Introduction

Bar code technology enables efficient data collection in various businesses including both commercial office and industrial automation Importantly bar code technology also ensures the accuracy of captured data The bar code readers described in this manual have been developed for maximum efficiency accuracy and ease of use in various process scenarios

FCC Statement

The federal communications commission FCC requires that all CCD readers must be labeled with FCC approval This equipment complies with the requirements in part 15 of FCC rules for a class A computing device These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment This equipment generates uses and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual may cause harmful interface to radio communications Operation of this equipment in a residential area may cause unacceptable interference to radio and TV reception requiring the operator to take whatever is necessary to correct the interface

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Chapter 1. Technical Data

This User's Manual introduces the technical specification of the bar code readers. The product features are described in later chapter e.g. installation set-up and configuration as well as detailed technical specifications.

Main Technical FEATURES

Bar code width	75mm
Depth of reading	0 to 40mm
Working current	Scanning 84mA (with Decoder)
	Stand-by 14mA
Light	Red LED array 660nm
Interface	TTL, RS232C, Keyboard Wedge, WAND, Notebook, USB
Device Selection For Keyboard Interface	PC AT/XT, PS/2 25, 30, 50, 60, 70, 80, Acer 7300, IBM 5550, Mac, NEC9800

Bar code selections	Code39, Code32, CIP39 Coda Bar (CLSI) EAN-13, UPC-A, EAN-8, UPC-E (Add on 2 of 5) MSI/Plessey (UK Plessey) Code 128 (EAN128) Code 93 Code 11 Interleaved 2 of 5 Industrial 2 of 5 Matrix 2 of 5 China Postal Code Telepen
Keyboard nationality	US, French, German, Spanish, Italian, UK, Swiss, Belgium, Netherlands, Sweden, Norway, Denmark, Protugal, Finland, Slovakia, Japan, Hungary, Greece, Yugoslavia Cyrillic, Yugoslavia

Chapter 2. How to install your Bar Code Reader

Installation

Step 1. Turn off the power on your terminal device.

Step 2. Connect the bar code reader to the appropriate outlet on the technical device depending on the model / interface cable that you have, e.g. RS232, PS2, …….

Step 3. Turn on the terminal device, you will hear the initial welcome music.

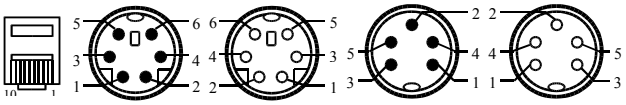
Step 4. The reader is now in stand-by mode.

Chapter 3. Pin Assignment

This bar code reader is designed to be connected via various cable connections, the pin assignments are listed as below

1. **Keyboard Wedge**

   A. 6 DIN and 5 DIN connector

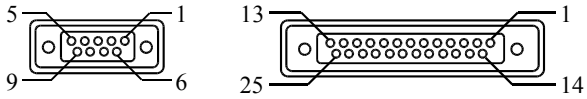


M F M F

Phone Jack	DIN-6M	DIN-6F	Function	DIN-5M	DIN-5F
1	3	3	GND	4	4
2	4	4	VCC	5	5
3	--	5	K/B CLK	--	1
4	--	1	K/B DATA	--	2
5	1	--	SYS DATA	2	--
6	5	--	SYS CLK	1	--
7	--	--	--	--	--

8	--	--	--	--	--
9	--	--	--	--	--
10	--	--	--	--	--
	3	3	GND shield	4	4

2. RS-232 : 9 PIN and 25 PIN female RS-232 connector

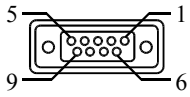


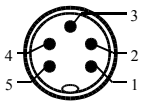
9P **25P**

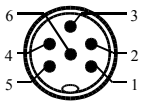
Phone Jack	9 Pin (F)	25 Pin (F)	Function
1	5.1	7.1	GND
2	9	16.25	VCC
3	--	--	K/B DATA
4	--	--	K/B CLK

5	--	--	SYS DATA
6	--	--	SYS CLK
7	7	4	CTS
8	2	3	TXD
9	3	2	RXD
10	8	5	RTS
	5	7	GND Shield

3. WAND Emulation 9 PIN female and 5 DIN 6 DIN male connector



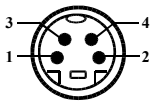


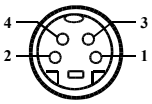


9P M M

Phone Jack	Remark	Dsub 9P (F)	Dsub 9P (M)	DIN-5M	DIN-6M
1	GND	7.8	1	3	3
2	VCC	9	5	1	1
8	DATA	2	7	2	2
	GND Shield	7	1	3	3

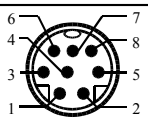
4. Apple MACINTOSH 4 PIN female and 4 DIN male connector





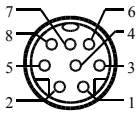
M **F**

Phone Jack	Function	DIN-4M	DIM-4F
1	GND	4	4
2	VCC	3	3
3	K/B DATA	--	--
4	K/B CLK	--	--
5	SYS DATA	1	1
6	SYS CLK	--	--
7	--	--	--
8	--	--	--
9	--	--	--



10	--	--	--
	GND Shield	4	4

5. NEC 9800 8 PIN female and 8 DIN male connector

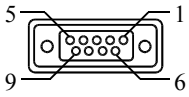


M F

Phone Jack	Function	DIN-8M	DIM-8F
1	GND	2	2
2	VCC	8	8
3	K/B DATA	--	4
4	K/B CLK	--	3
5	SYS DATA	4	--
6	SYS CLK	3	--
7	--	--	--
8	--	--	--
9	--	--	--
10	--	--	--
	Reset	1	1

	Retry	5	5
	--	6	6
	--	7	7
	GND Shield	2	2

6. TTL (CMOS) 9 PIN female and 5 DIN 6DIN male connector



9P

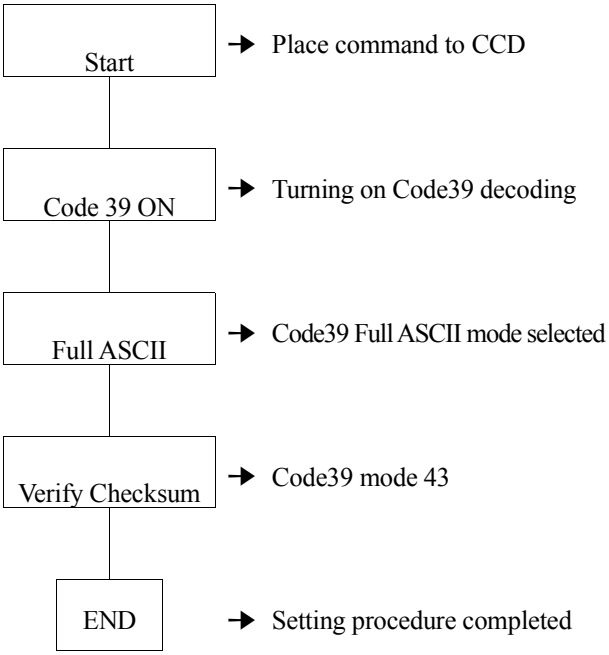
Phone Jack	Function	Dsub 9P (F)
1	GND	7
2	VCC+5V	9
3	DATA	1
4	INDICATOR	2
5	TRIGGER	3
6	ENABLE	4
7	SCAN	5
8	--	--

9	--	--
10	--	--
		GND Shield

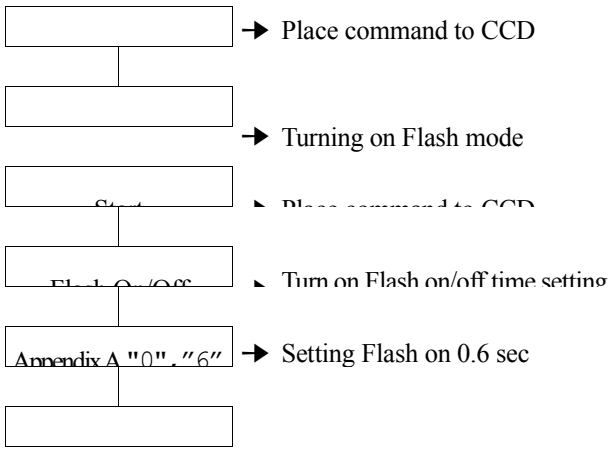
Chapter 4. Set Up Configuration

1. Example
   In order to setup the program for the bar code reader, you must be familiar with the setup procedure. Three examples are given below.

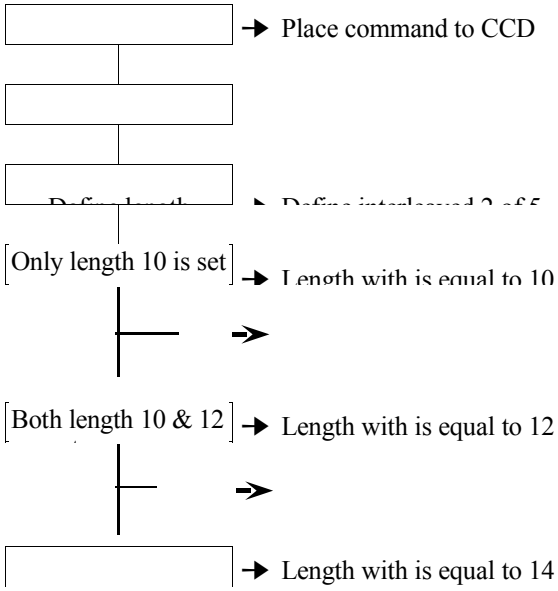
Example 1 Setup Code 39 refer page 21



Example 2



Example 3



All 3 length (10,12,14) are set completely.
No need to scan “SET” again.

All Appendix A are no need to scan “END”

1. SET DEFAULT CONFIGURATION

Default

All programmed settings will be returned to the manufacture default setting after the scanning process.

Other available option

Show configuration

Show version

Abort setting

Start up code

If the scanner's light is on, but it can not read. Try to scan the "start up code". The scanner may read again.

2. INTERFACE OPTIONS

Start

*Keyboard

AT Notebook

RS-232

WAND

End

Read the interface selection code for your particular application.

Above interfaces, only one can be enabled, other interfaces will be disabled automatically, ie, scan "Start"→ "RS232"→ "End".

Mute

If you scan "Mute", the initial welcome music will be on "Mute" mode when power on the terminal device

3. SYSTEM TYPE

Start

Apple Macintosh ADB

PC XT

NEC 9800

*PC AT, PS/2 50 60 70 80

IBM 5550

PS/2 25 30

ACER 7300

End

Other system types may be available upon request, please consult your supplier for details.

4. KEYBOARD WEDGE SETTING

Start

*On

Upper/Lower case

Upper

*Lower

Number Keys

*Alphanum

Number lock

Upper Caps Lock

*OFF

ON

Alt+Number

*OFF

ON

End

5. RS-232 SETTING

Start

On

1200

Baud Rate

*9600

2400

19200

4800

38400

Data Bits

7 bit

*8 bit

Parity

*Disabled

Even

Odd

RS-232 Hand Shaking

*Disabled

Xon/Xoff RS232

End

RTS/CTS RS232

6. WAND EMULATION SETTING

Start

On

Bar High / Low

20

*High

Low

Scan Speed

Highest

*High

Low

Lowest

End

7. SCANNING CONTROL

Start

Type **LED Light** **Bar Code**

On-with button pressed

Off-with button depressed

One bar code

Trigger pressed

On-for 3 seconds

Off-any bar code scanned

One bar code

*Trigger on

On-with button pressed, light on for 3 seconds

Off-with button pressed again

One bar code

Trigger on/off

On-for 30 seconds

Off-automatically after 30 seconds or button pressed again

One bar code

Trigger on 30 sec.

On-for 120 seconds

Off-automatically after 120 seconds or button pressed again

One bar code

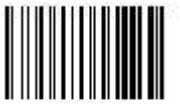
Trigger on 120 sec.

On-all the time

Off-never off

One bar code

LED on



Continuous reading

On-all the time
Off-never off or trigger off

Saft time Default value is 1 sec

Same bar code Continuous read

Safety time setting

Scan “Start”+ “Safety time”+ Appendix A “0”, “8”

Set value is 0.8 Sec

Safety time 0.8 Sec

Flash Mode

After turn ON or finish reading Barcode will continue on 60 sec than Flash

Default On 0.3sec,Off 0.2sec

Flash on/off time

Scan “Start”→ “Flash on/off time” Appendix A→“0”,“A” , “0”, “6” the flash on 1 sec, flash off 0.6sec.

Flash on/off range 0.3~25.5sec

Flash on 1 sec

Flash off 0.6 sec.

8. TURN ON VARIOUS BAR CODE FORMAT

Start

OFF		ON
	Code 39*	
	*Interleaved 2 of 5	
	*Industrial 2 of 5	
	*Matrix 2 of 5	

Coda Bar*

EAN-13*/UPC-A*

EAN-8*

UPC-E*

OFF

ON

*EAN/UPC

Add-on 2/5

Code 128*

Code 11*

*MSI/Plessey

*Telepen

*China Postal Code

*Code 93

Turn On All Bar Codes

End

9. CODE IDENTIFIER

Start

AIM

*Off

On

USER

Code 39

Interleaved 2 of 5

Industrial 2 of 5

Matrix 2 of 5

Coda Bar

EAN-13/UPC-A

EAN-8

UPC-E

Code 11

MSI

Code 128

Code 93

Plessey

TELEPEN

Please refer the Appendix B-ASCII table for the ID character you need, for example scan appendix A “5” “3” for S or scan “5” “0” for P.
There is only one code identifier allowed on the specific type bar code.

End

10. CODE 39 CONTROL

Start

Off

*On

Code 32 Control

*Off

On

CIP 39 Control

*Off

On

*Standard type

Full ASCII

Transmit start/stop character

*No

Yes

Verify MOD 43 checksum

*No

Yes

Transmit check character

No

*Yes

End

11. INTERLEAVED 2 OF 5 CONTROL

Start

*Off

On

Verify MOD 10 checksum

*No

Yes

Transmit check digit

No

*Yes

Define Length

You may set up to 3 fixed bar code lengths if necessary.

Please refer to the hexadecimal table in Appendix A,

for example scan “0” “A” — 10

scan “0” “C” — 12

scan “0” “E” — 14

You will be able to read the interleaved 2 of 5 code length which is equal to 10, 12, 14 digits only.

End

12. INDUSTRIAL 2 OF 5 CONTROL

Start

*Off

On

Verify MOD 10 checksum

*No

Yes

Transmit check digit

No

*Yes

Define Length

You may set up to 3 fixed bar code lengths if necessary. Please refer to the hexadecimal table in Appendix A,

for example
scan “0” “A” — 10
scan “0” “C” — 12
scan “0” “E” — 14

You will be able to read the industrial 2 of 5 code length which is equal to 10, 12, 14 digits only.

End

13. MATRIX 2 OF 5 CONTROL

Start

*Off

On

Verify MOD 10 checksum

*No

Yes

Transmit check digit

No

*Yes

Define Length

You may set up to 3 fixed bar code lengths if necessary. Please refer to the hexadecimal table in Appendix A,

for example scan “0” “A” — 10

scan “0” “C” — 12

scan “0” “E” — 14

You will be able to read the Matrix 2 of 5 code length which is equal to 10, 12, 14 digits only.

End

14. CODA BAR / NW7 CONTROL

Start

Off

*On

Transmit Start/End

*No

Yes

Start/End Transmit type

ABCD/ABCD

ABCD/TN*E

*ABCD/abcd

ABCD/tn*e

Verify MOD 16 checksum

*No

Yes

Transmit check character

*No

Yes

MOD 10-CLSI

*No

Yes

End

15. EAN-13 CONTROL

Start

Off

*On

Truncate leading digit

*No Yes

Truncate leading 0

*No Yes

Transmit check digit

No *Yes

End

16. UPC-A CONTROL

Start

Off

*On

Truncate leading digit

*No

Yes

Transmit check digit

No

*Yes

End

17. EAN-8 CONTROL

Start

Off

*On

Truncate leading digit

*No

Yes

Transmit check digit

No

*Yes

End

18. UPC-E CONTROL

Start

Off

*On

Truncate leading digit

*No

Yes

Transmit check digit

No

*Yes

End

19. UPC/EAN CONVERSION

Start

UPC-A To UPC-E Conversion

*Off

On

UPC-E To UPC-A Conversion

*Off

On

UPCA/EAN8 To EAN13 Conversion

*Off

On

ISBN Conversion

*Off

On

20. CODE 11 CONTROL

Off

*On

Verify checksum

1

*2

Transmit check digit

No

*Yes

End

21.MSI CODE CONTROL

Start

MOD 10 Only

No

*Yes

MOD 10/MOD 10

*No

Yes

MOD 11/MOD 10

*No

Yes

Transmit check digit

*1

2

No

*Yes

End

22.TELEPEN MODE

Numeric

Alphanumeric

Note

To read these commands the telepen family MUST be enabled.
The default is Alphanumeric mode (at each power up of the reader).

23. CHINA POSTAL CODE CONTROL

Start

*Off On

Verify MOD 10 check digit

*No Yes

Transmit check digit

No *Yes

Define Length

You may set up to 3 fixed bar code lengths if necessary. Please refer to the hexadecimal table in Appendix B,
for example scan “0” “A” — 10
scan “0” “C” — 12
scan “0” “E” — 14
You will be able to read the China Postal code length which is equal to 10, 12, 14 digits only.

End

24. END OF TEXT MESSAGE

Start

None

***CR**

LF
(for RS232 only)

CR/LF
(for RS232 only)

Space

Tab

Esc

Ctrl-C

End

25. PC AT KEYBOARD NATIONALITY

Start

***US**

UK

French

Belgium

Sweden

Denmark

Germany

Netherlands

Norway

Spanish

Italian

Protugal

Japan

Hungary

Greece

Swiss

Finland

Slovakia

Yugoslavia

Yugoslavia Cyrillic

End

26. SET PREFIX

Start

Prefix

Please refer to Appendix B regarding the prefix string.
You may add up to 10 characters as prefix.

27. SET SUFFIX

Start

Suffix

Please refer to Appendix B regarding the suffix string.
You may add up to 10 characters as suffix.

28. DATA FORMAT

Code ID number:

EAN13	00	Code 128	08
EAN8	01	Code 93	09
UPC E	02	Code 11	0A
Code 39	03	MSI	0B
Codabar	04	China Post	0C
Matrix 25	05	UK Plessy	0D
Industry 25	06	Telepen	0E
Interleved 25	07	All	FF

Example

Data	0	0	9	4	7	3	8	2	7	1	9	0
Reserve	01	02		03			01	04				01
Output	0	×	×	4	7	3	×	2	7	1	9	×
Delete	01	02		03			01	04				01
Output	×	0	9	×	×	×	8	×	×	×	×	0

Start

Reserve

Delete

Appendix A "0","3"

To set Code 39 data format

Reserve

*

Delete

Scan Please refer to the hexadecimal table in Appendix A
*Finish Reserve or Delete to Scan “SET”

29. OTHER CONTROL

Start

Buzzer tone frequency

*Highest

Medium

Low

Mute

Buzzer duration

*50msec

20msec

Keystroke / Character

*Fastest

Fast

Medium

Slow

Character inter delay time Default to 1msec

Please refer to the hexadecimal table in Appendix A
Hex 00~FF (00~255msec unit 1msec)

End

Appendix A Hexadecimal / Decimal Table

0		**9**	
1		**A**	
2		**B**	
3		**C**	
4		**D**	
5		**E**	
6		**F**	

7  **SET** 

8 

Appendix B Hex and Numeric table

(To read the desired hex and numeric selections)

DEC	HEX	PC	ASC II	DEC	HEX	PC & ASCII
0	00	(Null)	NULL	**37**	25	%
1	01		SOH	**38**	26	&
2	02	☻	STX	**39**	27	'
3	03	♥	ETX	**40**	28	(
4	04	♦	EOT	**41**	29	)
5	05	♣	ENQ	**42**	2A	*
6	06	♠	ACK	**43**	2B	+
7	07	❉	BEL	**44**	2C	,
8	08	◘	BS	**45**	2D	–
9	09	°	HT	**46**	2E	.
10	0A	■	LF	**47**	2F	/

11	0B	♂	VT	**48**	30	0
12	0C	♀	FF	**49**	31	1
13	0D	♪	CR	**50**	32	2
14	0E	♫	SO	**51**	33	3
15	0F	☼	SI	**52**	34	4
16	10		DLE	**53**	35	5
17	11		DC1	**54**	36	6
18	12	↕	DC2	**55**	37	7
19	13	‼	DC3	**56**	38	8
20	14	¶	DC4	**57**	39	9
21	15	§	NAK	**58**	3A	:
22	16	‒	SYN	**59**	3B	;
23	17	↨	ETB	**60**	3C	<
24	18	↑	CAN	**61**	3D	=
25	19	↓	EM	**62**	3E	>
26	1A	→	SUB	**63**	3F	?
27	1B	←	ESC	**64**	40	@
28	1C	∟	FS	**65**	41	A

29	1D	↔	GS	**66**	42	B
30	1E	▲	RS	**67**	43	C
31	1F	▼	US	**68**	44	D
32	20	Space		**69**	45	E
33	21	!		**70**	46	F
34	22	"		**71**	47	G
35	23	#		**72**	48	H
36	24	$		**73**	49	I

DEC	**HEX**	**PC & ASC II**	**DEC**	**HEX**	**PC & ASCII**
74	4A	J	**113**	71	q
75	4B	K	**114**	72	r
76	4C	L	**115**	73	s
77	4D	M	**116**	74	t
78	4E	N	**117**	75	u
79	4F	O	**118**	76	v
80	50	P	**119**	77	w
81	51	Q	**120**	78	x
82	52	R	**121**	79	y

83	53	S	**122**	7A	z
84	54	T	**123**	7B	{
85	55	U	**124**	7C	|
86	56	V	**125**	7D	}
87	57	W	**126**	7E	~
88	58	X	**127**	7F	∆
89	59	Y	**128**	80	Ç
90	5A	Z	**129**	81	ü
91	5B	[	**130**	82	é
92	5C	\	**131**	83	â
93	5D	]	**132**	84	ä
94	5E	^	**133**	85	à
95	5F	_	**134**	86	å
96	60	`	**135**	87	ç
97	61	a	**136**	88	ê
98	62	b	**137**	89	ë
99	63	c	**138**	8A	è
100	64	d	**139**	8B	ï

101	65	e	**140**	8C	î
102	66	f	**141**	8D	ì
103	67	g	**142**	8E	Ä
104	68	h	**143**	8F	Å
105	69	i	**144**	90	É
106	6A	j	**145**	91	æ
107	6B	k	**146**	92	Æ
108	6C	l	**147**	93	Ô
109	6D	m	**148**	94	ö
110	6E	n	**149**	95	Ò
111	6F	o	**150**	96	û
112	70	p	**151**	97	ù

DEC	HEX	PC & ASCII	DEC	HEX	PC & ASCII
152	98	ÿ	**190**	BE	╛
153	99	Ö	**191**	BF	┐
154	9A	Ü	**192**	C0	└
155	9B	¢	**193**	C1	┴

156	9C	£	**194**	C2	┬
157	9D	¥	**195**	C3	├
158	9E	Pts	**196**	C4	─
159	9F	*f*	**197**	C5	┼
160	A0	á	**198**	C6	╞
161	A1	í	**199**	C7	╟
162	A2	ó	**200**	C8	╚
163	A3	ú	**201**	C9	╔
164	A4	ñ	**202**	CA	╩
165	A5	Ñ	**203**	CB	╦
166	A6	**a**	**204**	CC	╠
167	A7	**o**	**205**	CD	=
168	A8	¿	**206**	CE	╬
169	A9	┌	**207**	CF	╧
170	AA	┐	**208**	D0	╨
171	AB	½	**209**	D1	╤
172	AC	¼	**210**	D2	╥
173	AD	¡	**211**	D3	╙

174	AE	«	**212**	D4	╘
175	AF	»	**213**	D5	╒
176	B0	░	**214**	D6	╓
177	B1	▒	**215**	D7	╫
178	B2	▓	**216**	D8	╪
179	B3	│	**217**	D9	┘
180	B4	┤	**218**	DA	┌
181	B5	╡	**219**	DB	█
182	B6	╢	**220**	DC	▄
183	B7	╖	**221**	DD	▌
184	B8	╕	**222**	DE	▐
185	B9	╣	**223**	DF	▀
186	BA	║	**224**	E0	α
187	BB	╗	**225**	E1	β
188	BC	╝	**226**	E2	Γ
189	BD	╜	**227**	E3	π

DEC	**HEX**	**PC & ASCII**		

228	E4	Σ		
29	E5	σ		
230	E6	µ		
231	E7	Y		
232	E8	Φ		
233	E9	θ		
234	EA	Ω		
235	EB	δ		
236	EC	∞		
237	ED	ψ		
238	EE	ε		
239	EF	∩		
240	F0	≡		
241	F1	±		
242	F2	≧		
243	F3	≦		
244	F4	⌠		
245	F5	⌡		

246	F6	÷		
247	F7	≈		
248	F8	○		
249	F9	●		
250	FA	•		
251	FB	√		
252	FC	η		
253	FD	²		
254	FE	■		
255	FF	(Bland)		

HEX	KEY	AT SCAN CODE
81	Home	E0 6C E0 F0 6C
82	End	E0 69 E0 F0 69
83	Page up	E0 7D E0 F0 7D
84	Page down	E0 7A E0 F0 7A
85	Insert	E0 70 E0 F0 70
86	Delete	E0 71 E0 F0 71
87	Numeric Keypad +	79 F0 79
88	Back Space	66 F0 66
89	Tab	0D F0 0D
8A	Enter	5A F0 5A
8B	←	E0 6B E0 F0 6B
8C	→	E0 74 E0 F0 74
8D	Numeric Keypad Enter	E0 5A E0 F0 5A
8E	↑	E0 75 E0 F0 75

8F	↓	E0 72 E0 F0 72
90	F1	05 F0 05
91	F2	06 F0 06
92	F3	04 F0 04
93	F4	0C F0 0C
94	F5	03 F0 03
95	F6	0B F0 0B
96	F7	83 F0 83
97	F8	0A F0 0A
98	F9	01 F0 01
99	F10	09 F0 09
9A	F11	78 F0 78
9B	Esc	76 F0 76
9C	F12	07 F0 07
9D*	Left Shift+1 character	12 “C” F0 “C” F0 12
9E*	Left Ctrl +1 character	14 “C” F0 “C” F0 14
9F*	Left Alt +1 character	11 “C” F0 “C” F0 11
A0	Numeric Keypad -	7B F0 7B

A1	Numeric Keypad *	7C F0 7C
A2	Numeric Keypad /	E0 4A E0 F0 4A
A3	Caps Lock	58 F0 58
A4	Num Lock	77 F0 77
A5	Left Alt	11 F0 11
A6	Left Ctrl	14 F0 14

HEX	**KEY**	**AT SCAN CODE**
A7	Left Shift	12 F0 12
A8	Right Alt	E0 11 E0 F0 11
A9	Right Ctrl	E0 14 E0 F0 14
AA	Right Shift	59 F0 59
AB**	Left Alt Make	11
AC**	Left Alt Break	F0 11
AD**	Left Ctrl Make	14
AE**	Left Ctrl Break	F0 14
AF	Print Screen	E0 12 E0 7C E0 F0 7C E0 F0 12

B0	Shift Tab	12 0D F0 0D F0 12
B1* **	Alt +Numeric	E0 11 “C” F0 “C” E0 F0 11

ASCII “A” make code is 1C

* Example

“Start” “Prefix”

1st Configurable Prefix =”9” ”E”

2nd Configurable Prefix =”4” ”1” => ASCII “A”

“SET”

Scanner will transmit 14 <1C F0 1C > F0 14

** Example

“Start” “Prefix”

1st Configurable Prefix =”A” ”B”

2nd Configurable Prefix =”4” ”1” => ASCII “A”

3 Configurable Prefix =”A” ”C”

“SET”

on “Lower case” Scanner will transmit

11 <12 1C F0 1C F0 12> F0 11

on “Upper case” Scanner will transmit

11 <1C F0 1C> F0 11

*** Show ASCII Example

“Start” “Prefix”

1st Configurable Prefix =”B” ”1”

2nd Configurable Prefix =”6” ”4” =>ASCII “d” DEC

“1” ”0” ”0”

“SET”

Scanner will transmit

11 <69 F0 69> <70 F0 70> <70 F0 70 > F0 11