

# REFERENCE CARD

# concept

## HDS

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### CONCEPT COMMAND SUMMARY

All terminal commands are executable from the keyboard or communication line(s) (under program control). Terminal commands are either control codes or command sequences. Control codes are generated from the keyboard by pressing the control key (CTRL) while simultaneously pressing another key. Command sequences are generated from the keyboard by typing the "MULT-CODE" key followed by a one character command identifier and any required input parameters. Command sequences from the communication line(s) replace the "MULT-CODE" key with the "escape" message character. Commonly used commands such as cursor controls, print, and editing functions have special keys (e.g. HOME, PRINT, INSRT) which when pressed generate the required control code or command sequence. These commands can be executed either by pressing the special key or by typing the required control code/command sequence. The table below lists all terminal commands as follows:

COLUMN	DESCRIPTION
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- 1 Command Name/Description
- 2 Special Key — k indicates unshifted key, K indicates shifted key, ↑ k indicates control unshifted key, ↑ K indicates control shifted key, blank indicates no special key exists.
- 3 Programmer/User Mode — P indicates that the command is executable only in programmer mode, blank indicates executable either in programmer or user mode.
- 4 Device Dependent Command — D indicates a device dependent command (i.e. if received from a dependent device applies to all other dependent devices), blank indicates not a device dependent command.
- 5 Control Code or Command Sequence — MC indicates a command sequence otherwise a control code. The one ASCII character command identifier is listed next followed in parentheses by the decimal value of the identifier (useful when programming). A command identifier preceded by a ↑ indicates a control code.
- 6 Required Input Parameters — An abbreviation of each input parameter name is listed separated by commas. Each input parameter is one character in length (one keystroke). When multiple parameters are required, no separator is used between parameters (e.g. two characters are typed for two parameters).
- 7 Footnote Number — Footnotes describe input parameters.

### GENERAL

	1	2	3	4	5	6	7
Status	k				MC + (43)		
Reset	K				MC (44)		
Set Device Dependent					MC 3 (51)		
Set Device Independent					MC # (35)		
Change Message Character		P			MC o (111)	chr,w	1

### APL/ASCII

APL Mode		D			MC 0 (48)		
APL Mode (Alternate)					↑N (14)		
ASCII Mode		D			MC ) (41)		
ASCII Mode (Alternate)					↑O (15)		

### MODE SETTING

User			D		MC u (117)		
Programmer			D		MC U (85)		
Text		P	D		MC f (102)		
Form		P	D		MC F (70)		
Scroll		P	D		MC s (115)		
Page			D		MC S (83)		
Character					MC 7 (55)		
Block					MC & (38)		
Upper/Lower Case					MC 5 (53)		
Caps Lock					MC % (37)		
Full Duplex					MC 8 (56)		
Half Duplex					MC * (42)		
Remote					MC 9 (57)		
Local					MC ( (40)		
Transparent Mode off			D		MC t (116)		
Transparent Mode on		P	D		MC T (84)		
Auto Linefeed off		P	D		MC l (108)		
Auto Linefeed on		P	D		MC L (76)		
Auto Tab off		P	D		MC b (98)		
Auto Tab on		P	D		MC B (66)		

### EDITING

Form Feed					↑L (12)		
Insert Mode on		k			MC ↑P (16)		
Insert Mode off		K			MC ↑@ (00)		
Delete Char in Line/Field		k			MC ↑Q (17)		
Delete Character in Window		K			MC ↑A (01)		
Insert Line		k			MC ↑R (18)		
Delete Line		K			MC ↑B (02)		
Clear to End of Line/Field		k			MC ↑S (19)		
Clear to End of Window		K			MC ↑C (03)		
Clear All to EDL/EOF			P		MC ↑U (21)		
Clear All to EDW			P		MC ↑E (05)		
Set Insert Type			P		MC ↑G (07)	n	2
Define Clear Characteristics			P		MC ↑H (08)	m,w,chr	3

### CURSOR CONTROLS

Carriage Return		k			↑M (13)		
Line Feed		k			↑J (10)		
Back Space		k			↑H (08)		
Tab		k			↑I (09)		
Back Tab		K			MC (39)		
Tab Set		k			MC ] (93)		
Tab Clear		K			MC - (95)		
↑		k			MC ; (59)		
↓		k			MC < (60)		
→		k			MC = (61)		
←		k			MC > (62)		
Home		k			MC ? (63)		
Write Address			P		MC a (97)	ln1,col	4
Read Address			P		MC A (65)		
End of Text					MC p (112)		
Set Cursor Blink Underline					MC w (119)		
Set Cursor Blink Block					MC W (87)		

### DISPLAY

	1	2	3	4	5	6	7
Blink on		P	D		MC C (67)		
Blink off		P	D		MC c (99)		
Reverse Video on		P	D		MC D (68)		
Reverse Video off		P	D		MC d (100)		
Half Bright on		P	D		MC E (69)		
Half Bright off		P	D		MC e (101)		
Underline on		P	D		MC G (71)		
Underline off		P	D		MC g (103)		
Nondisplay on		P	D		MC H (72)		
Nondisplay off		P	D		MC h (104)		
Protection on		P	D		MC I (73)		
Protection off		P	D		MC i (105)		
Select Character Set		P	D		MC j (106)	n	
Screen Reverse Video					MC k (107)		
Screen Normal Video					MC K (75)		
Half Bright Protected Flds					MC M (77)		
Normal Protected Fields					MC m (109)		
Set Attribute Word		P	D		MC N (78)	w	
Read Attribute Word		P			MC n (110)		
Set Attribute of Block		P			MC J (74)	m,w,lns,cls	
Repeat Char Horizontal		P			MC r (114)	c,n	
Repeat Char Vertical		P			MC R (82)	c,n	

### TRANSMISSION

Set Baud Rate			P		MC O (79)	n	
Set Parity			P		MC P (80)	n	
Transmit Line/Field		k			MC ↑T (20)		
Transmit Window		K			MC ↑D (04)		
Transmit All Line/Field			P		MC ↑V (22)		
Transmit All Window			P		MC ↑F (06)		
Start of Print/Transmit					MC ↑ (49)		
Suspend Block Transmit			P		↑S (19)		
Resume Block Transmit			P		↑Q (17)		

### MULTIPLE DEVICES

Set Output Network			P		MC Y (89)	n	
Read Output Network			P		MC P (80)		
Function Route*			P		MC Q (81)	dev,msg,EOF	
Attach Printer		↑k			MC } (125)		
Detach Printer		↑K			MC ~ (126)		
Print Window		k			MC { (123)		
Print Line		K			MC   (124)		
FF Prior to Print on					MC Z (90)		
FF Prior to Print off					MC z (122)		

### SCREEN CONTROL

Define Window			P		MC v (118)	ln1, cl1,L,C	
Tie Window			P		MC q (113)	n	
Page ↑		K			MC . (46)		
Page ↓		k			MC - (45)		
Scroll ↑		K			MC \ (92)		
Scroll ↓		k			MC   (91)		
Start of Screen			P		MC V (86)	ln	

### FUNCTION KEYS

Programming			P		MC 4 (52)	L,K,t,msg	
Reset All			P		MC \$ (36)		
Set Cursor Pad to Transmit			P		MC X (88)		
Set Cursor Pad to Execute			P		MC x (120)		

# ISPLAY

	1	2	3	4	5	6	7
k on	P	D	MC	C	(67)		
k off	P	D	MC	c	(99)		
erse Video on	P	D	MC	D	(68)		
erse Video off	P	D	MC	d	(100)		
f Bright on	P	D	MC	E	(69)		
f Bright off	P	D	MC	e	(101)		
erline on	P	D	MC	G	(71)		
erline off	P	D	MC	g	(103)		
isplay on	P	D	MC	H	(72)		
isplay off	P	D	MC	h	(104)		
tection on	P	D	MC	I	(73)		
tection off	P	D	MC	i	(105)		
ct Character Set	P	D	MC	j	(106)	n	5
en Reverse Video			MC	k	(107)		
en Normal Video			MC	K	(75)		
f Bright Protected Flds			MC	M	(77)		
mal Protected Fields			MC	m	(109)		
Attribute Word	P	D	MC	N	(78)	w	6
id Attribute Word	P	D	MC	n	(110)		6
Attribute of Block	P		MC	J	(74)	m,w,lns,cls	7
eat Char Horizontal	P		MC	r	(114)	c,n	8
eat Char Vertical	P		MC	R	(82)	c,n	8

# TRANSMISSION

		P	MC			n	
Baud Rate		P	MC	O	(79)	n	9
Parity		P	MC	P	(80)	n	10
nsmit Line/Field	k		MC	↑T	(20)		
nsmit Window	K		MC	↑D	(04)		
nsmit All Line/Field		P	MC	↑V	(22)		
nsmit All Window		P	MC	↑F	(06)		
rt of Print/Transmit			MC	↑	(49)		11
pend Block Transmit		P		↑S	(19)		12
ume Block Transmit		P		↑Q	(17)		12

# MULTIPLE DEVICES

		P	MC			n	
Output Network		P	MC	Y	(89)	n	13
ad Output Network		P	MC	y	(121)		13
unction Route*		P	MC	Q	(81)	dev,msg,EOF	14
ach Printer	↑k		MC	}	(125)		
ach Printer	↑K		MC	~	(126)		
nt Window	k		MC	{	(123)		
nt Line	K		MC	;	(124)		
Prior to Print on			MC	Z	(90)		
Prior to Print off			MC	z	(122)		

# SCREEN CONTROL

		P	MC			ln1, c11,L,C	
ine Window		P	MC	v	(118)	ln1, c11,L,C	15
Window		P	MC	q	(113)	n	16
e ↑	K		MC	.	(46)		
e ↓	k		MC	-	(45)		
ll ↑	K		MC	\	(92)		
ll ↓	k		MC	[	(91)		
rt of Screen		P	MC	V	(86)	ln	17

# FUNCTION KEYS

		P	MC			L,K,t,msg	
ramming		P	MC	4	(52)	L,K,t,msg	18
et All		P	MC	S	(36)		
ursor Pad to Transmit		P	MC	X	(88)		
ursor Pad to Execute		P	MC	x	(120)		

# FOOTNOTES

- chr specifies the message character to be changed as follows:  
 ESC (escape)=32(sp),  
 ACK (acknowledgement)=33(!),  
 NAK (negative acknowledgement)=34(''),  
 SOM (start of message)=35(#),  
 EOF (end of field)=36(\$),  
 EOL (end of line)=37(%),  
 EOM (end of message)=38(&),  
 function key identification=39(')  
 w is the new character
- Multiple page software only.  
 n specifies the insert type to be used for the requesting device as follows:  
 Insert in Window=32(sp), Insert in Line=33(!)
- Multiple page software only. Defines the clear character and attributes used by the editing functions as follows:  
 m specifies user supplied attributes and is determined by summing the values of these attributes as follows:  
 1=display/nondisplay, 2=blink on/off, 4=underlining, 8=protection, 16=brightness control, 32=normal/reverse video. The resultant can be incremented by 64 to allow transmission of a displayable character. Attributes not supplied by the user are taken from the current attribute word.  
 w is the settings of the user supplied attributes and is determined by summing the desired values as follows: 1=nondisplay, 2=blink, 4=underline, 8=unprotected, 16=half bright, 32=reverse video. The resultant can be incremented by 64 to allow transmission of a displayable character.  
 chr is the actual character to be placed in the area of cleared displayed memory.
- In1 is the desired line number + 32 (In1=LINE + 32). On multiple page terminals entering the two input parameters 1,32 (↑A,sp) will specify line 96.  
 col is the desired column number + 32 (col=COLUMN + 32).  
 Note that LINE is limited by the number of pages of memory (24 lines per page) and COLUMN can be at most 79. (Line and column numbering begin at 0.)
- n is the desired character set number (0-3) plus 32(sp,l,',',#).  
 ASCII=0(sp), APL=3(#).

- w is the attribute word and is determined by summing the values of the desired character attributes as follows:  
 1=nondisplay, 2=blink, 4=underline, 8=unprotected, 16=half bright, 32=reverse video (corresponds to bits 0-5). The resultant value can be incremented by 64 to allow transmission of a displayable character.
- m specifies the attributes which are affected and is determined by summing the values of these attributes as follows:  
 1=display/nondisplay, 2=blink on/off, 4=underlining, 8=protection, 16=brightness control, 32=normal/reverse video. Attributes not specified in m will retain their prior values. The resultant value can be incremented by 64 to allow transmission of a displayable character.  
 w is the attribute word as in 6 above.  
 lns is the number of lines in the block plus 32. On multiple page terminals entering the two input parameters 1,32 (↑A,sp) will specify 96 lines.  
 cls is the number of columns in the block plus 32.
- c is the character to be repeated.  
 n is the repeat count plus 32.  
 (i.e. 33(!)=repeat count of one).
- (n-32) indicates the baud rate as follows:  
 0=50(sp), 1=75(!), 2=110(''), 3=134.5(#), 4=150(\$), 5=300(%), 6=600(&), 7=1200('), 8=1800(,), 9=2000(,), 10=2400(\*), 11=3600(+), 12=4800(,), 13=7200(-), 14=9600(.).
- (n-32) indicates the parity: 0=none(sp), 1=even(!), 2=odd('').
- Start of print/transmit is the current cursor position.
- Multiple page software only.
- n specifies the devices which are to receive output from the requesting device and is determined by summing the values corresponding to the desired devices (16=video, 8=line1, 4=line2, 2=line3, 1=line4). The resultant value can be incremented by 32 to allow transmission of a displayable character.

- (dev-32) specifies the device which is to receive the message.  
 0=video(sp), 1=line1(!), 2=line2(''), 3=line3(#), 4=line4(\$).  
 msg is the message. Maximum length is 7 characters.  
 EOF is the programmable end of field character (default ↑ w).
- In1 is the line position of window cursor home plus 32. (Line and column numbering begins at zero.)  
 c11 is the column position of window cursor home plus 32.  
 L is the number of lines in the window plus 32. On multiple page terminals entering the two input parameters 1,32 (↑A,sp) will specify 96 lines.  
 C is the number of columns in the window plus 32.
- (n-32) is the window to tie. (n-32) equal to 0 implies keyboard, 1-4 implies requesting device's window.
- For terminals with multiple pages of memory, In indicates the starting line for display. Calculated as in 2 above.
- (L-32) is the length of the function key message.  
 (K-32) indicates the key to be changed as follows:  
 0-15 shifted function keys 1-16  
 16-31 unshifted function keys 1-16  
 32-34 unshifted function keys 17-19  
 35-37 shifted function keys 17-19  
 t=32(sp) restores default sequence and sets transmit mode, t=33(!) restores default sequence and sets execute mode, t=34('') sets transmit mode, t=35(#) sets execute mode.  
 msg is the actual character message to be programmed on the function key.

# ASCII CHARACTER SET\*

# APL CHARACTERS

D000 0000	D001 0001	D002 0002	D003 0003	D004 0004	D005 0005	D006 0006	D007 0007	D008 0010	D009 0011	D010 0012	D011 0013	D012 0014	D013 0015	D014 0016	D015 0017
D016 0020	D017 0021	D018 0022	D019 0023	D020 0024	D021 0025	D022 0026	D023 0027	D024 0030	D025 0031	D026 0032	D027 0033	D028 0034	D029 0035	D030 0036	D031 0037
D032 0040	D033 0041	D034 0042	D035 0043	D036 0044	D037 0045	D038 0046	D039 0047	D040 0050	D041 0051	D042 0052	D043 0053	D044 0054	D045 0055	D046 0056	D047 0057
D048 0060	D049 0061	D050 0062	D051 0063	D052 0064	D053 0065	D054 0066	D055 0067	D056 0070	D057 0071	D058 0072	D059 0073	D060 0074	D061 0075	D062 0076	D063 0077
D064 0100	D065 0101	D066 0102	D067 0103	D068 0104	D069 0105	D070 0106	D071 0107	D072 0110	D073 0111	D074 0112	D075 0113	D076 0114	D077 0115	D078 0116	D079 0117
D080 0120	D081 0121	D082 0122	D083 0123	D084 0124	D085 0125	D086 0126	D087 0127	D088 0130	D089 0131	D090 0132	D091 0133	D092 0134	D093 0135	D094 0136	D095 0137
D096 0140	D097 0141	D098 0142	D099 0143	D100 0144	D101 0145	D102 0146	D103 0147	D104 0150	D105 0151	D106 0152	D107 0153	D108 0154	D109 0155	D110 0156	D111 0157
D112 0160	D113 0161	D114 0162	D115 0163	D116 0164	D117 0165	D118 0166	D119 0167	D120 0170	D121 0171	D122 0172	D123 0173	D124 0174	D125 0175	D126 0176	D127 0177

D000 0000	D001 0001	D002 0002	D003 0003	D004 0004	D005 0005	D006 0006	D007 0007	D008 0010	D009 0011	D010 0012	D011 0013	D012 0014	D013 0015	D014 0016	D015 0017
D016 0020	D017 0021	D018 0022	D019 0023	D020 0024	D021 0025	D022 0026	D023 0027	D024 0030	D025 0031	D026 0032	D027 0033	D028 0034	D029 0035	D030 0036	D031 0037
D032 0040	D033 0041	D034 0042	D035 0043	D036 0044	D037 0045	D038 0046	D039 0047	D040 0050	D041 0051	D042 0052	D043 0053	D044 0054	D045 0055	D046 0056	D047 0057
D048 0060	D049 0061	D050 0062	D051 0063	D052 0064	D053 0065	D054 0066	D055 0067	D056 0070	D057 0071	D058 0072	D059 0073	D060 0074	D061 0075	D062 0076	D063 0077
D064 0100	D065 0101	D066 0102	D067 0103	D068 0104	D069 0105	D070 0106	D071 0107	D072 0110	D073 0111	D074 0112	D075 0113	D076 0114	D077 0115	D078 0116	D079 0117
D080 0120	D081 0121	D082 0122	D083 0123	D084 0124	D085 0125	D086 0126	D087 0127	D088 0130	D089 0131	D090 0132	D091 0133	D092 0134	D093 0135	D094 0136	D095 0137
D096 0140	D097 0141	D098 0142	D099 0143	D100 0144	D101 0145	D102 0146	D103 0147	D104 0150	D105 0151	D106 0152	D107 0153	D108 0154	D109 0155	D110 0156	D111 0157
D112 0160	D113 0161	D114 0162	D115 0163	D116 0164	D117 0165	D118 0166	D119 0167	D120 0170	D121 0171	D122 0172	D123 0173	D124 0174	D125 0175	D126 0176	D127 0177

