PRESENTATION SCANNERS

Software Configuration Manual

DATALOGIC

PRESENTATION SCANNERS

SOFTWARE CONFIGURATION MANUAL

DATALOGIC

DATALOGIC S.p.A.
Via Candini 2
40012 - Lippo di Calderara di Reno
Bologna - Italy

PRESENTATION SCANNERS Software Configuration Manual

Ed.: 11/2005

This manual refers to software version 1.0.5 and later.

15/11/05

CONTENTS

CONFIGURATION METHODS

Reading Configuration Barcodes

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

To configure your scanner:

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

2) Modify the desired parameters in one or more sections following the procedures given for each group. Some configuration codes require reading hex or numeric codes from the table in Appendix C.

3) 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 4.

Using DL Sm@rtSet

DL Sm@rtSet is a Windows-based utility program providing a quick and user-friendly configuration method via the RS232 or USB-COM interfaces.

It also allows upgrading the software of the connected device (see the DL Sm@rtSet User's Manual for more details).

Copy Command

A previously configured scanner (Master device), can be used to send its configuration directly to other scanners of the same type. The particular procedure for each device is given in par. 4.9.

Sending Configuration Strings from Host

An alternative configuration method is provided in Appendix A using the RS232 or USB interfaces. 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.

1   INTRODUCTION

This manual provides all the necessary information for complete software configuration of various Presentation Scanner families.

Your scanner contains a built-in decoder and multi-standard interface.

It is designed for use in a wide variety of applications and environments including **commercial**, **office automation** and **retail** applications where large quantities of information need to be collected rapidly, easily and reliably.

It has several status indicator functions which are described in the next paragraph.

1.1   STATUS INDICATORS

Several status indicators are available. They signal several operating conditions which are described in the tables below.

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

SCANNER START-UP

Beeper[1]	Meaning
L L L L	Parameters loaded correctly or when exiting sleep mode (wakeup).
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

SCANNER CONFIGURATION

Beeper[1]	Meaning
H H H H	correct entry in Configuration mode
L	good read of a command
L L L	command read error
L H H H H	exit from Configuration mode

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

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

SCANNER DATA ENTRY

Beeper	LED	Meaning
one beep[2]	**Green** constant	Correct read of a code in normal mode. It remains constant once the decoding process has been successfully completed and the scanner is in *Timeout between same code readings*.
	Red constant	It is constant in normal mode while the Laser is ON and the scanner is ready to read a new code (not in *Timeout between same code readings*).
L H[1]	**Red** constant	No read in single line mode after *Single Line Decoding Duration* timeout.
	Red blinking fast	It blinks fast when the scanner is in *Stand-by* mode
	Red blinking slow	It blinks slower when the scanner is in *Sleep* mode
	Green/Red blinking alternatively	They turn on alternatively during serial configuration

[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 Parameter section.

2   INITIAL SETUP

2.1   SINGLE LINE MODE

When many barcodes are present in the same reading area, like in barcode price lists or in the case of configuration barcodes in this manual, selecting a specific barcode to read is not practical with the large raster pattern emitted by the presentation scanner, so a special single line scanning mode can be easily entered to perform this task. In this mode only a single scanning line is enabled so that aiming and reading barcodes becomes very easy.

To use single line mode for barcode reading follow the procedure below:

1.   While the normal raster pattern is present, press the trigger. A single laser line will appear but barcodes cannot be decoded.
2.   Position the presentation scanner over the code to read and press the trigger <u>within 5 seconds</u> to decode the code.

When using the scanner for data entry, a programmable timeout is provided to assure that the presentation scanner will return to raster mode if barcode reading is not successful in single line (*Single Line Decoding Duration*). Also a programmable timeout is available to manage how long to wait after successful reading before returning to raster mode (*Single Line Timeout OFF Before Raster*).

If you need to make consecutive readings in single line mode, simply repeat the procedure before the *Single Line Timeout OFF Before Raster* expires.

When in configuration, the scanner will remain in single line until the *Exit Configuration* barcode is read.

Single Line
and Wakeup
Trigger

Good Read
LED
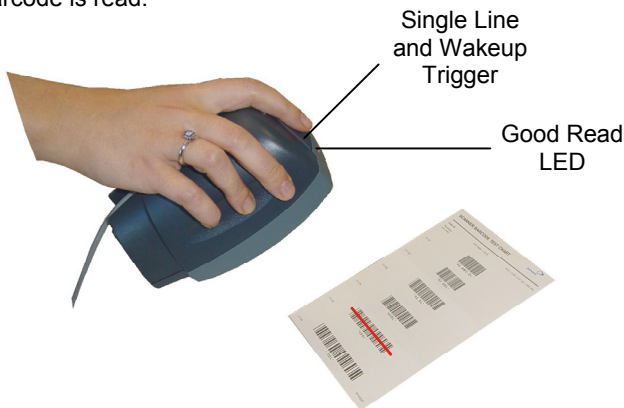
2.2   INTERFACE SELECTION

Follow the procedure to configure the interface required by your application

- USB Interface
- RS232 Interface
- Wedge Interface

2.2.1   USB Interface Configuration

The USB interface is compatible with:

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

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

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).

If the Host supplies sufficient power to the reader, the start-up phase ends correctly, the green LED stops blinking and the reader emits the beep OK signal.

If the Host does not supply sufficient power to the reader, a dialog box will appear on the Host and the reader will be blocked (green LED continues blinking). In this case, disconnect the USB cable <u>at the Host</u> (green LED stops blinking), connect and power-up an external supply to the USB cable <u>then</u> reconnect the USB cable to the Host and close the dialog box. The reader emits the beep OK signal. You can now read codes. 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 which can be downloaded from the web page http://www.datalogic.com.

The presentation scanner is ready.

First Start-Up

```
Connect the
presentation scanner          Green LED blinks
to Host

Load drivers
(if requested)

                              Does a dialog
Disconnect the       YES      box appear
presentation     ←────────    warning that Bus
scanner at Host               power is not
Green LED off                 sufficient?

Connect external              │ NO
power supply to               ▼  Green LED off - BEEP OK
cable and power up

Reconnect scanner    ──────→  Select desired USB
BEEP OK  cable to Host and             interface code
close dialog box              (USB-KBD is default)

                              Load drivers
                              (if requested)

                              Read test codes.
                              The presentation
                              scanner is READY
```

Successive start-ups will automatically recognize the previously loaded drivers. If external power is used, verify that external power is already supplied.

Successive Start-Ups

```
Connect the
presentation scanner          Green LED blinks
to Host

Disconnect the       YES      Does a dialog box
presentation     ┄┄┄┄┄┄┄      appear warning
scanner at Host               that Bus power is
                              not sufficient?

Connect external              │ NO
power supply to               ▼  Green LED off - BEEP OK
cable and power up

Reconnect scanner             Read test codes.
BEEP OK  cable to Host and  ┄┄┄┄┄┄    The presentation
close dialog box              scanner is READY
```
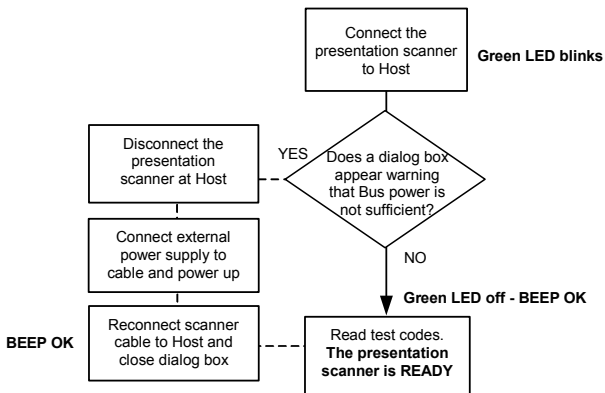
USB INTERFACE

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 which can be downloaded from the web page (see http://www.datalogic.com).

2.2.2 RS232 Interface Selection

Using Single Line Mode read the restore default code, then read the interface selection code for your application:

Restore Default

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

RS232 INTERFACE

Standard

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

POS SYSTEMS

Nixdorf Mode A

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

Fujitsu

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

ICL Mode

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

For POS system default settings refer to par. 4.11

2.2.3 Wedge Interface Selection

Using Single Line Mode read the restore default code, then read the interface selection code for your application:

Restore Default

‖‖ ‖‖‖‖‖‖‖‖ ‖‖‖‖

WEDGE INTERFACE

IBM AT or PS/2 PCs

‖‖‖ ‖‖ ‖‖‖‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖ ‖‖‖

IBM XT

‖‖‖ ‖‖ ‖‖‖‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖

PC Notebook

‖‖‖ ‖‖ ‖‖‖‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖

IBM SURE1

‖‖‖ ‖‖ ‖‖‖‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖

IBM Terminal 3153

‖‖‖ ‖‖ ‖‖‖‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖ ‖‖‖

WEDGE INTERFACE (CONTINUED)

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

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

KEY TRANSMISSION MODE

make-only keyboard

make-break keyboard

KEYBOARD TYPE

◆ advanced keyboard

typewriter keyboard

ALT MODE

The following interface 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

2

WEDGE INTERFACE (CONTINUED)

WYSE TERMINALS

ANSI Keyboard

‖‖ ‖ ‖‖‖‖‖ ‖‖‖‖‖‖‖‖‖‖ ‖ ‖‖‖‖‖ ‖‖

PC Keyboard

‖‖ ‖‖ ‖‖‖‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖ ‖ ‖‖

ASCII Keyboard

‖‖ ‖‖ ‖‖‖‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖ ‖‖

VT220 style Keyboard

‖‖ ‖‖ ‖‖‖‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖

DIGITAL TERMINALS

VT2xx/VT3xx/VT4xx

‖‖ ‖‖ ‖‖‖‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖

APPLE
(NOT AVAILABLE FOR DIAMOND™ D531)

APPLE ADB Bus

‖‖ ‖‖ ‖‖‖‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖

2.2.4   IBM 46xx Interface Selection

(IBM Devices only)

PORT 9B

4501 Protocol

(typical)

1520 Protocol

PORT 5B

1520 Protocol

(typical)

4501 Protocol

3   CONFIGURATION

Once your scanner is setup, you can change the default parameters to meet your application needs. Refer to chapter 2 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.

The first three groups are for Standard Interface parameter configuration, the fourth is only for IBM 46xx models:

- **RS232**

- **USB**

- **WEDGE**

- **IBM**

The following parameter groups are common to all interface applications:

DATA FORMAT parameters regard the messages sent to the Host system.

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.

RS232 PARAMETERS

⊙   *BAUD RATE*   ⊙

⊙   *PARITY*   ⊙

⊙   *DATA BITS*   ⊙

⊙   *STOP BITS*   ⊙

⊙   *HANDSHAKING*   ⊙

⊙   *ACK/NACK PROTOCOL*   ⊙

⊙   *INTER-CHARACTER DELAY*   ⊙

⊙   *RX TIMEOUT*   ⊙

⊙   *SERIAL DECODE CONTROL*   ⊙

⊙   *SERIAL SLEEP CONTROL*   ⊙

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.

BAUD RATE

300 baud

‖‖‖ ‖ ‖‖‖ ‖ ‖‖‖ ‖‖‖ ‖‖

600 baud

‖‖‖ ‖ ‖ ‖‖‖ ‖ ‖‖‖ ‖‖‖ ‖‖

1200 baud

‖‖‖ ‖ ‖ ‖‖‖ ‖ ‖‖‖ ‖‖‖ ‖‖‖

2400 baud

‖‖‖ ‖ ‖ ‖‖‖ ‖ ‖‖‖‖ ‖ ‖‖‖

4800 baud

‖‖‖ ‖ ‖ ‖‖‖ ‖‖‖‖‖ ‖‖‖ ‖‖‖

◆ 9600 baud

‖‖‖ ‖ ‖ ‖‖‖ ‖ ‖‖‖‖‖ ‖ ‖‖‖

19200 baud

‖‖‖ ‖ ‖ ‖‖‖ ‖ ‖‖‖‖ ‖‖‖ ‖‖‖

38400 baud

‖‖‖ ‖ ‖ ‖‖‖ ‖ ‖‖‖‖‖‖‖‖ ‖‖‖

RS232

PARITY

◆ none

even parity

odd parity

DATA BITS

7 bits

◆ 8 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.

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. 4.1.3 for details.

SERIAL DECODE CONTROL

◆ disable

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

enable and select characters

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

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

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

See par. 4.1.4 for details.

SERIAL SLEEP CONTROL

◆ disable

enable and select characters

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

- − First Character immediately puts the scanner in sleep.
- − Second Character immediately wakesup the scanner.

See par. 4.1.5 for details.

USB PARAMETERS

⊙   ***USB-COM***   ⊙
Handshaking, Ack/Nack Protocol, Inter-character Delay, Rx Timeout, Serial Decode Control, Serial Sleep Control

⊙   ***USB-KBD***   ⊙
Keyboard Nationality, Inter-character Delay, Inter-code Delay, Control Character Emulation

⊙   ***USB-IBM***   ⊙
No parameter selection required.

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.

USB-COM

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.

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. 4.1.3 for details.

SERIAL DECODE CONTROL

◆ disable

enable and select characters

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

－ First Character enables decoding
－ Second Character inhibits decoding until the first character is received again.

See par. 4.1.4 for details.

SERIAL SLEEP CONTROL

◆ disable

enable and select characters

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

－ First Character immediately puts the scanner in sleep.
－ Second Character immediately wakesup the scanner.

See par. 4.1.5 for details.

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

‖‖‖ ‖ ‖ ‖‖‖‖ ‖‖‖‖‖ ‖‖‖

French

‖‖‖ ‖ ‖ ‖‖‖‖ ‖‖‖‖ ‖‖‖ ‖‖‖

German

‖‖‖ ‖ ‖ ‖‖‖‖ ‖‖‖‖‖‖ ‖‖‖

Italian

‖‖‖ ‖ ‖ ‖‖‖‖ ‖‖‖‖‖ ‖ ‖‖‖

Japanese

‖‖‖ ‖ ‖ ‖‖‖‖ ‖‖‖‖‖ ‖ ‖‖‖

Spanish

‖‖‖ ‖ ‖ ‖‖‖‖ ‖‖‖‖‖‖‖‖ ‖‖‖

Swedish

‖‖‖ ‖ ‖ ‖‖‖‖ ‖‖‖‖‖‖‖ ‖‖‖

◆ USA

‖‖‖ ‖ ‖ ‖‖‖‖ ‖‖‖‖ ‖ ‖‖‖ ‖‖‖

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

CONTROL CHARACTER EMULATION

◆ CTRL+ Shift + Key

‖‖ ‖ ‖ ‖‖‖‖‖ ‖‖ ‖‖

CTRL + Key

‖‖ ‖ ‖ ‖‖ ‖‖‖‖‖‖‖

WEDGE PARAMETERS

⊙   *KEYBOARD NATIONALITY*   ⊙

⊙   *CAPS LOCK*   ⊙

⊙   *CAPS LOCK AUTO-RECOGNITION*   ⊙

⊙   *NUM LOCK*   ⊙

⊙   *INTER-CHARACTER DELAY*   ⊙

⊙   *INTER-CODE DELAY*   ⊙

⊙   *CONTROL CHARACTER EMULATION*   ⊙

⊙   *KEYBOARD SETTING*   ⊙

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

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

Belgian

English

French

German

Italian

Spanish

Swedish

◆ USA

The Japanese Keyboard Nationality selection is valid only for IBM AT compatible PCs.

Japanese

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

CONTROL CHARACTER EMULATION

◆ CTRL+ Shift + Key

‖‖|‖|‖|‖‖‖‖‖|‖|‖‖

CTRL + Key

‖‖|‖|‖|‖‖‖‖‖‖‖|‖‖

KEYBOARD SETTING

ALPHANUMERIC KEYBOARD SETTING

The scanner 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 scanner 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 scanner 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 scanner, 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 scanner 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 scanner 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**

DATA FORMAT

⊙   *CODE IDENTIFIER*   ⊙

⊙   *CUSTOM CODE IDENTIFIER*   ⊙

⊙   *HEADER*   ⊙

⊙   *TERMINATOR*   ⊙

⊙   *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.

CODE IDENTIFIER TABLE

CODE	AIM STANDARD	DATALOGIC 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	
Code 128	] C y	T	
EAN 128	] C y	k	
Code 93	] G y	U	
CIP/39	] X y	Y	
CIP/HR	] X y	e	
Code 32	] X y	X	
MSI	] M y	Z	
Plessey Standard	] P 0	a	
Plessey Anker	] P 1	o	
RSS Expanded Linear	] e 0	t	
RSS Limited	] e 0	v	
RSS 14 Linear	] e 0	u	

DATA FORMAT

- 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 Datalogic 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.

CODE IDENTIFIER

◆ disable

‖‖ ‖ ‖‖ ‖ ‖‖‖‖‖ ‖‖‖

Datalogic standard

‖‖ ‖ ‖‖ ‖ ‖‖‖‖‖ ‖ ‖‖

AIM standard

‖‖ ‖ ‖‖ ‖ ‖‖‖‖‖ ‖ ‖‖‖

custom

‖‖ ‖ ‖‖ ‖ ‖ ‖‖‖‖ ‖‖‖

CUSTOM CODE IDENTIFIER

define custom code identifier(s)

① Read the above code.
(Code Identifiers default to Datalogic 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-FE**.

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

define custom code identifier(s) Code 39

Read + + **40** + **FF**

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.

Example:

four character header

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

For more details see par. 4.2.1.

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 Terminator codes, read the character(s) from the HEX table.

Example:

two character terminator

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

For more details see par. 4.2.1.

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

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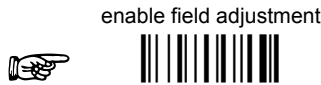
② Select the code type from the <u>Code Identifier Table</u> in Appendix B.

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**

DATA FORMAT

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**.

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 <u>define each</u> 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.

④ From the Hex/Numeric Table read two characters corresponding to the Hex value (**00**-**FE**) which identifies the new character to replace.
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**
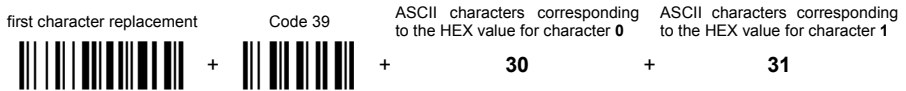
For Code 39 codes containing the string "**0**123", the contents transmitted will be "**1**123".

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**
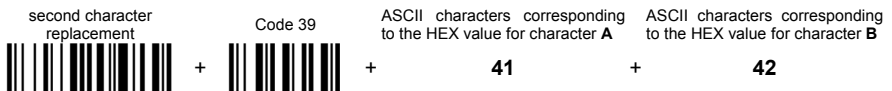
For Code 39 codes containing the string "**A**BCD", the contents transmitted will be "**B**BCD".

POWER SAVE

⊙   *STAND-BY STATE*   ⊙
⊙   *ENTER STAND-BY TIMEOUT*   ⊙
⊙   *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

STAND-BY STATE

disable

◆ enable

See par. 4.3.1 for details.

ENTER STAND-BY TIMEOUT

1 minute

◆ 5 minutes

15 minutes

25 minutes

See par. 4.3.2 for details.

POWER SAVE

SLEEP STATE

disable

◆ enable

See par. 4.3.3 for details.

ENTER SLEEP TIMEOUT

enter sleep timeout

Read 2 numbers in the range 01-99:

01-99 = corresponds to a max. 99 min. delay before entering the Sleep state.

See par. 4.3.4 for details.

READING PARAMETERS

⊙   *TIMEOUT BETWEEN SAME CODE READINGS*   ⊙

⊙   *SINGLE LINE DECODING DURATION*   ⊙

⊙   *SINGLE LINE TIMEOUT OFF BEFORE RASTER*   ⊙

⊙   *BEEPER INTENSITY*   ⊙

⊙   *BEEPER TONE*   ⊙

⊙   *BEEPER TYPE*   ⊙

⊙   *BEEPER LENGTH*   ⊙

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.

TIMEOUT BETWEEN SAME CODE READINGS

timeout between same code readings

☞

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

Read 2 numbers in the range 01-99:

01 to 99 = timeout from 0.1 to 9.9 seconds for which the code must be removed (no decoding) before a consecutive read on same code.

◆ timeout = 0.3 sec

See par. 4.4.1 for details.

SINGLE LINE DECODING DURATION

single line decoding duration

☞

Read 2 numbers in the range 01-20:

01 to 20 = timeout from 1 to 20 seconds before passing to the *Single Line Timeout OFF Before Raster*.

◆ duration = 5 sec

See par. 4.4.2 details.

SINGLE LINE TIMEOUT OFF BEFORE RASTER

☞ single line timeout OFF before raster

Read 1 number in the range 1-9:

1 to 9 =   timeout from 1 to 9 seconds before re-entering Raster mode.

◆ timeout = 2 sec

See par. 4.4.3 for details.

BEEPER INTENSITY

beeper off *

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. 1.1.

READING PARAMETERS

BEEPER TONE

tone 1

◆ tone 2

tone 3

tone 4

BEEPER TYPE

◆ monotone

bitonal

BEEPER LENGTH

long

◆ short

DECODING PARAMETERS

⊙   *INK SPREAD*   ⊙

⊙   *OVERFLOW CONTROL*   ⊙

⊙   *INTERDIGIT CONTROL*   ⊙

⊙   *CODE 39 STITCHING*   ⊙

⊙   *CODE 128 STITCHING*   ⊙

⊙   *DECODING SAFETY*   ⊙

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

$\blacklozenge$ enable

See par. 4.5.1 for details.

OVERFLOW CONTROL

disable

$\blacklozenge$ enable

See par. 4.5.2 for details.

CODE 39 STITCHING

disable

◆ enable

See par. 4.5.4 for details.

CODE 128 STITCHING

disable

◆ enable

See par. 4.5.4 for details.

INTERDIGIT CONTROL

disable

◆ enable

See par. 4.5.3 for details.

DECODING SAFETY

◆ one read

(decoding safety disabled)

two reads

three reads

four reads

Required number of good reads before accepting code.

CODE SELECTION

⊙   *EAN/UPC FAMILY*   ⊙
⊙   *2/5 FAMILY*   ⊙
⊙   *CODE 39 FAMILY*   ⊙
⊙   *CODE 128 FAMILY*   ⊙
⊙   *CODE 93*   ⊙
⊙   *CODABAR FAMILY*   ⊙
⊙   **MSI**   ⊙
⊙   *PLESSEY*   ⊙
⊙   *RSS 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 SELECTION

DISABLES ALL CODE FAMILIES

NOTE

The scanner allows up to 5 code selections. This does not limit the number of CODES enabled to 5, 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**

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

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

Set EAN/UPC Autodiscriminate Decoding Safety

Read 2 numbers in the range 02-30:
02 to 30 = from 2 to 30 reads before transmitting the EAN/UPC code without ADD ON.

◆ 15 reads

See par. 4.6.1 for details.

CODE SELECTION

WITHOUT ADD ON

◆ **EAN 8/EAN 13/UPC A/UPC E**

‖‖ ‖ ‖‖ ‖ ‖‖‖‖‖ ‖‖‖

EAN 8/EAN 13

‖‖ ‖ ‖‖ ‖ ‖‖‖‖‖ ‖ ‖‖

UPC A/UPC E

‖‖ ‖ ‖‖ ‖ ‖‖‖‖‖ ‖ ‖‖

CODE SELECTION

WITH ADD ON 2 AND 5

EAN 8/EAN 13/UPC A/UPC E

EAN 8/EAN 13

UPC A/UPC E

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 ADD ON ONLY FOR SELECTED PREFIXES

◆ **Disable EAN/UPC ADD ON only for Selected Prefixes**

Enable EAN/UPC ADD ON only for Selected Prefixes

If enabling this option, it is necessary to select the desired prefixes by scanning the corresponding codes given in the following section.

CODE SELECTION

SELECT EAN/UPC PREFIXES

◆ **Cancel All Selections**

378/379 Only

434/439 Only

414/419 Only

977 Only

978 Only

979 Only

CODE SELECTION

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

◆ EAN 8

NO CHECK DIGIT TRANSMISSION

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

disables 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.

Default character range: **06-99**

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.

Default character range: **04-99**

CODE 128 FAMILY

disables the family

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

① Read the desired family code

◆ Code 128

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

control without transmission
of check digit

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.

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.

Default character range: **01-99**

The length is calculated on the output string.

CODE 93

◆ disables the code

Code 93

control without transmission
of check digit

CODABAR FAMILY

◆ disables 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 LENGTH (optional)

The code length selection is valid for the entire Codabar 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.

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

◆ disables 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

PLESSEY

◆ disables the family

‖‖ ‖ ‖ ‖ ‖‖‖‖‖ ‖‖

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

Standard Plessey

no check digit control

‖‖ ‖ ‖ ‖ ‖‖‖‖‖‖‖ ‖‖

check digit control
check digit transmitted

‖‖ ‖ ‖ ‖ ‖‖‖‖‖‖‖ ‖‖

check digit control
check digit not transmitted

‖‖ ‖ ‖ ‖ ‖‖‖‖‖‖ ‖ ‖‖

Anker Plessey

no check digit control

‖‖ ‖ ‖ ‖ ‖‖‖‖‖‖ ‖‖ ‖‖

check digit control
check digit transmitted

‖‖ ‖ ‖ ‖ ‖‖‖‖‖‖‖ ‖

check digit control
check digit not transmitted

‖‖ ‖ ‖ ‖ ‖‖‖‖‖‖ ‖‖ ‖‖

RSS CODES

◆ disables the family

DISABLE CODE

disable RSS Expanded Linear

ENABLE CODE

enable RSS Expanded Linear

disable RSS Limited

enable RSS Limited

disable RSS 14 Linear

enable RSS 14 Linear

ADVANCED FORMATTING

⊙   *CONCATENATION*   ⊙

⊙   *ADVANCED FORMATTING*   ⊙

NOTE

Please follow the setup procedure carefully for these parameters.

---

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.

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 (Datalogic, 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.

---

5   **Transmission after Timeout**

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 **<u>before</u>** 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 <u>Code Identifier Table</u> 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

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

ADVANCED FORMATTING

---

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 = **01-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.

---

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.

<div align="center">

OR BY

</div>

  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.

<div align="center">

OR BY

</div>

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

<div align="center">

OR BY

</div>

  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

field separator

a) ☞ ‖‖ ‖‖‖‖‖‖ ‖‖‖

Read the field separator character from the HEX table. Range of characters = **01-FE**.

discard separator   include separator

‖‖ ‖‖‖‖‖ ‖   ‖‖ ‖‖‖‖‖ ‖‖

OR

match character

b) ☞ ‖‖ ‖‖‖ ‖‖‖ ‖‖‖

Read the match character from the HEX table. Range of characters = **01-FE**.

OR

field length

c) ☞ ‖‖ ‖‖‖‖ ‖‖‖ ‖‖‖

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

OR

this is the last field (variable length)

d) ☞ ‖‖ ‖‖‖ ‖‖‖ ‖‖‖

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 = **01-FE**.

For readers using Wedge interface, all values from **9C** to **FE** send the Space character.

ADVANCED FORMATTING

DEFINE FIELD 2 BY:
EITHER

field separator

a) ☞ ‖‖‖‖‖‖‖‖‖‖

Read the field separator character from the HEX table. Range of characters = **01-FE**.

discard separator   include separator

‖‖‖‖‖‖‖‖   ‖‖‖‖‖‖‖‖

OR

match character

b) ☞ ‖‖‖‖‖‖‖‖‖

Read the match character from the HEX table. Range of characters = **01-FE**.

OR

field length

c) ☞ ‖‖‖‖‖‖‖‖‖

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

OR

this is the last field (variable length)

d) ☞ ‖‖‖‖‖‖‖‖‖

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 = **01-FE**.

For readers using Wedge interface, all values from **9C** to **FE** send the Space character.

ADVANCED FORMATTING

‖‖ ‖ ‖‖‖‖ ‖‖ ‖‖

DEFINE FIELD 3 BY:
EITHER

field separator

a) ☞ ‖‖‖ ‖‖‖‖‖‖ ‖‖ ‖‖

Read the field separator character from the HEX table. Range of characters = **01-FE**.

discard separator   include separator

‖‖‖ ‖‖‖‖‖‖ ‖‖   ‖‖‖ ‖‖‖‖‖ ‖‖‖

OR

match character

b) ☞ ‖‖ ‖ ‖‖‖ ‖‖‖ ‖‖‖‖

Read the match character from the HEX table. Range of characters = **01-FE**.

OR

field length

c) ☞ ‖‖ ‖ ‖‖‖ ‖‖‖‖ ‖‖‖‖

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

OR

this is the last field (variable length)

d) ☞ ‖‖ ‖ ‖‖‖ ‖‖‖‖‖ ‖‖‖‖

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 = **01-FE**.

For readers using Wedge interface, all values from **9C** to **FE** send the Space character.

ADVANCED FORMATTING

‖‖ ‖ ‖‖‖‖‖ ‖‖‖

DEFINE FIELD 4 BY:
EITHER

field separator

‖‖‖‖‖‖‖‖ ‖‖‖

a) ☞

Read the field separator character from the HEX table. Range of characters = **01-FE**.

discard separator

‖‖ ‖‖‖‖‖

include separator

‖‖ ‖‖‖‖‖‖

OR

match character

‖‖‖‖‖‖‖ ‖‖‖

b) ☞

Read the match character from the HEX table. Range of characters = **01-FE**.

OR

field length

‖‖‖‖‖‖‖ ‖‖‖

c) ☞

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

OR

this is the last field (variable length)

‖‖‖‖‖‖‖‖ ‖‖‖

d) ☞

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 = **01-FE**.

For readers using Wedge interface, all values from **9C** to **FE** send the Space character.

‖‖ ‖ ‖‖‖‖‖ ‖‖

DEFINE FIELD 5 BY:
EITHER

field separator

a) ☞ ‖‖ ‖‖‖‖‖‖ ‖‖‖

Read the field separator character from the HEX table. Range of characters = **01-FE**.

discard separator   include separator

‖‖ ‖‖‖‖‖ ‖‖   ‖‖ ‖‖‖‖‖ ‖‖

OR

match character

b) ☞ ‖‖ ‖‖‖ ‖‖‖ ‖‖‖

Read the match character from the HEX table. Range of characters = **01-FE**.

OR

field length

c) ☞ ‖‖ ‖‖‖‖ ‖‖‖ ‖‖‖

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

OR

this is the last field (variable length)

d) ☞ ‖‖ ‖‖‖ ‖‖‖‖ ‖‖‖

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 = **01-FE**.

For readers using Wedge interface, all values from **9C** to **FE** send the Space character.

ADVANCED FORMATTING

‖‖ ‖ ‖ ‖‖‖ ‖‖

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 = **01-FE**. For readers using Wedge interface, all values from **9C** to **FE** send the Space character.

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 = **01-FE**. For readers using Wedge interface, all values from **9C** to **FE** send the Space character.

Example:

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   + **4** +   Field 2   +   Additional Field 1   +   Field 1   +   Field 2

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

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   RS232 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.

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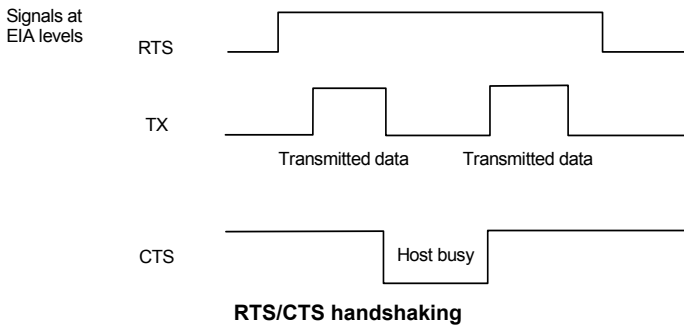
Software handshaking: (XON/XOFF)

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.

XON/XOFF handshaking
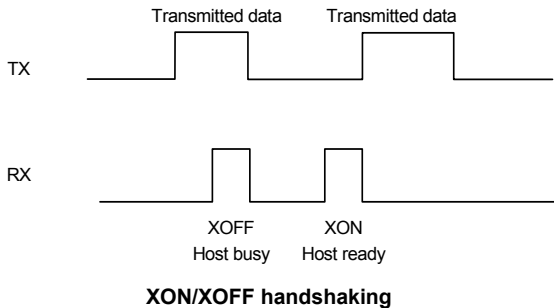
4.1.2   ACK/NACK Protocol

This parameter sets a transmission protocol in which the Host responds to the scanner 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.

If the scanner does not receive an ACK or NACK, transmission is ended after the RX Timeout (see par. 4.1.3).

4.1.3   RX Timeout

When the RS232 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.

4.1.4   Serial Decode Control

This parameter allows defining two ASCII characters that control whether the scanner is enabled to decode barcodes or not. When this parameter is enabled and the first defined character is sent over the serial line, decoding is enabled. When the second defined character is sent over the serial line, decoding is disabled until the first character is received again.

If Serial Sleep Enabling is used the characters must be different.

4.1.5   Serial Sleep Control

This parameter allows defining two ASCII characters that control when the scanner enters sleep and wakeup states. When this parameter is enabled and the first defined character is sent over the serial line, the scanner immediately enters the sleep state. When the second defined character is sent over the serial line, the scanner immediately wakesup.

If Serial Decode Enabling is used the characters must be different.

4.2   DATA FORMAT

4.2.1   Header/Terminator Selection

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

RS232 and USB-COM: no header, terminator CR-LF
WEDGE and USB-KBD: no header, terminator ENTER
WEDGE ALT-MODE and USB-KBD-ALT-MODE: no header, terminator CR

These default values are <u>always</u> restored through the reading of the relative interface selection code, see chapter 2.2

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 scanners using Wedge interface, all values from **9C** to **FE** send the Space character.

4.2.2　　Set Custom Extended Header/Terminator Keys

The extended Header/Terminator keys for **Wedge Interface users** can be customized by defining them through a simple keyboard setting procedure.

For example, the Numeric Keypad keys can be set for use as Headers or Terminators by substituting the default extended keys using this procedure.

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

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 scanner 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 scanner, 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 scanner 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".

Set Custom Extended Header/Terminator Keys

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

Read the code above.

- **If the first 4 KEYS (Shift, Alt, Ctrl, and Backspace) are not available on your keyboard, you can only substitute them with keys not used, or substitute them with each other.**

- Keys 5 to 28 must be defined

Press the desired keys in the following order:

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

CUSTOM EXTENDED KEYBOARD SETTING TABLE		
		Custom
Order	HEX	KEY
01	**-**	Shift
02	**-**	Alt
03	**-**	Ctrl
04	**-**	Backspace
05	**83**	
06	**84**	
07	**85**	
08	**86**	
09	**87**	
10	**88**	
11	**89**	
12	**8A**	
13	**8B**	
14	**8C**	
15	**8D**	
16	**8E**	
17	**8F**	
18	**90**	
19	**91**	
20	**92**	
21	**93**	
22	**94**	
23	**95**	
24	**96**	
25	**97**	
26	**98**	
27	**99**	
28	**9A**	

4.3 POWER SAVE

4.3.1 Stand-by State

This is a low-power operating mode in which the scanner is still operating but decoding cannot take place.
The scanner enters Stand-by after the configured timeout, during which no codes are presented to it.

It is possible to exit Stand-by mode (return to normal operation) by presenting a code to the scanner (the scanner automatically wakes up) or by pressing the trigger.

4.3.2 Enter Stand-by timeout

For scanners that have the *Stand-by* state enabled, this timeout, during which no codes are presented to the scanner, determines when the scanner will enter this state.

The valid values are: 1, 5, 15, and 25 minutes.

4.3.3 Sleep State

This allows the scanner to enter a "Sleep" state for minimum power consumption in which the scanner Laser is OFF and the motor is not rotating.

Before entering Sleep mode, the following are verified:

- no data being transmitted to Host
- Enter Sleep Timeout ended (see par. 4.3.4)

It is possible to exit Sleep mode by pressing the trigger.

4.3.4 Enter Sleep Timeout

For scanners that have the Sleep state enabled, this timeout, during which no codes are presented to the scanner, determines when the scanner will enter this state.

This timeout begins after the Stand-by timeout ends (if Stand-by State is enabled), otherwise it begins immediately.

4

4.4   READING PARAMETERS

4.4.1   Timeout between Same Code Readings

This timeout prevents the device from immediately decoding one or more codes (of those present in the same reading area) more than once.

Any decoded code must be removed from the reading area for the duration of the configured timeout before it can be decoded again.

4.4.2   Single Line Decoding Duration

Single Line Mode allows aiming a single scan line across a barcode for decoding. The first trigger press allows aiming the single line without decoding. After the second trigger press (which must occur within 5 seconds) the code can be decoded.

The Single Line Decoding Duration parameter sets the timeout during which the scanner continues to attempt code decoding. When the timeout expires, the scanner passes to the Single Line Timeout OFF before Raster parameter before returning to Raster Mode.

4.4.3   Single Line Timeout OFF before Raster

This parameter sets a timeout, after the decoding process has been completed (either due to a good read or Single Line Decoding Duration timeout expired), during which the Laser is OFF before returning to Raster mode.

If the trigger is pressed before this timeout expires, the scanner returns to Single Line Mode (aiming without decoding).

4.5   DECODING PARAMETERS

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

4.5.1   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.

4.5.2   Overflow Control

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

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

4.5.3   Interdigit Control

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

4.5.4   Code Stitching

The code stitching parameter allows decoding codes that are not entirely crossed by a single laser line or are of poor print quality, and/or damaged print. It does this by adding together (stitching), two partial reads of a code to complete the entire code.

For code 39 and code 128, this parameter can be disabled if MISREADS are produced.

4.6   CODE SELECTION

4.6.1   Set EAN/UPC Autodiscriminate Decoding Safety

When EAN/UPC codes are enabled with and without ADD ON, this parameter assures that <u>codes without ADD ON</u> will only be transmitted after decoding them **n** number of times (15 default).

4.7   CONFIGURATION EDITING COMMANDS

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

Command	Description
‖‖‖‖‖‖‖‖‖‖‖	Restore <u>factory default configuration</u> (see the relative Quick Reference Manual for default settings)
‖‖‖‖‖‖‖‖‖‖‖	Transmit the Software release.
‖‖‖‖‖‖‖‖‖‖‖	Transmit the device configuration in ASCII format.

4.8   CUSTOM DEFAULT CONFIGURATION

Read the following code to set the scanner <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
‖‖‖‖‖‖‖‖‖‖‖

4.9   CONFIGURATION COPY COMMAND

<u>**Procedure**</u>**:**

① Connect the **master** (correctly configured scanner) and the **slave** (scanner to be configured) together through two RS232 serial interface cables and external power supply. Accessory cables and power supply are available from your Datalogic distributor to provide this connection.

RS232 Cables: <u>CAB363 & CAB364</u> or <u>CAB320 & CAB328</u>

Power Supply: <u>PG5</u>

② Using the slave device, read the Restore Default barcode and then the RS232 interface barcode from par. 2.2.2 of this manual or from the Quick Reference Manual.

③ With the master device, read the Configuration Copy barcode below.

Copy Configuration

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

Note: The master device can be configured for any interface.

4.10 FIRMWARE UPGRADES

Device firmware upgrades can be performed using the DL Sm@rtSet external Downloader utility tool from your PC either through RS232 or USB communications. The procedure for downloading is described in the DL Sm@rtSet User's Manual and in the Help window.

4.11 DEFAULT PARAMETERS FOR POS SYSTEMS

The default values for the RS232 and Data Format parameters for POS systems are listed in the following table:

	NIXDORF Mode A	FUJITSU	ICL Mode
RS232 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
Inter-Character Delay	Disabled	Disabled	Disabled
RX Timeout	9.9 sec	2 sec	9.9 sec
Serial Decode Enabling			
Serial Sleep Enabling			
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

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

CODE	NIXDORF Mode A	FUJITSU	ICL Mode
UPC-A	A0	A	A
UPC-E	C	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/Plessey	O	None	None
RSS	E	None	None
Other	None	None	None

A   HOST CONFIGURATION STRINGS

In this section we provide a description of how to modify the device configuration using serial strings sent from the Host.

This method requires either the RS232 or USB-COM interface.

The device configuration can be changed by receiving commands from the Host through the serial interface. When this method is used, the programming sequence format is the following:

$+	*Command*	$-	CR

→ Carriage return character (0D Hex.)

→ Exit and Save configuration

→ Character sequence in following tables

→ Enter configuration environment
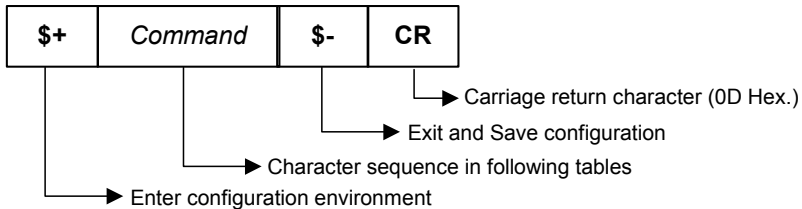
Example:

Multiple command programming sequence:

$+	BG1	BH0	AC410132	$-	CR

→ Carriage return character (0D Hex.)

→ Exit and save new configuration

→ Matrix 2/5 3 bars: no check digit,
variable length code from 1 to 32 characters

→ Beeper tone 1

→ Beeper low intensity

→ Enter configuration environment
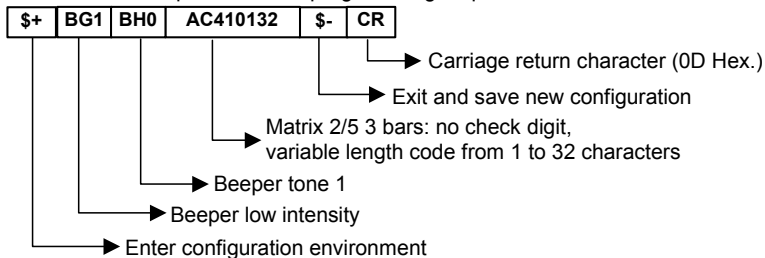
Each configuration parameter setting removes the condition previously active for that parameter.

> **NOTE**
>
> *The device buffer can contain about 400 characters. If your programming string goes over this value, you must split it into separate groups and send each group after a delay of at least 3 seconds to give the scanner time to empty the buffer and interpret the commands.*

SERIAL CONFIGURATION STRINGS

ENTER/EXIT CONFIGURATION COMMANDS	
DESCRIPTION	**STRING**
Enter Configuration	**$+**
Exit and Save Configuration	**$-**
Restore Factory Default	**$+$***
Transmit Software Release	**$+$!**
Transmit Configuration	**$+$&**

INTERFACE SELECTION		
DESCRIPTION		**STRING**
RS232	Standard	**CP0**
	ICL Mode	**CM0**
	Fujitsu	**CM1**
	Nixdorf Mode A	**CM2EC0**
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**
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**
	Keyboard Type for IBM Terminals 31xx, 32xx, 34xx, 37xx — 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**
	for Apple ADB Bus	**CP513**
IBM 46xx	4501 Protocol	**CP800**
	1520 Protocol	**CP801**

RS232		
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**
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**
Inter-character Delay *(ms)*		**CK00 - CK99**
RX Timeout *(100 ms)*		**CL00 - CL99**
Serial Decode Control	disable	**CR0**
	enable	**CR1*ab***
Serial Sleep Control	disable	**CS0**
	enable	**CS1*ab***

a = Hex value of the ASCII character from **00** to **FE** enabling the decoding or the serial sleep;

b = Hex value of the ASCII character from **00** to **FE** disabling the decoding or the serial sleep;

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**
Inter-character Delay *(ms)*		**CK00 - CK99**
RX Timeout *(100 ms)*		**CL00 - CL99**
Serial Decode Control	disable	**CR0**
	enable	**CR1***ab*
Serial Sleep Control	disable	**CS0**
	enable	**CS1***ab*
USB-KBD		
Keyboard Nationality (not for USB-KBD-ALT-MODE)	Belgian	**FJ7**
	English	**FJ4**
	French	**FJ2**
	German	**FJ3**
	Italian	**FJ1**
	Spanish	**FJ6**
	Swedish	**FJ5**
	USA	**FJ0**
	Japanese	**FJ8**
Delays	Inter-Character *(ms)*	**CK00 - CK99**
	Inter-Code *(s)*	**FG00 - FG99**
Control Character Emulation	CTRL +Shift + Key	**FO0**
	Ctrl + Key	**FO1**

a = Hex value of the ASCII character from **00** to **FE** enabling the decoding or the serial sleep;

b = Hex value of the ASCII character from **00** to **FE** disabling the decoding or the serial sleep;

WEDGE		
DESCRIPTION		**STRING**
Keyboard Nationality	Belgian	**FJ7**
	English	**FJ4**
	French	**FJ2**
	German	**FJ3**
	Italian	**FJ1**
	Spanish	**FJ6**
	Swedish	**FJ5**
	USA	**FJ0**
	Japanese (IBM AT compatible only)	**FJ8**
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**

DATA FORMAT		
DESCRIPTION		**STRING**
Code Identifier	disable	**EB0**
	Datalogic 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 DATALOGIC STANDARD Code Identifier from the table on page 34.

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

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

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

DATA FORMAT (continued)		
DESCRIPTION		STRING
Code Length Tx	not transmitted	**EE0**
	transmitted	**EE1**
	transmitted in 4-digit format	**EE2**
Field Adjustment	disabled	**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*** = HEX values representing an ASCII character.

a = ASCII character of the DATALOGIC STANDARD Code Identifier from the table on page 34.

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)

POWER SAVE		
DESCRIPTION		STRING
Stand by State	disable	**Bf0**
	enable	**Bf1**
Enter Stand by Timeout	1 min	**Bg04**
	5 mins.	**Bg20**
	15 mins.	**Bg60**
	25 mins.	**Bg99**
Sleep State	disable	**BQ0**
	enable	**BQ1**
Enter Sleep Timeout *(min)*		**Bi01-Bi99**

READING PARAMETERS		
DESCRIPTION		**STRING**
Timeout Between Same Code Readings *(100 ms)*		**Bh01 - Bh99**
Single Line Decoding Duration		**Bd01 – Bd20**
Single Line Timeout OFF Before Raster		**Be1 – Be9**
Beeper Intensity	beeper off	**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**

DECODING PARAMETERS		
DESCRIPTION		**STRING**
Ink-Spread	disable	**AX0**
	enable	**AX1**
Overflow Control	disable	**AW1**
	enable	**AW0**
Interdigit Control	disable	**AV0**
	enable	**AV1**
Code 39 Stitching	disable	**Aa0**
	enable	**Aa1**
Code 128 Stitching	disable	**Ac0**
	enable	**Ac1**
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**
	Set EAN/UPC Autodiscriminate Decoding Safety		**ES02-ES30**
	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**
	With Add On Only for Selected Prefixes	disable	**Ad0**
		enable	**Ad1**
	Select Prefixes	cancel all selections	**ET0**
		378/379 only	**ET1378ET2379**
		434/439 only	**ET3434ET4439**
		414/419 only	**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**
	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**

CODE SELECTION (continued)			
DESCRIPTION			**STRING**
	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 lengths are **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
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
	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
	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 lengths are **99** characters.

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

A

CODE SELECTION (continued)		
DESCRIPTION		**STRING**
Plessey	disable the family	**AF0**
	Standard no check	**AF11**
	Standard check - with tx	**AF12**
	Standard check - no tx	**AF13**
	Anker no check	**AF21**
	Anker check - with tx	**AF22**
	Anker check - no tx	**AF23**
RSS Codes	disable the family	**AQ0**
	disable RSS Expanded Linear	**AQ10**
	enable RSS Expanded Linear	**AQ11**
	disable RSS Limited	**AQ20**
	enable RSS Limited	**AQ21**
	disable RSS 14 Linear	**AQ30**
	enable RSS 14 Linear	**AQ31**

B   CODE IDENTIFIER TABLE

Interleaved 2/5

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

‖‖ ‖ ‖‖‖‖ ‖ ‖‖‖

Code 128

‖‖ ‖‖ ‖‖‖‖ ‖‖‖

EAN 128

‖‖ ‖ ‖‖‖‖ ‖ ‖‖‖

CIP/HR

‖‖ ‖‖‖ ‖‖ ‖ ‖‖‖

CIP/39

‖‖ ‖‖‖‖ ‖‖ ‖‖‖

117

Code 32

Code 93

MSI

Plessey Anker

Plessey Standard

RSS 14 Linear

RSS Expanded Linear

RSS Limited

C

C   HEX AND NUMERIC TABLE

‖‖ ‖‖‖‖‖‖
0

‖‖ ‖‖‖‖‖‖
1

‖‖ ‖‖‖‖‖‖
2

‖‖ ‖‖‖‖‖‖
3

‖‖ ‖‖‖‖‖‖
4

‖‖ ‖‖‖‖‖‖
5

‖‖ ‖‖‖‖‖‖
6

‖‖ ‖‖‖‖‖‖
7

‖‖ ‖‖‖‖‖‖
8

‖‖ ‖‖‖‖‖‖
9

‖‖ ‖‖ ‖ ‖‖
A

‖‖ ‖ ‖‖ ‖‖
B

‖‖ ‖ ‖‖ ‖‖
C

‖‖ ‖ ‖ ‖‖‖
D

‖‖ ‖ ‖ ‖‖‖
E

‖‖ ‖ ‖‖‖ ‖‖
F

Backspace

‖‖ ‖ ‖ ‖‖‖‖ ‖

Cancels an incomplete configuration sequence

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