchronous	DEL =	Delete
VT =	Vertical Tab				

TELETYPE PRODUCT SERVICE

Teletype® products are fully supported by our Product Service Organization, which has centers located across the U.S. and Canada. Services available include installation and checkout, component exchange, and on-site maintenance and repair, on an on-call or on a regularly scheduled basis.

For additional information call Product Service Headquarters on 312-982-3920.

SYSTEM TESTING SUPPORT

Teletype® Product Service Centers offer two services specifically designed to help the user to help himself: Loan Service and Testing Service.

With either service the 40/4 user gains access to a TSM-7810 Line Monitor/Data Display. Loan Service provides use of the TSM-7810S, while Testing Service provides a Product Service representative equipped with the unit.

The TSM-7810S is a portable unit (slightly larger than an attache case) which permits the user to see at a glance:

The first or last 1024 characters sent, received, or both

and

The on/off status of each and every lead on the EIA (RS-232) interface between the 40/4 and its data set or the computer and its data set, depending on whether the TSM-7810S is coupled between the 40/4 and its data set or the computer and its data set.

For information on charges and scheduling call the nearest Product Service Center or Product Service Headquarters at 312-982-3920.

TELETYPE CORPORATION ***the computercations people®***
5555 Touhy Avenue, Skokie, Illinois 60076 Telephone: (312) 982-2000