baracoda Traceability

Data Capture
for Workforce
in Motion

# BaracodaPencil2 - Programming Guide




Bluetooth

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# Revision History

Changes to the original manual are listed below.

| Document | Date | Description |
|---|---|---|
| 1.0 | 01 may 07 | Initial release |
| 1.4 | 26 Aug. 08 | Update “Batch” section & add “The different connection method” section |
| 1.5 | 02 July 09 | Modify “Operating Mode” section & Add “buffered data” section. |
| 1.6 | 22 Sept. 09 | Modify “Reading Mode” section to add No Duplicate Scan option. |
| 1.7 | 7 July 10 | Modify “Define GS replacement character” barcode |

# Introduction

The BaracodaPencil 2 can be programmed by scanning barcode labels which contain commands for the 1D decoder.

Programming labels must be Code128, with specific starting and ending characters. These labels will always be read, even if Code128 symbology is disabled.

The scanner will acknowledge a good and valid programming bar code label reading with two beeps and a green enlightening led. It will give two other beeps (lower tone) and a red enlightening led for either an invalid or bad reading.

Please do not read the programming barcodes while being connected to the BaracodaManager software.

Programmable options are divided into 2 groups. The first group includes the options that show the general behaviour of the scanner. The second group sets the decoding parameters for each barcode symbology.

All our documentations can be downloaded from the Partners download section of Baracoda website (registration is required):

**http://www.baracoda.com**

# 1/ General Configuration

## *1.1/ Reset all parameters:*

The reading of the "Default settings" label turns all the parameters of the BaracodaPencil2 back to default settings and switches it off.

Reset to factory defaults

## *1.2/ Erase all barcodes in memory*

The BaracodaPencil2 has the ability to store barcodes in its internal memory (both in batch mode and in Real Time with "No Data Loss Mode" ON). By reading the following barcode you will empty the internal memory of the scanner.

Empty memory

## *1.3/ Baracoda advanced features*

### 1.3.1/ Switch on delay

In order to switch on the BaracodaPencil2 in its standard mode, you should just press the trigger. You can set up the scanner to be switched on only after keeping the trigger pressed for two seconds by reading the appropriate barcode.

Switch on delay : 2 seconds

Switch on delay : 0 second (*)

### 1.3.2/ Shutdown timers

There are two differents "shutdown timers":

- **when connected timer** : delay between the last scanned barcode and the switch off when the scanner is connected to a host
- **Not connected timer** : delay between the last scanned barcode and the switch off when the scanner is not connected to any host

It is possible to set those timers to 'infinite'. In that case, the scanner will stay all the time ON.

Set shutdown timers to infinity

By default, timers value are:

- when connected timer = 20 minutes
- Not connected timer = 10 minutes

Set shutdown timers to defaults

### 1.3.3/ No data loss mode and Baracoda Header

**Baracoda header:** It is a proprietary data encapsulation. It is necessary to activate it to use the Baracoda keyboard emulation (Kemul) and Hyper terminal. The Baracoda header is enabled in default settings

**No data loss mode:** Baracoda has developed a proprietary communication protocol in order to enhance the security of the Bluetooth transmission. Every barcode sent to the host must be acknowledged by the host (until then, the scanner will transmit it again and again). This acknowledgment is disabled in default settings. It is strongly recommended to set this protocol acknowledgment on when using the scanner with the BaracodaManager.

Enable Baracoda header + “No Data loss mode” ON

Disable Baracoda header + “No data loss mode” OFF

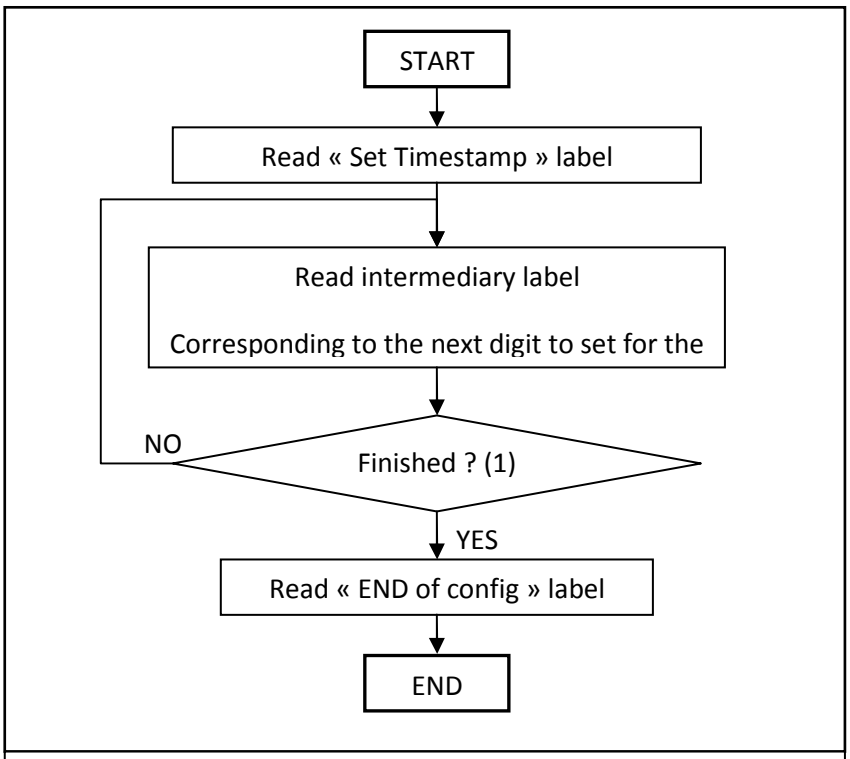
Enable Baracoda header + “No Data loss mode” OFF (*)

### 1.3.4/ Timestamp Option

Time stamp can be configured (ON/OFF, set new date and new time) by the following configuration barcodes

Timestamp on

Timestamp off (*)




**Programming procedure for "set Timestamp" option.**

Set Timestamp

End of configuration

Noted that the timestamp must fit the specific following format: {YY} {MM} {DD} {HH} {MM} {SS}

The setting is made by scanning the 0-9 labels (Appendix 1) as on a calculator; following the timestamp format shown above.

For example: to set the current time at 16th May 2007, 3.25 pm, the user will scan:

- "Set Timestamp" label,
- "0" label,
- "7" label,
- "0" label,
- "5" label,
- "1" label,
- "6" label,
- "1" label,
- "5" label,
- "2" label,
- "5" label,
- "0" label,
- "0" label,
- "end of config" label.

### *1.4/ Reading Mode*

In trigger mode, pressing the trigger will activate the beam.

Trigger (*)

**The "No duplicate scan" option** has been developed for users who do not want to scan the same barcode twice.

**« no duplicate scans » disabled (*)**

**« no duplicate scans » enabled + error signal**

→ If the same barcode is scanned, an error signal is played (two beeps (lower tone) and a red enlightening of the led)

**« no duplicate scans » enabled + no decoding**

→ If the same barcode is trying to be scanned, it won't be. The laser beam will still be enlightening.

### *1.5/ Operating Mode*

**Real Time mode (standard mode):** barcodes are transmitted in real time to the remote host device/terminal (with optional acknowledgment beep from the host to the scanner). User can choose if the scanner, when not connected, should read, memorize and later automatically upload the barcodes or shouldn't read the barcodes (no beam).

**Batch mode:** Barcodes are stored in the scanner even if the reader is connected to a device. In order to upload the data the user will have to read the "discharge" barcode.

#### 1.5.1/ Real time mode

**Important reminder**: if an ACK beep or bufferisation is needed, the scanner must be set in the "No Data Loss mode" first.

**Enable REAL TIME mode**

Erases all codes in memory and forces the BaracodaPencil2 in Real time mode. No other setting is changed.

**Enable Real Time with « No Data Loss » mode**

**Enable Real Time without « No Data Loss » mode**

**Enable ACK beep**

Forces the BaracodaPencil2 in Real Time mode (with data acknowledgement). Erases all codes in memory. The BaracodaPencil2 should have been previously set in the "No data loss mode" ON (Scan the "Enable Real Time with No Data Loss mode" barcode before).

**Disable ACK beep**

Forces the BaracodaPencil2 in Real Time mode (without data acknowledgement). Erases all codes in memory. The BaracodaPencil2 should have been previously set in the "No data loss mode" ON.

## Real Time - Buffered data option

It's possible to set the scanner in "Real Time with No Data Loss mode" but with no bufferisation (buffer configured to 0) when it's not connected. In this particular situation the trigger will not activate the beam: so impossible to read barcodes in this mode, and the LED blinks orange.

Max Buffered Barcodes = 0

Max Buffered Barcodes = MAX

### 1.5.2/ Batch mode

**BATCH MODE**

Forces the BaracodaPencil2 in Batch mode. Erases all codes in memory.

When in batch mode, the scanner will wait for the appropriate command in order to start uploading the barcodes: this command can come

- from the BaracodaManager
- from reading the “Upload batch data” barcode here after

If this barcode is read when the reader is in batch mode and connected, the reader will automatically upload to the host all the data in its memory. If not in batch mode or not connected, the scanner will ignore this barcode.

**→ For CPU firmware versions <1.09, only the following upload barcode is available:**

Upload batch data

When scanning this barcode, the BaracodaPencil2 will send all barcodes in memory using the Baracoda header, with “no data loss mode” OFF.

**→ For CPU firmware versions ≥1.09, you must use the following Upload barcode:**

Upload batch data (with No Data Loss on)

When scanning this barcode, the scanner will send a message to the host, meaning that it wants to upload its data. Following this, the host will launch the upload process and grab the batch data.

If the host application has received all the expected data, it will acknowledge the upload to the scanner which will erase the data from its memory. If not, the host application will send a negative acknowledgment message to the scanner which will keep the data in memory, ready to retry an upload.

If the data transfer has been successful (the scanner has received the acknowledgment and erased its memory) and, for any reason, the user gets to realize that data has been lost at a higher level (keyboard emulation for example), it still has the possibility to recover the last batch data into the scanner’s memory, by scanning the below barcode.

Restore last batch data

Restore last batch + launch upload

Please note that the data recovering won’t be possible if other barcodes have been scanned or if the scanner has been shut down after the upload.

### *1.6/ The different connection methods*

There are two (2) different way to create a connection from a Host and a scanner:

- **Slave mode (by default)**
  The Host (PC, BaracodaManager, …) is creating the connection onto the scanner.

- **Master mode**
  The scanner is creating itself a connection to the recorded Host Bluetooth address. This connection attempt is set after a scan of barcode. The configuration of Host address (on which the scanner will set up a connection) can be done:
  - Via BaracodaManager software.
  - Via scan of barcodes.

All usage mode (Real Time, No Data Loss, Batch) are obviously available on those two different ways of connection.

Enable master mode


Disable master mode


Enable master mode and disconnect


Disable master mode and disconnect


The configuration of the Host Bluetooth address (BDA) is made by scanning the 0-9, a-f, A-F labels (Appendix 1) as on a calculator; following the timestamp format shown above.

For example: to set the following BDA: 00:c3:EF:44:a2:B9, the user will scan:

- “Set Remote BDA” label,
- “0” label,
- “0” label,
- “c” label,
- “3” label,
- “E” label,
- “F” label,
- “4” label,
- “4” label,
- “a” label,
- “2” label,
- “B” label,
- “9” label,
- “End of Config” label.

Set Remote BDA


End of Config

### *1.7/ Buzzer and Led Settings*

You can use these options to enable or disable the buzzer and / or the Led. You can also invert the led position.

LED ON (*)

LED OFF

Good read beep on (*)

Good read beep off

ACK beep on (*)

ACK beep off

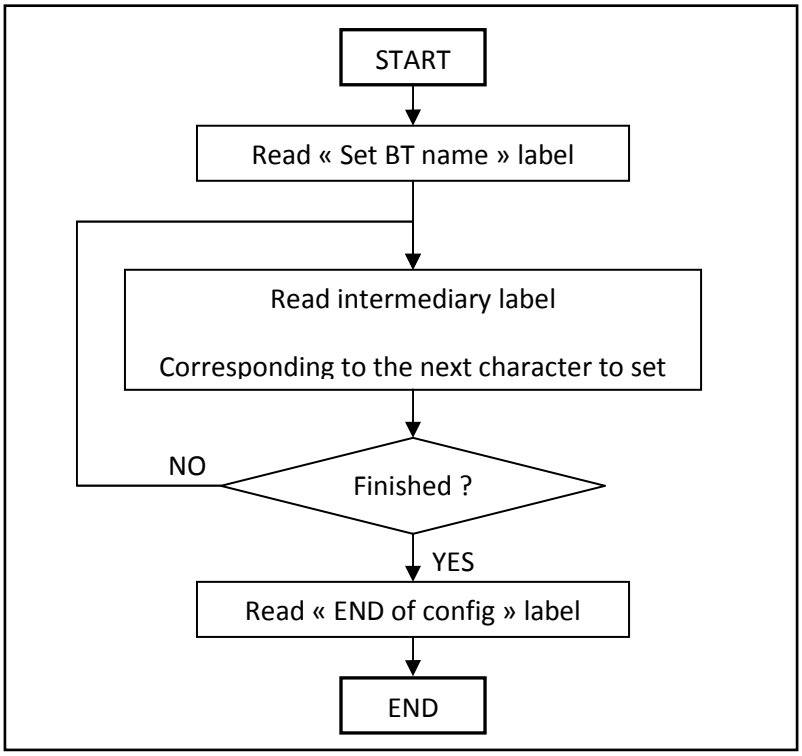
Beep level  volume = HIGH (*)

Beep level  Volume = LOW

## *1.8/ Bluetooth commands*

### 1.8.1/ Bluetooth name

You can change the scanner Bluetooth name; name that you see during a search of Bluetooth peripheral.




Set BT Name

End of config

### 1.8.2/ Sniff settings

The higher the Sniff period, the higher is the latency and the smaller is the power consumption. Default value is 150ms.

Sniff period = 150ms (*)

Sniff period = 100ms

Sniff period = 200ms

Sniff period = 300ms

Sniff period = 500ms

### 1.8.3/ Security (code PIN) settings

Some BT device will not accept connections with devices that do not have a security code.

Disable BT security code

Enable BT security code (*)

### *1.9/ Prefix and suffix*

The barcode string can be added a prefix, a postprefix, a suffix and/or a postsuffix. These can come as described below:

| prefix | postprefix | barcode | suffix | postsuffix |
|---|---|---|---|---|
| | | | | |

#### 1.9.1/ Prefix/suffix

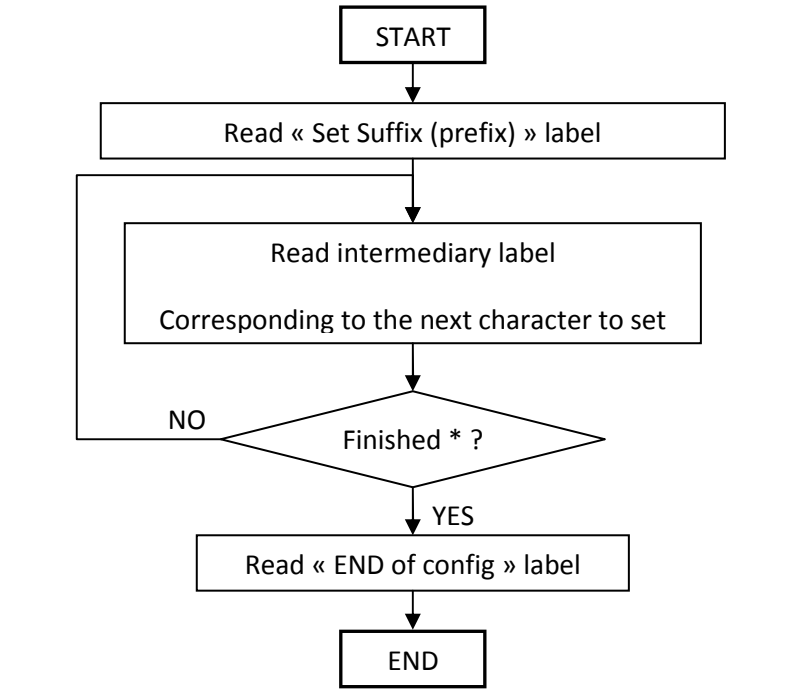
You can add a prefix and/or a suffix (strings of more than 32 characters will not be accepted) to every barcode sent to the host device. There is no prefix/suffix in default settings.

Prefix on

Prefix off (*)

Suffix on

Suffix off (*)




**Programming procedure for "set suffix (prefix)" option.**

*= max length of the Suffix (Prefix) is 32 characters

Set prefix

Set suffix

End of configuration

### 1.9.2/ Postrefix/postsuffix

You can add a postprefix and/or a postsuffix (strings of more than 32 characters will not be accepted) to every barcode sent to the host device. (Feature enabled for CPU firmware version ≥ 1.09)

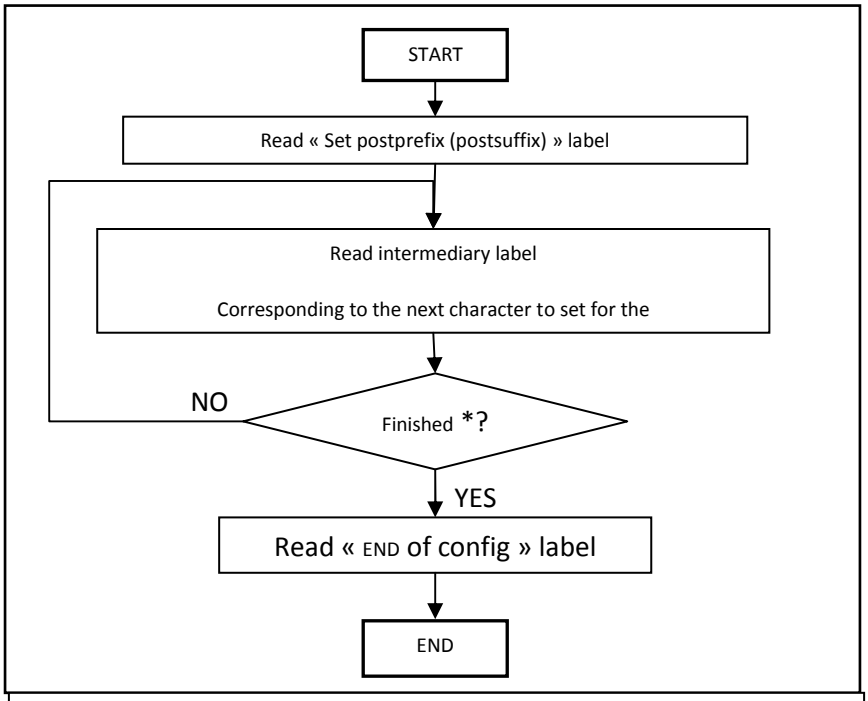
There is no postprefix/postsuffix in default settings.

POST Prefix on

POST Prefix off (*)

POST Suffix on

POST Suffix off (*)




**Programming procedure for "set postprefix (postsuffix)" option.**

*= max length of the Suffix (Prefix) is 32 characters

Set postprefix

Set postsuffix

End of configuration

# 2/ Decoder settings

## *2.1/ Symbology default settings*

Sets the defaults decoder settings for all the symbologies.

Set Decoder Default Settings

## *2.2/ Symbology identifier*

AIM Identifier will be transmitted at the beginning of the barcode. More information about the AIM Identifier available in Appendix2.

Symbology identifier - AIM - not transmitted (*)

Symbology identifier - AIM - transmitted

## *2.3/ Disable All Symbologies*

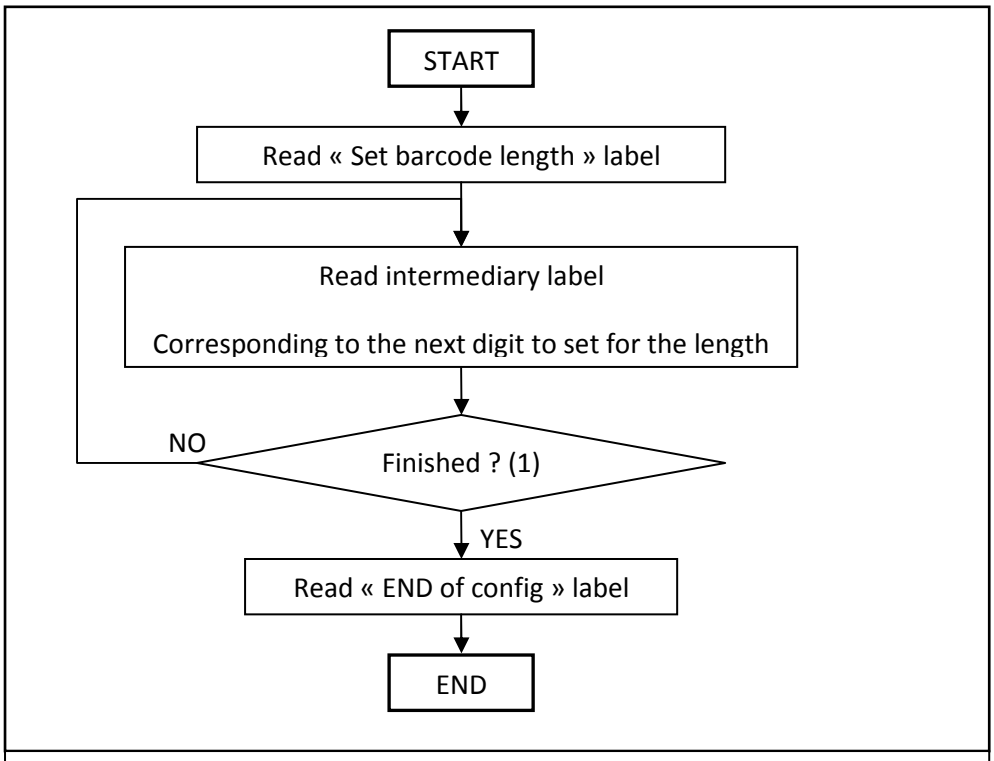
Even if all symbologies are disabled, the BaracodaPencil2 will always be able to read the programming barcodes of this document.

Disable all symbologies

Enable all symbologies

### *2.4/ Set decoder barcode length*

You can set a fixed length for the barcode decoding. The scanner will only decode barcodes of this length.
*(Feature enabled for CPU firmware version ≥ 1.09*)




**Programming procedure for "set barcode length" option.**

Set barcode length

END of config

### *2.5/ Codabar settings*

Codabar - not active

Codabar – active (*)

Codabar - start/stop - not transmitted (*)

Codabar - start/stop - transmitted

Codabar - check digit (AIM recommendation) - not used (*)

Codabar - check digit (AIM recommendation) - checked and transmitted

Codabar - check digit (AIM recommendation) - checked but not transmitted

Codabar - barcode length - any length

Codabar – barcode length Min=6 (*)

### *2.6/ Code 11 Settings*

Code 11 - not active (*)

Code 11 - active

Code 11 - check digits - 1 digit (*)

Code 11 - check digits - 2 digits

Code 11 - check digits - checked and transmitted (*)

Code 11 - check digits - checked but not transmitted

Code 11 - barcode length - any length

Code 11 – barcode length – Min = 6 (*)

### *2.7/ Code 39 settings*

Code 39 - active (*)

Code 39 - not active

Code 39 - format - standard 43 characters (*)

Code 39 - format - full ASCII

Code 39 - start/stop - not transmitted (*)

Code 39 - start/stop - transmitted

Code 39 - start/stop - accepted characters - * only (standard Code 39) (*)

Code 39 - start/stop - accepted characters - $ only (Trioptic Code 39)

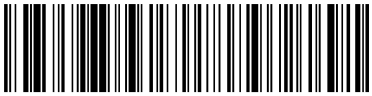
Code 39 - start/stop - accepted characters - $ and * (standard and Trioptic Code 39)

Code 39 - check digit - not used (*)

Code 39 - check digit - modulo 43 - checked and transmitted

Code 39 - check digit - modulo 43 - checked but not transmitted

Code 39 - barcode length - any length (*)



Code 39 - barcode length - minimum length = 6

### *2.8/ Code 93 Settings*

Code 93 - not active

Code 93 – active (*)

Code 93 - barcode length - any length

Code 93 - barcode length - minimum length = 6 (*)

### *2.9/ Code 128 Settings*

#### 2.9.1/ General

Code 128/EAN 128 - not active

Code 128/EAN 128 – active (*)

Code 128/EAN 128 - barcode length - any length (*)

Code 128/EAN 128 - barcode length - minimum length = 6

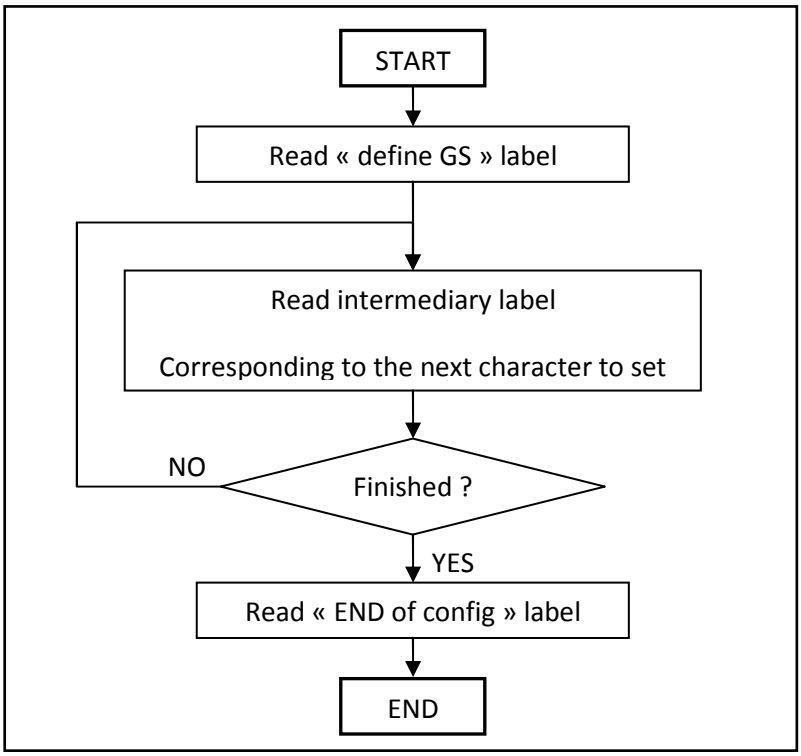
### 2.9.2/ EAN 128: Group Separator

'FNC1' included in an EAN128 code is transmitted by default as 'GS' (Group Separator – 0x1D).

Enable GS transmission (*)

Disable GS transmission

It is possible to replace that 'GS' data to an other ASCII data.




Define GS Replacement Character

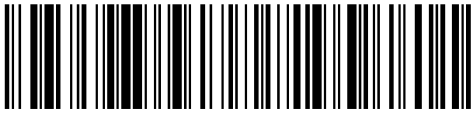
**End of configuration**

The common request to replace 'GS' by the | (pipe) can be done through the scan of:

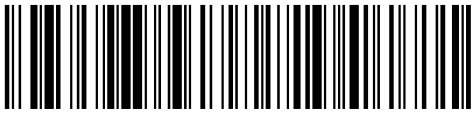
Define | as GS

Even if the “AIM ID transmit” is disabled, it is possible to enable the AIM ID transmission for EAN128.

Enable AIM ID transmission for EAN128



Disable AIM ID transmission for EAN128 (*)



### *2.10/ Interleaved 2 of 5 Settings*

Interleaved 2 of 5 - not active

Interleaved 2 of 5 – active (*)

Interleaved 2 of 5 - check digit - not used (*)

Interleaved 2 of 5 - check digit - mod 10 - checked and transmitted

Interleaved 2 of 5 - check digit - mod 10 - checked but not transmitted

Interleaved 2 of 5 - barcode length - minimum length = 6 (*)

Interleaved 2 of 5 – barcode length- any length

### *2.11/ MSI Code Settings*

MSI Code - not active (*)

MSI Code – active

MSI Code - check digit - mod 10 - checked and transmitted (*)

MSI Code - check digit - mod 10 - checked but not transmitted

MSI Code - check digit - double mod 10 - checked and transmitted

MSI Code - check digit - double mod 10 - checked but not transmitted

MSI Code - barcode length - any length

MSI Code - barcode length - minimum length = 6 (*)

### *2.12/ Standard 2 of 5 Settings*

Standard 2 of 5 - not active

Standard 2 of 5 – active (*)

Standard 2 of 5 - check digit mod 10 - not used (*)

Standard 2 of 5 - check digit mod 10 - checked and transmitted

Standard 2 of 5 - check digit mod 10 - checked but not transmitted

Standard 2 of 5 - barcode length - any length

Standard 2 of 5 - barcode length - minimum length = 6 (*)

### *3.13/ UPC/ EAN Settings*

UPC / EAN - active (*)

UPC / EAN - not active

UPC / EAN - UPC-A and EAN 13 desactivated

UPC / EAN - UPC-E desactivated

UPC / EAN - EAN-8 desactivated

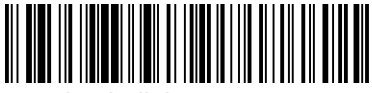
UPC / EAN - check digit - UPC-A and EAN13 - transmitted (*)


UPC / EAN - check digit - UPC-A/EAN 13 - not transmitted

UPC / EAN - check digit - UPC-E - transmitted (*)

UPC / EAN - check digit - UPC-E - not transmitted

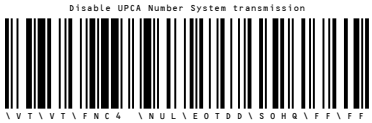
UPC / EAN - check digit - EAN-8 - transmitted (*)



UPC / EAN - check digit - EAN-8 - not transmitted

UPC / EAN - UPC number system - UPC-A - transmitted (*)

UPC / EAN - UPC number system - UPC-A - not transmitted



UPC / EAN - UPC number system - UPC-E - transmitted (*)

UPC / EAN - UPC number system - UPC-E - not transmitted

UPC / EAN - re-encoding UPC-A, UPC-E, EAN-8 - UPC-A transmitted as EAN-13

UPC / EAN - re-encoding UPC-A, UPC-E, EAN-8 - UPC-A transmitted as UPC-A (*)

UPC / EAN - re-encoding UPC-A, UPC-E, EAN-8 - UPC-E transmitted as UPC-E (*)

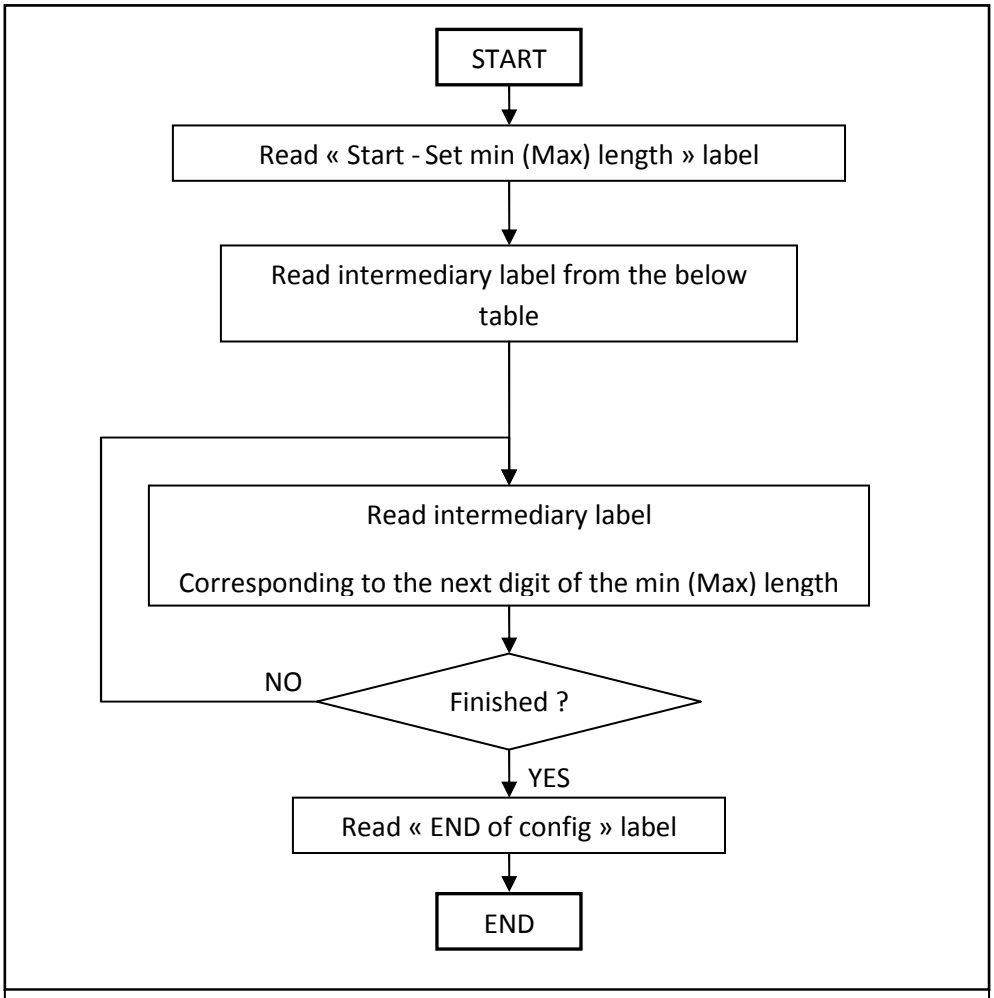
UPC / EAN - re-encoding UPC-A, UPC-E, EAN-8 - UPC-E transmitted as UPC-A

UPC / EAN - re-encoding UPC-A, UPC-E, EAN-8 - EAN-8 transmitted as EAN 8 (*)

UPC / EAN - re-encoding UPC-A, UPC-E, EAN-8 - EAN-8 transmitted as EAN-13

### *3.14/ Set min or Max length option*

The following is a procedure to follow for every barcodes.




**Programming procedure for "set min (Max) length" option.**

***Symbology table***

| Header | Selected Symbology |
|---|---|
| | SELECT ALL |
| | Code 93 |
| | Code 128 / EAN 128 |
| | EAN 13 / UPC A |
| | Code 39 |
| | Codabar |
| | Interleaved 2 of 5 |
| | Standard 2 of 5 (industrial 2 of 5) |
| | Code 11 |
| | MSI |
| | UPC E |
| | EAN 8 |

Start – set min length

Start – Set Max length

End of config

# APPENDIX 1: ASCII Table (A-Z, a-z, 0-9, ponctuation, Control characters)

**Capital letters (A-Z) :**

| Name | Programming label |
|---|---|
| A | |
| B | |
| C | |
| D | |
| E | |
| F | |
| G | |

| Name | Programming label |
|---|---|
| N | |
| O | |
| P | |
| Q | |
| R | |
| S | |
| T | |

| | |
|---|---|
| H | |
| I | |
| J | |
| K | |
| L | |
| M | |

| | |
|---|---|
| U | |
| V | |
| W | |
| X | |
| Y | |
| Z | |

**Small letters (a-z) :**

| Name | Programming label |
|---|---|
| a | |
| b | |
| c | |
| d | |
| e | |
| f | |
| g | |
| h | |

| Name | Programming label |
|---|---|
| n | |
| o | |
| p | |
| q | |
| r | |
| s | |
| t | |
| u | |

| | |
|---|---|
| i | |
| j | |
| k | |
| l | |
| m | |

| | |
|---|---|
| v | |
| w | |
| x | |
| Y | |
| z | |

**Ponctuaction :**

| | |
|---|---|
| Space |  |
| ! |  |
| " |  |
| # |  |
| $ |  |
| % |  |
| & |  |
| ' |  |
| ( |  |
| ) |  |
| * |  |
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| , |  |
| - |  |
| . |  |
| / |  |
| : |  |
| ; |  |
| < |  |

| | |
|---|---|
| = |  |
| > |  |
| ? |  |
| @ |  |
| [ |  |
| ] |  |
| ^ |  |
| _ |  |
| { |  |
| \| |  |
| } |  |
| ~ |  |

**Decimal numbers (0-9) :**

| Name | Programming label |
|---|---|
| 0 |  |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |
| 6 |  |
| 7 |  |
| 8 |  |
| 9 |  |

**Control Characters:**

| Name | Programming label |
|---|---|
| CR | |
| EOT | |
| ETX | |
| LF | |
| NUL | |
| SOH | |
| STX | |
| TAB | |

# APPENDIX 2

The SI prefix is a two or three character string:
**] c m** where
**]** : SI indicator
**c** : Symbology Identification
**m :** Modifier characters (optional)

**Symbology Character**

| | |
|---|---|
| A | Code 39 |
| B | Telepen |
| C | Code 128 |
| D | Code One |
| E | EAN/UPC |
| F | Codabar |
| G | Code 93 |
| H | Code 11 |
| I | ITF 25 |
| K | Code 16K |
| L | PDF417 |
| M | MSI code |
| N | Anker Code |
| O | Codablock |
| P | Plessey Code |
| R | Straight 2 of 5 (two bar start/stop codes) |
| S | Straight 2 of 5 (three bar start/stop codes) |
| T | Code 49 |
| X | Other Bar code |
| Z | Non Barcode data |

**Modifier Characters**

The modifier character is determined by summing the option values of each symbology. If the sum is greater than 9, use A, B, C, D, E , F in the place of 10, 11, 12, 13, 14 and 15.

**Code 39 Option Values**

| | |
|---|---|
| 0 | No check character or Full ASCII |
| 1 | Reader has performed mod 43 check |
| 2 | Reader has performed mod 43 check and stripped the check character |
| 4 | Reader has performed Full ASCII conversion |

**Telepen Option Values**

| | |
|---|---|
| 0 | Full ASCII mode |
| 1 | Double density numeric mode |
| 2 | Double density numeric followed by full ASCII |
| 4 | Full ASCII followed by double density numeric |

**Code 128 Option Values**

| | |
|---|---|
| 0 | Standard |
| 1 | Function code 1 in first character position |
| 2 | Function code 2 in second character position |
| 4 | Concatenation according to ISBT specification has been performed, and concatenated data follows. |