Attachment

User's Manual

SCORPIUS 980N plus / 980 KEYBOARD

SPECIFICATIONS

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QTRONIX®

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WARNING

Note : This equipment has been tested and found to comply with the limits for a Class B 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 instructions, 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 in connected.
- Consult the dealer or an experienced radio / TV technician for technician for help.

Notice:

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 980N plus / 980" rubber mechanical keyswitch keyboard.

II GENERAL

Description

The Scorpius 980N plus /980 keyboard has an enhanced slim design and can work with any USB compatible computer.

Utilizing the latest in rubber mechanical key switch technology, the Scorpius 980N plus offers durability and style that will enhance any system for years to come. 20 Extra rubber buttons let keyboard link more closer with PC, touch one button to make some functions work immediately. 10of 20 buttons can be programmed by end-users.

Features

- 104 ,105 or 109 key standard layouts .
- Scorpius 980N plus with 20 extra rubber buttons high quality rubber mechanical key switches.
- Adjustable tilt mechanism.
- Permanently attached coiled cord.
- Tactile key stroke.
- N-key –roll- over.
- 10,000,000 lift 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 980N USB plus Keyboard (with wrist pad & program disk)
- SCORPIUS 980 USB Keyboard
- SCORPIUS 980 USB plus Keyboard (with wrist pad)
- 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 for Scorpius 980N USB 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.

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 azes. 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 shell 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 rates UL 94HB or better.
- PC Board : Paper Phenolic. Rated UL-94V0.tter.

Interconnect Cable

- Jacket : Low durometer PVC, 5mm to 10%mm nominal diameter.
- Shield : Serve shield with 90% ± 5% coverage Ferrite coil.
- Conductor Insulation : PVC, Polypropylene or Teflon.

Standard Connector(4 Pin USB-A plug)

- Connector Shell :Shielded, plastic plated , with metallic contact dimples
- 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±0.2mmt
- Contact Bounce : Switch shall have electronically debounced contact time of 5 ms (max)
- Operation Force : 55g + 10 g
- Mechanical Life : 10million cycles

Weight

The weight shall be 105kg (3.3lbs)

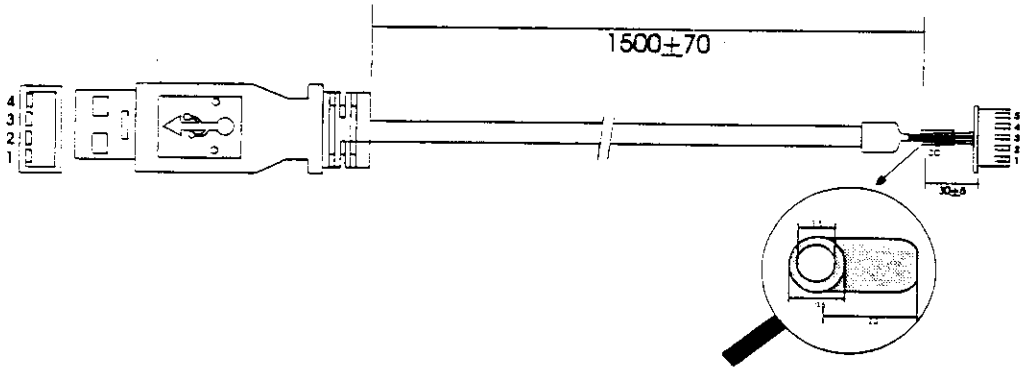
Standard Colors

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 478.

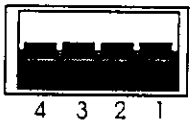
Design Practice.

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 USB-A plug is as follows :

USB

DESCRIPTION	*SIGNAL*	*PINS*	*CONNECTOR*
Power Supply	+5Vdc Signal	1	
Data -	D-	2	
Data +	D+	3	
Ground	0	4	

Power Requirements

- Current Consumption : 40mA
- Operation Voltage : 5Vdc ± 5%

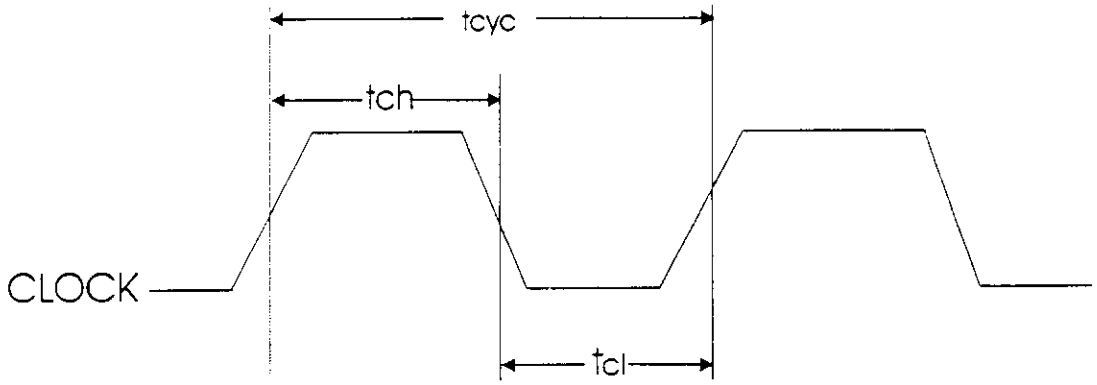
Rubber / Membrane

- Rubber Dome Contact Resister : 100Ω (max)
- Membrane Contact Resister : 100 Ω
- Membrane Open Resister 10M Ω

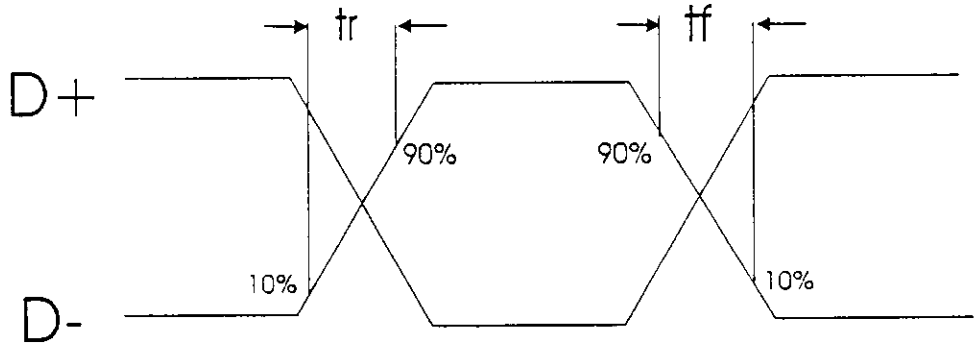
Interface

- Serial data transfer
- Timing detail:

Parameter	Description	Min	Max	Unit
tcyc	Input click cycle time	165.0	168.3	ns
tch	Clock high time	0.45tcyc	-	ns
tcl	Clock low time	0.45tcyc	-	ns
tr	Transition rise time	75	300	ns
tf	Transition fall time	75	300	ns



Clock Timing



USB Data signal Timing

VI CODE SET TABLE

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

Appendix C: USB Keyboard/Keypad Page (0x07)

This section is the Usage Page for key codes to be used in implementing a USB keyboard. A Boot Keyboard (84-, 101- or 104-key) should at a minimum support all associated usage codes as indicated in the "Boot" column below.

Note: Due to the variation of keyboards from language to language, it is not feasible to specify exact key mappings for every language. Where this list is not specific for a key function in a language, the closest equivalent key position should be used, so that a keyboard may be modified for a different language by simply printing different keycaps. One example is the Y key on a North American keyboard. In Germany, this is typically Z. Rather than changing the keyboard firmware to put the Z Usage into that place in the descriptor list, the vendor should use the Y Usage on both the North American and German keyboards. This continues to be the existing practice in the industry, in order to minimize the number of changes to the electronics to accommodate other languages.

Usage index (dec)	Usage Index (hex)	Usage	Ref:typical AT-101 position	PC-AT	Mac-intosh	UNIX	Boot
0	00	Reserved (no event indicated)[9]	N/A	√	√	√	84/101/104
1	01	Keyboard ErrorRollOver[9]	N/A	√	√	√	84/101/104
2	02	Keyboard POSTFail[9]	N/A	√	√	√	84/101/104
3	03	Keyboard ErrorUndefined[9]	N/A	√	√	√	84/101/104
4	04	Keyboard a and A[4]	31	√	√	√	84/101/104
5	05	Keyboard b and B	50	√	√	√	84/101/104
6	06	Keyboard c and C[4]	48	√	√	√	84/101/104
7	07	Keyboard d and D	33	√	√	√	84/101/104
8	08	Keyboard e and E	19	√	√	√	84/101/104
9	09	Keyboard f and F	34	√	√	√	84/101/104
10	0A	Keyboard g and G	35	√	√	√	84/101/104
11	0B	Keyboard h and H	36	√	√	√	84/101/104
12	0C	Keyboard i and I	24	√	√	√	84/101/104
13	0D	Keyboard j and J	37	√	√	√	84/101/104
14	0E	Keyboard k and K	38	√	√	√	84/101/104
15	0F	Keyboard l and L	39	√	√	√	84/101/104
16	10	Keyboard m and M[4]	52	√	√	√	84/101/104
17	11	Keyboard n and N	51	√	√	√	84/101/104
18	12	Keyboard o and O[4]	25	√	√	√	84/101/104
19	13	Keyboard p and P[4]	26	√	√	√	84/101/104
20	14	Keyboard q and Q[4]	17	√	√	√	84/101/104
21	15	Keyboard r and R	20	√	√	√	84/101/104
22	16	Keyboard s and S[4]	32	√	√	√	84/101/104
23	17	Keyboard t and T	21	√	√	√	84/101/104
24	18	Keyboard u and U	23	√	√	√	84/101/104
25	19	Keyboard v and V	49	√	√	√	84/101/104

Usage index (dec)	Usage Index (hex)	Usage	Ref:typical AT-101 position	PC-AT	Mac-intosh	UNIX	Boot
26	1A	Keyboard w and W[4]	18	√	√	√	84/101/104
27	1B	Keyboard x and X[4]	47	√	√	√	84/101/104
28	1C	Keyboard y and Y[4]	22	√	√	√	84/101/104
29	1D	Keyboard z and Z[4]	46	√	√	√	84/101/104
30	1E	Keyboard 1 and ![4]	2	√	√	√	84/101/104
31	1F	Keyboard 2 and @[4]	3	√	√	√	84/101/104
32	20	Keyboard 3 and #[4]	4	√	√	√	84/101/104
33	21	Keyboard 4 and $[4]	5	√	√	√	84/101/104
34	22	Keyboard 5 and %[4]	6	√	√	√	84/101/104
35	23	Keyboard 6 and ^[4]	7	√	√	√	84/101/104
36	24	Keyboard 7 and &[4]	8	√	√	√	84/101/104
37	25	Keyboard 8 and *[4]	9	√	√	√	84/101/104
38	26	Keyboard 9 and ([4]	10	√	√	√	84/101/104
39	27	Keyboard 0 and)[4]	11	√	√	√	84/101/104
40	28	Keyboard Return(ENTER)[5]	43	√	√	√	84/101/104
41	29	Keyboard ESCAPE	110	√	√	√	84/101/104
42	2A	Keyboard DELETE (Backspace)[13]	15	√	√	√	84/101/104
43	2B	Keyboard Tab	16	√	√	√	84/101/104
44	2C	Keyboard Spacebar	61	√	√	√	84/101/104
45	2D	Keyboard - and (underscore)[4]	12	√	√	√	84/101/104
46	2E	Keyboard = and+[4]	13	√	√	√	84/101/104
47	2F	Keyboard [and {[4]	27	√	√	√	84/101/104
48	30	Keyboard] and }[4]	28	√	√	√	84/101/104
49	31	Keyboard \ and |	29	√	√	√	84/101/104
50	32	Keyboard Non-US# and ~[2]	42	√	√	√	84/101/104
51	33	Keyboard ;[4]	40	√	√	√	84/101/104
52	34	Keyboard ' and "[4]	41	√	√	√	84/101/104
53	35	Keyboard Grave Accent and Tilde[4]	1	√	√	√	84/101/104
54	36	Keyboard , and <[4]	53	√	√	√	84/101/104
55	37	Keyboard . and >[4]	54	√	√	√	84/101/104
56	38	Keyboard / and ?[4]	55	√	√	√	84/101/104
57	39	Keyboard CapsLock[11]	30	√	√	√	84/101/104
58	3A	Keyboard F1	112	√	√	√	84/101/104
59	3B	Keyboard F2	113	√	√	√	84/101/104
60	3C	Keyboard F3	114	√	√	√	84/101/104
61	3D	Keyboard F4	115	√	√	√	84/101/104
62	3E	Keyboard F5	116	√	√	√	84/101/104
63	3F	Keyboard F6	117	√	√	√	84/101/104

Usage index (dec)	Usage Index (hex)	Usage	Ref:typical AT-101 position	PC-AT	Mac-intosh	UNIX	Boot
64	40	Keyboard F7	118	√	√	√	84/101/104
65	41	Keyboard F8	119	√	√	√	84/101/104
66	42	Keyboard F9	120	√	√	√	84/101/104
67	43	Keyboard F10	121	√	√	√	84/101/104
68	44	Keyboard F11	122	√	√	√	101/104
69	45	Keyboard F12	123	√	√	√	101/104
70	46	Keyboard PrintScreen[1]	124	√	√	√	101/104
71	47	Keyboard ScrollLock[11]	125	√	√	√	84/101/104
72	48	Keyboard Pause[1]	126	√	√	√	101/104
73	49	Keyboard Insert[1]	75	√	√	√	101/104
74	4A	Keyboard Home[1]	80	√	√	√	101/104
75	4B	Keyboard PageUp[1]	85	√	√	√	101/104
76	4C	Keyboard Delete Forward[1]	76	√	√	√	101/104
77	4D	Keyboard End[1]	81	√	√	√	101/104
78	4E	Keyboard PageDown[1]	86	√	√	√	101/104
79	4F	Keyboard RightArrow[1]	89	√	√	√	101/104
80	50	Keyboard LeftArrow[1]	79	√	√	√	101/104
81	51	Keyboard DownArrow[1]	84	√	√	√	101/104
82	52	Keyboard UpArrow[1]	83	√	√	√	101/104
83	53	Keypad NumLock and Clear[11]	90	√	√	√	101/104
84	54	Keypad /[1]	95	√	√	√	101/104
85	55	Keypad *	100	√	√	√	84/101/104
86	56	Keypad -	105	√	√	√	84/101/104
87	57	Keypad +	106	√	√	√	84/101/104
88	58	Keypad ENTER5	108	√	√	√	101/104
89	59	Keypad 1 and End	93	√	√	√	84/101/104
90	5A	Keypad 2 and Down Arrow	98	√	√	√	84/101/104
91	5B	Keypad 3 and PageDn	103	√	√	√	84/101/104
92	5C	Keypad 4 and Left Arrow	92	√	√	√	84/101/104
93	5D	Keypad 5	97	√	√	√	84/101/104
94	5E	Keypad 6 and Righ tArrow	102	√	√	√	84/101/104
95	5F	Keypad 7 and Home	91	√	√	√	84/101/104
96	60	Keypad 8 and Up Arrow	96	√	√	√	84/101/104
97	61	Keypad 9 and PageUp	101	√	√	√	84/101/104
98	62	Keypad 0 and Insert	99	√	√	√	84/101/104
99	63	Keypad . and Delete	104	√	√	√	84/101/104
100	64	Keyboard Non-US\ and |[3,5]	45	√	√	√	84/101/104
101	65	Keyboard Application[10]	129	√		√	104
102	66	Keyboard Power[9]			√	√	
103	67	Keypad =			√		
104	68	Keyboard F13			√		

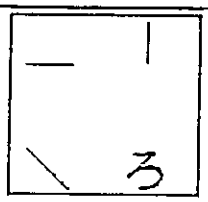
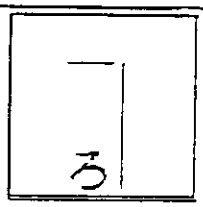
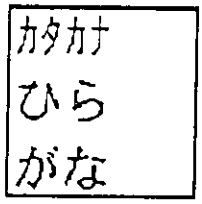
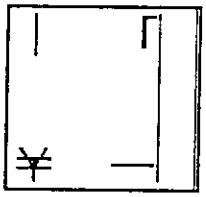
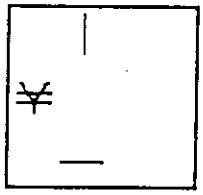
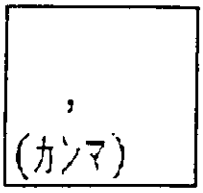
Usage index (dec)	Usage Index (hex)	Usage	Ref:typical AT-101 position	PC-AT	Mac-intosh	UNIX	Boot
105	69	Keyboard F14			√		
106	6A	Keyboard F15			√		
107	6B	Keyboard F16					
108	6C	Keyboard F17					
109	6D	Keyboard F18					
110	6E	Keyboard F19					
111	6F	Keyboard F20					
112	70	Keyboard F21					
113	71	Keyboard F22					
114	72	Keyboard F23					
115	73	Keyboard F24					
116	74	Keyboard Execute				√	
117	75	Keyboard Help				√	
118	76	Keyboard Menu				√	
119	77	Keyboard Select				√	
120	78	Keyboard Stop				√	
121	79	Keyboard Again				√	
122	7A	Keyboard Undo				√	
123	7B	Keyboard Cut				√	
124	7C	Keyboard Copy				√	
125	7D	Keyboard Paste				√	
126	7E	Keyboard Find				√	
127	7F	Keyboard Mute				√	
128	80	Keyboard Volume Up				√	
129	81	Keyboard Volume Down				√	
130	82	Keyboard Locking Caps Lock[12]				√	
131	83	Keyboard Locking Num Lock[12]				√	
132	84	Keyboard Locking Scroll Lock [12]				√	
133	85	Keypad Comma					
134	86	Keypad Equal Sign					
135	87	Keyboard Kanji1[15]					
136	88	Keyboard Kanji2[16]					
137	89	Keyboard Kanji3[17]					
138	8A	Keyboard Kanji4[18]					
139	8B	Keyboard Kanji5[19]					
140	8C	Keyboard Kanji6[20]					
141	8D	Keyboard Kanji7[21]					
142	8E	Keyboard Kanji8[22]					
143	8F	Keyboard Kanji9[22]					

Usage index (dec)	Usage Index (hex)	Usage	Ref:typical AT-101 position	PC-AT	Mac-intosh	UNIX	Boot
144	90	Keyboard LANG1[3]					
145	91	Keyboard LANG2[8]					
146	92	Keyboard LANG3[8]					
147	93	Keyboard LANG4[8]					
148	94	Keyboard LANG5[8]					
149	95	Keyboard LANG6[8]					
150	96	Keyboard LANG7[8]					
151	97	Keyboard LANG8[8]					
152	98	Keyboard LANG9[8]					
153	99	Keyboard AlternateErase[7]					
154	9A	Keyboard SysReq/Attenti[1]					
155	9B	Keyboard Cancel					
156	9C	Keyboard Clear					
157	9D	Keyboard Prior					
158	9E	Keyboard Return					
159	9F	Keyboard Separator					
160	A0	Keyboard Out					
161	A1	Keyboard Oper					
162	A2	Keyboard Clear/Again					
163	A3	Keyboard CrSel/Props					
164	A4	Keyboard ExSel					
165-223	A5-DF	Reserved					
224	E0	Keyboard LeftControl	58	√	√	√	84/101/104
225	E1	Keyboard LeftShift	44	√	√	√	84/101/104
226	E2	Keyboard LeftAlt	60	√	√	√	84/101/104
227	E3	Keyboard Left GUI[10:23]	127	√	√	√	104
228	E4	Keyboard RightControl	64	√	√	√	101/104
229	E5	Keyboard RightShift	57	√	√	√	84/101/104
230	E6	Keyboard RightAlt	62	√	√	√	101/104
231	E7	Keyboard Right GUI[10:24]	128	√	√	√	104
232-255	E8-FF	Reserved					

Footnotes

1. Usage of keys is not modified by the state of the Control, Alt, Shift or Num Lock keys. That is, a key does not send extra codes to compensate for the state of any Control, Alt, Shift or Num Lock keys.
2. Typical language mappings: US: \| Belg: µ £ FrCa: <}> Dan:* Dutch: <> Fren:*µ Ger: #' Ital: ù§ LatAm: }] Nor:,* Span:}Ç Swed: ,* Swiss: $£ UK: #~.
3. Typical language mappings: Belg:<\> FrCa:«°» Dan:<\> Dutch:]|[Fren:<> Ger:<|> Ital:<> LatAm:<> Nor:<> Span:<> Swed:<|> Swiss:<\> UK:\| Brazil: \|.
4. Typically remapped for other languages in the host system.
5. Keyboard Enter and Keypad Enter generate different Usage codes.
6. Typically near the Left-Shift key in AT-102 implementations.
7. Example, Erase-Eaze™ key.
8. Reserved for language-specific functions, such as Front End Processors and Input Method Editors.
9. Reserved for typical keyboard status or keyboard errors. Sent as a member of the keyboard array. Not a physical key.
10. Microsoft ® Windows® key for Microsoft® Windows® 95 and "Compose."
11. Implemented as a non-locking key; sent as member of an array.
12. Implemented as a locking key; sent as a toggle button. Available for legacy support; however, most systems should use the non-locking version of this key.
13. Backs up the cursor one position, deleting a character as it goes.
14. Deletes one character without changing position.
15. See next page
16. See next page
17. See next page
18. See next page
19. See next page
20. See next page
21. Toggle Double-Byte/Single-Byte mode.
22. Undefined, available for other Front End Language Processors.
23. Windowing environment key, examples are Microsoft® Left Win key, Macintosh ® Left Apple key, Sun® Left Meta key
24. Windowing environment key, examples are Microsoft® Right Win key, Macintosh® Right Apple key, Sun® Right Meta key.

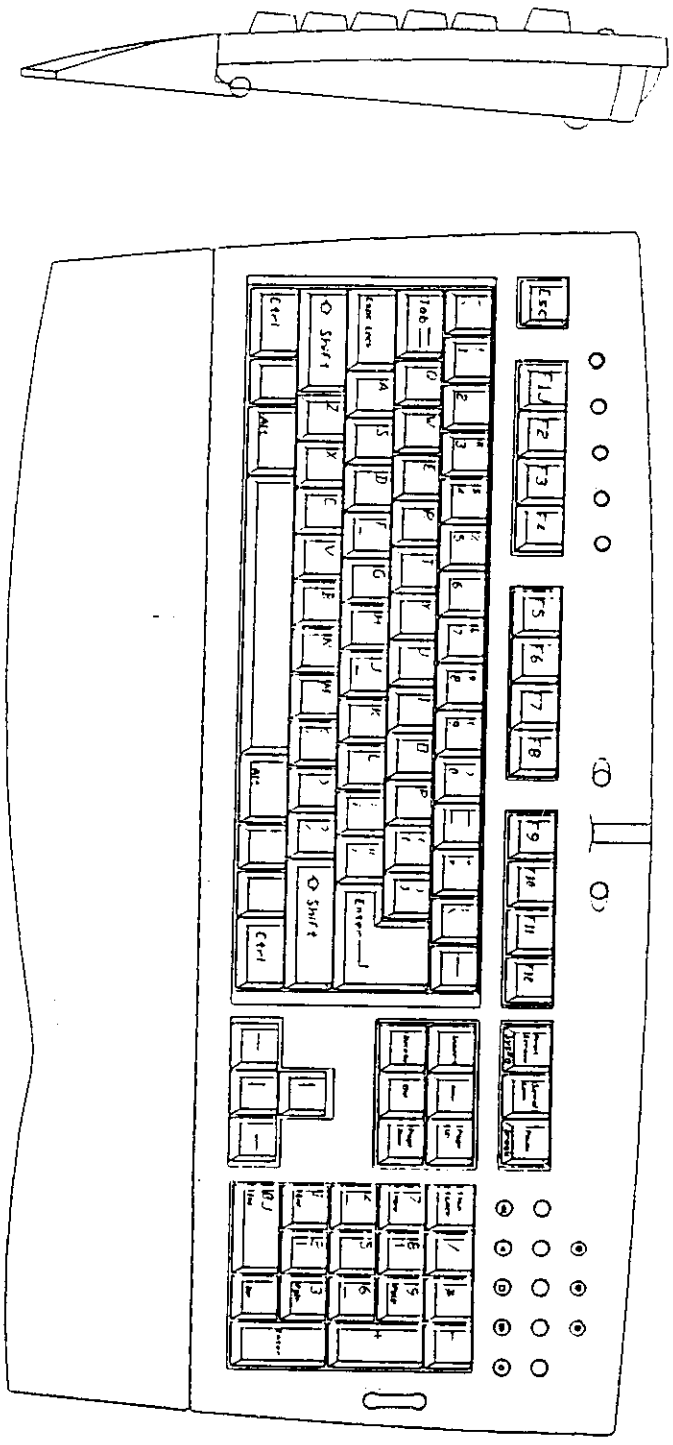
Footnotes 15–20

Note	AT-104	DOS/V-109 (suggested)	PC98 (suggested)
15	No function		
16	No function		
17	No function		
18	No function		
19	No function		
20	No function	No function	

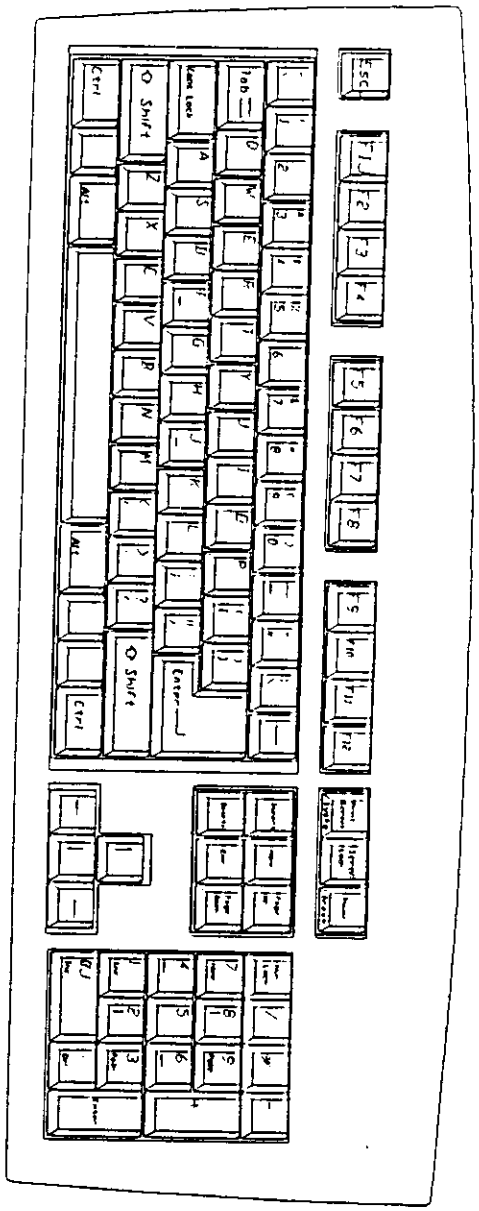
1. 980N 20 hot keys for multimedia function.

Key Name	Default Assignment	Code Set
Menu	Pop-out Menu and shows the active key assignment. User can also change assignment from here.	F7
WWW	Open Browser	F0
Previous	Back to last page	F1
SRCH	Search Web Site	F4
STOP	Stop loading from Web Site	F3
Next	Froward to next page	F2
Rewind	Previous track	EA
Play/Pause	Play / pause CD ROM	E8
Stop	Stop Play	E9
Forward	Next track	EB
Record	Record from assigned source	EC
Scroll Up	Scrolling work sheet or browser up	F5
Scroll Down	Scrolling work sheet or browser down	F6
+	Volume increase	ED
0	Volume Mute	EF
-	Volume decrease	EE
Suspend	Turns system into suspend mode	F8
Coffee Break	Turns system into sleeping mode	F9
Calculator	Brings out Calculator	FB
X'fer	Transfer the amount of Calculator to Worksheet	FA

VII LANGUAGE LAYOUT



Scorpius-980N plus



Scorpius 980

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.