

# **USER'S MANUAL**

## ***ALPHA-12/22 SERIES***

**The manual can be used as  
keyboard emulation, RS- 232C  
serial interface, CMOS serial  
interface and wand emulation.**

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# USER'S MANUAL

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## **1. INTRODUCTION**

The series CCD scanners can be configured by scanning a series of programming bar code labels. This allows decoding options and interface protocols to be tailored to a specific application. The configuration is stored in non-volatile memory and will not be lost by removing power from the scanner.

The scanner must be properly powered before programming. For RS-232C type scanners, an external power adaptor must be used to supply DC power to the scanner. If a keyboard emulation type scanner is used with a IBM PC/XT/AT, PS/2 or any fully compatible computers, power will be drawn from the keyboard port. No external power adaptor is required. If keyboard emulation type scanner is used with any other non IBM PC compatible computers, an external power adaptor may be needed.

During the programming mode, the CCD scanner will acknowledge a good and valid reading with a short beep. It will give long beeps for either an invalid or bad reading.

## **2. PROGRAMMING OPTIONS**

Programmable options are divided into four groups. The first group includes the options that show the general behavior of the CCD scanner. The second group of options governs the operation of RS-232C type serial ports. The third group selects the keyboard type that the keyboard emulation type will be emulated. The last group

sets the decoding parameters for each bar code symbology.

|                                    |   |
|------------------------------------|---|
| MATRIX 25 bar code identifier code | G |
|------------------------------------|---|

1

### **3. DEFAULT PARAMETERS**

This table gives the default settings of all the programmable parameters. The default settings will be restored whenever the "Reset" programming label is scanned and the CCD scanner is in programming mode.

#### **DEFAULT VALUES OF OPERATING PARAMETERS**

| Function                                 | Default Values |
|--|----------------|
| Scanning Mode Selection                  | Trigger mode   |
| Header and trailer                       | None           |
| Inter-Message delay                      | Normal         |
| Inter-Character delay                    | Normal         |
| Message/Block mode selection             | Message        |
| Send command in block mode communication | Disable        |
| Good read beeper tone selection          | 2KHz/120 mSec  |
| Code identifier transmitting             | Disable        |
| Code 39 bar code identifier code         | M              |
| ITF 2 of 5 bar code identifier code      | I              |
| Chinese post code identifier code        | H              |
| UPC-E bar code identifier code           | E              |
| UPC-A bar code identifier code           | A              |
| EAN-13 bar code identifier code          | F              |
| EAN-8 bar code identifier code           | FF             |
| Codabar bar code identifier code         | N              |
| Code 128 bar code identifier code        | K              |
| Code 93 bar code identifier code         | L              |
| MSI bar code identifier code             | P              |

2

#### **DEFAULT VALUES OF KEYBOARD EMULATION PARAMETERS SETTING**

| Function                | Default Values         |
|-------------------------|------------------------|
| Keyboard type selection | IBM PC/AT USA          |
| Message terminator      | Enter/ carriage return |

#### **DEFAULT VALUES OF RS-232C SERIAL COMMUNICATION PARAMETERS**

| Function                      | Default Values |
|-------------------------------|----------------|
| Handshaking protocol          | None           |
| ACK/NAK response time setting | 300 msec       |
| Baud rate                     | 9600           |
| Data bit                      | 8              |
| Stop bit                      | 1              |
| Parity                        | Mark (None)    |
| Message terminator selection  | CR/LF          |

#### **DEFAULT VALUES OF WAND EMULATION PARAMETERS**

| Function              | Default Values |
|-----------------------|----------------|
| Wand emulation speed  | Normal         |
| Wand emulation output | Black = High   |

Note: For wand emulation, the configuration is only effective for the items with asterisk ( \* ).

|                 |                        |                  |
|-----------------|------------------------|------------------|
| Codabar         | Type                   | Standard         |
|                 | Start/stop characters  | A,B,C,D          |
|                 | Length                 | 6~32 digits      |
| Code 128        | FNC 2 append           | Disable          |
|                 | Check digit            | Disable          |
| MSI             | Length                 | Variable         |
|                 | Check digit            | Transmit         |
| Italian Pharmac | Transmit "A" Character | Not transmitting |
| MATRIX 25       | Length                 | Fix 10 digits    |
|                 | Check digit            | Disable          |

3

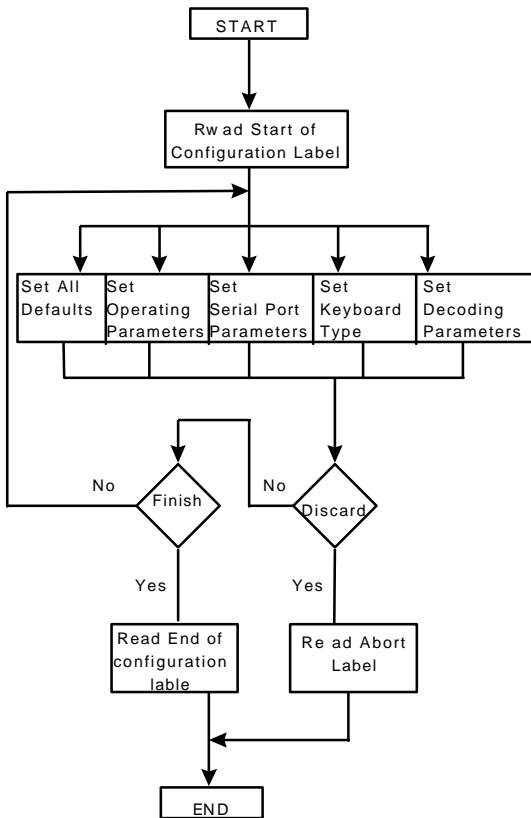
### **DEFAULT VALUES OF DECODING PARAMETERS**

| Function                | Code                  | Default Value    |
|-------------------------|-----------------------|------------------|
| Reading codes selection | Code 39               | Enable           |
|                         | ITF 2 of 5            | Enable           |
|                         | Chinese Post Code     | Disable          |
|                         | UPC/EAN/JAN           | Enable           |
|                         | Codabar               | Enable           |
|                         | * MSI                 | Disable          |
|                         | Code 128              | Enable           |
|                         | Code 93               | Enable           |
|                         | * ITAT                | Disable          |
|                         | * EAN-128             | Disable          |
|                         | * MATRIX 25           | Disable          |
| * Italian Pharmac       | Disable               |                  |
|                         | ISSN/ ISBN            | Disable          |
| Code 39                 | Codes                 | Standard         |
|                         | Start/stop characters | Not transmitting |
|                         | Check digit           | Disabled         |
|                         | Concatenation         | Off              |
| Interleaved 2 of 5      | Length                | 6-32 digits      |
|                         | Check digit           | Disable          |
| Chinese Post Code       | Length                | 10~16 digits     |
|                         | Check digit           | Transmit         |
| UPC/EAN/JAN             | Format                | All              |
|                         | Addendum              | Disable          |
|                         | UPC-E=UPC-A           | Disabled         |
|                         | UPC-A leading digit   | Transmit         |
|                         | UPC-A check digit     | Transmit         |
|                         | UPC-E leading digit   | Transmit         |
|                         | UPC-E check digit     | Transmit         |

4

Note: The configuration of the items with asterisk ( \* ) is effective when being appointed in advance.

### **4. PROGRAM PROCEDURE USING BAR CODE MENUS**



configuration" label.



- The reading of the "ABORT" label discards all the parameters read prior to the "End of configuration".
- The scanner remains in the last interface mode when the scanner is reset. The lable below should be scanned if th escanner is configured the first time.



5



Start of Configuration

- The reading of the "RESET " label turns all the parameters back to default values.
- When you intend to turn your scanner back to default parameter, please scan the "Start of configuration" label first, then scan "RESET" label and finally scan the "End of

6

**SCANNING MODE SELECTION**





Alternate Mode



Repeat Mode



Trigger Mode

**DATA REDUNDANT CHECK**



Enable



Disable

**HEADER AND TRAILER**



Header



Trailer



Set



End of Configuration

7



Start of Configuration

**INTER-MESSAGE DELAY**



None



100 mSec

**INTER-MESSAGE DELAY (Cont' d)**



500 mSec



1 Second

**INTER-CHARACTER DELAY**



None



10 mSec



20 mSec



50 mSec

**MESSAGE/BLOCK MODE SELECTION**



Message



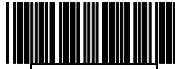
Block

8

**SEND COMMAND IN BLOCK MODE COMMUNICATION**



Enable



Disable



Store



Set

**GOOD READ BEEPER TONE SELECTION**



Medium



Low



High

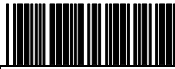


Disable

**SOUND DURATION**



long(120ms)



Medium(50ms)



Short(20ms)



Very short(5ms)



End of Configuration

9



Start of Configuration

**BAR CODE IDENTIFIER CODE SELECTION**



Enable



Disable

**BAR CODE IDENTIFIER CODE SETTING**



UPC- E



UPC- A



EAN- 13



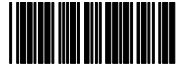
EAN- 8



Chinese post code



ITF 2 OF 5



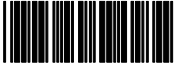
Codabar



Code 39

10

**BAR CODE IDENTIFIER CODE SETTING (Cont'd)**



Code 128



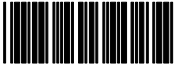
Set



Code 93



MSI



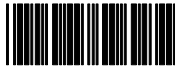
MATRIX 25

**RS-232C SERIAL COMMUNICATION  
PARAMETERS SETTING**

**HANDSHAKING PROTOCOL**



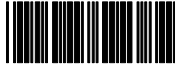
None



RTS/ CTS



ACK/ NAK



Xon/ Xoff

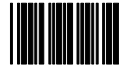
**ACK/NAK RESPONSE TIME SETTING**



300 mSec



End of Configuration



Start of Configuration

**ACK/ NAK RESPONSE TIME SETTING (Cont'd)**



2 Sec



500 mSec



3 Sec



1 Sec

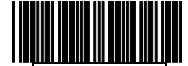


5 Sec

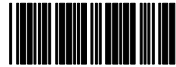
**BAUD RATE**



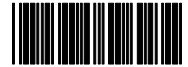
19200



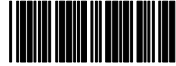
9600



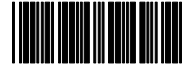
4800



2400



1200



600

12  
DATA BIT



7



8

STOP BIT



1



2

PARITY



Even



Odd



Mark



Space



13



Start of Configuration

---

**MESSAGE TERMINATOR (FOR RS-232C TYPE ONLY)**



None



CR/ LF



CR



LF



H Tab



STX/ ETX



EOT

---

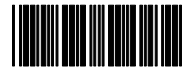
**KEYBOARD EMULATION PARAMETERS**

**SETTING**

**KEYBOARD TYPE SELECTION**



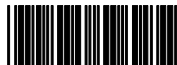
IBM AT



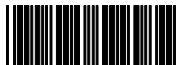
PS/ 2 30-80



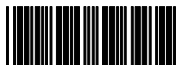
IBM 5550

**KEYBOARD TYPE SELECTION (Cont' d)**

IBM 5295 Terminal



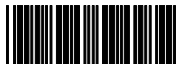
IBM XT

IBM 3477/ 3472 Terminal  
(for Asia Area only)

IBM 5530-SC



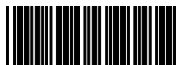
IBM 5530-ZC



NEC 9801



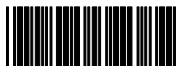
IBM 3196 Terminal



APPLE MAC II (i )



MOS SYS



PS2/ 30/56

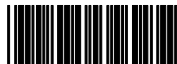
Note: The configuration of the items with asterisk  
(i ) is optional.



End of Configuration



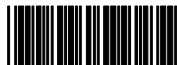
Start of Configuration

**KEYBOARD TYPE SELECTION (Cont' d)**

IBM 3477 Terminal



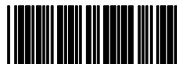
NEC 5200 (i )

**KEYBOARD LANGUAGE SELECTION**

USA



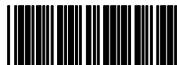
UK



Germany



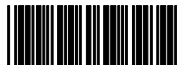
French



Spanish



Italian



Swiss

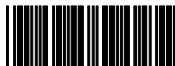


Swedish

**MESSAGE TERMINATOR (FOR KEYBOARD WEDGE USE)**



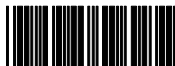
None



Return



Hor. TAB



Execute

**BREAK CODE ON/OFF SETTING (FOR IBM AT USE)**



ON



OFF

**FUNTION KEY ACTIVE ON/ OFF (FOR IBM AT USE)**



ON



OFF

**CAPITAL LOCK ON/ OFF**



ON



OFF



End of Configuration



Start of Configuration

**READING CODE SELECTION**



Code 39 Enable



Code 39 Disable



Codabar Enable



Codabar Disable



UPC/ EAN/ JAN Enable



UPC/ EAN/ JAN Disable



ITF 2 of 5 Enable



ITF 2 of 5 Disable



SLZ 2 of 5 Enable



SLZ 2 of 5 Disable



Code 128 Enable



End of Configuration

18

**READING CODE SELECTION (Cont' d)**



Code 128 Disable



MSI Enable



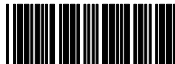
MSI Disable



Code 93 Enable



Code 93 Disable



IATA Enable



IATA Disable



EAN- 128 Enable



EAN-128 Disable



MATRIX 25 Enable

19



Start of Configuration

**READING CODE SELECTION (Cont' d)**



MATRIX Disable



Italian Pharmac Enable



Italian Pharmac Disable

**CODE 39 PARAMETERS SETTING**

CHARACTER SET



Standard Code 39



Full ASCII Code 39

START/STOP CHARACTER TRANSMISSION



Yes



No

CHECK DIGIT

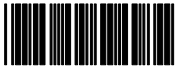


Calculate and Transmit

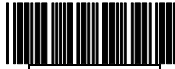


End of Configuration

20  
CHECK DIGIT

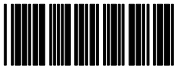


Calculate but not Transmit

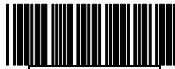


Concatenation

No



Enable



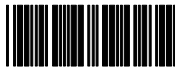
Disable

**INTERLEAVED 2 OF 5 PARAMETERS SETTING**

LENTGTH



MAX



Min



Set

21



Start of Configuration

**INTERLEAVED 2 OF 5 PARAMETERS SETTING**

**(Cont' d)**

CHECK DIGIT



No



Calculate and Transmit



Calculate but not Transmit

**CHINESE POST CODE PARAMETERS SETTING**

LENGTH



MAX



MIN



Set



UPC-A



UPC-E

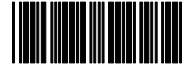


CHECK DIGIT

No



EAN-13



EAN-8



Calculate and Transmit



End of Configuration

22

**CHINESE POST CODE PARAMETERS SETTING (Cont' d)**



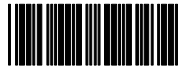
Calculate but not Transmit

**UPC/ EAN/ JAN PARAMETERS SETTING**

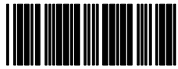
FORMAT



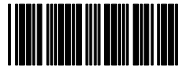
All



EAN-8 or EAN-13



UPC-A and EAN-13



UPC-A and UPC-E

23



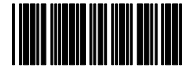
Start of Configuration

**UPC/ EAN/ JAN PARAMETERS SETTING(Cont' d)**

ADDENDUM



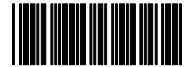
No



5 Characters



2 Characters



2 or 5 Characters

FORCE UPC-E TO UPC-A FORMAT



Yes



No

FORCE UPC-A TO EAN-13 FORMAT



Yes

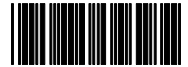


No

TRANSMIT UPC-E LEADING CHARACTER



Yes

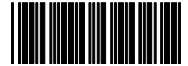


No

TRANSMIT UPC-E CHECK DIGIT



Yes



No

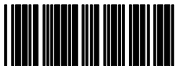
---

End of Configuration

24

**UPC/ EAN/ JAN PARAMETERS SETTING**  
**(Cont'd)**

TRANSMIT UPC-A LEADING CHARACTER

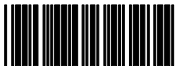


Yes

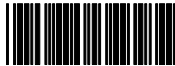


No

TRANSMIT UPC-A CHECK DIGIT



Yes



No

25



Start of Configuration

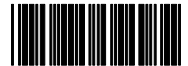
---

**UPC/ EAN/ JAN PARAMETERS SETTING**  
**(Cont'd)**

TRANSMIT EAN-13 CHECK DIGIT



Yes

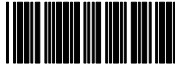


No

TRANSMIT EAN-8 CHECK DIGIT



Yes



No

**CODABAR/ MONARCH PARAMETERS SETTING**

**START/ STOP CHARACTER TRANSMISSION**



No



A, B, C, D



DC1 ~DC4



a/ t, b/ n, c/ \*, d/ e



Calculate and Transmit



Calculate but not Transmitt

**MATRIX 25 PARAMETERS SETTING**

**LENGTH**



MAX



MIN



Set



End of Configuration

26

**CODE 128 PARAMETERS SETTING**

**FNC 2 CONCATENATION**



Enable



Disable

**CHECK DIGIT**



No

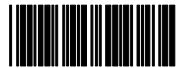
27



Start of Configuration

**MSI/PLESSY PARAMETERS SETTING**

**Length**



MAX



MIN



SET

Double Check digit



Calculate but not Transmitted



No



Calculate but only first one Transmitted



Calculated and both Transmitted

Single Check digit



Calculated but not Transmitted



Calculated and transmitted

28

Plessy code setting



Calculated and transmitted

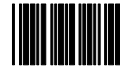


Calculate but not transmitted



End of Configuration

29



Start of Configuration

**MATRIX 25 PARAMETERS SETTING (Cont' d)**

CHECK DIGIT



No



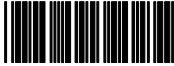
Calculate and Transmit



Calculate but not Transmitt

**ITALIAN PHARMAC PARAMETERS SETTING**

TRANSMIT "A" CHARACTER



Yes



No

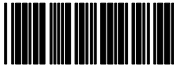
**BAR CODE LENGTH SETTING**

Examples: Setting length 4 to 8 digits.

Scan: " Start---Mini---04---Set---End"

" Start---Max---08---Set---End"

CODE 39 LENGTH SETTING



MAX



MIN

CODE 93 LENGTH SETTING



MAX



MIN

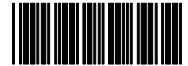
30

**BAR CODE LENGTH SETTING (Cont' d)**

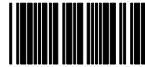
CODE 128 LENGTH SETTING



MAX



MIN



Set

**CODABAR LENGTH SETTING**



MAX



MIN

**ISBN/ ISSN CONVERSION**



ACTIVE ISBN/ ISSN



INACTIVE ISBN/ ISSN

**WAND EMULATION PARAMETERS SETTING**

**EMULATION SPEED SELECTION**



Low



Medium



End of Configuration

31



Start of Configuration

**EMULATION SPEED SELECTION (Cont' d)**



Normal



High

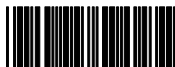


Higher

### EMULATION DATA OUTPUT SELECTION



Black= High



Black= Low

### WNAD EMULATION NARROW/WIDE RATIO



1:2



1:3




End of Configuration

| ASCII | CODE 39 | VALEUR HEXA. | ASCII | CODE 39 | VALEUR HEXA. |
|-------|---------|--------------|-------|---------|--------------|
| NUL   | %U      | 00           | %     | /E      | 25           |
| SOH   | \$A     | 01           | &     | /F      | 26           |
| STX   | \$B     | 02           | '     | /G      | 27           |
| ETX   | \$C     | 03           | (     | /H      | 28           |
| EOT   | \$D     | 04           | )     | /I      | 29           |
| ENQ   | \$E     | 05           | *     | /J      | 2A           |
| ACK   | \$F     | 06           | +     | /K      | 2B           |
| BEL   | \$G     | 07           | ,     | /L      | 2C           |
| BS    | \$H     | 08           | -     | -       | 2D           |
| HT    | \$I     | 09           | .     | .       | 2E           |
| LF    | \$J     | 0A           | /     | /       | 2F           |
| VT    | \$K     | 0B           | 0     | 0       | 30           |
| FF    | \$L     | 0C           | 1     | 1       | 31           |
| CR    | \$M     | 0D           | 2     | 2       | 32           |
| SO    | \$N     | 0E           | 3     | 3       | 33           |
| SI    | \$O     | 0F           | 4     | 4       | 34           |
| DLE   | \$P     | 10           | 5     | 5       | 35           |
| DC1   | \$Q     | 11           | 6     | 6       | 36           |
| DC2   | \$R     | 12           | 7     | 7       | 37           |
| DC3   | \$S     | 13           | 8     | 8       | 38           |
| DC4   | \$T     | 14           | 9     | 9       | 39           |
| NAK   | \$U     | 15           | :     | /Z      | 3A           |
| SYN   | \$V     | 16           | ;     | %F      | 3B           |
| ETB   | \$W     | 17           | <     | %G      | 3C           |
| CAN   | \$X     | 18           | =     | %H      | 3D           |
| EM    | \$Y     | 19           | >     | %I      | 3E           |
| SUB   | \$Z     | 1A           | ?     | %J      | 3F           |
| ESC   | %A      | 1B           | @     | %V      | 40           |
| FS    | %B      | 1C           | A     | A       | 41           |
| GS    | %C      | 1D           | B     | B       | 42           |
| RS    | %D      | 1E           | C     | C       | 43           |
| US    | %E      | 1F           | D     | D       | 44           |
| SP    | SP      | 20           | E     | E       | 45           |
| !     | /A      | 21           | F     | F       | 46           |
| "     | /B      | 22           | G     | G       | 47           |
| #     | /C      | 23           | H     | H       | 48           |
| \$    | /D      | 24           | I     | I       | 49           |

| ASCII | CODE 39 | VALEUR HEXA. | ASCII | CODE 39 | VALEUR HEXA. |
|-------|---------|--------------|-------|---------|--------------|
| J     | J       | 4A           | e     | +E      | 65           |
| K     | K       | 4B           | f     | +F      | 66           |
| L     | L       | 4C           | g     | +G      | 67           |
| M     | M       | 4D           | h     | +H      | 68           |
| N     | N       | 4E           | i     | +I      | 69           |
| O     | O       | 4F           | j     | +J      | 6A           |
| P     | P       | 50           | k     | +K      | 6B           |
| Q     | Q       | 51           | l     | +L      | 6C           |
| R     | R       | 52           | m     | +M      | 6D           |
| S     | S       | 53           | n     | +N      | 6E           |
| T     | T       | 54           | o     | +O      | 6F           |
| U     | U       | 55           | p     | +P      | 70           |
| V     | V       | 56           | q     | +Q      | 71           |
| W     | W       | 57           | r     | +R      | 72           |
| X     | X       | 58           | s     | +S      | 73           |
| Y     | Y       | 59           | t     | +T      | 74           |
| Z     | Z       | 5A           | u     | +U      | 75           |
| [     | %K      | 5B           | v     | +V      | 76           |
| \     | %L      | 5C           | w     | +W      | 77           |
| ]     | %M      | 5D           | x     | +X      | 78           |
| ^     | %N      | 5E           | y     | +Y      | 79           |
| _     | %O      | 5F           | z     | +Z      | 7A           |
| `     | %W      | 60           | {     | %P      | 7B           |
| a     | +A      | 61           |       | %Q      | 7C           |
| b     | +B      | 62           | }     | %R      | 7D           |
| c     | +C      | 63           | ~     | %S      | 7E           |
| d     | +D      | 64           | DEL   | %T      | 7F           |


### ***FUNCTION KEY EMULATION***

| FUNCTION KEY | ASCII | CODE 39 | FUNCTION KEY | ASCII | CODE 39 |
|--------------|-------|---------|--------------|-------|---------|
| F1           | DC1   | \$Q     | F7           | ETB   | \$W     |
| F2           | DC2   | \$R     | F8           | CAN   | \$X     |
| F3           | DC3   | \$S     | F9           | EM    | \$Y     |
| F4           | DC4   | \$T     | F10          | SUB   | \$Z     |
| F5           | NAK   | \$U     | F11          | ESC   | %A      |
| F6           | SYN   | \$V     | F12          | FS    | %B      |




Start of Configuration


---




NUL




ENQ




LF




SOH




ACK




VT




STX




BEL




FF




ETX




BS




CR



EOT




HT



SO

---



End of Configuration

**CODE 39 FULL ASCII BAR CODE TABLE**

  
Start of Configuration

---

  
SI

  
DC4

  
EM

  
DLE

  
NAK

  
SUB

  
DC1

  
SYN

  
ESC

  
DC2

  
ETB

  
FS

  
DC3

  
CAN

  
GS

  
RS

  
#

  
(

  
US

  
\$

  
)

  
SP

  
%

  
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!

  
&

  
+

  
"

'

  
,

---

  
End of Configuration

APPENDIX B

CODE 39 FULL ASCII BAR CODE TABLE



Start of Configuration



-



2



7



.



3



8



/



4



9



0



5



:



1



6



;

APPENDIX B

CODE 39 FULL ASCII BAR CODE TABLE



<



A



F



=



B



G



>



C



H



?



D



I



@



E



J



End of Configuration

## APPENDIX B

## CODE 39 FULL ASCII BAR CODE TABLE



Start of Configuration



K



P



U



L



Q



V



M



R



W



N



S



X



O



T



Y

## APPENDIX B

## CODE 39 FULL ASCII BAR CODE TABLE



Z



-



d



[



\



e



\



a



f



]



b



g



^



c



h



End of Configuration

## APPENDIX B

## CODE 39 FULL ASCII BAR CODE TABLE



Start of Configuration



i



n



s



j



o



t



k



p



u



l



q



v



m



r



w

## APPENDIX B

## CODE 39 FULL ASCII BAR CODE TABLE



x



~



{



y



DEL



|



z



}



End of Configuration

