Wasp

BARCODE TECHNOLOGIES

WLS8600

Reference Manual

CONTENTS

NOTES

GENERAL VIEW

WLS8600 READER

LEDs

Cable Connector

Trigger

Laser   Output
Window

Figure A – WLS8600 Series Reader

1   INTRODUCTION

Wasp Barcode Technologies renews its range of industrial laser scanners introducing the **WLS8600** family. Robustness and ergonomics remain unsurpassed: clearly audible beeper and bright "good read" LEDs for areas where noise levels are normally high; the aim mode, which helps point to the right code, has now been extended to the whole family. Optical parts are completely suspended on shock absorbers and a careful choice of the body materials, such as the co-molded rubber, protect the **WLS8600** from damage due to "falls".

New enhanced architecture, based on an M16 high-speed microprocessor, enables exceptional performance for promptness and reading speed of standard codes as well as the ability to read poorly printed and damaged codes. Puzzle Solver Technology™ adds further strength to the powerful engine of the **WLS8600**.

Your **WLS8600** reader is supplied with its own Quick Reference Guide, which provides connection, diagrams, reading diagrams, basic application parameter settings, default values, and specific technical features. You can use either the Quick Reference Guide or this Manual for initial configuration in order to set the default values and select the interface for your application. This manual provides all the necessary information for complete mechanical installation and system software configuration.

2 INSTALLATION

<table>
<tr>
<td>⚠️
CAUTION</td>
<td><i>Connections should always be made with power OFF!</i></td>
</tr>
</table>

2.1 WLS8600 INTERFACE CABLE CONNECTIONS

The WLS8600 reader incorporates a multi-standard interface, which can be connected to a Host by plugging the correct interface cable into the connector and closing the cable cover.
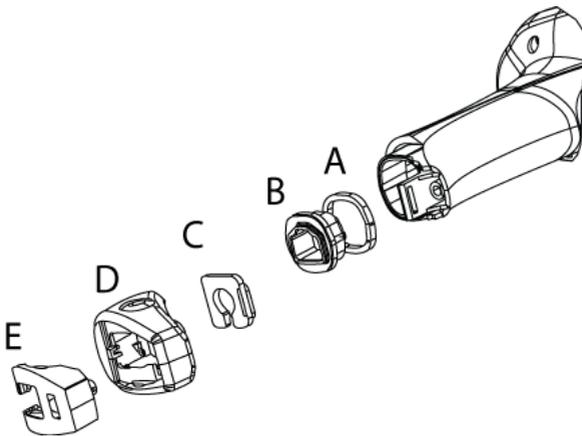
- A. Rubber gasket

- B. Plastic boot

- C. Cable spacer

- D. Cover

- E. Strain relief

Follow the given procedure for correct cable insertion:
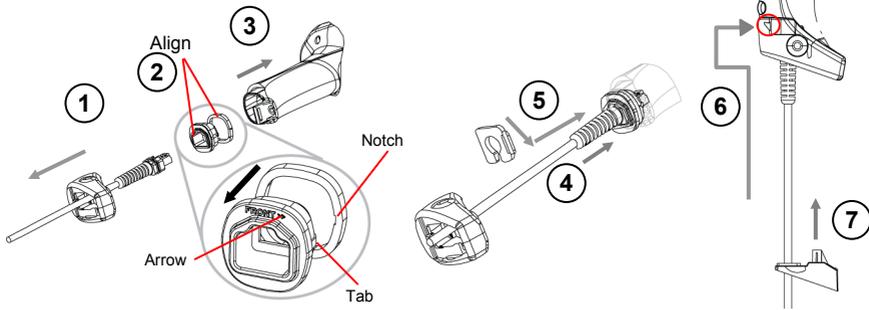
① Slip the cover over the cable.

② Push the plastic boot into the rubber gasket. Take care that the tab on the plastic boot is aligned with the notch in the rubber gasket.

③ Push the plastic boot and gasket into the handle. Ensure that the "Front" marking on the plastic boot is facing out, with the arrow pointing towards the front of the scanner.

④ Insert the cable into the socket of the plastic boot.

⑤ Insert the cable spacer into the cable wire and slide it towards the handle.

⑥ Push the cover along the cable towards the reader, and hook it over the yellow "tooth".

⑦ Insert the strain relief into the cover and tighten the screw to fix the whole assembly to the reader handle.

> ⚠ **CAUTION**   *Connections should always be made with power OFF!*

2.2 RS-232 CONNECTION

2.3 USB

2.4 IBM USB POS

2.5   WEDGE CONNECTION
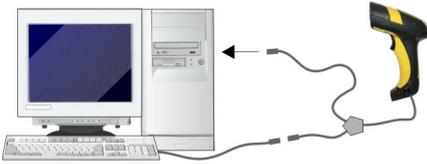
2.6   PEN EMULATION CONNECTION
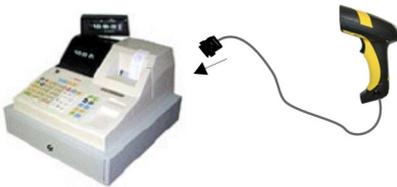
3   CONFIGURATION

3.1   CONFIGURATION METHODS

3.1.1   Reading Configuration Barcodes

This manual can be used for complete setup and configuration of your reader by following the setup procedures in this chapter (see par. 3.2 for an overview).

If you wish to change the default settings, this manual provides complete configuration of your reader in an easy way.

To configure your reader:

1)   Open the folded page in Appendix C with the hex-numeric table and keep it open during the device configuration.

2)   Read the **Enter Configuration** code ONCE, available at the top of each page of configuration.

3)   Modify the desired parameters in one or more sections following the procedures given for each group.

4)   Read the **Exit and Save Configuration** code ONCE, available at the top of each page of configuration.

Reference notes describing the operation of the more complex parameters are given in chapter 0.

3.1.2   Copy Command

A previously configured device (Master), can be used to send its configuration directly to other devices of the same type (Slaves). The particular procedure for each device is given in par. 4.11.

3.1.3   Sending Configuration Strings from Host

An alternative configuration method is provided in Appendix A using the RS-232 interface. This method is particularly useful when many devices need to be configured with the same settings. Batch files containing the desired parameter settings can be prepared to configure devices quickly and easily.

3.2 SETUP PROCEDURES

For WLS8600 Series readers, follow the setup procedures in pars. 3.3, and 3.4.

Proceed as shown in the following diagram:

BEGIN SETUP

Follow the procedure indicated below.

1. Restore default parameters

Scan the Restore Default barcode at section 3.3, WLS8600 Setup.

2. Scan the interface code

Go to section 3.4, Interface Selection and choose the appropriate barcode for your application.

END SETUP

Your reader is now ready to read barcodes using the default settings.
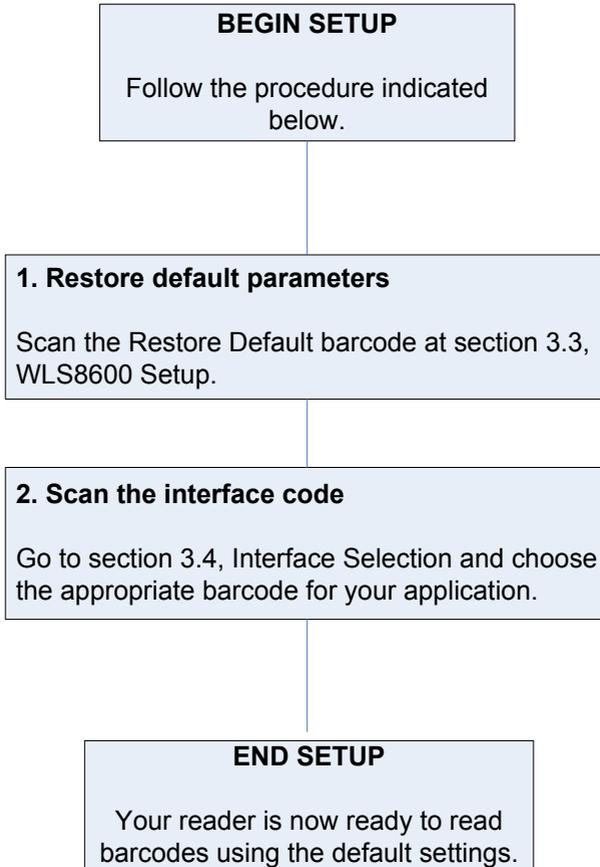
3.3   **WLS8600 SETUP**

1.   Read the restore default parameters code below.

Restore WLS8600 Default

After reading the above code, go to par. 3.4 Interface Selection.

3.4   INTERFACE SELECTION

Read the interface selection code for your application.

RS-232

Standard

||| || || ||| | ||||||||| ||| |||| || |||

POS TERMINALS

Nixdorf Mode A

||| || || ||| ||| |||| ||| || | | ||||| || |||||| | |||

Fujitsu

||| || ||| |||| || |||| | ||| | |||||| || |||

ICL Mode

||| || || ||| | |||| ||| ||| || |||||| | |||

For POS terminal default settings refer to par. 4.12.

PEN

||| || || ||| | ||||||||| ||| |||| || | |||

WEDGE

IBM AT or PS/2 PCs

IBM XT

PC Notebook

IBM SURE1

IBM Terminal 3153

IBM Terminals 31xx, 32xx, 34xx, 37xx:

To select the interface for these IBM Terminals, read the correct <u>KEY TRANSMISSION</u> code. Select the <u>KEYBOARD TYPE</u> if necessary (default = advanced keyboard).

KEY TRANSMISSION MODE

make-only keyboard

make-break keyboard

KEYBOARD TYPE

◆ advanced keyboard

typewriter keyboard

WEDGE (CONTINUED)

ALT MODE

The ALT-mode selection allows barcodes sent to the PC to be interpreted correctly independently from the Keyboard Nationality used. **You do not need to make a Keyboard Nationality selection.**

(default = Num Lock Unchanged). **Make sure the Num Lock key on your keyboard is ON.**

IBM AT - ALT mode

PC Notebook - ALT mode

WYSE TERMINALS

ANSI Keyboard

PC Keyboard

ASCII Keyboard

VT220 style Keyboard

DIGITAL TERMINALS

VT2xx/VT3xx/VT4xx

3.5   USB READER CONFIGURATION

The USB interface is compatible with the following Operating Systems:

Windows 98 (and later)	IBM POS for Windows
Mac OS 8.0 (and later)	4690 Operating System

USB Start-up

As with all USB devices, upon connection, the Host performs several checks by communicating with the device. During this phase normal operations are suspended (the LED on the WLS8600 reader blinks). Two basic conditions must be met before the device is ready, <u>the correct USB driver must be loaded</u> and <u>sufficient power must be supplied to the reader</u>.

First Start-Up

① For all systems, the correct USB driver for the default USB-KBD interface is included in the Host Operating System and will either be loaded automatically or will be suggested by the O.S. and should therefore be selected from the dialog box (the first time only).

Normally the Host supplies sufficient power to the device and the start-up phase ends correctly. (The reader's LED stops blinking and the reader emits the beep OK signal).

In rare cases, if the Host does not supply sufficient power to the device, a dialog box will appear on the Host and the device will be blocked (the reader's LED continues blinking). In this case, disconnect the USB device cable <u>at the Host</u> (the reader's LED stops blinking), and then try a different USB port as indicated by the Operating System message. (The device emits the beep OK signal. You can now read codes).

① Connect device to Host

reader LED blinks

Load drivers *(if requested)*

reader LED off - BEEP OK

② Select desired USB interface code (USB-KBD is default)

Load drivers *(if requested)*

Read test codes. **Device is READY**

② At this point you can read the USB interface configuration code according to your application. Load drivers from the O.S. (if requested). When configuring the USB-COM interface, the relevant files and drivers must be installed from the USB Device Installation software. Contact WASP Technical Support for more information.

The device is ready. Successive start-ups will automatically recognize the previously loaded drivers.

USB

USB-KBD

‖‖ ‖ ‖‖ ‖‖‖‖‖ ‖ ‖‖‖‖‖ ‖ ‖‖‖‖‖ ‖‖

USB-KBD-ALT-MODE

‖‖ ‖ ‖‖ ‖‖‖‖‖ ‖ ‖‖‖‖‖ ‖ ‖‖‖‖ ‖‖‖ ‖‖

USB-KBD-APPLE

‖‖ ‖ ‖‖ ‖‖‖‖‖ ‖ ‖‖‖‖‖‖ ‖‖‖‖ ‖‖ ‖‖

USB-COM*

‖‖ ‖ ‖‖ ‖‖‖‖‖ ‖ ‖‖‖‖‖‖ ‖ ‖‖‖‖‖ ‖‖
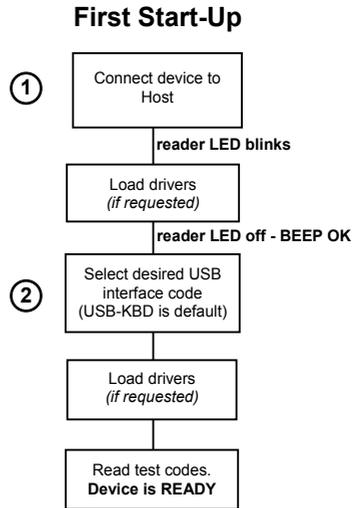
USB-IBM-Table Top

‖‖ ‖ ‖‖ ‖‖‖‖‖ ‖ ‖‖‖‖‖ ‖ ‖‖‖‖ ‖‖‖ ‖‖

USB-IBM-Hand Held

‖‖ ‖ ‖‖ ‖‖‖‖‖ ‖ ‖‖‖‖‖‖ ‖ ‖‖‖‖‖ ‖‖

* When configuring USB-COM, the relevant files and drivers must be installed from the USB Device Installation software. Contact WASP Technical Support for more information.

3.6   CHANGING DEFAULT SETTINGS

Once your reader is setup, you can change the default parameters to meet your application needs. Refer to the preceding paragraphs for initial configuration in order to set the default values and select the interface for your application.

In this manual, the configuration parameters are divided into logical groups making it easy to find the desired function based on its reference group.

RS-232

USB

WEDGE

PEN EMULATION

DATA FORMAT parameters regard the messages sent to the Host system for all interfaces except Pen Emulation.

POWER SAVE manages overall current consumption in the reading device.

READING PARAMETERS control various operating modes and indicator status functioning.

DECODING PARAMETERS maintain correct barcode decoding in certain special reading conditions.

CODE SELECTION parameters allow configuration of a personalized mix of codes, code families and their options.

ADVANCED FORMATTING PARAMETERS allow code concatenation and advanced formatting of messages towards the Host. It cannot be used with Pen Emulation connections.

RS-232 PARAMETERS

All WLS8600 Series readers

◉	*BAUD RATE*	◉
◉	*PARITY*	◉
◉	*DATA BITS*	◉
◉	*STOP BITS*	◉
◉	*HANDSHAKING*	◉
◉	*ACK/NACK PROTOCOL*	◉
◉	*FIFO*	◉
◉	*INTER-CHARACTER DELAY*	◉
◉	*RX TIMEOUT*	◉
◉	*SERIAL TRIGGER LOCK*	◉

1.   Read the **Enter Configuration** code <u>ONCE</u>, available at the top of each page.

2.   Read configuration codes from the desired groups.

⊙   = Read the code and follow the procedure given

◆   = Default value

3.   Read the **Exit and Save Configuration** code <u>ONCE</u>, available at the top of each page.

RS-232

BAUD RATE

300 baud

‖‖‖‖‖‖‖‖‖

600 baud

‖‖‖‖‖‖‖‖‖

1200 baud

‖‖‖‖‖‖‖‖‖

2400 baud

‖‖‖‖‖‖‖‖‖

4800 baud

‖‖‖‖‖‖‖‖‖

◆ 9600 baud

‖‖‖‖‖‖‖‖‖

19200 baud

‖‖‖‖‖‖‖‖‖

38400 baud

‖‖‖‖‖‖‖‖‖

PARITY

◆ none

‖‖‖‖‖‖‖‖‖

even parity

‖‖‖‖‖‖‖‖‖

odd parity

‖‖‖‖‖‖‖‖‖

DATA BITS

7 bits

‖‖‖ ‖ ‖ ‖‖ ‖ ‖‖‖ ‖‖‖ ‖‖

◆ 8 bits

‖‖‖ ‖ ‖ ‖‖‖ ‖ ‖‖‖ ‖ ‖‖

9 bits

‖‖‖ ‖ ‖ ‖‖‖ ‖ ‖‖‖‖ ‖‖

STOP BITS

◆ 1 stop bit

‖‖‖ ‖ ‖ ‖ ‖‖ ‖‖‖‖ ‖‖

2 stop bits

‖‖‖ ‖ ‖ ‖‖ ‖ ‖‖‖‖ ‖‖ ‖‖

HANDSHAKING

◆ disable

‖‖‖ ‖ ‖ ‖‖ ‖ ‖‖‖‖ ‖‖

hardware (RTS/CTS)

‖‖‖ ‖ ‖ ‖‖ ‖ ‖‖‖‖ ‖‖ ‖‖‖

software (XON/XOFF)

‖‖‖ ‖ ‖ ‖ ‖‖ ‖‖‖‖ ‖ ‖‖

RTS always ON

‖‖‖ ‖ ‖ ‖‖ ‖ ‖‖‖‖ ‖ ‖‖

See par. 4.1.1 for details.

ACK/NACK PROTOCOL

◆ disable

enable

See par. 4.1.2 for details.

FIFO

disable

◆ enable

See par. 4.1.3 for details.

INTER-CHARACTER DELAY

delay between characters transmitted to Host

Read 2 numbers from the table where:

00 = DELAY disabled
01-99 = DELAY from 1 to 99 milliseconds

◆ delay disabled

RX TIMEOUT

timeout control in reception from Host

||| | | | ||||||| |||

Read 2 numbers from the table where:
00 = TIMEOUT disabled
01-99 = TIMEOUT from **.1** to **9.9** seconds

◆ rx timeout 5 seconds

See par. 4.1.4 for details.

SERIAL TRIGGER LOCK

◆ disabled

||| | | || ||||||| |||

enable and select characters

||| | | || |||||| |||

Read 2 characters from the Hex/Numeric table in the range 00-FE where:

− First Character enables device trigger
− Second Character inhibits device trigger until the first character is received again.

USB PARAMETERS

⊙   ***USB-COM***   ⊙

Handshaking, Ack/Nack protocol, FIFO, Inter-character delay, Rx timeout, Serial trigger lock

⊙   ***USB-KBD***   ⊙

Keyboard nationality, FIFO, Inter-character delay, Inter-code delay, USB keyboard speed

⊙   ***USB-IBM***   ⊙

No parameter selection required.

1. Read the **Enter Configuration** code ONCE, available at the top of each page.

2. Read configuration codes from the desired groups.

       = Read the code and follow the procedure given

◆   = Default value

3. Read the **Exit and Save Configuration** code ONCE, available at the top of each page.

HANDSHAKING

◆ disable

‖‖ ‖ ‖ ‖‖ ‖‖‖‖‖ ‖‖

hardware (RTS/CTS)

‖‖ ‖ ‖ ‖‖‖ ‖‖‖‖ ‖‖‖

software (XON/XOFF)

‖‖ ‖ ‖ ‖‖‖ ‖‖‖‖ ‖‖ ‖

RTS always ON

‖‖ ‖ ‖ ‖‖‖ ‖‖‖‖ ‖‖ ‖‖

See par. 4.1.1 for details.

ACK/NACK PROTOCOL

◆ disable

‖‖ ‖ ‖‖ ‖ ‖‖‖‖‖‖ ‖‖

enable

‖‖ ‖ ‖ ‖ ‖‖‖‖‖‖‖‖ ‖‖

See par. 4.1.2 for details.

FIFO

disable

‖‖ ‖ ‖ ‖ ‖ ‖‖‖‖‖‖ ‖‖

◆ enable

‖‖ ‖ ‖ ‖ ‖ ‖‖‖‖ ‖‖ ‖‖

See par. 4.1.3 for details.

INTER-CHARACTER DELAY

delay between characters transmitted to Host

‖‖‖‖‖‖‖‖‖‖

Read 2 numbers from the table where:

00 = DELAY disabled
01-99 = DELAY from 1 to 99 milliseconds

◆ delay disabled

RX TIMEOUT

timeout control in reception from Host

‖‖‖‖‖‖‖‖‖‖

Read 2 numbers from the table where:

00 = TIMEOUT disabled
01-99 = TIMEOUT from **.1** to **9.9** seconds

◆ rx timeout 5 seconds

See par. 4.1.4 for details.

SERIAL TRIGGER LOCK

◆ disabled

‖‖‖‖‖‖‖‖‖‖

enable and select characters

‖‖‖‖‖‖‖‖‖‖

Read 2 characters from the Hex/Numeric table in the range 00-FE where:

− First Character enables device trigger
− Second Character inhibits device trigger until the first character is received again.

KEYBOARD NATIONALITY

Not Available for USB-KBD-ALT-MODE Interface

This parameter default value is restored through the Interface Selection code and not Restore Default.

Belgian

English (UK)

French

German

Italian

Spanish

Swedish

◆ USA

The Japanese and Eastern Block Keyboard Nationality selections are valid only for IBM AT compatible PCs.

Japanese

‖‖‖‖‖‖‖‖‖‖‖

Russian (Latin)

‖‖‖‖‖‖‖‖‖‖‖

Russian (Cyrillic)

‖‖‖‖‖‖‖‖‖‖‖

Hungarian

‖‖‖‖‖‖‖‖‖‖‖

Slovenian, Croatian,
Serbian (Latin)

‖‖‖‖‖‖‖‖‖‖‖

Romanian

‖‖‖‖‖‖‖‖‖‖‖

Czech Republic

‖‖‖‖‖‖‖‖‖‖‖

FIFO

disable

‖‖‖‖‖‖‖‖‖‖‖

◆ enable

‖‖‖‖‖‖‖‖‖‖‖

See par. 4.1.3 for details.

USB-KBD

INTER-CHARACTER DELAY

delay between characters transmitted to Host

‖‖ ‖ ‖ ‖‖‖ ‖‖‖‖ ‖‖‖

Read 2 numbers from the table where:

00 = DELAY disabled
01-99 = DELAY from **1** to **99** milliseconds

◆ delay disabled

INTER-CODE DELAY

delay between codes transmitted to Host

‖‖‖ ‖ ‖ ‖‖‖ ‖ ‖‖‖‖ ‖‖‖

Read 2 numbers from the table where:

00 = DELAY disabled
01-99 = DELAY from **1** to **99** seconds

◆ delay disabled

USB KEYBOARD SPEED

◆ Normal

‖‖‖ ‖‖‖‖‖ ‖‖‖‖‖‖‖ ‖‖‖ ‖‖‖

Fast

‖‖‖ ‖‖‖‖‖ ‖‖‖‖‖‖‖ ‖‖‖ ‖‖‖

WEDGE PARAMETERS

⊙	*KEYBOARD NATIONALITY*	⊙
⊙	*CAPS LOCK*	⊙
⊙	*CAPS LOCK AUTO-RECOGNITION*	⊙
⊙	*NUM LOCK*	⊙
⊙	*INTER-CHARACTER DELAY*	⊙
⊙	*INTER-CODE DELAY*	⊙
⊙	*KEYBOARD SETTING*	⊙
⊙	*WEDGE CONTROL CHARACTER EMULATION*	⊙

1. Read the **Enter Configuration** code <u>ONCE</u>, available at the top of each page.

2. Read configuration codes from the desired groups.

   = Read the code and follow the procedure given

◆   = Default value

3. Read the **Exit and Save Configuration** code <u>ONCE</u>, available at the top of each page.

KEYBOARD NATIONALITY

Belgian

‖‖‖ ‖ ‖ ‖‖‖ ‖‖‖‖‖‖ ‖‖

English (UK)

‖‖‖ ‖ ‖ ‖‖‖‖ ‖‖‖‖‖ ‖‖

French

‖‖‖ ‖ ‖ ‖‖‖ ‖‖‖‖ ‖‖‖ ‖‖

German

‖‖‖ ‖ ‖ ‖‖‖ ‖‖‖‖‖‖ ‖‖

Italian

‖‖‖ ‖ ‖ ‖‖‖ ‖‖‖‖‖ ‖ ‖‖

Spanish

‖‖‖ ‖ ‖ ‖‖‖ ‖‖‖‖‖‖ ‖ ‖‖

Swedish

‖‖‖ ‖ ‖ ‖‖‖ ‖‖‖‖‖‖ ‖‖

◆ USA

‖‖‖ ‖ ‖ ‖‖‖‖ ‖‖‖ ‖‖‖ ‖‖

WEDGE

The Japanese and Eastern Block Keyboard Nationality selections are valid only for IBM AT compatible PCs.

Japanese

‖‖|‖|‖‖‖‖‖‖‖|‖|‖‖

Russian (Latin)

‖‖|‖|‖‖‖‖‖‖|‖|‖

Russian (Cyrillic)

‖‖|‖|‖‖‖|‖|‖‖‖|‖‖

Hungarian

‖‖|‖|‖‖‖|‖|‖‖‖

Slovenian, Croatian,
Serbian (Latin)

‖‖|‖|‖‖‖|‖|‖‖‖|‖

Romanian

‖‖|‖|‖‖‖‖|‖|‖‖‖

Czech Republic

‖‖|‖|‖‖‖|‖|‖‖‖|‖

CAPS LOCK

◆ caps lock OFF

‖‖|‖|‖|‖|‖‖‖|‖‖‖

caps lock ON

‖‖|‖|‖|‖|‖|‖‖‖|‖|‖‖

Select the appropriate code to match your keyboard caps lock status.

NOTE: Caps lock manual configuration is ignored when Caps Lock Auto-Recognition is enabled. For **PC Notebook** interface selections, the caps lock status is automatically recognized; therefore this command is not necessary.

CAPS LOCK AUTO-RECOGNITION (IBM AT COMPATIBLE ONLY)

disable

‖‖|‖|‖‖‖‖‖‖

◆ enable

‖‖|‖|‖‖‖‖‖‖

NUM LOCK

toggle num lock

‖‖|‖|‖‖‖‖|‖‖

◆ num lock unchanged

‖‖|‖|‖‖‖‖|‖‖

This selection is used together with the Alt Mode interface selection for AT or Notebook PCs.

It changes the way the Alt Mode procedure is executed; therefore it should be set as follows:

- if your keyboard Num Lock is <u>normally on</u> use **num lock unchanged**
- if your keyboard Num Lock is <u>normally off</u> use **toggle num lock**

In this way the device will execute the Alt Mode procedure correctly for your application.

INTER-CHARACTER DELAY

delay between characters transmitted to Host

‖‖|‖|‖‖‖‖‖

Read 2 numbers from the table where:
  00 = DELAY disabled
01-99 = DELAY from **1** to **99** milliseconds

◆ delay disabled

INTER-CODE DELAY

delay between codes transmitted to Host

‖‖‖‖‖‖‖‖‖‖

Read 2 numbers from the table where:

00 = DELAY disabled
01-99 = DELAY from **1** to **99** seconds

◆ delay disabled

KEYBOARD SETTING

ALPHANUMERIC KEYBOARD SETTING

The device (reader or cradle) can be used with terminals or PCs with various keyboard types and nationalities through a simple keyboard setting procedure.

The type of computer or terminal must be selected before activating the keyboard setting command.

Keyboard setting consists of communicating to the device how to send data corresponding to the keyboard used in the application. The keys must be set in a specific order.

Press and release a key to set it.

Some characters may require more than one key pressed simultaneously during normal use (refer to the manual of your PC or terminal for keyboard use). The exact sequence must be indicated to the reader in this case pressing and releasing the different keys.

Example:

If one has to press the "Shift" and "4" keys simultaneously on the keyboard to transmit the character "$" to the video, to set the "$", press and release "Shift" then press and release "4".

Each pressed and released key must generate an acoustic signal on the device; otherwise repress the key. Never press more than one key at the same time, even if this corresponds to the normal use of your keyboard.

Press "Backspace" to correct a wrong key entry. In this case the device emits 2 beeps.
NOTE: "CAPS LOCK" and "NUM LOCK" must be off before starting the keyboard setting procedure. "SHIFT" must be repressed for each character and cannot be substituted by "CAPS LOCK".

setting the alphanumeric keyboard

‖‖‖‖‖‖‖‖‖‖

Read the code above.
Press the keys shown in the following table according to their numerical order.

WEDGE

Some ASCII characters may be missing as this depends on the type of keyboard: these are generally particular characters relative to the various national symbologies. In this case:

- **The first 4 characters (Shift, Alt, Ctrl, and Backspace) can only be substituted with keys not used, or substituted with each other.**
- characters can be substituted with other single symbols (e.g. "SPACE") even if not included in the barcode set used.
- characters can be substituted with others corresponding to your keyboard.

The device signals the end of the procedure with 2 beeps indicating the keys have been registered.

01 : **Shift**		
02 : **Alt**		
03 : **Ctrl**		
04 : **Backspace**		
05 : **SPACE**	28 : **7**	51 : **N**
06 : **!**	29 : **8**	52 : **O**
07 : **"**	30 : **9**	53 : **P**
08 : **#**	31 : **:**	54 : **Q**
09 : **$**	32 : **;**	55 : **R**
10 : **%**	33 : **<**	56 : **S**
11 : **&**	34 : **=**	57 : **T**
12 : **'**	35 : **>**	58 : **U**
13 : **(**	36 : **?**	59 : **V**
14 : **)**	37 : **@**	60 : **W**
15 : *****	38 : **A**	61 : **X**
16 : **+**	39 : **B**	62 : **Y**
17 : **,**	40 : **C**	63 : **Z**
18 : **-**	41 : **D**	64 : **[**
19 : **.**	42 : **E**	65 : ****
20 : **/**	43 : **F**	66 : **]**
21 : **0**	44 : **G**	67 : **^**
22 : **1**	45 : **H**	68 : **_** (underscore)
23 : **2**	46 : **I**	69 : **`**
24 : **3**	47 : **J**	70 : **{**
25 : **4**	48 : **K**	71 : **|**
26 : **5**	49 : **L**	72 : **}**
27 : **6**	50 : **M**	73 : **~**
		74 : **DEL**

WEDGE

CONTROL CHARACTER EMULATION

◆ Ctrl + Shift + Key

Ctrl + Key

PEN EMULATION

⊙	*OPERATING MODE*	⊙
⊙	*MINIMUM OUTPUT PULSE*	⊙
⊙	*CONVERSION TO CODE 39*	⊙
⊙	*OVERFLOW*	⊙
⊙	*OUTPUT LEVEL*	⊙
⊙	*IDLE LEVEL*	⊙
⊙	*INTER-BLOCK DELAY*	⊙

1. Read the **Enter Configuration** code ONCE, available at the top of each page.

2. Read configuration codes from the desired groups.

◆ = Default value

3. Read the **Exit and Save Configuration** code ONCE, available at the top of each page.

The operating mode parameters are complete commands and do not require reading the Enter and Exit configuration codes.

OPERATING MODE

◆ interpret mode

Interprets commands without sending them to the decoder.

transparent mode

Sends commands to the decoder without interpreting them.

MINIMUM OUTPUT PULSE

high resolution code
emulation

200 µs

‖‖ ‖ ‖ ‖ ‖ ‖‖‖‖ ‖‖‖

400 µs

‖‖ ‖ ‖ ‖ ‖‖‖‖ ‖ ‖‖‖

◆ 600 µs

‖‖ ‖ ‖ ‖ ‖‖‖‖ ‖ ‖‖‖

800 µs

‖‖ ‖ ‖ ‖ ‖‖‖‖ ‖ ‖‖‖

1 ms

‖‖ ‖ ‖ ‖ ‖‖‖‖ ‖ ‖‖‖

1.2 ms

‖‖ ‖ ‖ ‖ ‖‖‖‖ ‖‖ ‖‖‖

low resolution code
emulation
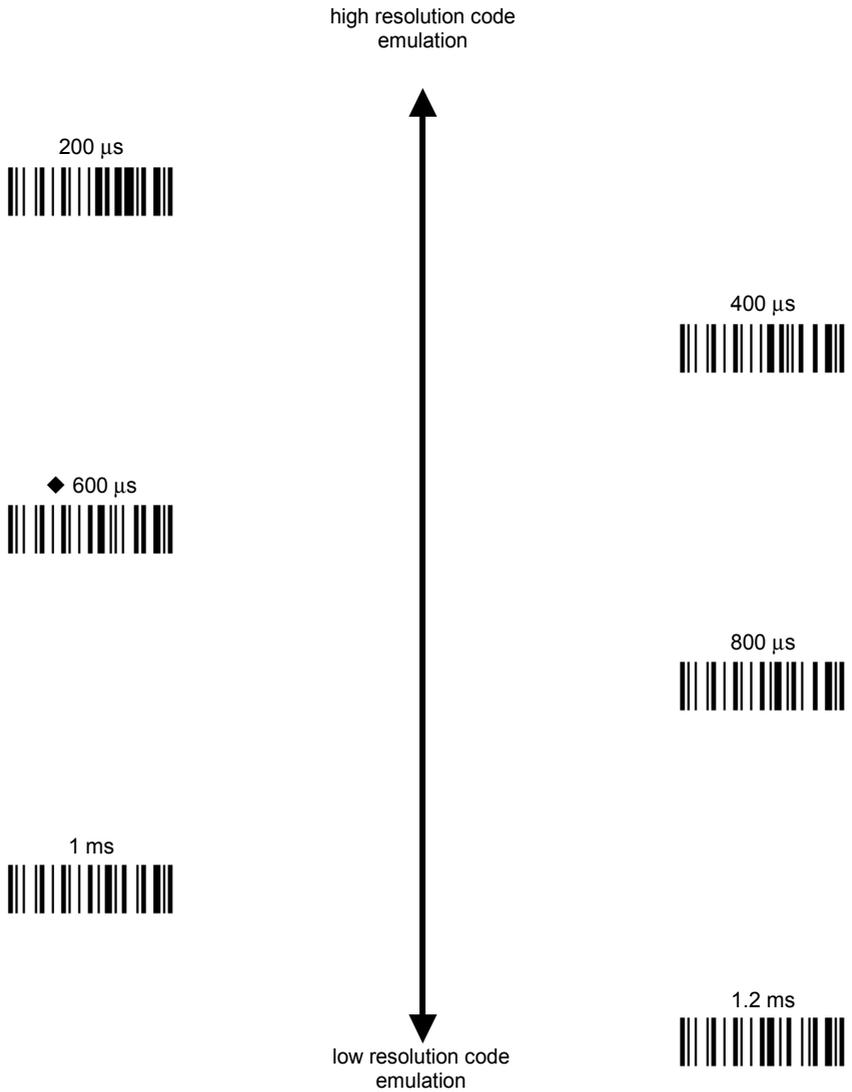
See par. 4.2.1 for details.

CONVERSION TO CODE 39

◆ disable conversion to Code 39

Transmits codes in their original
format.

enable conversion to Code 39

Converts codes read into
Code 39 format.

See par. 4.2.2 for details.

CONVERSION TO CODE 39 AND CODE 128

◆ enable conversion to Code 39

Converts codes read into Code
39 format.

enable conversion to Code 128

Converts codes read into Code
128 format.

See par. 4.2.2 for details.

OVERFLOW

narrow

◆ medium

wide

See par. 4.2.3 for details.

OUTPUT LEVEL

◆ normal

||| || || || ||||||| |||

(white = logic level 0)

inverted

||| || || || |||||| |||

(white = logic level 1)

See par. 4.2.4 for details.

IDLE LEVEL

◆ normal

||| || || || |||| || |||

(black level)

inverted

||| || || || ||||| || |||

(white level)

See par. 4.2.4 for details.

INTER-BLOCK DELAY

delay between character blocks transmitted to Host

||| || || ||| |||||| |||

Read 2 numbers from the table where:
  00 = DELAY disabled
01-99 = DELAY from .**1** to **9.9** seconds

◆ delay disabled

See par. 4.2.5 for details.

DATA FORMAT

⊙   *CODE IDENTIFIER*   ⊙

⊙   *CUSTOM CODE IDENTIFIER*   ⊙

⊙   *HEADER*   ⊙

⊙   *TERMINATOR*   ⊙

⊙   *SPECIAL KEYS*   ⊙

⊙   *FIELD ADJUSTMENT*   ⊙

⊙   *FIELD ADJ. CHARACTER*   ⊙

⊙   *CODE LENGTH TX*   ⊙

⊙   *CHARACTER REPLACEMENT*   ⊙

1.   Read the **Enter Configuration** code <u>ONCE</u>, available at the top of each page.

2.   Read configuration codes from the desired groups.

> = Read the code and follow the procedure given

◆   = Default value

3.   Read the **Exit and Save Configuration** code <u>ONCE</u>, available at the top of each page.

DATA FORMAT

CODE IDENTIFIER TABLE			
CODE	**AIM STANDARD**	**WASP STANDARD**	**Custom**
2/5 interleaved	] I *y*	N	
2/5 industrial	] X y	P	
2/5 normal 5 bars	] S y	O	
2/5 matrix 3 bars	] X y	Q	
EAN 8	] E 4	A	
EAN 13	] E 0	B	
UPC A	] X y	C	
UPC E	] X y	D	
EAN 8 with 2 ADD ON	] E 5	J	
EAN 8 with 5 ADD ON	] E 6	K	
EAN 13 with 2 ADD ON	] E 1	L	
EAN 13 with 5 ADD ON	] E 2	M	
UPC A with 2 ADD ON	] X y	F	
UPC A with 5 ADD ON	] X y	G	
UPC E with 2 ADD ON	] X y	H	
UPC E with 5 ADD ON	] X y	I	
Code 39	] A y	V	
Code 39 Full ASCII	] A y	W	
CODABAR	] F y	R	
ABC CODABAR	] X y	S	
Code 128	] C y	T	
EAN 128	] C y	k	
ISBT 128	] C4	f	
Code 93	] G y	U	
CIP/39	] X y	Y	
CIP/HR	] X y	e	
Code 32	] X y	X	
MSI	] M y	Z	
Code 11	] H y	b	
Code 16K	] K 0	p	
Code 49	] T y	q	
GS1 DataBar™ Expanded Linear and Stacked	] e 0	t	
GS1 DataBar Limited	] e 0	v	
GS1 DataBar 14 Linear and Stacked	] e 0	u	

- AIM standard identifiers are not defined for all codes: the X identifier is assigned to the code for which the standard is not defined. The *y* value depends on the selected options (check digit tested or not, check digit tx or not, etc.).

- When customizing the Wasp Standard code identifiers, 1 or 2 identifier characters can be defined for each code type. If only 1 identifier character is required, the second character must be selected as **FF** (disabled).

- The code identifier can be singly disabled for any code by simply selecting **FF** as the first identifier character.

- Write in the Custom character identifiers in the table above for your records.

DATA FORMAT

CODE IDENTIFIER

◆ disable

Wasp standard

AIM standard

custom

CUSTOM CODE IDENTIFIER

define custom code identifier(s)

① Read the above code.
   (Code Identifiers default to Wasp standard, see table on previous page).

② Select the code type from the code table in Appendix B for the identifier you want to change.

③ You can define 1 or 2 identifier characters for each code type. If only 1 identifier character is required, the second character must be selected as **FF** (disabled). Read the hexadecimal value corresponding to the character(s) you want to define as identifiers for the code selected in step ②: valid characters are in the range **00-FD**.

Example: To define Code 39 Code Identifier = **@**

	define custom code identifier(s)		Code 39				
Read		+		+	**40**	+	**FF**

DATA FORMAT

HEADER

no header

‖‖ ‖ ‖‖ ‖ ‖‖‖‖‖‖ ‖‖ ‖‖

one character header

‖‖ ‖ ‖ ‖ ‖ ‖‖‖‖‖‖‖ ‖‖

two character header

‖‖ ‖ ‖ ‖ ‖ ‖‖‖‖‖‖‖ ‖‖

three character header

‖‖ ‖ ‖ ‖ ‖ ‖‖‖‖‖‖‖ ‖‖

four character header

‖‖ ‖ ‖ ‖ ‖ ‖‖‖‖‖‖ ‖‖ ‖‖

five character header

‖‖ ‖ ‖ ‖ ‖ ‖‖‖‖‖‖‖ ‖ ‖‖

six character header

‖‖ ‖ ‖ ‖ ‖ ‖‖‖‖‖‖ ‖ ‖‖

seven character header

‖‖ ‖ ‖ ‖ ‖ ‖‖‖‖‖‖ ‖‖ ‖‖

eight character header

‖‖ ‖ ‖ ‖ ‖ ‖‖‖‖‖‖‖ ‖ ‖‖

After selecting **one** of the desired Header codes, read the character(s) from the HEX table. Valid characters are in the range **00-FE**. For Wedge and USB-KBD interfaces, it is also possible to read the **Special Key(s)** on page 42.

Example:

four character header

‖‖ ‖ ‖ ‖ ‖‖‖‖‖‖‖ ‖‖   + **41** + **42** + **43** + **44** = Header **ABCD**

For more details see par. 4.3.1 and par. 4.3.2.

DATA FORMAT

TERMINATOR

no terminator

‖‖ ‖ ‖ ‖ ‖‖‖‖‖‖ ‖‖

one character terminator

‖‖ ‖ ‖‖ ‖ ‖‖‖‖‖ ‖‖

two character terminator

‖‖ ‖ ‖ ‖ ‖‖‖‖‖‖ ‖‖

three character terminator

‖‖ ‖ ‖‖ ‖ ‖‖‖‖‖‖ ‖‖

four character terminator

‖‖ ‖ ‖ ‖ ‖ ‖‖‖ ‖‖‖ ‖‖

five character terminator

‖‖ ‖ ‖‖ ‖ ‖‖‖‖ ‖‖ ‖ ‖‖

six character terminator

‖‖ ‖ ‖ ‖ ‖ ‖‖‖‖ ‖‖ ‖ ‖‖

seven character terminator

‖‖ ‖ ‖‖ ‖ ‖ ‖‖‖‖ ‖‖ ‖‖

eight character terminator

‖‖ ‖ ‖ ‖ ‖‖‖‖‖ ‖‖ ‖‖

After selecting **one** of the desired Header codes, read the character(s) from the HEX table. Valid characters are in the range **00-FE.** For Wedge and USB-KBD interfaces, it is also possible to read the **Special Key(s)** on page 42.

Example:

two character terminator

‖‖ ‖‖ ‖ ‖‖‖‖‖‖ ‖‖ + **0D** + **0A** = Terminator **CR LF**

For more details see par. 4.3.1 and par. 4.3.2.

SPECIAL KEYS

DATA FORMAT

‖‖ ‖ ‖‖‖‖‖‖‖

‖‖ ‖ ‖‖‖‖‖‖‖

Available only for Wedge IBM AT-PS/2 and USB-KBD Interfaces

NOTE	*It is necessary to define each Special Key by following the procedure given in par. 4.3.2.*

Select one or more of the following Special Keys according to your needs.

Special Key 1

‖‖ ‖‖‖‖ ‖‖‖ ‖‖ ‖‖

Special Key 2

‖‖ ‖‖‖‖‖ ‖‖‖ ‖‖ ‖‖

Special Key 3

‖‖ ‖‖‖‖ ‖‖ ‖‖‖‖‖

Special Key 4

‖‖ ‖‖‖‖ ‖ ‖‖‖‖ ‖‖

Special Key 5

‖‖ ‖‖ ‖‖‖‖‖ ‖‖ ‖‖

FIELD ADJUSTMENT

◆ disable field adjustment

Field adjustment allows a number of characters *n*, to be added to or subtracted from the barcode read. The adjustment can be different for each enabled code type. To <u>define</u> the field adjustment:

① Read the enable field adjustment code:

enable field adjustment

② Select the code type from the <u>Code Identifier Table</u> in Appendix B.

③ Select the type of adjustment to perform:

right addition

left addition

right deletion

left deletion

④ Read a number in the range **01 - 32** from the Hex/Numeric Table to define how many characters to add or delete:

Conditions:

- Adjustment is only performed on the barcode data, the Code Identifier and Code Length Transmission fields are not modified by the field adjustment parameter.

- If the field setting would subtract more characters than exist in the barcode, the subtraction will take place only to code length 0.

- You can set up to a maximum of 10 different field adjustments on the same barcode family or on different barcode families.

<u>**Example:**</u> To add 4 characters to the right of Standard Code 39 Codes:

	enable field adjustment		Code 39		right addition		
Read		+		+		+	**04**

FIELD ADJUSTMENT CHARACTER

① Read the field adjustment character code:

field adjustment character

② Read the hexadecimal value corresponding to the character you want to use for field adjustment. Valid characters are in the range **00-FE**. For Wedge and USB-KBD interfaces, it is also possible to read the **Special Key(s)** on page 42.

Example:

To define the field adjustment character = **A**:

field adjustment character

Read   + **41**

CODE LENGTH TX

◆ code length not transmitted

code length transmitted in variable-digit format

code length transmitted in fixed 4-digit format

The code length is transmitted in the message after the Headers and Code Identifier characters. The code length is calculated after performing any field adjustment operations.

CHARACTER REPLACEMENT

◆ disable character replacement

This parameter allows up to three characters to be replaced from the barcode read. These substitutions are stored in memory. To underline define each character replacement:

①   Read one of the following character replacement codes:

first character replacement

second character replacement

third character replacement

②   From the Code Identifier Table in Appendix B, read the Code Identifier for the desired code family.
    0 = character replacement will be effective for all code families.

③   From the Hex/Numeric Table read two characters corresponding to the Hex value (**00**-**FE**), which identifies the character to be replaced. For Wedge and USB-KBD interfaces, it is also possible to read the **Special Key(s)** on page 42.

④   From the Hex/Numeric Table read two characters corresponding to the Hex value (**00**-**FE**), which identifies the new character to replace. For Wedge and USB-KBD interfaces, it is also possible to read the **Special Key(s)** on page 42.
    FF = the character to be replaced will be substituted with no character, that is, it will be removed from the code.

Example:

The following strings define:

1. *First Character Replacement:* substitution in *Code 39 barcodes* of all occurrences of the **0** character with the **1** character.

2. *Second Character Replacement:* substitution in *Code 39 barcodes* of all occurrences of the **A** character with the **B** character.

first character replacement		Code 39		ASCII characters corresponding to the HEX value for character **0**		ASCII characters corresponding to the HEX value for character **1**
	+		+	**30**	+	**31**
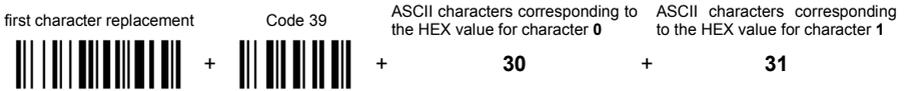
For Code 39 codes containing the string "**0**123", the contents transmitted will be "**1**123".

second character replacement		Code 39		ASCII characters corresponding to the HEX value for character **A**		ASCII characters corresponding to the HEX value for character **B**
	+		+	**41**	+	**42**
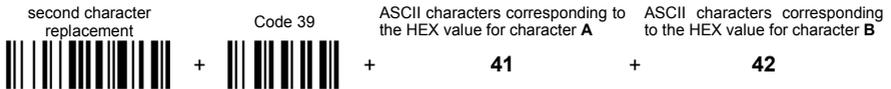
For Code 39 codes containing the string "**A**BCD", the contents transmitted will be "**B**BCD".

POWER SAVE

⊙   *SLEEP STATE*   ⊙

⊙   *ENTER SLEEP TIMEOUT*   ⊙

1.   Read the **Enter Configuration** code <u>ONCE</u>, available at the top of each page.

2.   Read configuration codes from the desired groups.

         = Read the code and follow the procedure given

◆   = Default value

3.   Read the **Exit and Save Configuration** code <u>ONCE</u>, available at the top of each page.

POWER SAVE

SLEEP STATE

◆ disable

‖‖ ‖ ‖ ‖‖‖‖‖ ‖‖ ‖‖

enable

‖‖ ‖ ‖‖ ‖ ‖‖‖‖‖‖‖‖

See par. 4.4.1 for details.

ENTER SLEEP TIMEOUT

enter sleep timeout

‖‖ ‖ ‖‖ ‖ ‖‖‖ ‖‖‖ ‖‖‖

Read 2 numbers in the range 00-99:
  00 = Enter Sleep state immediately
01-99 = corresponds to a max. 9.9 sec. delay before entering the
          Sleep state.

◆ enter sleep timeout = 0.6 sec.

See par. 4.4.2 for details.

READING PARAMETERS

⊙   *TRIGGER TYPE*   ⊙

⊙   *TRIGGER SIGNAL*   ⊙

⊙   *TRIGGER CLICK*   ⊙

⊙   *TRIGGER-OFF TIMEOUT*   ⊙

⊙   *FLASH MODE*   ⊙

⊙   *READS PER CYCLE*   ⊙

⊙   *SAFETY TIME*   ⊙

⊙   *BEEPER INTENSITY*   ⊙

⊙   *BEEPER TONE*   ⊙

⊙   *BEEPER TYPE*   ⊙

⊙   *BEEPER LENGTH*   ⊙

⊙   *GOOD READ SPOT DURATION*   ⊙

⊙   *AIMING SYSTEM*   ⊙

1.   Read the **Enter Configuration** code <u>ONCE</u>, available at the top of each page.

2.   Read configuration codes from the desired groups.

           = Read the code and follow the procedure given

◆   = Default value

3.   Read the **Exit and Save Configuration** code <u>ONCE</u>, available at the top of each page.

TRIGGER TYPE

◆ hardware trigger

Restores TRIGGER MODE

software trigger

Enables FLASH MODE

always on

TRIGGER SIGNAL

◆ trigger active level

trigger active pulse

See par. 4.5.1 for details.

TRIGGER CLICK

◆ disable

enable

See par. 4.5.2 for details.

TRIGGER-OFF TIMEOUT

trigger-off timeout

Read 2 numbers in the range 00-99:
00 = disables the trigger-off timeout
01-99 = corresponds to a max. 99-sec. delay after the trigger press to allow the reader to turn off automatically.

◆ trigger-off timeout disabled

See par. 4.5.3 for details.

FLASH MODE

"FLASH" ON duration

"FLASH" OFF duration

Read 2 numbers in the range 01-99:
01 to 99 = from .1 to 9.9 seconds.

◆ Flash-ON = 1 sec. Flash-OFF = 0.6 sec

READS PER CYCLE

◆ one read per cycle

multiple reads per cycle

See par. 4.5.4 for details.

SAFETY TIME

safety time

Limits <u>same</u> code consecutive reading.

Read 2 numbers in the range 00-99:
  00 = no same code consecutive reading until reader is removed (no decoding) for at least 400 ms.
  01-99 = timeout from .1 to 9.9 seconds before a consecutive read on same code.

◆ safety time = 0.5 sec

See par. 4.5.5 for details.

BEEPER INTENSITY

* very low intensity

low intensity

medium intensity

◆ high intensity

* This sets the beeper OFF for data entry, while for all other beeper signals it has the meaning "very low intensity". The Beeper Intensity parameter is effective for all operating conditions described in par. 5.2.

READING PARAMETERS

BEEPER TONE

tone 1

◆ tone 2

tone 3

tone 4

BEEPER TYPE

◆ monotone

bitonal

BEEPER LENGTH

long

◆ short

GOOD READ SPOT DURATION

disable

short

◆ medium

long

AIMING SYSTEM

◆ disabled

DECODING PARAMETERS

⊙   *INK SPREAD*   ⊙

⊙   *OVERFLOW CONTROL*   ⊙

⊙   *INTERDIGIT CONTROL*   ⊙

⊙   *DECODING SAFETY*   ⊙

⊙   *PUZZLE SOLVER™*   ⊙

CAUTION

Before changing these parameter values read the descriptions in par. 4.6.

1. Read the **Enter Configuration** code <u>ONCE</u>, available at the top of each page.

2. Read configuration codes from the desired groups.
   ◆   = Default value

3. Read the **Exit and Save Configuration** code <u>ONCE</u>, available at the top of each page.

INK SPREAD

disable

‖‖ ‖‖ ‖ ‖‖‖‖‖‖ ‖‖

◆ enable

‖‖ ‖‖ ‖ ‖‖‖‖ ‖‖‖ ‖‖

See par. 4.6.1 for details.

OVERFLOW CONTROL

disable

‖‖ ‖‖ ‖ ‖ ‖‖‖‖‖ ‖ ‖‖‖

◆ enable

‖‖ ‖‖ ‖ ‖ ‖‖ ‖‖‖‖‖ ‖‖‖

See par. 4.6.2 for details.

INTERDIGIT CONTROL

disable

‖‖ ‖‖ ‖ ‖‖‖ ‖‖‖‖‖ ‖‖‖

◆ enable

‖‖ ‖‖ ‖ ‖‖‖ ‖ ‖‖‖‖‖ ‖‖‖

See par. 4.6.3 for details.

DECODING SAFETY

◆ one read

(decoding safety disabled)

two reads

three reads

four reads

Required number of good reads before accepting code.

PUZZLE SOLVER™

◆ disable

enable

In the case of damaged or poorly printed codes, this parameter allows reading multiple parts of the single code to reconstruct it.

To read codes using this technology, simply move the illuminated bar over the code so that each line of the code is scanned. During this process a series of brief "ticks" indicates that reading is proceeding correctly.

Conditions:

- This parameter is only valid for the following codes:

EAN 8 without Add-on	EAN 13 without Add-on	UPC A without Add-on
Code 128	Code 39	

- **For Code 39, Check digit control is forced.**

- PuzzleSolver™ is not valid for ISBT 128 code.

CODE SELECTION

⊙   *AUTO-CONFIGURATION*   ⊙

⊙   *EAN/UPC FAMILY*   ⊙

⊙   *2/5 FAMILY*   ⊙

⊙   *CODE 39 FAMILY*   ⊙

⊙   *CODE 128 FAMILY*   ⊙

⊙   *CODABAR FAMILY*   ⊙

⊙   *CODE 93*   ⊙

⊙   *MSI*   ⊙

⊙   *CODE 11*   ⊙

⊙   *CODE 16K*   ⊙

⊙   *CODE 49*   ⊙

⊙   *GS1 DATABAR CODES*   ⊙

1.   Read the **Enter Configuration** code <u>ONCE</u>, available at the top of each page.

2.   Read configuration codes from the desired groups.

            = Read the code and follow the procedure given

◆   = Default value

3.   Read the **Exit and Save Configuration** code <u>ONCE</u>, available at the top of each page.

Code selections may be performed according to two different procedures:

- **Auto-configuration**, allowing an automatic recognition and selection of the code families to be read;
- **Manual configuration**, requiring configuration and selection of each code family to be read.

AUTO-CONFIGURATION

The following codes do not require reading the Enter and Exit configuration codes.

In auto-configuration mode the reader enters a particular state, during which it reads, recognizes and saves all information received from the decoding of an existing code (with the exception of MSI, Code 49 and Code 16k code types). In this way, the code families will be automatically configured.
It is possible to configure up to 10 code types, whose length is variable and check digit ignored.
If reading different codes belonging to the same family, information about the last code will overwrite the information about the previous one.

Follow the given procedure to auto-configure the desired code families:

⚠️ **CAUTION**	*If no code is read during the auto-configuration procedure (step ②), the configuration will be empty and therefore the reader will be unable to read codes.*

① Read the following code to enter the auto-configuration mode:

auto-configuration

② Read an existing code belonging to the code families that you need to configure.

③ Read the following code to save the configuration automatically and return to the reader's normal functioning:

save auto-configuration

If you need to change the configuration, repeat the auto-configuration procedure, follow the manual configuration by setting the parameters for each single code family or read the "Restore Default" code on page 113. Be careful that in the latter case all reader parameters will be restored.

CODE SELECTION

DISABLE ALL CODE FAMILIES

NOTE

The reader allows up to 10 code selections. This does not limit the number of CODES enabled to 10, as it depends on the code family.

SINGLE SELECTIONS =

- **ONE** combination code from the EAN family
- **ONE** code from the 2/5 family

Example

5 code selections:

1. **2/5 Interleaved**
2. **2/5 Industrial**
3. Code 128 + EAN 128
4. Code 39 Full ASCII + Code 32
5. **UPC A/UPC E**
6. etc.

In this section all SINGLE code selections are underlined and in bold.

CODE SELECTION

EAN/UPC FAMILY

disable the family

① Read the desired family code

NOTE: Since the EAN/UPC without ADD ON code selection is enabled by default, to correctly enable another selection, first disable the family.

EAN 8/EAN 13/UPC A/UPC E with and without ADD ON

WITHOUT ADD ON

◆ **EAN 8/EAN 13/UPC A/UPC E**

EAN 8/EAN 13

UPC A/UPC E

WITH ADD ON 2 AND 5

EAN 8/EAN 13/UPC A/UPC E

EAN 8/EAN 13

UPC A/UPC E

CODE SELECTION

WITH ADD ON 2 ONLY

EAN 8/EAN 13

UPC A/UPC E

WITH ADD ON 5 ONLY

EAN 8/EAN 13

UPC A/UPC E

WITH AND WITHOUT ADD ON

◆ **EAN/UPC with and without ADD ON no Autodiscrimination**

EAN/UPC Autodiscrimination ADD ON by Prefix

By setting the EAN/UPC Autodiscrimination ADD ON by Prefix, the desired prefixes must be selected by reading the corresponding codes given in the following section, since no prefix is configured by default.

SELECT EAN/UPC PREFIXES

👆 **NOTE**	*When scanning the following codes, barcodes starting with <u>the selected prefixes will be read and transmitted only if the ADD ON is present</u>. If no ADD ON is found, the barcode will not be read. Barcodes starting with different characters are read regardless of ADD ON presence and transmitted always without ADD ON.*

◆ **Cancel All Selections**

‖‖ ‖ ‖ ‖‖ ‖‖‖‖‖ ‖‖

OR

select one or more of the following prefixes:

378/379

‖‖ ‖ ‖‖ ‖‖‖‖‖‖‖‖ ‖‖ ‖‖ ‖‖‖‖‖‖‖‖‖ ‖‖

434/439

‖‖ ‖ ‖‖ ‖‖‖‖‖‖‖‖ ‖‖ ‖‖ ‖‖‖‖‖‖‖ ‖‖

414/419

‖‖ ‖ ‖‖ ‖‖‖‖‖‖‖‖ ‖‖ ‖‖‖‖‖‖‖‖ ‖‖ ‖‖

977

‖‖ ‖ ‖ ‖‖ ‖‖‖‖‖‖‖‖ ‖‖ ‖‖

978

‖‖ ‖ ‖ ‖‖ ‖‖‖‖‖‖‖‖‖ ‖‖

979

‖‖ ‖ ‖ ‖‖ ‖‖‖‖‖‖‖‖ ‖‖ ‖‖

The commands above are not mutually exclusive. They can be used to configure more than one set of prefixes simultaneously.

Example:

The following string allows reading and transmitting with ADD ON all EAN/UPC starting with the 434/439, 977 and 978 prefixes:

1. *EAN/UPC Autodiscrimination ADD ON by Prefix.*

2. *434/439:* enables reading and transmission with ADD ON of all EAN/UPC barcodes starting with 434/439 prefixes.

3. *977:* enables reading and transmission with ADD ON of all EAN/UPC barcodes starting with 977 prefix.

4. *978:* enables reading and transmission with ADD ON of all EAN/UPC barcodes starting with 978 prefix.

EAN/UPC Autodiscrimination ADD ON by Prefix

434/439

+

+

977

978

+

+

To clear the current prefix selections:

1. *Cancel all Selections*

Cancel All Selections

EAN/UPC CHECK DIGIT TX SELECTIONS

For each code type in this family you can choose to transmit the check digit or not

CHECK DIGIT TRANSMISSION

NO CHECK DIGIT TRANSMISSION

◆ EAN 8

EAN 8

◆ EAN 13

EAN 13

◆ UPC A

UPC A

◆ UPC E

UPC E

CODE SELECTION

CONVERSION OPTIONS

UPC E to UPC A conversion

UPC E to EAN 13 conversion

UPC A to EAN 13 conversion

EAN 8 to EAN 13 conversion

Enable only ISBN conversion

Enable only ISSN conversion

Enable both ISBN and ISSN
conversion

Disable both ISBN and ISSN
conversion

2/5 FAMILY

disable the family

① Read the desired family code

◆ **Interleaved 2/5**

Normal 2/5 (5 Bars)

Industrial 2/5 (IATA)

Matrix 2/5 (3 Bars)

The pharmaceutical code below is part of the 2/5 family but has no check digit or code length selections.

Code CIP/HR

French pharmaceutical code

② Read a check digit selection

CHECK DIGIT TABLE

no check digit control

◆ check digit control and transmission

check digit control without transmission

③ Read **4** numbers for the code length where:
− **First 2 digits** = minimum code length.
− **Second 2 digits** = maximum code length.

The maximum code length is **99** characters.

The minimum code length must always be less than or equal to the maximum.

Examples:
0199 = variable from 1 to 99 digits in the code.
1010 = 10 digit code length only.

CODE 39 FAMILY

disables the family

‖‖ ‖ ‖ ‖ ‖‖‖ ‖‖ ‖

① Read the desired family code

② Read a check digit selection

CHECK DIGIT TABLE

◆ **Standard Code 39**

‖‖ ‖ ‖ ‖ ‖ ‖‖‖ ‖

◆ no check digit control

‖‖ ‖ ‖‖‖‖‖ ‖‖

Full ASCII Code 39

‖‖ ‖ ‖ ‖ ‖‖‖‖ ‖‖

check digit control
and transmission

‖‖ ‖ ‖‖‖‖‖ ‖

check digit control
without transmission

‖‖ ‖ ‖‖‖‖‖ ‖

The pharmaceutical codes below are part of the Code 39 family but have no check digit selections.

Code CIP39

‖‖ ‖ ‖ ‖ ‖ ‖‖‖ ‖‖

French pharmaceutical code

Code 32

‖‖ ‖ ‖ ‖ ‖‖‖ ‖‖ ‖

Italian pharmaceutical code

CODE LENGTH (optional)

The code length selection is valid for the entire Code 39 family

Read the code + **4** numbers for the code length where:
First 2 digits = minimum code length.
Second 2 digits = maximum code length.

set code length

‖‖ ‖ ‖ ‖ ‖ ‖‖ ‖‖‖

The maximum code length is **99** characters.
The minimum code length must always be less than or equal to the maximum.

Examples: **0199** = variable from 1 to 99 digits in the code. **1010** = 10 digit code length only.

CODE 128 FAMILY

disable the family

① Read the desired family code
◆ **Code 128**

control without transmission of
check digit

ISBT 128

enabling ISBT 128 automatically
disables Puzzle Solver™.

EAN 128

control without transmission of
check digit

Transmit GS Before Code

Code EAN 128 uses the ASCII <GS> character to separate a variable length code field from the next code field. This character can also be transmitted before the code.

◆ disable

enable

If the <GS> character has been modified in the Character Replacement parameter, the new character is affected by this command.

CODE LENGTH (optional)

The code length selection is valid for the entire Code 128 family and is calculated on the output string.

Read the code + **4** numbers for the code length where:

First 2 digits = minimum code length.

set code length

Second 2 digits = maximum code length.

The maximum code length is **99** characters.
The minimum code length must always be less than or equal to the maximum.

Examples: **0199** = variable from 1 to 99 digits in the code.   **1010** = 10 digit code length only.

CODE 93

◆ disable the code

‖‖‖‖‖‖‖‖‖‖‖‖‖

Code 93

‖‖‖‖‖‖‖‖‖‖‖

control without transmission
of check digit

CODABAR FAMILY

◆ disable the family

‖‖‖‖‖‖‖‖‖‖‖

① Read the desired equality control code

② Read a start/stop transmission selection

START/STOP CHARACTER TRANSMISSION

Standard Codabar

‖‖‖‖‖‖‖‖‖‖‖

no start/stop character equality control

no transmission

‖‖‖‖‖‖‖

Standard Codabar

‖‖‖‖‖‖‖‖‖‖‖

start/stop character equality control

transmission

‖‖‖‖‖‖‖

CODE SELECTION

The Codabar ABC code below uses a fixed start/stop character transmission selection.

Codabar ABC

‖‖‖‖‖‖‖‖‖‖‖‖‖‖

no start/stop character equality control but transmission.

Codabar ABC Forced Concatenation

enable Codabar ABC with forced concatenation

‖‖‖‖‖‖‖‖‖‖‖‖

non start/stop character equality control but transmission

CODE LENGTH (optional)

The code length selection is valid for the entire Codabar family

Read the code + **4** numbers for the code length where:

set code length

‖‖‖‖‖‖‖‖‖‖‖

First 2 digits = minimum code length.

Second 2 digits = maximum code length.

The maximum code length is **99** characters.

The minimum code length must always be less than or equal to the maximum.

Examples: **0199** = variable from 1 to 99 digits in the code. **1010** = 10 digit code length only.

START/STOP CHARACTER CASE IN TRANSMISSION

The start/stop character case selections below are valid for the entire Codabar family:

transmit start/stop characters in lower case

‖‖‖‖‖‖‖‖‖‖‖

transmit start/stop characters in upper case

‖‖‖‖‖‖‖‖‖‖‖

MSI

◆ disable the family

Enable the code by selecting one of the check digit selections.

no check digit control

MOD10 check digit control
no check digit transmission

MOD10 check digit control
check digit transmission

MOD11 - MOD10 check digit control
no check digit transmission

MOD11 - MOD10 check digit control
check digit transmission

MOD10 - MOD10 check digit control
no check digit transmission

MOD10 - MOD10 check digit control
check digit transmission

CODE 11

◆ disable the family

Enable the code by selecting one of the check digit selections.

no check digit control

Type C check digit control
check digit transmitted

Type C check digit control
check digit not transmitted

Type K check digit control
check digit transmitted

Type K check digit control
check digit not transmitted

Type C and Type K
check digit control
check digits transmitted

Type C and Type K
check digit control
check digits not transmitted

CODE 16K

◆ disable the code

‖‖ ‖ ‖‖‖ ‖‖‖‖ ‖ ‖‖‖

Code 16K

‖‖ ‖ ‖ ‖‖‖ ‖‖‖‖ ‖ ‖‖‖

To read stacked codes, simply move the reader over the code so that each line of the code is scanned. During this process a series of brief "ticks" indicates that reading is proceeding correctly.

CODE 49

◆ disable the code

‖‖ ‖ ‖‖‖ ‖‖‖‖ ‖ ‖‖‖

Code 49

‖‖ ‖ ‖‖‖ ‖‖‖‖ ‖ ‖‖‖

To read stacked codes, simply move the reader over the code so that each line of the code is scanned. During this process a series of brief "ticks" indicates that reading is proceeding correctly.

CODE SELECTION

GS1 DATABAR™ CODES

◆ disable the family

DISABLE CODE

ENABLE CODE

disable GS1 DataBar Expanded Linear and
Stacked

enable GS1 DataBar Expanded Linear and
Stacked

disable GS1 DataBar Limited

enable GS1 DataBar Limited

disable GS1 DataBar 14 Linear and Stacked

enable GS1 DataBar 14 Linear and Stacked

To read stacked codes, simply move the reader over the code so that each line of the code is
scanned. During this process a series of brief "ticks" indicates that reading is proceeding
correctly.

ADVANCED FORMATTING

> ### NOT FOR PEN INTERFACES

⊙   *CONCATENATION*   ⊙

⊙   *ADVANCED FORMATTING*   ⊙

NOTE   *Please follow the setup procedure carefully for these parameters.*

NOTE   *The Advanced Formatting parameters may not be compatible with the IBM USB POS interface selection.*

---

1. Read the **Enter Configuration** code <u>ONCE</u>, available at the top of page.

2. **Read configuration codes precisely following the numbered procedure given.**

       = Read the code and follow the procedure given

     ◆   = Default value

3. Read the **Exit and Save Configuration** code ONCE, available at the top of page.

CONCATENATION

◆ disable

‖‖|‖|‖|‖‖‖|‖|‖‖‖

enable

‖‖|‖|‖|‖‖‖|‖‖‖

Permits the concatenation of two codes defined by code type and length. It is possible to set a timeout for the second code reading and to define code transmission if the timeout expires.

The order of transmission is CODE 1-CODE 2.

Define Concatenation

1   **Code 1**

code ID

‖‖|‖|‖|‖‖‖‖|‖|‖‖‖

Read the code type from the Code Identifier Table beginning in Appendix B.

code length

‖‖|‖|‖|‖‖‖‖|‖|‖‖‖

Read a number in the range **01-99** from the Hex/Numeric Table.

Exit and Save Configuration

ADVANCED FORMATTING

‖‖ ‖ ‖‖‖‖‖ ‖‖‖

---

2   **Code 2**

code ID

‖‖ ‖ ‖ ‖‖‖‖‖ ‖‖‖

Read the code type from the <u>Code Identifier Table</u> beginning in Appendix B.

code length

‖‖ ‖ ‖ ‖‖‖‖ ‖‖ ‖‖

Read a number in the range **01-99** from the Hex/Numeric Table.

---

3   **Concatenation Result Code ID**

use code 1 ID

‖‖ ‖ ‖ ‖‖ ‖‖‖‖ ‖‖ ‖‖

use code 2 ID

‖‖ ‖ ‖ ‖‖ ‖‖‖‖ ‖‖ ‖‖

Since you can concatenate codes from different families, you must select the Code ID character of the resulting code. The Code ID character will be sent in the output message only if it is enabled according to the Code Identifier selection (Wasp, AIM, or Custom).

---

4   **Concatenation Timeout**

timeout

‖‖ ‖ ‖ ‖‖‖‖‖‖ ‖

Read two numbers in the range **00** to **99**
00= no timeout
01-99 = timeout from 1 to 99 seconds

Define the timeout, which determines the valid waiting period between the two codes, in order to accept concatenation. If the timeout expires, the resulting action will be based on the following selection. (HHDII)

---

5   **Transmission after Timeout**

ADVANCED FORMATTING

no code transmitted
after timeout

only code 1 transmitted
(if read) after timeout

only code 2 transmitted
(if read) after timeout

either code 1 or code 2 transmitted
after timeout

ADVANCED FORMATTING

Advanced formatting has been designed to offer you complete flexibility in changing the format of barcode data **before** transmitting it to the host system. This formatting will be performed when the barcode data meets certain criteria, which you will define in the following procedure.

Up to 4 advanced code management formats can be defined and saved in memory. For each format you must complete the entire configuration procedure:

```
            ┌─────────────────────────────┐
            │      Read the Enter         │
            │  Configuration Command      │
            └─────────────────────────────┘
            ┌─────────────────────────────┐
       ┌───▶│          Step 1             │
       │    │    Begin Format Definition  │
       │    │         1, 2, 3, or 4       │
       │    └─────────────────────────────┘
       │    ┌─────────────────────────────┐
       │    │         Steps 2 - 4         │
       │    │  Define Match Code Conditions│
       │    └─────────────────────────────┘
       │    ┌─────────────────────────────┐
       │    │          Step 5             │
       │    │    Divide Code into Fields  │
       │    └─────────────────────────────┘
       │    ┌─────────────────────────────┐
       │    │          Step 6             │
       │    │     Define Code Fields      │
       │    └─────────────────────────────┘
       │    ┌─────────────────────────────┐
       │    │        Steps 7 - 8          │
       │    │  Add up to 2 Additional Fields│
       │    └─────────────────────────────┘
       │    ┌─────────────────────────────┐
       │    │          Step 9             │
       │    │   Define Field Transmission │
       │    └─────────────────────────────┘
       │    ┌─────────────────────────────┐
       │    │          Step 10            │
       │    │       Apply or Not          │
       │    │  Standard Message Formatting│
       │    └─────────────────────────────┘
       │    ┌─────────────────────────────┐
       │    │          Step 11            │
       │    │    End Format Definition    │
       │    │         1, 2, 3, or 4       │
       │    └─────────────────────────────┘
       │ YES          ◇─────────◇
       └─────────────< Define another? >
                      ◇─────────◇
                           │ NO
            ┌─────────────────────────────┐
            │  Enable Advanced Formats    │
            │         1, 2, 3, 4          │
            └─────────────────────────────┘
            ┌─────────────────────────────┐
            │   Define No Match Result    │
            └─────────────────────────────┘
            ┌─────────────────────────────┐
            │      Read the Exit and Save │
            │   Configuration Command     │
            └─────────────────────────────┘
```

ADVANCED FORMATTING

1   **Begin Format Definition**

begin Format 1 definition

‖‖ ‖ ‖‖ ‖ ‖‖‖‖ ‖‖ ‖‖

begin Format 2 definition

‖‖ ‖ ‖‖ ‖ ‖‖‖‖ ‖‖ ‖‖

begin Format 3 definition

‖‖ ‖ ‖‖ ‖ ‖‖‖‖ ‖‖ ‖‖

begin Format 4 definition

‖‖ ‖ ‖‖ ‖‖‖‖ ‖ ‖‖

2   **Match Code Type**

match code type

‖‖ ‖ ‖ ‖ ‖‖‖ ‖ ‖‖‖

Read the above code + the code type to match from the Code Identifier Table in Appendix B.

OR   any code type

‖‖ ‖ ‖ ‖ ‖ ‖‖‖‖‖ ‖‖

3   **Match Code Length**

match code length

‖‖ ‖ ‖ ‖ ‖ ‖ ‖‖ ‖‖

Read the above code + two numbers in the range **01** to **99** for the exact code length.

OR   any code length

‖‖ ‖ ‖ ‖ ‖ ‖‖‖ ‖‖‖‖‖ ‖‖‖

4   **Match with Predefined Characters**

no match

OR

match with 1 character

match with a 2-character string

match with a 3-character string

match with a 4-character string

After selecting the predefined match code, read the character(s) from the HEX table. Range of characters = **00-FE**.

Example:
Match code with the 2-character predefined string = "@@".

Match with a 2-character string

Read   **+ 40 + 40**

AND   position of first character in predefined string

Read the above code + two numbers in the range **01** to **99** representing the character position in the code where the first character of the predefined string must be found.

Read **00** if the match string can be found in any character position.

See par. 4.7.1 for details.

5   **Divide Code into Fields**

divide code into fields

Read one number in the range **1** to **5** to divide the code into fields.

---

6   **Define Code Fields**

define code fields

Each code field length can be set by either:

a) defining a field separator character to be found in the code itself. In this case you can choose to **discard** the code separator character or **include** it as the last character of the field.

OR BY

b) defining a match character to be found consecutively repeated in the code itself. In this case the field ends with the first character that does not match.

OR BY

c) specifying a specific character length up to the maximum of 99 characters.

OR BY

d) selecting the last field as variable length (if any).

You must define the same number of fields as selected in step 5, including fields that will not be transmitted.

DEFINE FIELD 1 BY:
EITHER

a)

field separator

Read the field separator character from the HEX table. Range of characters = **00-FE**.

discard separator

include separator

OR

b)

match character

Read the match character from the HEX table. Range of characters = **00-FE**.

OR

c)

field length

Read two numbers in the range **01** to **99** to define the field length.

OR

d)

this is the last field (variable length)

AND

Field 1 Terminators

no field terminators

1 field terminator

2 field terminators

Read the field terminator character(s) from the HEX table. Valid range of characters for all readers = **00-FE**. For Wedge and USB-KBD interface, it is also possible to read the **Special Key(s)** on page 42.

ADVANCED FORMATTING

‖‖ ‖ ‖‖‖‖‖ ‖‖

DEFINE FIELD 2 BY:
EITHER

a)

field separator

‖‖ ‖ ‖‖‖ ‖‖‖ ‖‖ ‖‖

Read the field separator character from the HEX table. Range of characters = **00-FE**.

discard separator

‖‖ ‖‖‖‖‖‖‖ ‖

include separator

‖‖ ‖‖‖‖‖‖ ‖

OR

b)

match character

‖‖ ‖ ‖‖ ‖ ‖‖‖ ‖‖‖‖

Read the match character from the HEX table. Range of characters = **00-FE**.

OR

c)

field length

‖‖ ‖ ‖‖‖ ‖‖‖‖ ‖‖‖‖

Read two numbers in the range **01** to **99** to define the field length.

OR

d)

this is the last field (variable length)

‖‖ ‖ ‖‖‖ ‖‖‖‖ ‖‖‖‖

AND

Field 2 Terminators

no field terminators

‖‖ ‖ ‖‖ ‖‖‖‖‖ ‖‖‖‖

1 field terminator

‖‖ ‖ ‖ ‖ ‖‖‖‖‖ ‖‖‖

2 field terminators

‖‖ ‖ ‖ ‖‖ ‖‖‖‖‖ ‖‖‖

Read the field terminator character(s) from the HEX table. Valid range of characters for all readers = **00-FE**. For Wedge and USB-KBD interface, it is also possible to read the **Special Key(s)** .

ADVANCED FORMATTING

DEFINE FIELD 3 BY:
EITHER

a)

field separator

‖‖‖‖‖‖‖‖‖‖ ‖‖‖‖

Read the field separator character from the HEX table. Range of characters = **00-FE**.

discard separator

‖‖‖ ‖‖‖‖‖‖ ‖‖‖‖

include separator

‖‖‖ ‖‖‖‖‖‖ ‖‖‖

OR

b)

match character

‖‖‖ ‖‖‖‖‖‖‖ ‖‖‖‖

Read the match character from the HEX table. Range of characters = **00-FE**.

OR

c)

field length

‖‖‖ ‖‖‖‖‖‖‖ ‖‖‖‖

Read two numbers in the range **01** to **99** to define the field length.

OR

d)

this is the last field (variable length)

‖‖‖ ‖‖‖‖‖‖‖‖ ‖‖‖‖

AND

Field 3 Terminators

no field terminators

‖‖‖ ‖‖‖‖‖‖‖ ‖‖‖‖

1 field terminator

‖‖‖ ‖‖‖‖‖‖‖‖ ‖‖‖

2 field terminators

‖‖‖ ‖‖‖‖‖‖‖‖‖ ‖‖‖

Read the field terminator character(s) from the HEX table. Valid range of characters for all readers = **00-FE**. For Wedge and USB-KBD interface, it is also possible to read the **Special Key(s)** on page 42.

DEFINE FIELD 4 BY:
EITHER

a) field separator

Read the field separator character from the HEX table. Range of characters = **00-FE**.

discard separator   include separator

OR

b) match character

Read the match character from the HEX table. Range of characters = **00-FE**.

OR

c) field length

Read two numbers in the range **01** to **99** to define the field length.

OR

d) this is the last field (variable length)

AND

Field 4 Terminators

no field terminators

1 field terminator   2 field terminators

Read the field terminator character(s) from the HEX table. Valid range of characters for all readers = **00-FE**. For Wedge and USB-KBD interface, it is also possible to read the **Special Key(s)** on page 42.

ADVANCED FORMATTING

‖‖ ‖ ‖‖‖‖‖ ‖‖‖

DEFINE FIELD 5 BY:
EITHER

a)

field separator

‖‖ ‖‖‖‖‖‖‖ ‖‖‖‖

Read the field separator character from the HEX table. Range of characters = **00-FE**.

discard separator

‖‖‖ ‖‖‖‖‖‖ ‖‖‖

include separator

‖‖‖ ‖ ‖‖‖‖‖ ‖‖‖

OR

b)

match character

‖‖ ‖ ‖‖‖ ‖‖‖ ‖‖‖‖

Read the match character from the HEX table. Range of characters = **00-FE**.

OR

c)

field length

‖‖ ‖ ‖ ‖‖‖ ‖‖‖ ‖‖‖‖

Read two numbers in the range **01** to **99** to define the field length.

OR

d)

this is the last field (variable length)

‖‖‖ ‖ ‖‖‖ ‖‖‖‖‖ ‖‖‖‖

AND

Field 5 Terminators

no field terminators

‖‖‖ ‖ ‖ ‖‖ ‖‖‖‖‖ ‖‖‖

1 field terminator

‖‖‖ ‖ ‖ ‖‖‖‖‖‖ ‖‖‖

2 field terminators

‖‖‖ ‖ ‖ ‖‖ ‖‖‖‖‖‖ ‖‖‖

Read the field terminator character(s) from the HEX table. Valid range of characters for all readers = **00-FE**. For Wedge and USB-KBD interface, it is also possible to read the **Special Key(s)** on page 42.

7   **First Additional Fixed Field**

no fixed field

1 character fixed field

2 character fixed field

3 character fixed field

4 character fixed field

5 character fixed field

6 character fixed field

After selecting **one** of the Additional Fixed Field codes, read the corresponding character(s) from the HEX table. Range of characters = **00-FE**. For Wedge and USB-KBD interface, it is also possible to read the **Special Key(s)** on page 42.

Example:

4 Character Fixed Field
              + **4D** + **41** + **49** + **4E** =   **MAIN**

ADVANCED FORMATTING

‖‖ ‖ ‖‖‖‖‖ ‖‖ ‖

---

8   **Second Additional Fixed Field**

no fixed field

‖‖ ‖ ‖‖‖ ‖‖‖‖ ‖‖ ‖‖

1 character fixed field

‖‖ ‖ ‖‖‖ ‖‖‖ ‖‖ ‖‖

2 character fixed field

‖‖ ‖ ‖‖‖ ‖‖‖‖ ‖ ‖‖

3 character fixed field

‖‖ ‖ ‖‖‖ ‖‖‖ ‖‖ ‖‖

4 character fixed field

‖‖ ‖ ‖‖‖ ‖ ‖‖‖ ‖‖

5 character fixed field

‖‖ ‖ ‖‖‖ ‖‖‖‖ ‖ ‖‖

6 character fixed field

‖‖ ‖ ‖‖‖ ‖‖‖ ‖ ‖‖

After selecting **one** of the Additional Fixed Field codes, read the corresponding character(s) from the HEX table. Range of characters = **00-FE**. For Wedge and USB-KBD interface, it is also possible to read the **Special Key(s)** on page 42.

<u>Example:</u>

3 Character Fixed Field
‖‖ ‖ ‖‖‖‖‖ ‖‖‖ ‖‖   + **53** + **45** + **54** =   **SET**

9   **Field Transmission**

number of fields to transmit

Read one number in the range **1** to **7** for the number of fields to transmit. **Include only fields to be transmitted.**

Field Order Transmission

Read the codes corresponding to the fields to transmit in the order in which they are to be transmitted. A field can be transmitted more than once. See example.

field 1

field 2

field 3

field 4

field 5

additional field 1

additional field 2

Example:

The barcode is divided into 3 defined fields plus 1 additional fixed field.

Transmit in the order: Field 2, Additional Field 1, Field 1, Field 2.

Number of Fields
to Transmit   Field 2   Additional Field 1   Field 1   Field 2

+ **4** +   +   +   +

---

10   **Standard Formatting**

do not apply standard formatting

apply standard formatting

After performing Advanced Formatting on the barcode read, Standard Formatting (Headers, Code Length, Code ID, Terminators) can be applied to the message to be transmitted.

---

11   **End Format Definition**

end Format 1 definition

end Format 2 definition

end Format 3 definition

end Format 4 definition

ADVANCED FORMATTING

Enable Advanced Format

◆ no Advanced Formats enabled

‖‖ ‖ ‖‖ ‖‖‖‖‖ ‖‖ ‖‖‖

Advanced Format 1

enable

‖‖ ‖ ‖‖ ‖‖‖‖‖‖‖ ‖‖ ‖‖‖

disable

‖‖ ‖ ‖‖ ‖‖‖‖‖‖‖ ‖ ‖‖‖

Advanced Format 2

enable

‖‖ ‖ ‖‖ ‖‖‖‖‖‖‖ ‖‖‖

disable

‖‖ ‖ ‖‖ ‖‖‖‖‖‖‖ ‖ ‖‖‖

Advanced Format 3

enable

‖‖ ‖ ‖‖ ‖‖‖‖‖‖‖ ‖‖ ‖‖‖

disable

‖‖ ‖ ‖‖ ‖‖‖‖‖‖‖ ‖‖ ‖‖‖

Advanced Format 4

enable

‖‖ ‖ ‖‖ ‖‖‖‖‖‖‖ ‖‖ ‖‖‖

disable

‖‖ ‖ ‖‖ ‖‖‖‖‖‖‖ ‖ ‖‖‖

ADVANCED FORMATTING

No Match Result

clear data - no transmission

transmit data using standard format

This selection determines the action to be taken when codes read do not conform to the advanced format requisites (no match).

- Codes not matching can be ignored, cleared from memory and not transmitted.

- Codes not matching can be transmitted using the Standard formatting (Headers, Code Length, Code ID, Terminators).

4   REFERENCES

4.1   RS-232 PARAMETERS

4.1.1   Handshaking

Hardware handshaking: (RTS/CTS)

The RTS line is activated by the decoder before transmitting a character. Transmission is possible only if the CTS line (controlled by the Host) is active.

Signals at
EIA levels   **RTS**

TX

Transmitted data   Transmitted data

CTS   Host busy

RTS/CTS handshaking
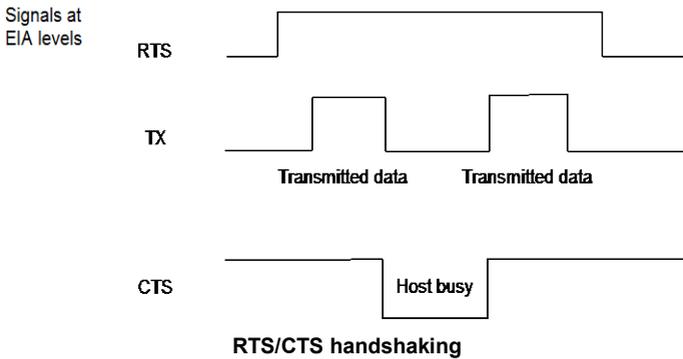
Software handshaking: (XON/XOFF)

During transmission, if the Host sends the XOFF character (13 Hex), the decoder interrupts the transmission with a maximum delay of one character and only resumes when the XON character (11 Hex) is received.

Transmitted data   Transmitted data

TX

RX

XOFF   XON
Host busy   Host ready

XON/XOFF handshaking
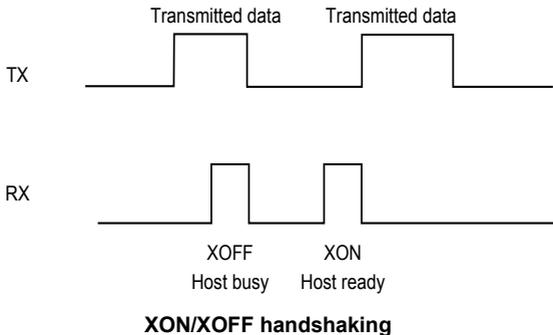
4.1.2 ACK/NACK Protocol

WLS8600 Readers
This parameter sets a transmission protocol in which the Host responds to the reader after every code transmitted. The Host sends an ACK character (06 HEX) in the case of good reception or the NACK character (15 HEX) requesting re-transmission, in the case of bad reception.
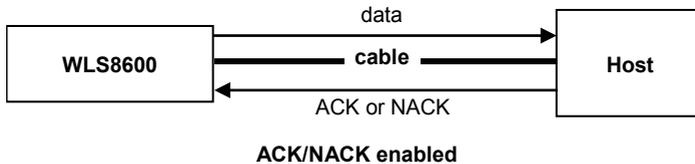
ACK/NACK enabled

If the reader does not receive an ACK or NACK, transmission is ended after the RX Timeout (see par. 4.1.4).

When ACK/NACK protocol is enabled, FIFO must be disabled manually, see par. 4.1.3.

4.1.3 FIFO

This parameter determines whether data (barcodes) are buffered on a First In First Out basis allowing faster data collection in certain cases for example when using slow baud rates and/or hardware handshaking.

If the FIFO buffering is enabled, codes are collected and sent out on the serial line in the order of acquisition. About 800 characters can be collected (buffer full), after which the reader signals an error and discards any further codes until the transmission is restored.

If the FIFO buffering is disabled, each code must be transmitted before another one can be read.

4.1.4   RX Timeout

When the RS-232 interface is selected, the Host can be used to configure the device by sending it command strings (see Appendix A).

This parameter can be used to automatically end data reception from the Host after the specified period of time.

If no character is received from the Host, after the timeout expires, any incomplete string (any string not terminated by <CR>) is flushed from the device buffer.

4.2   PEN PARAMETERS

4.2.1   Minimum Output Pulse

This parameter sets the duration of the output pulse corresponding to the narrowest element in the barcode. In this way the code resolution is controlled by the signal sent to the decoder, independently of the physical resolution of the code read.

The shortest pulse (200 μs) corresponds to a high-resolution code emulation and therefore a shorter transfer speed to the decoder (for decoders able to work on high resolution codes). Likewise, longer pulses correspond to low-resolution code emulation and therefore a longer transfer time to the decoder.

4.2.2   Conversion to Code 39 and Code 128

When using these readers it is possible to convert all codes to Code 39. By disabling this option the decoded codes will be transmitted in their original format, except for the following codes, which are ALWAYS converted into Code 39 format:
MSI, Code 11, Code 16K, Code 49, GS1 DataBar™.

4.2.3   Overflow

This parameter generates a white space before the first bar and after the last bar of the code. The selections are as follows:

narrow   =   space 10 times the minimum output pulse.
medium   =   space 20 times the minimum output pulse.
wide   =   space 30 times the minimum output pulse.

4.2.4   Output and Idle Levels

The following state diagrams describe the different output and idle level combinations for Pen emulation:
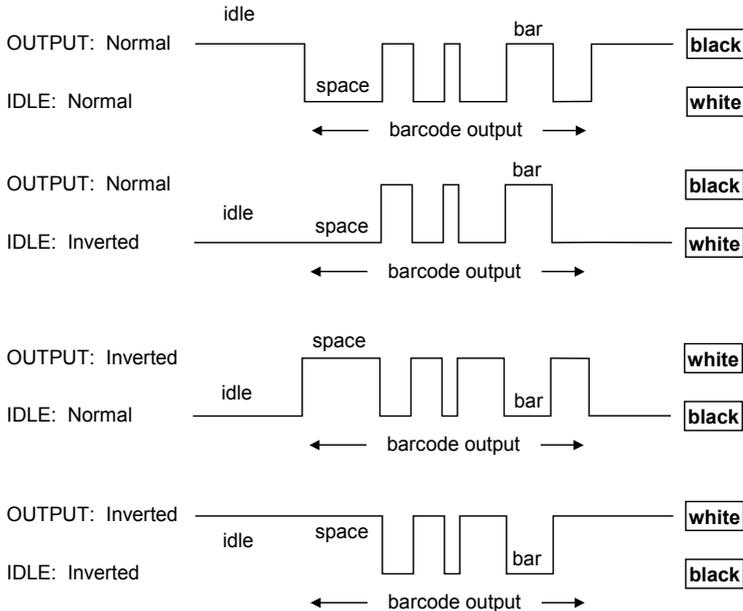
Output and Idle Levels

4.2.5   Inter-Block Delay

For the PEN Emulation interface, data are sent to the Host in fixed size blocks of 20 characters each. The inter-block delay parameter allows setting a delay between each block sent to the Host.

4.3   DATA FORMAT

For an overview of Message Formatting see Chapter **Error! Reference source not found.**.

4.3.1   Header/Terminator Selection

The header/terminator selection is not effected by the reading of the restore default code. In fact, header and terminator default values depend on the interface selection:

RS-232:   no header, terminator CR-LF

WEDGE: no header, terminator ENTER

These default values are always restored through the reading of RS-232 or WEDGE interface selection code, see chapter 2.

For the WEDGE interface, the following extended keyboard values can also be configured:

EXTENDED KEYBOARD TO HEX CONVERSION TABLE				
	IBM AT IBM 3153 APPLE ADB	IBM XT	IBM 31xx, 32xx, 34xx, 37xx	Wyse Digital
HEX	KEY	KEY	KEY	KEY
83	ENTER	ENTER	FIELD EXIT	RETURN
84	TAB	TAB	TAB	TAB
85	F1	F1	F1	F1
86	F2	F2	F2	F2
87	F3	F3	F3	F3
88	F4	F4	F4	F4
89	F5	F5	F5	F5
8A	F6	F6	F6	F6
8B	F7	F7	F7	F7
8C	F8	F8	F8	F8
8D	F9	F9	F9	F9
8E	F10	F10	F10	F10
8F	F11	ESC	F11	F11
90	F12	BACKSPACE	F12	F12
91	HOME	HOME	ENTER	F13
92	END	END	RESET	F14
93	PG UP	PG UP	INSERT	F15
94	PG DOWN	PG DOWN	DELETE	F16
95	↑	↑	FIELD -	UP
96	↓	↓	FIELD +	DOWN
97	←	←	ENTER (Paddle)	LEFT
98	→	→	PRINT	RIGHT
99	ESC	ESC		ESC
9A	CTRL (Right)	CTRL (Right)		CTRL (Right)
9B	Euro	Space	Space	Space

For all devices using IBM AT (compatible) Wedge or USB-KBD interfaces, all values from **9C** to **FE** send the relative simulated keypress when available or else the relative ALT-Mode sequence. See the Hex to Character Conversion Table in Appendix C.

For all devices using other Wedge interfaces, all values from **9C** to **FE** send the Space character.

4.3.2   Define Special Key Sequence

The Special Key(s) for **Wedge IBM AT-PS/2 and USB-KBD interface users** can be associated with a sequence of keyboard keys that otherwise could not be selected, i.e. ALT + F6, SHIFT + F1. These Special Keys can be used for:

- Headers/Terminators
- Character Replacement
- Field Adjustment
- Custom Code ID
- Advanced Formatting – Define Field
- Advanced Formatting – Additional Fixed Field

Follow the procedure to define the desired Special Key sequence:

1. Read the Enter Configuration code above and select the Special Key to define (one at a time):

Define Special Key 1

||| | | ||| ||||| | ||||| |||

Define Special Key 2

||| | | ||| ||||| | ||| || |||

Define Special Key 3

||| | | ||| ||||| || ||||| | |||

Define Special Key 4

||| | | ||| ||||| | | ||||| |||

Define Special Key 5

||| | | ||| ||| | ||||| ||| |||

2. Read <u>only one code</u> to be associated with the special key sequence:

SHIFT

OR

CTRL

OR

ALT

OR

CTRL + SHIFT

OR

ALT + SHIFT

OR

CTRL + ALT

3. Select the character to be associated with the Special Key sequence by reading the codes corresponding to the 3 character values from Appendix C. Then, read the Exit and Save Configuration code above to complete the Special Key sequence.

The character values having the ^{S} and ^{A} symbols **require** SHIFT or ALT keys or key combinations in **step 2**, in particular:
^{S} = the character is obtained in combination with SHIFT
^{A} = the character is obtained in combination with ALT

The following character values change according to the keyboard nationality.

KEYB / CHAR	ITA	USA	FR	BE	DE	UK	ES	SW	JP
!	016 ^{S}	016 ^{S}	04A	03E	016 ^{S}	016 ^{S}	016 ^{S}	016 ^{S}	016 ^{S}
"	01E ^{S}	052 ^{S}	026	026	01E ^{S}	01E ^{S}	01E ^{S}	01E ^{S}	01E ^{S}
#	052 ^{A}	026 ^{S}	026 ^{A}	026 ^{A}	05D	05D	026 ^{A}	026 ^{S}	026 ^{S}
$	025 ^{S}	025 ^{S}	05B	05B	025 ^{S}	025 ^{S}	025 ^{S}	025 ^{A}	025 ^{S}
%	02E ^{S}	02E ^{S}	052 ^{S}	052 ^{S}	02E ^{S}	02E ^{S}	02E ^{S}	02E ^{S}	02E ^{S}
&	036 ^{S}	03D ^{S}	016	016	036 ^{S}	03D ^{S}	036 ^{S}	036 ^{S}	036 ^{S}
'	04E	052	025	025	05D ^{S}	052	04E	05D	03D ^{S}
(	03E ^{S}	046 ^{S}	02E	02E	03E ^{S}	046 ^{S}	03E ^{S}	03E ^{S}	03E ^{S}
)	046 ^{S}	045 ^{S}	04E	04E	046 ^{S}	045 ^{S}	046 ^{S}	046 ^{S}	046 ^{S}
*	05B ^{S}	03E ^{S}	05D	05B ^{S}	05B	03E ^{S}	05B ^{S}	05D ^{S}	052 ^{S}
+	05B	055 ^{S}	055 ^{S}	04A ^{S}	05B	055 ^{S}	05B	04E	04C ^{S}
,	041	041	03A	03A	041	041	041	041	041
-	04A	04E	036	055	04A	04E	04A	04A	04E
.	049	049	041 ^{S}	041 ^{S}	049	049	049	049	049
/	03D ^{S}	04A	049 ^{S}	049 ^{S}	03D ^{S}	04A	03D ^{S}	03D ^{S}	04A
0	045	045	045 ^{S}	045 ^{S}	045	045	045	045	045
1	016	016	016 ^{S}	016 ^{S}	016	016	016	016	016
2	01E	01E	01E ^{S}	01E ^{S}	01E	01E	01E	01E	01E
3	026	026	026 ^{S}	026 ^{S}	026	026	026	026	026
4	025	025	025 ^{S}	025 ^{S}	025	025	025	025	025
5	02E	02E	02E ^{S}	02E ^{S}	02E	02E	02E	02E	02E
6	036	036	036 ^{S}	036 ^{S}	036	036	036	036	036
7	03D	03D	03D ^{S}	03D ^{S}	03D	03D	03D	03D	03D
8	03E	03E	03E ^{S}	03E ^{S}	03E	03E	03E	03E	03E
9	046	046	046 ^{S}	046 ^{S}	046	046	046	046	046

KEYB / CHAR	ITA	USA	FR	BE	DE	UK	ES	SW	JP
:	049 [S]	04C [S]	049	049	049 [S]	04C [S]	049 [S]	049 [S]	052
;	041 [S]	04C	041	041	041 [S]	04C	041 [S]	041 [S]	04C
<	061	041 [S]	061	061	061	041 [S]	061	061	041 [S]
=	045 [S]	055	055	04A	045 [S]	055	045 [S]	045 [S]	04E [S]
>	061 [S]	049 [S]	061 [S]	061 [S]	061 [S]	049 [S]	061 [S]	061 [S]	049 [S]
?	04E	04A [S]	03A [S]	03A [S]	04E [S]	04A [S]	04E [S]	04E [S]	04A [S]
@	04C [A]	01E [S]	045 [A]	01E [A]	015 [A]	052 [S]	01E [A]	01E [A]	054
[	054 [A]	054	02E [A]	054 [A]	052 [S]	054	054 [A]	03E [A]	05B
\	00E	05D	03E [A]	061 [A]	04C [S]	061	00E [A]	04E [A]	051
]	05B [A]	05B	04E [A]	05B [A]	054 [S]	05B	05B [A]	046 [A]	05D
^	055 [S]	036 [S]	046 [A]	054	00E	036 [S]	054 [S]	05B [S]	055
_	04A [S]	04E [S]	03E	055	04A [S]	04E [S]	04A [S]	04A [S]	051 [S]
' (accent)	-	00E	03D [A]	05D [A]	055 [S]	00E	054	055 [S]	054 [S]
a	01C	01C	015	015	01C	01C	01C	01C	01C
b	032	032	032	032	032	032	032	032	032
c	021	021	021	021	021	021	021	021	021
d	023	023	023	023	023	023	023	023	023
e	024	024	024	024	024	024	024	024	024
f	02B	02B	02B	02B	02B	02B	02B	02B	02B
g	034	034	034	034	034	034	034	034	034
h	033	033	033	033	033	033	033	033	033
i	043	043	043	043	043	043	043	043	043
j	03B	03B	03B	03B	03B	03B	03B	03B	03B
k	042	042	042	042	042	042	042	042	042
l	04B	04B	04B	04B	04B	04B	04B	04B	04B
m	03A	03A	04C	04C	03A	03A	03A	03A	03A
n	031	031	031	031	031	031	031	031	031
o	044	044	044	044	044	044	044	044	044
p	04D	04D	04D	04D	04D	04D	04D	04D	04D
q	015	015	01C	01C	015	015	015	015	015
r	02D	02D	02D	02D	02D	02D	02D	02D	02D
s	01B	01B	01B	01B	01B	01B	01B	01B	01B
t	02C	02C	02C	02C	02C	02C	02C	02C	02C
u	03C	03C	03C	03C	03C	03C	03C	03C	03C
v	02A	02A	02A	02A	02A	02A	02A	02A	02A

KEYB \ CHAR	ITA	USA	FR	BE	DE	UK	ES	SW	JP
w	01D	01D	01A	01A	01D	01D	01D	01D	01D
x	022	022	022	022	022	022	022	022	022
y	035	035	035	035	01A	035	035	035	035
z	01A	01A	01D	01D	035	01A	01A	01A	01A
{	-	054 S	025 A	046 A	052	054 S	052 A	03D A	05B S
|	00E S	05D S	036 A	016 A	04C	061 S	016 A	061 A	06A S
}	-	05B S	055 A	045 A	054	05B S	05D A	045 A	05D S
~	-	00E S	01E A	04A A	04E	05D S	-	05B A	055 S

> **NOTE**
>
> *To use upper case letters, it is necessary to read one of the SHIFT commands from step 2 before the value corresponding to the lower case letters.*

The following key values are common to all the keyboard nationalities.

KEYB \ KEY	ITA	USA	FR	BE	DE	UK	ES	SW	JP
ENTER	05A	05A	05A	05A	05A	05A	05A	05A	05A
TAB	00D	00D	00D	00D	00D	00D	00D	00D	00D
F1	005	005	005	005	005	005	005	005	005
F2	006	006	006	006	006	006	006	006	006
F3	004	004	004	004	004	004	004	004	004
F4	00C	00C	00C	00C	00C	00C	00C	00C	00C
F5	003	003	003	003	003	003	003	003	003
F6	00B	00B	00B	00B	00B	00B	00B	00B	00B
F7	083	083	083	083	083	083	083	083	083
F8	00A	00A	00A	00A	00A	00A	00A	00A	00A
F9	001	001	001	001	001	001	001	001	001
F10	009	009	009	009	009	009	009	009	009
F11	078	078	078	078	078	078	078	078	078
F12	007	007	007	007	007	007	007	007	007
Home	26C	26C	26C	26C	26C	26C	26C	26C	26C
End	269	269	269	269	269	269	269	269	269
PG UP	27D	27D	27D	27D	27D	27D	27D	27D	27D
PG down	27A	27A	27A	27A	27A	27A	27A	27A	27A

KEYB CHAR	ITA	USA	FR	BE	DE	UK	ES	SW	JP
Up arrow	275	275	275	275	275	275	275	275	275
Down arrow	272	272	272	272	272	272	272	272	272
Left arrow	26B	26B	26B	26B	26B	26B	26B	26B	26B
Right arrow	274	274	274	274	274	274	274	274	274
Esc	076	076	076	076	076	076	076	076	076
Ctrl right	214	214	214	214	214	214	214	214	214
€	02E [A]	02E [A]	024 [A]	024 [A]	024 [A]	025 [A]	02E [A]	02E [A]	-
SPACE	029	029	029	029			029		029

NOTE

If Caps Lock Auto-Recognition is disabled, it is necessary to verify that the keyboard caps lock status matches the reader one.

EXAMPLES

- Defining Special Key Sequences -

1. the following example allows defining Special Key 1 as SHIFT + F5:

Read   enter configuration   +   define Special Key 1   +   SHIFT   +

+   codes from Appendix **C** corresponding to the character value for F5   **003**   +   exit & save configuration

2. the following example allows defining Special Key 2 as CTRL + S (upper case):

Read   enter configuration + define Special Key 2 + CTRL + SHIFT +

+ codes from Appendix **C** corresponding to the character value for s (lower case) **01B** + exit & save configuration

3. the following example allows defining Special Key 3 as Alt + F6:

Read   enter configuration + define Special Key 3 + ALT +

+ codes from Appendix **C** corresponding to the character value for F6 **00B** + exit & save configuration

4. the following example allows defining Special Key 4 as Alt + Shift + F1:

Read   enter configuration + define Special Key 4 + ALT + SHIFT +

+ codes from Appendix **C** corresponding to the character value for F1 **005** + exit & save configuration

- Integrating Special Keys in Headers/Terminators -

1. the following example allows setting Special Key 1 (defined in example 1 above) as terminator:

Read   enter configuration + one character terminator + special key 1 + exit & save configuration

2. the following example allows setting Special Key 2 (defined in example 2 above) as header:

enter configuration		one character header		special key 2		exit & save configuration
Read ‖‖‖‖‖‖‖‖‖	+	‖‖‖‖‖‖‖‖‖‖	+	‖‖‖‖‖‖‖‖	+	‖‖‖‖‖‖‖‖‖

3. the following example allows setting Special Key 3 (defined in example 3 above) as header:

enter configuration		one character header		special key 3		exit & save configuration
Read ‖‖‖‖‖‖‖‖‖	+	‖‖‖‖‖‖‖‖‖‖	+	‖‖‖‖‖‖‖‖	+	‖‖‖‖‖‖‖‖‖

4. the following example allows setting Special Key 4 (defined in example 4 above) and ENTER character as terminators:

enter configuration		two character terminator		special key 4		ASCII characters corresponding to the HEX value for character ENTER	
Read ‖‖‖‖‖‖‖‖‖	+	‖‖‖‖‖‖‖‖‖‖‖	+	‖‖‖‖‖‖‖‖	+	**83**	+

	exit & save configuration
+	‖‖‖‖‖‖‖‖
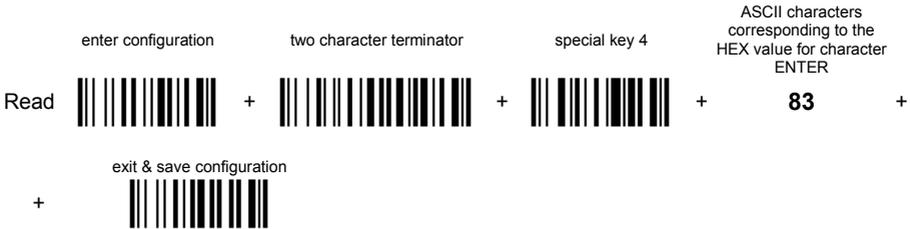
4.4   POWER SAVE

4.4.1   Sleep State

When using interfaces other than USB, this mode allows the µP in the reader to enter a "Sleep" state for minimum power consumption.This command is only valid when hardware trigger type is selected.

Before entering Sleep mode, the following are verified:

- no commands coming from Host
- no data being transmitted to Host
- Enter Sleep Timeout ended (see par. 4.4.2)

To exit Sleep mode press the trigger.

When using the USB interface, this mode allows the device to manage Selective Suspend conditions generated by the Host Operating System in which optimizing low power consumption (ex. Windows Stand-by). It is possible to exit the Suspend mode either from the Host (ex. moving the mouse during Stand-by) or through the barcode reader. The latter, called Remote Wakeup, makes the device wake up the Host restoring the communication. Remote Wakeup is possible by pressing the trigger.

4.4.2   Enter Sleep Timeout

For readers that have the Sleep state enabled, this timeout determines when the reader will enter this state.

4.5 READING PARAMETERS

4.5.1 Trigger Signal

This mode determines how the reading phase is controlled when the hardware trigger operating mode is selected:

- trigger active level: the reader goes ON when the trigger is pressed and goes OFF when it is released
- trigger active pulse: the reader goes ON at the first trigger press and goes OFF only at a second press

4.5.2 Trigger Click

When enabled, it activates a "click" sound upon each trigger pressure.

4.5.3 Trigger-Off Timeout

When this timeout is selected, the reader turns OFF automatically after the desired period of time.

4.5.4 Reads per Cycle

In general, a **reading cycle** corresponds to the ON + OFF times of a device.
The resulting effects of this parameter on code reading depend on other related configuration conditions. Here are the definitions of ON and OFF times.

- For readers using the software trigger parameter (FLASH MODE), a reading cycle corresponds to the *flash on* + *flash off* times. Code reading takes place during the *flash on* time.
- For readers using the *hardware trigger* parameter, a reading cycle corresponds to a trigger press (ON) + one of the following OFF events:

  trigger release (for *trigger active level*)

  a second trigger press (for *trigger active pulse*)

  trigger-off timeout (see par. 4.5.3).

When **one read per cycle** is selected, the device decodes only one code during the ON period <u>and immediately turns the reader OFF</u>. It is only possible to read another code when the next ON time occurs.

In **multiple reads per cycle**, the ON period is extended so that the device can continue decoding codes until an OFF event occurs. For software trigger mode, the *flash on* period is immediately reset after each read and therefore extended. If another code is decoded before the reset *flash on* period expires, it is again reset and the effect is that the device remains ON, decoding codes until the *flash on* or *timeout* period expires.

The Safety Time parameter should be used in this case to avoid unwanted multiple reading of the same code, see par. 4.5.5.

4.5.5   Safety Time

Safety time prevents the device from immediately decoding the same code more than once. Same code consecutive reading can be disabled requiring the reader to be removed from the code (no decoding) for at least 400 ms, or a timeout can be set up to 9.9 seconds before the decoder will accept the same code. Reading is immediate if the code changes.

The safety time parameter is not applicable when reading stacked codes or when setting one read per cycle in hardware trigger operating mode, since these settings require voluntary action by the user.

4.6   DECODING PARAMETERS

> ⚠️ **CAUTION**
>
> *These parameters are intended to enhance the decoding capability of the reader for particular applications. Used incorrectly, they can degrade the reading performance or increase the possibility of a decoding error.*

4.6.1   Ink-Spread

The ink-spread parameter allows the decoding of codes, which are not perfectly printed because the page texture tends to absorb the ink.

4.6.2   Overflow Control

The overflow control parameter can be disabled when decoding codes printed on small surfaces, which do not allow the use of an overflow space.

This command does not affect code families 2/5, Code 128 and Code 93.

4.6.3 Interdigit Control

The interdigit control parameter verifies the interdigit spacing for code families Code 39 and Codabar.

4.7 ADVANCED FORMATTING

4.7.1 Match Conditions

Selecting an Advanced Formatting and specifying a Match restriction (Code Type, Code Length, Predefined Characters) the code will be transmitted according to the order of the defined formats.

For example, defining 2 formats where:
- Format 1: Match Code type = Code128
- Format 2: Match Code length = 15 and Match with Predefined Characters "DATA"

a Code128 "DATA:12345ABCDE" with code length 15 will be formatted following the Format 1.

To send the same code with the Format 2 it is necessary to invert the format order as follows:
- Format 1: Match Code length = 15 and Match with Predefined Characters "DATA"
- Format 2: Match Code type = Code128

4.8   CONFIGURATION EDITING COMMANDS

The following commands carry out their specific function and then exit the configuration environment.

Command	Description
‖‖ ‖‖‖‖‖‖‖‖‖‖‖	Restore WLS8600 reader default configuration (see the relative Quick Reference Guide for default settings)
‖‖ ‖‖‖‖‖‖‖‖‖‖‖	Transmit the WLS8600 software release
‖‖ ‖‖‖‖‖‖‖‖‖ ‖‖	Transmit WLS8600 reader configuration in ASCII format. This command is not effective with Pen emulation interface.

4.9   CUSTOM DEFAULT CONFIGURATION

Read the following code to set the reader <u>user-defined configuration</u> as custom default configuration:

Save User-defined Configuration as Custom Default

||| ||||||||||||||||||

Read the following code whenever you need to restore the custom default configuration:

Restore Custom Default Configuration

||| ||||||||||||||||||

4.10 CODE TYPE RECOGNITION

This procedure allows the reader to enter a particular state during which it reads and transmits to the Host information about the family type of codes unknown to the user (with the exception of MSI, Code 49 and Code 16k code types). It is also possible to read and transmit configuration strings without interpreting them.
All codes are read ignoring the check digit.

Follow the given procedure:

① Read the following code to enter the code type recognition mode:

code type recognition

||| |||||||||||||||||||||||

② Read existing codes whose family type you need to check.

③ Read the following code to return to the reader's normal functioning:

exit code type recognition mode

||| |||||||||||||

4.11 CONFIGURATION COPYING COMMANDS

4.11.1   Copy WLS8600 Series

Procedure:

① Connect the **master** (correctly configured reader) and the **slave** (reader to be configured) together through two RS-232 serial interface cables and external power supply.

   RS-232 Cables: CAB471 & CAB472

   Power Supply: PG5

② Using the **slave** reader, read the Restore Default barcode and then the RS-232 interface barcode from chapter 3 of this manual or from the Quick Reference Guide.

③ With the **master** reader, read the Configuration Copy barcode below.

Copy Configuration

The configuration will be copied from the master to the slave reader. The slave reader signals the end of the procedure with a series of beeps.

NOTE: The master reader can be configured for any interface.

4.12 DEFAULT PARAMETERS FOR POS TERMINALS

The default values of the RS-232 and Data Format parameters for POS terminals are listed in the following table:

	NIXDORF Mode A	FUJITSU	ICL Mode
RS-232 Group			
Baud Rate	9600	9600	9600
Parity	Odd	None	Even
Data Bits	8	8	8
Stop Bits	1	1	1
Handshaking	Hardware (RTS/CTS)	None	RTS always ON
ACK/NACK Protocol	Disabled	Disabled	Disabled
FIFO	Disabled	Enabled	Enabled
Inter-Character Delay	Disabled	Disabled	Disabled
RX Timeout	9.9 sec	2 sec	9.9 sec
Serial Trigger Lock	Disabled	Disabled	Disabled
Data Format Group			
Code Identifier	Custom	Custom	Custom
Header	No Header	No Header	No Header
Terminator	CR	CR	CR
Field Adjustment	Disabled	Disabled	Disabled
Code Length TX	Not Transmitted	Not Transmitted	Not Transmitted
Character Replacement	Disabled	Disabled	Disabled
Address Stamping	Disabled	Disabled	Disabled
Address Delimiter	Disabled	Disabled	Disabled
Time Stamping	Disabled	Disabled	Disabled
Time Delimiter	Disabled	Disabled	Disabled

The table below lists all the Code Identifiers available for the POS terminals:

CODE	NIXDORF Mode A	FUJITSU	ICL Mode
UPC-A	A0	A	A
UPC-E	C0	E	E
EAN-8	B	FF	FF
EAN-13	A	F	F
Code 39	M	None	C [code length]
Codabar	N	None	N [code length]
Code 128	K	None	L [code length]
Interleaved 2 of 5	I	None	I [code length]
Code 93	L	None	None
Industrial 2 of 5	H	None	H [code length]
UCC/EAN 128	P	None	L [code length]
MSI	O	None	None
GS1 DATABAR™	E	None	None
Other	None	None	None

5   TECHNICAL FEATURES

5.1   WLS8600

Electrical Features	
Power Supply	4 to 30 VDC
Max. Consumption	
@ 4V @ 5V @ 30 V Sleep Mode	420 mA 310 mA 62 mA 4 mA
Reading Indicators	Good Read LED (**green**) Good Read Spot (**green**), **Beeper**
Host Interfaces	
RS-232	300 to 38400 baud
WEDGE	IBM AT or PS/2, XT, PC Notebook, IBM SURE1, IBM 3153, 31xx, 32xx, 34xx, 37xx terminals, Wyse terminals, Digital VT terminals, Apple ADB Bus supported
PEN Emulation	Selectable minimum pulse from 200 µS to 1.2 mS
USB	USB-KBD, USB-KBD-ALT-MODE, USB-KBD APPLE, USB-COM, USB-IBM-Table Top, USB-IBM-Hand Held
Laser Features	
Light Source	VLD between 630~680 nm
Scan Rate	35 ± 5 scans/sec
Power (max) in mW	0.9 mW
Scan Angle	42°
PCS minimum	15%
Maximum Resolution	0.076 mm (3 mils)
Reading Field Width	see reading diagrams (par. 5.3)
Laser Safety Class	Class 2 EN 60825-1/CDRH
Environmental Features	
Working Temperature	-30° to +50 °C / -22° to +122 °F
Storage Temperature	-30° to +70 °C / -22° to +158 °F
Humidity	90% non condensing
Drop resistance (on concrete)	IEC 68-2-32 Test ED 2 m
Protection class	IP65
Mechanical Features	
Weight (without cable)	about 295 g (10.4 oz)
Dimensions	205 x 114 x 69 mm (8.07 x 4.49 x 2.72 in)
Cable length	2 m (6 ft 6 in)
Material	Polycarbonate molded with rubber

5.2   STATUS INDICATORS

The scanner has two indicator LEDs and a Beeper. They signal several operating conditions, which are described in the tables below.

H = high tone   **L** = low tone

WLS8600 READER START-UP

Beeper[1]	Meaning
L L L L	Parameters loaded correctly
H H H H long tones	Parameter loading error, reading or writing error in the non volatile memory
H L H L	Hardware error in EEPROM

WLS8600 READER CONFIGURATION

Beeper[1]	Meaning
H H H H	Correct entry or exit from Configuration mode
L	Good read of a command
L L L	Command read error

WLS8600 READER DATA ENTRY

Beeper[1]	LED	Good Read Spot	Meaning
one beep[2]	ON	ON	Correct read of a code in normal mode
H long	ON	ON	Successful advanced format concatenation
H H H			Timeout expired – operation not completed
H H long			Error in advanced data formatting
	OFF	OFF	Ready to read a code

[1] Only the Beeper Intensity command can modify these signals.

[2] The data entry good read tone is user-configurable with all the Beeper commands in the Reading Parameters section.

5.3 READING TABLE

WLS8600

mil	Typical reading distance with good quality codes
5	2.1 - 13.3 cm / 0.8 - 5.2 in
7,5	3.5 - 24.2 cm / 1.4 - 9.5 in
10	2.9 - 42.8 cm / 1.1 - 16.8 in
13	2.3 - 55.1 cm / 0.9 - 21.7 in
20	6.3 - 78.5 cm / 2.5 - 30.9 in
40	2.5 - 97.8 cm / 1.0 - 38.5 in

A   HOST CONFIGURATION STRINGS

SERIAL CONFIGURATION STRINGS

SPECIAL CONFIGURATION COMMANDS	
DESCRIPTION	**STRING**
Enter Configuration	**$+**
Exit and Save Configuration	**$-**
Restore Default	**$+$***
Transmit Software Release (not for PEN emulation)	**$+$!**
Transmit Device Configuration in ASCII (not for PEN emulation)	**$+$&**
Set Custom Default	**$+$0**
Restore Custom Default	**$+$1**

These commands do not require $-.

INTERFACE SELECTION			
DESCRIPTION			**STRING**
RS-232	Standard		**CP0**
	ICL Mode		**CM0**
	Fujitsu		**CM1**
	Nixdorf Mode A		**CM2EC0**
WEDGE	for IBM AT		**CP500**
	for IBM Terminals: 31xx, 32xx, 34xx, 37xx; make-break keyboard		**CP501**
	for IBM Terminals: 31xx, 32xx, 34xx, 37xx; make-only keyboard		**CP502**
	Keyboard Type for IBM Terminals 31xx, 32xx, 34xx, 37xx	typewriter	**FK0**
		advanced	**FK1**
	for IBM XT		**CP503**
	for IBM Terminal 3153		**CP504**
	for IBM PC Notebook		**CP505**
	for IBM SURE1		**CP506**
	for IBM AT - ALT mode		**CP507**
	for IBM PC Notebook - ALT mode		**CP508**
	for Wyse Terminal - ANSI Keyboard		**CP509**
	for Wyse Terminal - PC Keyboard		**CP510**
	for Wyse Terminal - ASCII Keyboard		**CP511**
	for Wyse Terminal - VT220 style Keyboard		**CP514**
	for Digital Terminals VT2xx/3xx/4xx		**CP512**
PEN EMULATION			**CP6**
USB	USB-KBD		**UA03**
	USB-KBD-ALT-MODE		**UA04**
	USB-KBD-APPLE		**UA05**
	USB-COM		**UA02**
	USB-IBM-Table Top		**UA00**
	USB-IBM-Hand Held		**UA01**

RS-232			
DESCRIPTION			**STRING**
Baud Rate	300		**CD1**
	600		**CD2**
	1200		**CD3**
	2400		**CD4**
	4800		**CD5**
	9600		**CD6**
	19200		**CD7**
	38400		**CD8**
Parity	none		**CC0**
	even		**CC1**
	odd		**CC2**
Data Bits	7		**CA0**
	8		**CA1**
	9		**CA2**
Stop Bits	1		**CB0**
	2		**CB1**
Handshaking	disable		**CE0**
	RTS/CTS		**CE1**
	XON/XOFF		**CE2**
	RTS always On		**CE3**
ACK/NACK Protocol	disable		**ER0**
	enable		**ER1**
FIFO	disable		**EC0**
	enable		**EC1**
Inter-character Delay *(ms)*			**CK00 - CK99**
RX Timeout *(100 ms)*			**CL00 - CL99**
Serial Trigger Lock	disable		**CR0**
	enable and select characters		**CR1***ab*

a = Hex values representing an ASCII character from **00** to **FE** enabling the device trigger.

b = HEX values representing an ASCII character from **00** to **FE** inhibiting the device trigger.

USB		
DESCRIPTION		**STRING**
USB-COM		
Handshaking	disable	**CE0**
	RTS/CTS	**CE1**
	XON/XOFF	**CE2**
	RTS always ON	**CE3**
ACK/NACK Protocol	disable	**ER0**
	enable	**ER1**
FIFO	disable	**EC0**
	enable	**EC1**
Inter-character Delay *(ms)*		**CK00 - CK99**
RX Timeout *(100 ms)*		**CL00 - CL99**
Serial Trigger Lock	disable	**CR0**
	enable	**CR1***ab*
USB-KBD		
Keyboard Nationality (not for USB-KBD-ALT-MODE)	Belgian	**FJ7**
	English (UK)	**FJ4**
	French	**FJ2**
	German	**FJ3**
	Italian	**FJ1**
	Spanish	**FJ6**
	Swedish	**FJ5**
	USA	**FJ0**
Keyboard Nationality (IBM AT compatible only)	Japanese	**FJ8**
	Russian (Latin)	**FJ9**
	Russian (Cyrillic)	**FJA**
	Hungarian	**FJB**
	Slovenian, Croatian, Serbian (Latin)	**FJC**
	Romanian	**FJD**
	Czech Republic	**FJE**
FIFO	disable	**EC0**
	enable	**EC1**
Delays	Inter-Character *(ms)*	**CK00 - CK99**
	Inter-Code *(s)*	**FG00 - FG99**
USB Keyboard Speed	normal	**UT10**
	fast	**UT01**

a = Hex values representing an ASCII character from **00** to **FE** enabling the device trigger.

b = HEX values representing an ASCII character from **00** to **FE** inhibiting the device trigger.

WEDGE		
DESCRIPTION		**STRING**
Keyboard Nationality	Belgian	**FJ7**
	English (UK)	**FJ4**
	French	**FJ2**
	German	**FJ3**
	Italian	**FJ1**
	Spanish	**FJ6**
	Swedish	**FJ5**
	USA	**FJ0**
Keyboard Nationality (IBM AT compatible only)	Japanese	**FJ8**
	Russian (Latin)	**FJ9**
	Russian (Cyrillic)	**FJA**
	Hungarian	**FJB**
	Slovenian, Croatian, Serbian (Latin)	**FJC**
	Romanian	**FJD**
	Czech Republic	**FJE**
Caps Lock	caps Lock ON	**FE1**
	caps Lock OFF	**FE0**
Caps Lock Auto-Recognition (IBM AT compatible only)	disable	**FP0**
	enable	**FP1**
Num Lock	toggle num lock	**FL1**
	num lock unchanged	**FL0**
Delays	Inter-Character *(ms)*	**CK00 - CK99**
	Inter-Code *(s)*	**FG00 - FG99**
Control Character Emulation	Ctrl + Shift + Key	**FO0**
	Ctrl + Key	**FO1**

PEN		
DESCRIPTION		**STRING**
Operating Mode	interpret (does not require **$+** or **$-**)	**$]**
	transparent (does not require **$+** or **$-**)	**$[**
Minimum Output Pulse	200µs	**DG0**
	400µs	**DG1**
	600µs	**DG2**
	800µs	**DG3**
	1 ms	**DG4**
	1.2 ms	**DG5**
Conversion to Code 39 and Code 128	disable conversion to Code 39 (D series only)	**DA0**
	enable conversion to Code 39	**DA1**
	enable conversion to Code 128 (M series only)	**DA2**
Output Level	normal	**DD0**
	inverted	**DD1**

PEN (continued)		
DESCRIPTION		STRING
Idle Level	normal	**DE0**
	inverted	**DE1**
Overflow	narrow overflow	**DH0**
	medium overflow	**DH1**
	wide overflow	**DH2**
Inter-block Delay *(100 ms)*		**CK00-CK99**

DATA FORMAT		
NOT FOR PEN EMULATION INTERFACES		
DESCRIPTION		STRING
Code Identifier	disable	**EB0**
	Wasp standard	**EB1**
	AIM standard	**EB2**
	custom	**EB3**
Custom Code Identifier		**EH*abc***
Headers	no header	**EA00**
	one character	**EA01*x***
	two characters	**EA02*xx***
	three characters	**EA03*xxx***
	four characters	**EA04*xxxx***
	five characters	**EA05*xxxxx***
	six characters	**EA06*xxxxxx***
	seven characters	**EA07*xxxxxxx***
	eight characters	**EA08*xxxxxxxx***
Terminators	no terminator	**EA10**
	one character	**EA11*x***
	two characters	**EA12*xx***
	three characters	**EA13*xxx***
	four characters	**EA14*xxxx***
	five characters	**EA15*xxxxx***
	six characters	**EA16*xxxxxx***
	seven characters	**EA17*xxxxxxx***
	eight characters	**EA18*xxxxxxxx***

a = ASCII character.
b, *c*, *x* = HEX values representing an ASCII character.

a = ASCII character of the WASP STANDARD Code Identifier from the table on page 39.

b = Hex value of the first Custom Code Identifier character from **00** to **FD**;
   FF = disable Code Identifier

c = Hex value of the second Custom Code Identifier character from **00** to **FD**;
   FF = disable second character of Custom Code Identifier

x = Hex value from **00** to **FE**

DATA FORMAT (continued)		
NOT FOR PEN EMULATION INTERFACES		
DESCRIPTION		**STRING**
Code Length Tx	not transmitted	**EE0**
	transmitted in variable-digit format	**EE1**
	transmitted in fixed 4-digit format	**EE2**
Field Adjustment	disable	**EF0**
	right addition	**EF*a*0*d***
	left addition	**EF*a*1*d***
	right deletion	**EF*a*2*d***
	left deletion	**EF*a*3*d***
Field Adjustment Character		**EG*e***
Character Replacement	disable character replacement	**EO0**
	first character replacement	**EO1*afg***
	second character replacement	**EO2*afg***
	third character replacement	**EO3*afg***

        a = ASCII character.
        d = a number from the Hex/Numeric Table
    e, f, g, h = HEX values representing an ASCII character

a = ASCII character of the WASP STANDARD Code Identifier from the table on page 39.

d = a number in the range **01-32** from the Hex/Numeric Table

e = Hex value from **00** to **FE**

f = Hex value of the character to be replaced from **00** to **FE**

g = Hex value of the new character to insert from **00** to **FE**
    FF = replace with no new character (remove character)

h = a HEX value in the range from **00 - FE** representing the ASCII character.

POWER SAVE		
DESCRIPTION		**STRING**
Sleep State	disable	**BQ0**
	enable	**BQ1**
Enter Sleep Timeout *(100 ms)*		**BR00-BR99**

READING PARAMETERS		
DESCRIPTION		**STRING**
Trigger Type	software trigger	**BK0**
	hardware trigger	**BK1**
	always on	**BK3**
Trigger Signal	trigger active level	**BA0**
	trigger active pulse	**BA1**
Trigger Click	disable	**Bc0**
	enable	**Bc1**
Trigger-off Timeout *(s)*		**BD00 - BD99**
FLASH ON *(100 ms)*		**BB001 - BB099**
FLASH OFF *(100 ms)*		**BB101 - BB199**
Reads per Cycle	one read	**BC0**
	multiple reads	**BC1**
Safety Time *(100 ms)*		**BE00 - BE99**
Beeper Intensity	very low intensity	**BG0**
	low intensity	**BG1**
	medium intensity	**BG2**
	high intensity	**BG3**
Beeper Tone	tone 1	**BH0**
	tone 2	**BH1**
	tone 3	**BH2**
	tone 4	**BH3**
Beeper Type	monotone	**BJ0**
	bitonal	**BJ1**
Beeper Length	long	**BI0**
	short	**BI1**
Good Read Spot Duration	disable	**BV0**
	short	**BV1**
	medium	**BV2**
	long	**BV3**
Aiming System	disabled	**Bj0**
	enabled	**Bj1**

DECODING PARAMETERS		
DESCRIPTION		**STRING**
Ink-spread	disable	**AX0**
	enable	**AX1**
Overflow Control	disable	**AW1**
	enable	**AW0**
Interdigit Control	disable	**AV0**
	enable	**AV1**
Puzzle Solver™	disable	**AU0**
	enable	**AU1**
Decoding Safety	one read	**ED0**
	two reads	**ED1**
	three reads	**ED2**
	four reads	**ED3**

CODE SELECTION			
DESCRIPTION			**STRING**
DISABLE ALL FAMILY CODES			**AZ0**
EAN/UPC	disable EAN/UPC family		**AA0**
	EAN 8/EAN 13/UPC A/UPC E	without ADD ON	**AA1**
		with ADD ON	**AA5**
		with and without ADD ON	**AA8**
	EAN 8/EAN 13	without ADD ON	**AA3**
		with ADD ON 2 ONLY	**AAK**
		with ADD ON 5 ONLY	**AAL**
		with ADD ON 2 AND 5	**AA6**
	UPC A/UPC E	without ADD ON	**AA4**
		with ADD ON 2 ONLY	**AAM**
		with ADD ON 5 ONLY	**AAN**
		with ADD ON 2 AND 5	**AA7**
	EAN/UPC with and without Add On no Autodiscrimination		**AA8Ad0**
	EAN/UPC Autodiscrimination Add On by Prefix		**AA8Ad1**
	Select Prefixes	cancel all selections	**ET0**
		378/379	**ET1378ET2379**
		434/439	**ET3434ET4439**
		414/419	**ET5414ET6419**
		977	**ET7977**
		978	**ET8978**
		979	**ET9979**
	EAN 8 check digit transmission	disable	**AAG0**
		enable	**AAG1**
	EAN 13 check digit transmission	disable	**AAH0**
		enable	**AAH1**

CODE SELECTION (continued)			
DESCRIPTION			**STRING**
	UPC A check digit transmission	disable	**AAI0**
		enable	**AAI1**
	UPC E check digit transmission	disable	**AAJ0**
		enable	**AAJ1**
	conversions	UPC E to UPC A	**AAA**
		UPC E to EAN 13	**AAB**
		UPC A to EAN 13	**AAC**
		EAN 8 to EAN 13	**AAD**
	ISBN Conversion codes	enable ISBN	**AP1**
		enable ISSN	**AP2**
		enable ISBN and ISSN	**AP3**
		disable ISBN and ISSN	**AP0**
Code 39	disable Code 39 family		**AB0**
	Standard	no check digit control	**AB11**
		check digit control and transmission	**AB12**
		check digit control without transmission	**AB13**
	Full ASCII	no check digit control	**AB21**
		check digit control and transmission	**AB22**
		check digit control without transmission	**AB23**
	CIP 39		**AB3**
	Code 32		**AB4**
	code length		**AB****xxxx**
2/5	disable Code 2/5 family		**AC0**
	Interleaved 2/5	no check digit control	**AC11***xxxx*
		check digit control and transmission	**AC12***xxxx*
		check digit control without transmission	**AC13***xxxx*
	Normal 2/5 5 bars	no check digit control	**AC21***xxxx*
		check digit control and transmission	**AC22***xxxx*
		check digit control without transmission	**AC23***xxxx*
	Industrial 2/5 (IATA)	no check digit control	**AC31***xxxx*
		check digit control and transmission	**AC32***xxxx*
		check digit control without transmission	**AC33***xxxx*
	Matrix 2/5 3 bars	no check digit control	**AC41***xxxx*
		check digit control and transmission	**AC42***xxxx*
		check digit control without transmission	**AC43***xxxx*
	CIP/HR		**AC5**

xxxx = ASCII numbers that define the code length where:

- First 2 digits = minimum acceptable code length.
- Second 2 digits = maximum acceptable code length.

The minimum code length must always be less than or equal to the maximum.

The maximum code length for all codes is 99 characters:

Examples:
0132 = variable length from 1 to 32 digits in the code.
1010 = 10 digit code length only.

CODE SELECTION (continued)			STRING
DESCRIPTION			**STRING**
Codabar	disable Codabar family		**AD0**
	Standard	no start/stop character equality control nor transmission	**AD111**
		no start/stop character equality control but transmission	**AD112**
		start/stop character equality control but no transmission	**AD121**
		start/stop character equality control and transmission	**AD122**
	ABC Codabar	no start/stop character equality control but transmission	**AD212**
	Codabar ABC forced concatenation		**AD232**
	code length		**AD*xxxx**
	start/stop character case in transmission	lower case	**ADA0**
		upper case	**ADA1**
Code 128	disable Code 128 family		**AI0**
	enable Code 128 - control without transmission of check digit		**AI11**
	enable EAN 128 - control without transmission of check digit		**AI21**
	Transmit GS before Code	disable	**EQ0**
		enable	**EQ1**
	ISBT 128	enable ISBT 128	**AI31**
	code length		**AILxxxx**
Code 93	disable Code 93 family		**AK0**
	enable Code 93 - control without transmission of check digit		**AK1**
MSI	disable the family		**AE0**
	no check		**AE1**
	MOD10 no tx		**AE2**
	MOD10 with tx		**AE3**
	MOD11-MOD10 no tx		**AE4**
	MOD11-MOD10 with tx		**AE5**
	MOD10-MOD10 no tx		**AE6**
	MOD10-MOD10 with tx		**AE7**

xxxx = ASCII numbers that define the code length where:

- First 2 digits = minimum acceptable code length.
- Second 2 digits = maximum acceptable code length.

The minimum code length must always be less than or equal to the maximum.

The maximum code length for all codes is 99 characters:

EXAMPLES:

0132 = variable length from 1 to 32 digits in the code.

1010 = 10 digit code length only.

CODE SELECTION (continued)		
DESCRIPTION		**STRING**
Code 11	disable the family	**AG0**
	no check	**AG1**
	Type C with tx	**AG21**
	Type C no tx	**AG22**
	Type K with tx	**AG31**
	Type K no tx	**AG32**
	Type C and K with tx	**AG41**
	Type C and K no tx	**AG42**
Code 16K	disable	**AJ0**
	enable	**AJ1**
Code 49	disable	**AM0**
	enable	**AM1**
GS1 DataBar™ Codes	disable the family	**AQ0**
	disable GS1 DataBar Expanded Linear and Stacked	**AQ10**
	enable GS1 DataBar Expanded Linear and Stacked	**AQ11**
	disable GS1 DataBar Limited	**AQ20**
	enable GS1 DataBar Limited	**AQ21**
	disable GS1 DataBar Linear and Stacked	**AQ30**
	enable GS1 DataBar Linear and Stacked	**AQ31**

B   CODE IDENTIFIER TABLE

2/5 Interleaved

2/5 Industrial

2/5 normal 5 bars

2/5 matrix 3 bars

EAN 8

EAN 13

UPC A

UPC E

EAN 8 with 2 ADD ON

EAN 8 with 5 ADD ON

EAN 13 with 2 ADD ON

EAN 13 with 5 ADD ON

UPC A with 2 ADD ON

UPC A with 5 ADD ON

||| || | || |||

UPC E with 2 ADD ON

||| |||| | || |||

UPC E with 5 ADD ON

||| | | |||| || |||

Code 39

||| ||| || || |||

Code 39 Full ASCII

||| ||| || || |||

CODABAR

||| | |||| || |||

ABC CODABAR

||| ||| || || |||

Code 128

||| || |||||| |||

EAN 128

||| | |||| | |||

Code 93

||| ||||||| || |||

CIP/39

||| |||| || || |||

CIP/HR

||| ||| || | || |||

Code 32

||| | |||||| || |||

ISBT 128

||| || |||| | |||

MSI

Code 16K

Code 11

Code 49

GS1 DATABAR Expanded Linear and Stacked

GS1 DATABAR Limited

GS1 DATABAR 14 Linear and Stacked

C   HEX AND NUMERIC TABLE

CHARACTER TO HEX CONVERSION TABLE					
char	hex	char	hex	char	hex
NUL	00	*	2A	U	55
SOH	01	+	2B	V	56
STX	02	,	2C	W	57
ETX	03	-	2D	X	58
EOT	04	.	2E	Y	59
ENQ	05	/	2F	Z	5A
ACK	06	0	30	[	5B
BEL	07	1	31	\	5C
BS	08	2	32	]	5D
HT	09	3	33	^	5E
LF	0A	4	34	_	5F
VT	0B	5	35	`	60
FF	0C	6	36	a	61
CR	0D	7	37	b	62
SO	0E	8	38	c	63
SI	0F	9	39	d	64
DLE	10	:	3A	e	65
DC1	11	;	3B	f	66
DC2	12	<	3C	g	67
DC3	13	=	3D	h	68
DC4	14	>	3E	i	69
NAK	15	?	3F	j	6A
SYN	16	@	40	k	6B
ETB	17	A	41	l	6C
CAN	18	B	42	m	6D
EM	19	C	43	n	6E
SUB	1A	D	44	o	6F
ESC	1B	E	45	p	70
FS	1C	F	46	q	71
GS	1D	G	47	r	72
RS	1E	H	48	s	73
US	1F	I	49	t	74
SPACE	20	J	4A	u	75
!	21	K	4B	v	76
"	22	L	4C	w	77
#	23	M	4D	x	78
$	24	N	4E	y	79
%	25	O	4F	z	7A
&	26	P	50	{	7B
'	27	Q	51			7C
(	28	R	52	}	7D
)	29	S	53	~	7E
		T	54	DEL	7F

NOTES

NOTES

NOTES

www.waspbarcode.com