

Attachment

User's Manual

SCORPIUS 98N plus KEYBOARD SPECIFICATIONS

JUNE 29, 1998

QTRONIX®

9F.#75,Sec. 1 Hsin Tai Wu Rd.
Hsichih, Taipei Hsien, Taiwan, R.O.C
(Far East World Center-Bldg.A)

TEL:(886-2)2698-2566

FAX:(886-2)2698-3133

WARNING

Note : This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures :

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio / TV technician for help.

Notice:

- (1) A Unshielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord be used.*
- (2) Use only shielded cables to connect I/O devices to this equipment.*
- (3) Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.*

I SCOPE

The purpose of this specification is to define the generic operational, Environmental, electrical and mechanical characteristics of the "Scorpius 98N plus" (rubber mechanical keyswitch keyboard).

II GENERAL

Description

The Scorpius 98N plus keyboard has an enhanced slim design and can work with any IBM PC AT & PS/2 compatible computer. Utilizing the latest in rubber mechanical key switch technology, the Scorpius 98N plus offers durability and style that will enhance any system for years to come. 20 Extra rubber buttons let keyboard link more closely with PC touch one button to make some functions work immediately. 10 of 20 buttons can be programmed by end-users.

Features

- 104, 105 or 109 key standard layouts with 20 extra rubber buttons.
- Adjustable tilt mechanism.
- High quality rubber mechanical key switches.
- Permanently attached coiled cord.
- Tactile key stroke.
- N-key rollover.
- 10,000,000 life cycles per switch.

Appearance / Durability

This keyboard is to be used in home and office environments. Therefore, the quality of appearance and touch are of great importance. Because of the environmental severity of home and office place, longevity, durability and resistance to contamination are also of major concern. Good engineering design practices shall be followed throughout, both mechanically and electrically.

Package Contents

- SCORPIUS 93N plus Keyboard
- User's Manual

Definitions

The term "keyboard" when used in this document defines a PC board with 104 - 105 - 109 key switches and 20 rubber buttons which is fully assembled and housed in an enclosure with an interconnecting cable. The complete assembly shall be tested and ready for use when plugged into a host device.

III ENVIRONMENTAL SPECIFICATIONS

Temperature

Operating

The operating temperature range shall be from 0°C to 50°C (32°F to 122°F). There shall be An operational temperature test of a single cycle, ambient, cold, hot, ambient. With a minimum of a 15 minute dwell pauser for every 15°C increment of change. The rate of temperature change shall not exceed 20°C per hour. The keyboard will operate normally throughout the cycle requiring no operator intervention or corrective actions, except to cause normal movement.

Non-Operating

The non-operating temperature range shall be from -10°C to 60°C (14°F to 140°F). There Shall be a thermal shock test of five(5) cycles from -15°C to 55°C holding for 30 minutes at each extreme. The rate of temperature change shall not exceed 25°C per hour. Normal keyboard operation will be verified before and after the thermal shock test.

Humidity

Operating

The operating relative humidity range shall be from 10% to 85% non condensing ambient temperature.

Non-Operating

The non-operating relative humidity range shall be from 10% to 95% non-Condensing. The keyboard shall withstand an environment varying between 25°C and 55°C, 95% relative humidity, non-condensing, for a period of 96 hours.

Vibration Test (*Packaged for shipment*)

Operating

With the system installed on a shock platform and operating the test software, a vibration with a displacement of 0.02" shall be exerted over the frequency range of 5 Hz to 22 Hz and an acceleration of 0.5 g over the frequency range of 22 Hz to 500 Hz on each of the three orthogonal axes. This shall be sustained for approximately 13 minutes per axis only.

Non-operating

With the system installed on a vibration platform and switched OFF, a vibration with a displacement of 0.1" shall be exerted over the frequency range of 5 Hz to 22 Hz and an acceleration of 0.75 g over the frequency range of 22 Hz on each of the three orthogonal axes. This test shall be sustained for approximately 13 minutes per axis.

Shock Test

Operating

With the system installed on a shock platform and operating the test software, a shock pulse of 5 G half sine for a duration of 15 ms shall be exerted on each of the 3 orthogonal axes. The test shall be repeated 3 times for the vertical axes only.

Non-operating

With the system installed on a shock platform and switched OFF, a pulse of 10 G half sine for a duration of 15 ms shall be exerted on each of the 3 orthogonal axes. The test shall be repeated 5 time.

Drop Test

- Drop height: 91.5cm
- Sequence : 1 corner, 3 edges, 6 faces

Related Documents

The keyboard shall meet the requirements of FCC Part 15, Sub-part J, for Class B computing devices.

ESD

- Test Condition : 3.5kV no data loss, 5kV no component damage
- Test Procedure : IEC 801-2

Contaminants

Dust

The keyboard has been designed to be unaffected by the normal accumulation of airborne dust as found in the home or office place. This includes non-metallic dust and grime as might be carried into the work place or home from outside sources.

Gases

The keyboard shall not be corroded or defaced or otherwise damaged by atmospheres acceptable to OSHA standards for the home and work place. This includes normal amounts of oxygen and ozone.

IV MECHANICAL SPECIFICATIONS

Materials

General

- keyboard Bases, Cover and Keytop :
Injection molded ABS Thermoplastic rated UL-94HB or better.
- PC Board : Paper Phenolic, Rated UL-94V0.

Interconnect Cable

- Jacket : Low durometer PVC, 5mm to 10³mm nominal diameter.
- Shield : Serve shield with 90% $\pm$ 5% coverage Fevrite coil.
- Conductor Insulation : PVC, Polypropylene or Teflon.

Standard Connector(5 Pin DIN or 6 Pin DIN)

- Connector Shell : Shielded, plastic plated, with metallic contact
stipples.
- Insulator: Thermoplastic
- Contacts : Tin flash plated with a minimum of .15 micro-inches in
contact area.
- Flex and Strain Relief: PVC.
- Backshell :Molded PVC.

Key Switch

- Type: Tactile feeling rubber membrane.
- Membrane Key Travel: 3.5 mm $\pm$ 0.2mm
- Contact Bounce : Switch shall have electronically debounced contact
time of 5 ms (max)
- Operation Force : 55g $\pm$ 10 g
- Mechanical Life : 10million cycles

Weight

The weight shall be 1.05kg (3.3lbs)

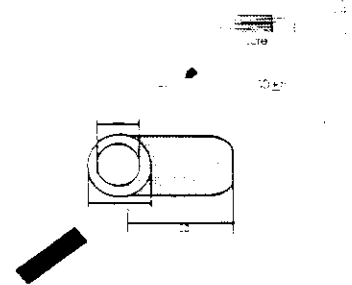
Standard Colors

White (Color No : 3361)

Dimentions

The maximum dimensions of the keyboard enclosure will not exceed 74mm in length , 190mm in width and 27mm in height.

Cable Specification



V ELECTRICAL SPECIFICATIONS

Components

All component will be of the highest commercial grade and shall be mounted according to IPC and recommended vendor practices. Standard values are to be adhered to at all times. Single sources, unusual values or designs outside specified component ratings shall be avoided.

PC Boards

PC Board shall be made of UL Underwriters Laboratories rated material, 94V-0 or better as per UL 473.

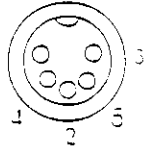
Design Practice.

All components shall perform well within their design ratings. Good IC design with respect to unused inputs and number of outputs shall be observed. Trace width and spacing shall be conservative wherever possible and shall meet IPC minimums at all times. Bypass capacitors shall be used liberally and some on-board filtering is expected when possible. Power consumption shall be minimized.

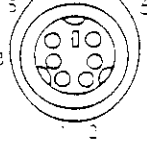
Connector Pin Assignments

The standard connector pin out for XT/AT and PS/2 is as follows :

XT OR AT

DESCRIPTION	SIGNAL	PINS	CONNECTOR
Keyboard Clock	+5Vdc Signal	1	
Keyboard Data	+5Vdc Signal	2	
NC	NC	3	
Ground	0	4	
Power Supply	+5Vdc	5	

PS-2

DESCRIPTION	SIGNAL	PINS	CONNECTOR
Keyboard Clock	+5Vdc Signal	1	
Keyboard Data	+5Vdc Signal	2	
NC	NC	3	
Ground	0	4	
Power Supply	+5Vdc	5	

Power Requirements

- Current Consumption : 40mA
- Operation Voltage : 5Vdc $\pm$ 5%

Rubber / Membrane

- Rubber Dome Contact Resistor : 100 Ω max
- Membrane Contact Resistor : 100 Ω
- Membrane Open Resistor : 10M Ω

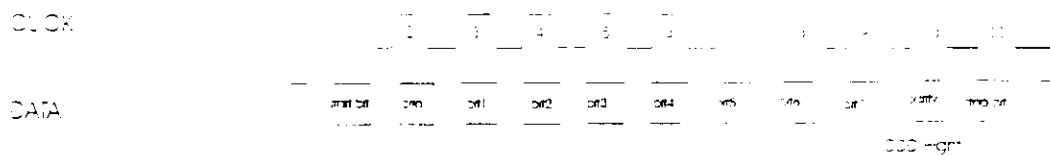
Interface

- Fully IBM PC AT PS-2 compatible
- Serial data transfer
- Timing details:

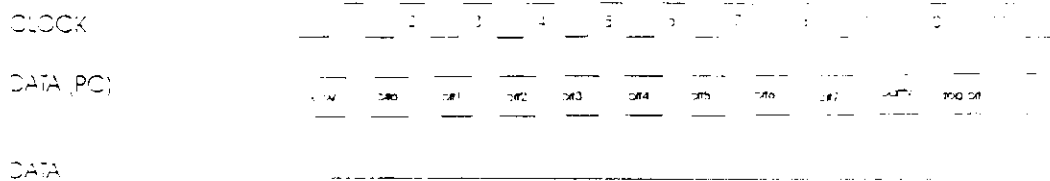
Transmission mode	Clock	Data
Transmission Inhibit	Low	High
System to send	High	Low
Keyboard to send	High	High



Data Transmit (Keyboard >>>PC)



Data Transmit (PC >>>Keyboard)



VI CODE SET TABLE

The following table shows three scan code sets used in the keyboard.

Key Number	Scan Code Set 1		Scan Code Set 2	
	Make Code	Break Code	Make Code	Break Code
1	29	A9	1E	F0 1E
2	20	32	16	F0 16
3	23	33	1E	F0 1E
4	24	34	2E	F0 2E
5	2E	3E	2E	F0 2E
6	26	36	2E	F0 2E
7	27	37	2D	F0 2D
8	28	38	3D	F0 3D
9	29	39	2E	F0 2E
10	2A	3A	4E	F0 4E
11	2B	3B	4E	F0 4E
12	2C	3C	4E	F0 4E
13	2D	3D	5E	F0 5E
14	2E	3E	5E	F0 5E
15	2F	3F	5D	F0 5D
16	30	40	5E	F0 5E
17	31	41	5D	F0 5D
18	32	42	5D	F0 5D
19	33	43	5D	F0 5D
20	34	44	5D	F0 5D
21	35	45	5D	F0 5D
22	36	46	5D	F0 5D
23	37	47	5D	F0 5D
24	38	48	5D	F0 5D
25	39	49	5D	F0 5D
26	3A	4A	5D	F0 5D
27	3B	4B	5D	F0 5D
28	3C	4C	5D	F0 5D
29	3D	4D	5D	F0 5D
30	3E	4E	5D	F0 5D
31	3F	4F	5D	F0 5D
32	40	50	5D	F0 5D
33	41	51	5D	F0 5D
34	42	52	5D	F0 5D
35	43	53	5D	F0 5D
36	44	54	5D	F0 5D
37	45	55	5D	F0 5D
38	46	56	5D	F0 5D
39	47	57	5D	F0 5D
40	48	58	5D	F0 5D
41	49	59	5D	F0 5D
42	4A	5A	5D	F0 5D
43	4B	5B	5D	F0 5D
44	4C	5C	5D	F0 5D
45	4D	5D	5D	F0 5D
46	4E	5E	5D	F0 5D

Key Number	Scan Code Set 1		Scan Code Set 2	
	Make Code	Break Code	Make Code	Break Code
47	5D	6D	5D	F0 5D
48	5E	6E	5D	F0 5D
49	5F	6F	5D	F0 5D
50	6D	7D	5D	F0 5D
51	6E	7E	5D	F0 5D
52	6F	7F	5D	F0 5D
53	7D	8D	5D	F0 5D
54	7E	8E	5D	F0 5D
55	7F	8F	5D	F0 5D
56	8D	9D	5D	F0 5D
57	8E	9E	5D	F0 5D
58	8F	9F	5D	F0 5D
59	9D	AD	5D	F0 5D
60	9E	AE	5D	F0 5D
61	9F	AF	5D	F0 5D
62	AD	BD	5D	F0 5D
63	AE	BE	5D	F0 5D
64	AF	BF	5D	F0 5D
65	BD	CD	5D	F0 5D
66	BE	CE	5D	F0 5D
67	BF	CF	5D	F0 5D
68	CD	DD	5D	F0 5D
69	CE	DE	5D	F0 5D
70	CF	DF	5D	F0 5D
71	DD	ED	5D	F0 5D
72	DE	EE	5D	F0 5D
73	DF	EF	5D	F0 5D
74	ED	FD	5D	F0 5D
75	EE	FE	5D	F0 5D
76	EF	FF	5D	F0 5D
77	FD	0D	5D	F0 5D
78	FE	0E	5D	F0 5D
79	FF	0F	5D	F0 5D
80	0D	1D	5D	F0 5D
81	0E	1E	5D	F0 5D
82	0F	1F	5D	F0 5D
83	1D	2D	5D	F0 5D
84	1E	2E	5D	F0 5D
85	1F	2F	5D	F0 5D
86	2D	3D	5D	F0 5D
87	2E	3E	5D	F0 5D
88	2F	3F	5D	F0 5D
89	3D	4D	5D	F0 5D
90	3E	4E	5D	F0 5D
91	3F	4F	5D	F0 5D
92	4D	5D	5D	F0 5D
93	4E	5E	5D	F0 5D
94	4F	5F	5D	F0 5D
95	5D	6D	5D	F0 5D
96	5E	6E	5D	F0 5D
97	5F	6F	5D	F0 5D
98	6D	7D	5D	F0 5D
99	6E	7E	5D	F0 5D
100	6F	7F	5D	F0 5D
101	7D	8D	5D	F0 5D
102	7E	8E	5D	F0 5D
103	7F	8F	5D	F0 5D
104	8D	9D	5D	F0 5D
105	8E	9E	5D	F0 5D
106	8F	9F	5D	F0 5D
107	9D	AD	5D	F0 5D
108	9E	AE	5D	F0 5D
109	9F	AF	5D	F0 5D
110	AD	BD	5D	F0 5D
111	AE	BE	5D	F0 5D
112	AF	BF	5D	F0 5D
113	BD	CD	5D	F0 5D
114	BE	CE	5D	F0 5D
115	BF	CF	5D	F0 5D
116	CD	DD	5D	F0 5D
117	CE	DE	5D	F0 5D
118	CF	DF	5D	F0 5D
119	DD	ED	5D	F0 5D
120	DE	EE	5D	F0 5D
121	DF	EF	5D	F0 5D
122	ED	FD	5D	F0 5D
123	EE	FE	5D	F0 5D
124	EF	FF	5D	F0 5D
125	FD	0D	5D	F0 5D

Key Number	Scan Code Set 1			
	Base Case Shift/Num Lock Make Break	Shift Case 1 Make Break	Num Lock On Make Break	Num Lock Off Make Break
15	E0 52 E0 02	E0 5A E0 52 E0 02 E0 2A	E0 2A E0 52 E0 02 E0 5A	
16	E0 53 E0 03	E0 5A E0 53 E0 03 E0 2A	E0 2A E0 53 E0 03 E0 5A	
17	E0 4B E0 0B	E0 5A E0 4B E0 0B E0 2A	E0 2A E0 4B E0 0B E0 5A	
18	E0 47 E0 07	E0 5A E0 47 E0 07 E0 2A	E0 2A E0 47 E0 07 E0 5A	
19	E0 4F E0 0F	E0 5A E0 4F E0 0F E0 2A	E0 5A E0 4F E0 0F E0 5A	
20	E0 48 E0 08	E0 5A E0 48 E0 08 E0 2A	E0 2A E0 48 E0 08 E0 5A	
21	E0 50 E0 00	E0 5A E0 50 E0 00 E0 2A	E0 2A E0 50 E0 00 E0 5A	
22	E0 51 E0 01	E0 5A E0 51 E0 01 E0 2A	E0 2A E0 51 E0 01 E0 5A	
23	E0 52 E0 02	E0 5A E0 52 E0 02 E0 2A	E0 2A E0 52 E0 02 E0 5A	
24	E0 53 E0 03	E0 5A E0 53 E0 03 E0 2A	E0 2A E0 53 E0 03 E0 5A	
25	E0 49 E0 09	E0 5A E0 49 E0 09 E0 2A	E0 2A E0 49 E0 09 E0 5A	
26	E0 51 E0 01	E0 5A E0 51 E0 01 E0 2A	E0 2A E0 51 E0 01 E0 5A	
27	E0 4D E0 0D	E0 5A E0 4D E0 0D E0 2A	E0 2A E0 4D E0 0D E0 5A	
28	E0 4E E0 0E	E0 5A E0 4E E0 0E E0 2A	E0 2A E0 4E E0 0E E0 5A	
29	E0 4D E0 0D	E0 5A E0 4D E0 0D E0 2A	E0 2A E0 4D E0 0D E0 5A	

Scan Code Set 1			
Key Number	Base Case Shift Num Lock Make / Break	Shift Case 1 Make / Break	Num Lock On Make / Break
15	E0 70 E0 F0 70	E0 F0 70 E0 70	E0 70 E0 70 E0 70
16	E0 71 E0 F0 71	E0 F0 71 E0 71	E0 71 E0 71 E0 71
17	E0 5B E0 F0 5B	E0 F0 5B E0 5B	E0 5B E0 5B E0 5B
18	E0 5C E0 F0 5C	E0 F0 5C E0 5C	E0 5C E0 5C E0 5C
19	E0 5D E0 F0 5D	E0 F0 5D E0 5D	E0 5D E0 5D E0 5D
20	E0 5E E0 F0 5E	E0 F0 5E E0 5E	E0 5E E0 5E E0 5E
21	E0 5F E0 F0 5F	E0 F0 5F E0 5F	E0 5F E0 5F E0 5F
22	E0 60 E0 F0 60	E0 F0 60 E0 60	E0 60 E0 60 E0 60
23	E0 61 E0 F0 61	E0 F0 61 E0 61	E0 61 E0 61 E0 61
24	E0 62 E0 F0 62	E0 F0 62 E0 62	E0 62 E0 62 E0 62
25	E0 63 E0 F0 63	E0 F0 63 E0 63	E0 63 E0 63 E0 63
26	E0 64 E0 F0 64	E0 F0 64 E0 64	E0 64 E0 64 E0 64
27	E0 65 E0 F0 65	E0 F0 65 E0 65	E0 65 E0 65 E0 65
28	E0 66 E0 F0 66	E0 F0 66 E0 66	E0 66 E0 66 E0 66
29	E0 67 E0 F0 67	E0 F0 67 E0 67	E0 67 E0 67 E0 67
30	E0 68 E0 F0 68	E0 F0 68 E0 68	E0 68 E0 68 E0 68
31	E0 69 E0 F0 69	E0 F0 69 E0 69	E0 69 E0 69 E0 69
32	E0 6A E0 F0 6A	E0 F0 6A E0 6A	E0 6A E0 6A E0 6A
33	E0 6B E0 F0 6B	E0 F0 6B E0 6B	E0 6B E0 6B E0 6B
34	E0 6C E0 F0 6C	E0 F0 6C E0 6C	E0 6C E0 6C E0 6C
35	E0 6D E0 F0 6D	E0 F0 6D E0 6D	E0 6D E0 6D E0 6D
36	E0 6E E0 F0 6E	E0 F0 6E E0 6E	E0 6E E0 6E E0 6E
37	E0 6F E0 F0 6F	E0 F0 6F E0 6F	E0 6F E0 6F E0 6F
38	E0 70 E0 F0 70	E0 F0 70 E0 70	E0 70 E0 70 E0 70
39	E0 71 E0 F0 71	E0 F0 71 E0 71	E0 71 E0 71 E0 71
40	E0 72 E0 F0 72	E0 F0 72 E0 72	E0 72 E0 72 E0 72
41	E0 73 E0 F0 73	E0 F0 73 E0 73	E0 73 E0 73 E0 73
42	E0 74 E0 F0 74	E0 F0 74 E0 74	E0 74 E0 74 E0 74
43	E0 75 E0 F0 75	E0 F0 75 E0 75	E0 75 E0 75 E0 75
44	E0 76 E0 F0 76	E0 F0 76 E0 76	E0 76 E0 76 E0 76
45	E0 77 E0 F0 77	E0 F0 77 E0 77	E0 77 E0 77 E0 77
46	E0 78 E0 F0 78	E0 F0 78 E0 78	E0 78 E0 78 E0 78
47	E0 79 E0 F0 79	E0 F0 79 E0 79	E0 79 E0 79 E0 79
48	E0 7A E0 F0 7A	E0 F0 7A E0 7A	E0 7A E0 7A E0 7A
49	E0 7B E0 F0 7B	E0 F0 7B E0 7B	E0 7B E0 7B E0 7B
50	E0 7C E0 F0 7C	E0 F0 7C E0 7C	E0 7C E0 7C E0 7C
51	E0 7D E0 F0 7D	E0 F0 7D E0 7D	E0 7D E0 7D E0 7D
52	E0 7E E0 F0 7E	E0 F0 7E E0 7E	E0 7E E0 7E E0 7E
53	E0 7F E0 F0 7F	E0 F0 7F E0 7F	E0 7F E0 7F E0 7F
54	E0 80 E0 F0 80	E0 F0 80 E0 80	E0 80 E0 80 E0 80
55	E0 81 E0 F0 81	E0 F0 81 E0 81	E0 81 E0 81 E0 81
56	E0 82 E0 F0 82	E0 F0 82 E0 82	E0 82 E0 82 E0 82
57	E0 83 E0 F0 83	E0 F0 83 E0 83	E0 83 E0 83 E0 83
58	E0 84 E0 F0 84	E0 F0 84 E0 84	E0 84 E0 84 E0 84
59	E0 85 E0 F0 85	E0 F0 85 E0 85	E0 85 E0 85 E0 85
60	E0 86 E0 F0 86	E0 F0 86 E0 86	E0 86 E0 86 E0 86
61	E0 87 E0 F0 87	E0 F0 87 E0 87	E0 87 E0 87 E0 87
62	E0 88 E0 F0 88	E0 F0 88 E0 88	E0 88 E0 88 E0 88
63	E0 89 E0 F0 89	E0 F0 89 E0 89	E0 89 E0 89 E0 89
64	E0 8A E0 F0 8A	E0 F0 8A E0 8A	E0 8A E0 8A E0 8A
65	E0 8B E0 F0 8B	E0 F0 8B E0 8B	E0 8B E0 8B E0 8B
66	E0 8C E0 F0 8C	E0 F0 8C E0 8C	E0 8C E0 8C E0 8C
67	E0 8D E0 F0 8D	E0 F0 8D E0 8D	E0 8D E0 8D E0 8D
68	E0 8E E0 F0 8E	E0 F0 8E E0 8E	E0 8E E0 8E E0 8E
69	E0 8F E0 F0 8F	E0 F0 8F E0 8F	E0 8F E0 8F E0 8F
70	E0 90 E0 F0 90	E0 F0 90 E0 90	E0 90 E0 90 E0 90
71	E0 91 E0 F0 91	E0 F0 91 E0 91	E0 91 E0 91 E0 91
72	E0 92 E0 F0 92	E0 F0 92 E0 92	E0 92 E0 92 E0 92
73	E0 93 E0 F0 93	E0 F0 93 E0 93	E0 93 E0 93 E0 93
74	E0 94 E0 F0 94	E0 F0 94 E0 94	E0 94 E0 94 E0 94
75	E0 95 E0 F0 95	E0 F0 95 E0 95	E0 95 E0 95 E0 95
76	E0 96 E0 F0 96	E0 F0 96 E0 96	E0 96 E0 96 E0 96
77	E0 97 E0 F0 97	E0 F0 97 E0 97	E0 97 E0 97 E0 97
78	E0 98 E0 F0 98	E0 F0 98 E0 98	E0 98 E0 98 E0 98
79	E0 99 E0 F0 99	E0 F0 99 E0 99	E0 99 E0 99 E0 99
80	E0 9A E0 F0 9A	E0 F0 9A E0 9A	E0 9A E0 9A E0 9A
81	E0 9B E0 F0 9B	E0 F0 9B E0 9B	E0 9B E0 9B E0 9B
82	E0 9C E0 F0 9C	E0 F0 9C E0 9C	E0 9C E0 9C E0 9C
83	E0 9D E0 F0 9D	E0 F0 9D E0 9D	E0 9D E0 9D E0 9D
84	E0 9E E0 F0 9E	E0 F0 9E E0 9E	E0 9E E0 9E E0 9E
85	E0 9F E0 F0 9F	E0 F0 9F E0 9F	E0 9F E0 9F E0 9F
86	E0 A0 E0 F0 A0	E0 F0 A0 E0 A0	E0 A0 E0 A0 E0 A0
87	E0 A1 E0 F0 A1	E0 F0 A1 E0 A1	E0 A1 E0 A1 E0 A1
88	E0 A2 E0 F0 A2	E0 F0 A2 E0 A2	E0 A2 E0 A2 E0 A2
89	E0 A3 E0 F0 A3	E0 F0 A3 E0 A3	E0 A3 E0 A3 E0 A3
90	E0 A4 E0 F0 A4	E0 F0 A4 E0 A4	E0 A4 E0 A4 E0 A4
91	E0 A5 E0 F0 A5	E0 F0 A5 E0 A5	E0 A5 E0 A5 E0 A5
92	E0 A6 E0 F0 A6	E0 F0 A6 E0 A6	E0 A6 E0 A6 E0 A6
93	E0 A7 E0 F0 A7	E0 F0 A7 E0 A7	E0 A7 E0 A7 E0 A7
94	E0 A8 E0 F0 A8	E0 F0 A8 E0 A8	E0 A8 E0 A8 E0 A8
95	E0 A9 E0 F0 A9	E0 F0 A9 E0 A9	E0 A9 E0 A9 E0 A9
96	E0 AA E0 F0 AA	E0 F0 AA E0 AA	E0 AA E0 AA E0 AA
97	E0 AB E0 F0 AB	E0 F0 AB E0 AB	E0 AB E0 AB E0 AB
98	E0 AC E0 F0 AC	E0 F0 AC E0 AC	E0 AC E0 AC E0 AC
99	E0 AD E0 F0 AD	E0 F0 AD E0 AD	E0 AD E0 AD E0 AD
100	E0 AE E0 F0 AE	E0 F0 AE E0 AE	E0 AE E0 AE E0 AE
101	E0 AF E0 F0 AF	E0 F0 AF E0 AF	E0 AF E0 AF E0 AF
102	E0 B0 E0 F0 B0	E0 F0 B0 E0 B0	E0 B0 E0 B0 E0 B0
103	E0 B1 E0 F0 B1	E0 F0 B1 E0 B1	E0 B1 E0 B1 E0 B1
104	E0 B2 E0 F0 B2	E0 F0 B2 E0 B2	E0 B2 E0 B2 E0 B2
105	E0 B3 E0 F0 B3	E0 F0 B3 E0 B3	E0 B3 E0 B3 E0 B3
106	E0 B4 E0 F0 B4	E0 F0 B4 E0 B4	E0 B4 E0 B4 E0 B4
107	E0 B5 E0 F0 B5	E0 F0 B5 E0 B5	E0 B5 E0 B5 E0 B5
108	E0 B6 E0 F0 B6	E0 F0 B6 E0 B6	E0 B6 E0 B6 E0 B6
109	E0 B7 E0 F0 B7	E0 F0 B7 E0 B7	E0 B7 E0 B7 E0 B7
110	E0 B8 E0 F0 B8	E0 F0 B8 E0 B8	E0 B8 E0 B8 E0 B8
111	E0 B9 E0 F0 B9	E0 F0 B9 E0 B9	E0 B9 E0 B9 E0 B9
112	E0 BA E0 F0 BA	E0 F0 BA E0 BA	E0 BA E0 BA E0 BA
113	E0 BB E0 F0 BB	E0 F0 BB E0 BB	E0 BB E0 BB E0 BB
114	E0 BC E0 F0 BC	E0 F0 BC E0 BC	E0 BC E0 BC E0 BC
115	E0 BD E0 F0 BD	E0 F0 BD E0 BD	E0 BD E0 BD E0 BD
116	E0 BE E0 F0 BE	E0 F0 BE E0 BE	E0 BE E0 BE E0 BE
117	E0 BF E0 F0 BF	E0 F0 BF E0 BF	E0 BF E0 BF E0 BF
118	E0 C0 E0 F0 C0	E0 F0 C0 E0 C0	E0 C0 E0 C0 E0 C0
119	E0 C1 E0 F0 C1	E0 F0 C1 E0 C1	E0 C1 E0 C1 E0 C1
120	E0 C2 E0 F0 C2	E0 F0 C2 E0 C2	E0 C2 E0 C2 E0 C2
121	E0 C3 E0 F0 C3	E0 F0 C3 E0 C3	E0 C3 E0 C3 E0 C3
122	E0 C4 E0 F0 C4	E0 F0 C4 E0 C4	E0 C4 E0 C4 E0 C4
123	E0 C5 E0 F0 C5	E0 F0 C5 E0 C5	E0 C5 E0 C5 E0 C5
124	E0 C6 E0 F0 C6	E0 F0 C6 E0 C6	E0 C6 E0 C6 E0 C6
125	E0 C7 E0 F0 C7	E0 F0 C7 E0 C7	E0 C7 E0 C7 E0 C7
126	E0 C8 E0 F0 C8	E0 F0 C8 E0 C8	E0 C8 E0 C8 E0 C8
127	E0 C9 E0 F0 C9	E0 F0 C9 E0 C9	E0 C9 E0 C9 E0 C9
128	E0 CA E0 F0 CA	E0 F0 CA E0 CA	E0 CA E0 CA E0 CA
129	E0 CB E0 F0 CB	E0 F0 CB E0 CB	E0 CB E0 CB E0 CB
130	E0 CC E0 F0 CC	E0 F0 CC E0 CC	E0 CC E0 CC E0 CC
131	E0 CD E0 F0 CD	E0 F0 CD E0 CD	E0 CD E0 CD E0 CD
132	E0 CE E0 F0 CE	E0 F0 CE E0 CE	E0 CE E0 CE E0 CE
133	E0 CF E0 F0 CF	E0 F0 CF E0 CF	E0 CF E0 CF E0 CF
134	E0 D0 E0 F0 D0	E0 F0 D0 E0 D0	E0 D0 E0 D0 E0 D0
135	E0 D1 E0 F0 D1	E0 F0 D1 E0 D1	E0 D1 E0 D1 E0 D1
136	E0 D2 E0 F0 D2	E0 F0 D2 E0 D2	E0 D2 E0 D2 E0 D2
137	E0 D3 E0 F0 D3	E0 F0 D3 E0 D3	E0 D3 E0 D3 E0 D3
138	E0 D4 E0 F0 D4	E0 F0 D4 E0 D4	E0 D4 E0 D4 E0 D4
139	E0 D5 E0 F0 D5	E0 F0 D5 E0 D5	E0 D5 E0 D5 E0 D5
140	E0 D6 E0 F0 D6	E0 F0 D6 E0 D6	E0 D6 E0 D6 E0 D6
141	E0 D7 E0 F0 D7	E0 F0 D7 E0 D7	E0 D7 E0 D7 E0 D7
142	E0 D8 E0 F0 D8	E0 F0 D8 E0 D8	E0 D8 E0 D8 E0 D8
143	E0 D9 E0 F0 D9	E0 F0 D9 E0 D9	E0 D9 E0 D9 E0 D9
144	E0 DA E0 F0 DA	E0 F0 DA E0 DA	E0 DA E0 DA E0 DA
145	E0 DB E0 F0 DB	E0 F0 DB E0 DB	E0 DB E0 DB E0 DB
146	E0 DC E0 F0 DC	E0 F0 DC E0 DC	E0 DC E0 DC E0 DC
147	E0 DD E0 F0 DD	E0 F0 DD E0 DD	E0 DD E0 DD E0 DD
148	E0 DE E0 F0 DE	E0 F0 DE E0 DE	E0 DE E0 DE E0 DE
149	E0 DF E0 F0 DF	E0 F0 DF E0 DF	E0 DF E0 DF E0 DF
150	E0 E0 E0 F0 E0	E0 F0 E0 E0 E0	E0 E0 E0 E0 E0 E0
151	E0 E1 E0 F0 E1	E0 F0 E1 E0 E1	E0 E1 E0 E1 E0 E1
152	E0 E2 E0 F0 E2	E0 F0 E2 E0 E2	E0 E2 E0 E2 E0 E2
153	E0 E3 E0 F0 E3	E0 F0 E3 E0 E3	E0 E3 E0 E3 E0 E3
154	E0 E4 E0 F0 E4	E0 F0 E4 E0 E4	E0 E4 E0 E4 E0 E4
155	E0 E5 E0 F0 E5	E0 F0 E5 E0 E5	E0 E5 E0 E5 E0 E5
156	E0 E6 E0 F0 E6	E0 F0 E6 E0 E6	E0 E6 E0 E6 E0 E6
157	E0 E7 E0 F0 E7	E0 F0 E7 E0 E7	E0 E7 E0 E7 E0 E7
158	E0 E8 E0 F0 E8	E0 F0 E8 E0 E8	E0 E8 E0 E8 E0 E8
159	E0 E9 E0 F0 E9	E0 F0 E9 E0 E9	E0 E9 E0 E9 E0 E9
160	E0 EA E0 F0 EA	E0 F0 EA E0 EA	E0 EA E0 EA E0 EA
161	E0 EB E0 F0 EB	E0 F0 EB E0 EB	E0 EB E0 EB E0 EB
162	E0 EC E0 F0 EC	E0 F0 EC E0 EC	E0 EC E0 EC E0 EC
163	E0 ED E0 F0 ED	E0 F0 ED E0 ED	E0 ED E0 ED E0 ED
164	E0 EE E0 F0 EE	E0 F0 EE E0 EE	E0 EE E0 EE E0 EE
165	E0 EF E0 F0 EF	E0 F0 EF E0 EF	E0 EF E0 EF E0 EF
166	E0 F0 E0 F0 F0	E0 F0 F0 E0 F0	E0 F0 E0 F0 F0 F0
167	E0 F1 E0 F0 F1	E0 F0 F1 E0 F1	E0 F1 E0 F1 E0 F1
168	E0 F2 E0 F0 F2	E0 F0 F2 E0 F2	E0 F2 E0 F2 E0 F2
169	E0 F3 E0 F0 F3	E0 F0 F3 E0 F3	E0 F3 E0 F3 E0 F3
170	E0 F4 E0 F0 F4	E0 F0 F4 E0 F4	E0 F4 E0 F4 E0 F4
171	E0 F5 E0 F0 F5	E0 F0 F5 E0 F5	E0 F5 E0 F5 E0 F5
172	E0 F6 E0 F0 F6	E0 F0 F6 E0 F6	E0 F6 E0 F6 E0 F6
173	E0 F7 E0 F0 F7	E0 F0 F7 E0 F7	E0 F7 E0 F7 E0 F7
174	E0 F8 E0 F0 F8	E0 F0 F8 E0 F8	E0 F8 E0 F8 E0 F8
175	E0 F9 E0 F0 F9	E0 F0 F9 E0 F9	E0 F9 E0 F9 E0 F9
176	E0 FA E0 F0 FA	E0 F0 FA E0 FA	E0 FA E0 FA E0 FA
177	E0 FB E0 F0 FB	E0 F0 FB E0 FB	E0 FB E0 FB E0 FB
178	E0 FC E0 F0 FC	E0 F0 FC E0 FC	E0 FC E0 FC E0 FC
179	E0 FD E0 F0 FD	E0 F0 FD E0 FD	E0 FD E0 FD E0 FD
180	E0 FE E0 F0 FE	E0 F0 FE E0 FE	E0 FE E0 FE E0 FE
181	E0 FF E0 F0 FF	E0 F0 FF E0 FF	E0 FF E0 FF E0 FF

* If the left shift key is held down, the F0 12 / 12 shift make and break is sent with the other scan codes. If the right shift key is held down, F0 59 is sent. If both shift keys are down, both sets of codes are sent with the other scan code.

Scan Code Set 2			
Key No	Make / Break Code	Shift Case Make / Break	Alt Case Make / Break
75	E0 4A / E0 F0 4A	E0 F0 12 4A / E0 12 F0 4A	

* If the left Shift key is held down, the AA / 2A shift make and break is sent with the other scan codes. If the right Shift key is held down, B6 / 36 is sent. If both Shift keys are down, both sets of codes are sent with the other scan code.

Scan Code Set 2			
Key No	Make / Break Code	Ctrl Shift Case Make / Break	Alt Case Make / Break
124	E0 12 E0 7C / E0 F0 7C E0 F0 12	E0 7C / E0 F0 7C	34 / F0 84

Scan Code Set 2		
Key No	Make Code	Ctrl Key Pressed
125	E0 14 / E0 F0 14 / E0 77	E0 7E E0 F0 7E

Scan Code 3			
Key No	Make Code	Break Code	Default Status
1	F0 1E	F0 1E	T
2	F0 1F	F0 1F	T
3	F0 1E	F0 1E	T
4	F0 2E	F0 2E	T
5	F0 2F	F0 2F	T
6	F0 2E	F0 2E	T
7	F0 3E	F0 3E	T
8	F0 3F	F0 3F	T
9	F0 3E	F0 3E	T
10	F0 4E	F0 4E	T
11	F0 4F	F0 4F	T
12	F0 4E	F0 4E	T
13	F0 5E	F0 5E	T
14	F0 5F	F0 5F	T
15	F0 5E	F0 5E	T
16	F0 6E	F0 6E	T
17	F0 6F	F0 6F	T
18	F0 6E	F0 6E	T
19	F0 7E	F0 7E	T
20	F0 7F	F0 7F	T
21	F0 7E	F0 7E	T
22	F0 8E	F0 8E	T
23	F0 8F	F0 8F	T
24	F0 8E	F0 8E	T
25	F0 9E	F0 9E	T
26	F0 9F	F0 9F	T
27	F0 9E	F0 9E	T
28	F0 AE	F0 AE	T
29	F0 AF	F0 AF	T
30	F0 AE	F0 AE	T
31	F0 BE	F0 BE	T
32	F0 BF	F0 BF	T
33	F0 BE	F0 BE	T
34	F0 CE	F0 CE	T
35	F0 CF	F0 CF	T
36	F0 CE	F0 CE	T
37	F0 DE	F0 DE	T
38	F0 DF	F0 DF	T
39	F0 DE	F0 DE	T
40	F0 EE	F0 EE	T
41	F0 EF	F0 EF	T
42	F0 EE	F0 EE	T
43	F0 FE	F0 FE	T
44	F0 FF	F0 FF	T

0000

hot key function	Play/Pause	Stop/Eject	Rewind	Forward	Record	V+	V-	Mute	WWW	Previous Page
	F1 M1	F2 M2	F3 M5	F4 M8	F5 M6	F6 M7	F7 M3	F8 M4	F9 L1	F10 L4
SET1 make code	E0 22	F0 24	E0 21	F0 23	F0 30	E0 2E	F0 20	E0 26	E0 25	E0 1E
break code	F0 A2	E0 A4	E0 A1	E0 A3	E0 R0	E0 AE	E0 A0	E0 A6	E0 A5	E0 92

SET2 make code	E0 34	E0 3B	E0 2B	E0 33	E0 32	E0 21	E0 23	E0 4B	E0 42	E0 1C
break code	F0 F0 34	F0 F0 3B	E0 F0 2B	E0 F0 33	E0 F0 32	E0 F0 23	E0 F0 23	E0 F0 4B	E0 F0 42	E0 F0 1C

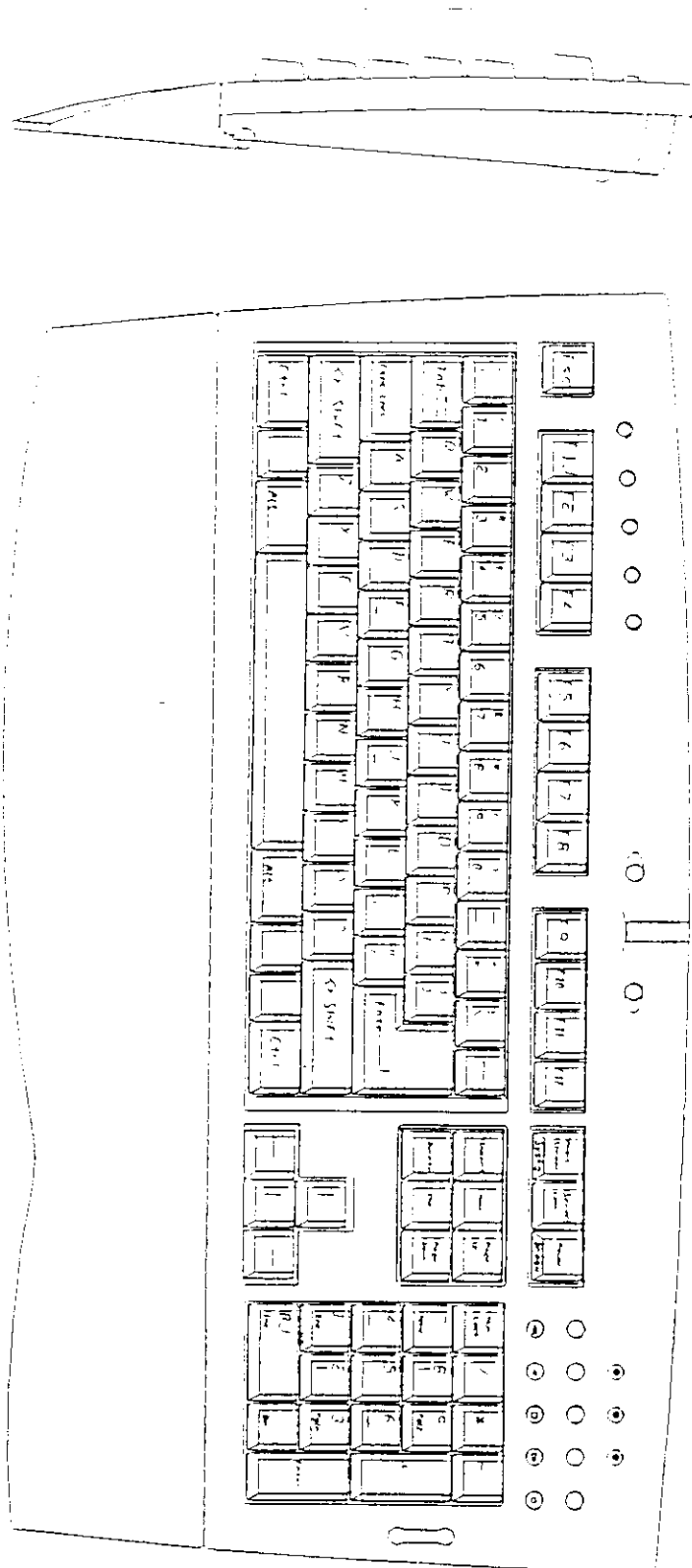
SET3 make code	93	94	99	9A	91	92	9B	9C	9D	95
break code	F0 93	F0 94	F0 99	F0 9A	F0 91	F0 92	F0 9B	F0 9C	F0 9D	F0 95
	M/R	M/R	M/R	M/R	M/R	M/R	M/R	M/R	M/R	M/R
	No Type	No Type	No Type	No Type	No Type	Typematic	Typematic	No Type	No Type	No Type

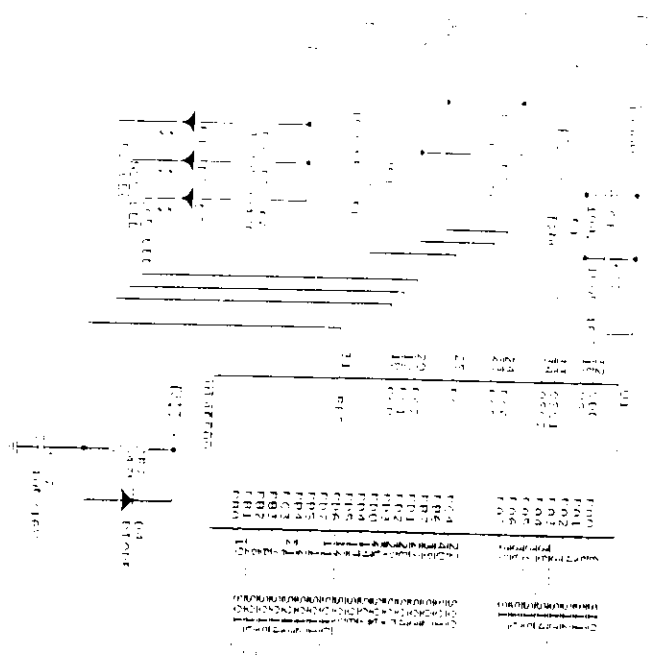
hot key function	Next Page	STOP	Search	Scroll up	Scroll Down	Coffee	Suspend	Calculator	Xler	Menu
	F11 L5	F12 L2	F13 L3	F14 P.1	F15 O.4	F16 O.5	F17 O.3	F18 S.1	F19 O.1	F20 O.2
SET1 make code	F0 12	E0 32	E0 17	E0 19	E0 10	E0 31	E0 1B	E0 6B	E0 1F	E0 13
break code	F0 92	F0 B2	E0 92	F0 99	E0 90	E0 B1	E0 9B	E0 E8	E0 9F	E0 93

SET2 make code	F0 24	F0 3A	E0 43	E0 4D	E0 15	E0 31	F0 44	E0 2B	E0 1B	F0 2D
break code	E0 F0 24	E0 F0 3A	E0 F0 43	F0 F0 4D	E0 F0 15	E0 F0 31	E0 F0 44	E0 F0 2B	E0 F0 1B	E0 F0 2D

SET3 make code	96	97	98	A0	A1	9E	9F	8E	A3	A2
break code	F0 96	F0 97	F0 98	F0 A0	F0 A1	F0 9E	F0 9E	F0 8E	F0 A3	F0 A2
	M/R	M/R	M/R	M/R	M/R	M/R	M/R	M/R	M/R	M/R
	No Type	No Type	No Type	Typematic	Typematic	No Type	No Type	No Type	No Type	No Type

VII LANGUAGE LAYOUT



[illegible][illegible][illegible]

IX RELIABILITY

MTBF

The keyboard assembly shall have a demonstrated MTBF of over five (5) years. When operated in a 30° C environment. Test results must meet 90% confidence level of the specified MTBF. Test report to be submitted with the first article unit shipment to Customer. MTBF report to include environmental, operating and non-operating, ESD, vibration, switch and key button life test plans and results.

Yield

During the first six (6) months of production yields as received by Buyer shall be 95% or greater.