8532-2 KEYBOARD SPECIFICATIONS AND USE

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ABSTRACT

This document describes the features of the Model 8532-2 Keyboard for Model 8510/a Graphics Computer Systems. Key location and codes are presented along with the interface specification. Programming considerations, other than keystroke codes, are not covered

1.0 GENERAL FEATURES

The TERAK Model 8532-2 Keyboard is standard equipment as the principal interactive input device for the TERAK Model 8510/a Graphics Computer System. The major features of the keyboard are its low profile, solid state switches, sculptured keytops, free-standing connection, and Word Processing oriented key layout.

Keystroke encoding is performed by N-channel LSI MOS electronics. The key switches are solid state (proximity capacitance) type providing 100 million keystroke reliability. Key tops are two-shot molded to provide smooth touch surfaces. Keystroke tactile feedback is provided by a two spring mechanism generating a comfortable increasina resistance to each keystroke. The keyboard enclosure is steel, finished with a highly durable polyurethane enamel.

Operating power is supplied from the host system as 5 Volts D.C. The keyboard interface is a TTL level strobed parallel design.

This document describes all features of the 8532-2 Keyboard exclusive of the Central Data Bus interface registers. The Keyboard interface supported by the 8510/a Video Display System is presented in publication 52-0002-001 (Video Display and 24K Memory System). Detail will be found there for system level programming support including the Central Data Bus interface registers.

Figure 1
TERAK Model 8532-2 Keyboard

2.0 SPECIFICATIONS

2.1 ELECTRICAL DATA

Input power	5 Volts D.C. at 500 ma
Rollover	N key
Data Output	8 bit parallel, positive logic
Strobe Output	10 microseconds, negative logic
Auto Repeat Delay	650 milliseconds + - 25%
Auto Repeat Rate	28.2 Hertz + - 255O
Interface signal levels	Standard power TTL

2.2 MECHANICAL DATA

Typical Key total travel	0.171 in. (4.34 mm)
Typical Key actuating force	2.5 oz. (78 grams)
Reliability	greater than 100 million MCBF
Typical keyboard cable length	72 inches (230 cm)
Dimensions . . (WxDxH)	17.8 in x 7.1 in. x 2.5 in. (45.2 cm x 18.0 cm x 6.4 cm) (excluding vinyl feet)
Nominal keytop slope	11 degrees

3.0 LAYOUT

Figure 2 shows the key layout and identifies each key by a sequential number (1 thru 71). The keytops are sculptured to allow high typing speed. The cursor arrow keys are raised to separate the typewriter oriented keys on the left from the control and numeric pad cluster on the right. The arrow preceeding the legend on certain keytops (e.g. NULL) indicates the legend is

transmitted only if the Control Key is simultaneously depressed. Otherwise, the Shifted and Unshifted characters are indicated by the upper and lower legends, respectively.

4.0 CODES

Figure 3 shows the 8 bit codes transmitted by each keystroke. Most keys transmit a different code for each of four states: Unshifted. Shifted, Control, and Control Shifted. The Numeric key pad on the right of the keyboard layout is active only in the shifted mode. Unshifted, it is a cluster of lesser used characters and control keys useful for word processing systems. The cursor arrows, Return, Backspace, Tab, Escape, Line feed, DC3, and Space transmit the same code in all four shift/control states. In all cases, a full 8 bit character code is transmitted. In the Control-Shift state, the Numeric key pad transmits upper codes (above octal 177), with bits 0 thru 6 containing the codes for the digits, and bit 7 set on.

Figure 2
8532-2 Keyboard Layout

KEY	CHAR	UNSHIFT	SHIFT	CONTROL	CONTROL & SHIFT
1	ESC	033	033	033	033
2	TAB	011	011	011	011
3	1!	061	041	061	041
4	2@	062	100	062	034
5	3#	063	043	063	043
6	4$	064	044	064	044
7	5%	065	045	065	045
8	6^	066	136	066	136
9	7&	067	046	067	046
10	8 *	070	052	070	052
11	9(	071	050	071	050
12	0)	060	051	060	051
13	=	055	137	055	137
14	- +	075	053	075	053
15	BACK SPACE	010	010	010	010
16	△	032	032	032	032
17	{7	173	067	041	267
18	|8	175	070	041	270
19	◗NULL 9	041	071	000	271
20	LINE FEED	012	012	012	012
21	Q	161	121	021	021
22	W	167	127	027	027
23	E	145	105	005	005
24	R	162	122	022	022
25	T	164	124	024	024
26	Y	171	131	023	023
27	U	165	125	025	025
28	I	151	111	011	011
29	O	157	117	017	017
30	P	160	120	020	020
31	\ ¦	134	174	134	174
32	[{	133	135	036	035
33	RETURN	015	015	015	015
34	▽	014	014	014	014
35	~ 4	176	064	041	264
36	' 5	140	065	041	265

KEY	CHAR.	UNSHIFT	SHIFT	CONTROL	CONTROL & SHIFT
37	◗EOM 6	041	066	031	266
38	DC3	023	023	023	023
39	LOCK				
40	A	141	101	001	001
41	S	163	123	023	023
42	D	144	104	004	004
43	F	146	106	006	006
44	G	147	107	007	007
45	H	150	110	010	010
46	J	152	112	012	012
47	K	153	113	013	013
48	L	154	114	014	014
49	; :	073	072	073	072
50	' "	047	042	047	042
51	◁	027	027	027	027
52	DC1 1	021	061	041	261
53	DC2 2	022	062	041	262
54	US 3	037	063	037	263
55	CONTROL				
56	SHIFT				
57	Z	172	132	032	032
58	X	170	130	030	030
59	C	143	103	003	003
60	V	166	126	026	026
61	B	142	102	002	002
62	N	156	116	016	016
63	M	155	115	015	015
64	, <	054	074	054	074
65	. >	056	076	056	076
66	/ ?	057	077	057	077
67	SHIFT				
68	▷	013	013	013	013
69	—	—	—	—	—
70	ETX 0	003	060	041	260
71	DEL •	177	056	177	056
72	SPACE BAR	040	040	040	040

Figure 3
8532-2 Keyboard Code Chart
All Codes Are In Octal

5.0 OPERATIONAL ASPECTS

All keystrokes are sensed by solid state switches; there are no current carrying switches in the keyboard. While this is a more reliable technology, cleanliness should be observed at all times. Liquids and smoking materials should be kept away from the keyboard. Keytops should be occasionally cleaned with a soft damp cloth.

Operation of each key requires a simple quick stroking motion. All keys are encoded using an N-key rollover technique. In the event of overlapping keystrokes, key codes will be transmitted in the order they were typed. Al1 keys (including control code keys) which transmit codes have an automatic repeat feature. After a key has been held down for the Delay Time (see specifications), the code for that key will be retransmitted at the Repeat rate.

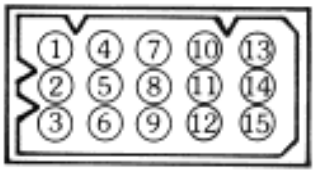
The shifted or unshifted condition of the keyboard is local to the keyboard; it cannot be detected from the data processor. The Shift keys and Control Key do not transmit codes. They are depressed while the desired key is typed. If the shift lock key is depressed, it will set the keyboard into a shifted condition, and light the LED indicator built into that key. A 'secretarial bail' feature is present; depressing either shift key will release the shift lock condition, and extinguish the LED indicator.

6.0 INTERFACE

Figure 4 contains the interface wire list and pin diagram for the 8532-2 Keyboard. All signal levels are nominal standard power TTL. The data lines are valid at the leading (negative going) edge of the strobe pulse. All pins in the keyboard cable plug connector are male except the keying pin, which is female.

Pin	Signal
6	Data Bit 0
5	Data Bit 1
9	Data Bit 2
8	Data Bit 3
12	Data Bit 4
11	Data Bit 5
15	Data Bit 6
14	Data Bit 7
13	Strobe (active low)
1	Vcc (5.0 VDC)
2	GND
3	GND
7	Keying pin (no connection)
4	Not Used (Not Installed)
10	Not Used (Not Installed)

All pins are male except pin 7 which is female.



Keyboard Connector
Viewed from end of cable plug

FIGURE 4