GRYPHON™

Software Configuration Manual

DATALOGIC

Bar Code & More

GRYPHON™

SOFTWARE CONFIGURATION MANUAL

This manual refers to
software version 1.0
and later

Rev. A

CONTENTS

HOW TO USE THIS MANUAL

Your reader is supplied with its own Quick Reference Manual which provides connection diagrams, reading diagrams, basic application parameter settings, default values, and specific technical features.

You can use either your reader's Quick Reference Manual or this Manual for initial configuration in order to set the default values and select the interface for your application.

This manual can be used for complete setup and configuration of your reader.

To use this manual for initial setup:

1) Read the Restore Default code on page 3.

2) Choose the correct interface selection code for your application from those listed in chapter 2.

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

To configure your reader:

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

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

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

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

Reference notes describing the operation of the more complex parameters are given in chapter 4.

Sending Configuration Strings from Host

An alternative configuration method is provided in Appendix A using the RS232 interface. This method is particularly useful when many devices need to be configured with the same settings. Batch files containing the desired parameter settings can be prepared to configure devices quickly and easily.

Copy Command

A Master device (previously configured reader), can be used to send its configuration directly to other readers by connecting them together using two RS232 cables and reading the Copy Configuration command. See par. 4.8 for details.

Services Available at Our Web Site:

By completing the electronic form at our website, **www.datalogic.com/hhd/gryphon_utilities.htm**, you have free access to download the following items:

- **WinSetPlus™**
  This Windows-based utility program allows device configuration using a PC. It provides direct RS232 interface configuration as well as configuration barcode printing.

- **Loader:**
  This is the utility program necessary to load the application software (upgrades) onto your reader.

- **Software Upgrades:**
  Software upgrades for your reader to keep you updated with the latest improvements.

- **Configuration Manual**
  This manual and its relative updates can be downloaded for printing or used for online consultation.

These items are also available from your local Datalogic distributor.

1 INTRODUCTION

This manual provides all the necessary information for complete software configuration.

This HHD product 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**, **retail**, and **light industrial** applications where large quantities of information need to be collected rapidly, easily and reliably.

This product has three status indicator functions which are described in the next paragraph.

1.1 STATUS INDICATORS

This reader has three indicators, LED, beeper and decoding spot. They signal several operating conditions which are described in the tables below.

POWER UP

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

CONFIGURATION

Beeper	Meaning
H H H H	correct entry or exit from Configuration mode
L	good read of a command
L L L	command read error

DATA ENTRY

Beeper	LED	Good Read Spot	Meaning
one beep°	ON	ON	correct read of a code in normal mode
H long	ON	ON	successful advanced format concatenation
H H H			timeout expired – operation not completed
H H long			error in advanced data formatting
	OFF	OFF	ready to read a code
H L long			tx buffer full (when FIFO is enabled)

° (user configurable) **H** = high tone **L** = low tone

2 INITIAL SETUP

2.1 RESTORE DEFAULT

Read the restore default parameters code below.

Restore Default

2.2 INTERFACE SELECTION

Read the interface selection code for your application.

RS232

PEN

WEDGE

IBM AT or PS/2 PCs

IBM XT

PC Notebook

IBM SURE1

IBM Terminal 3153

WEDGE (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

WEDGE (continued)

ALT MODE

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

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

IBM AT - ALT mode

PC Notebook - ALT mode

WYSE TERMINALS

ANSI Keyboard

PC Keyboard

ASCII Keyboard

VT220 style Keyboard

WEDGE (continued)

DIGITAL TERMINALS

VT2xx/VT3xx/VT4xx

APPLE

APPLE ADB Bus

YOUR READER IS NOW READY TO READ BARCODES.

To change the defaults see Chapter 3.

3 CONFIGURATION

Once your reader 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:

- **RS232**
- **WEDGE**
- **PEN EMULATION**

The following parameter groups are common to all interface applications:

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

POWER SAVE manages overall current consumption in the reading device.

READING PARAMETERS control various operating modes and indicator status functioning.

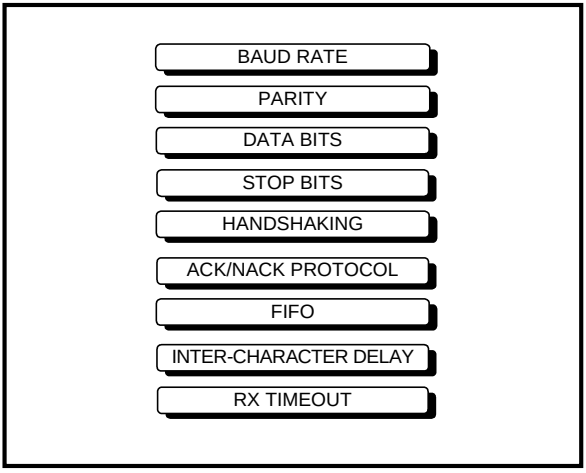
DECODING PARAMETERS maintain correct barcode decoding in certain special reading conditions.

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

ADVANCED FORMATTING PARAMETERS allow code concatenation and advanced formatting of messages towards the Host.

RS232 PARAMETERS

PARAMETERS



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

2. Read configuration codes from the desired groups.

☞ = Read the code and follow the procedure given

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

BAUD RATE

150 baud

300 baud

600 baud

1200 baud

2400 baud

4800 baud

◆ 9600 baud

19200 baud

38400 baud

PARITY

◆ none

even parity

odd parity

DATA BITS

7 bits

◆ 8 bits

9 bits

STOP BITS

◆ 1 stop bit

2 stop bits

HANDSHAKING

◆ disable

hardware (RTS/CTS)

software (XON/XOFF)

See par. 4.1.1 for details.

ACK/NACK PROTOCOL

◆ disable

enable

See par. 4.1.2 for details.

FIFO

disable

◆ enable

See par. 4.1.3 for details.

INTER-CHARACTER DELAY

delay between characters transmitted to Host

Read 2 numbers from the table where:

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

◆ delay disabled

RX TIMEOUT

timeout control in reception from Host

Read 2 numbers from the table where:

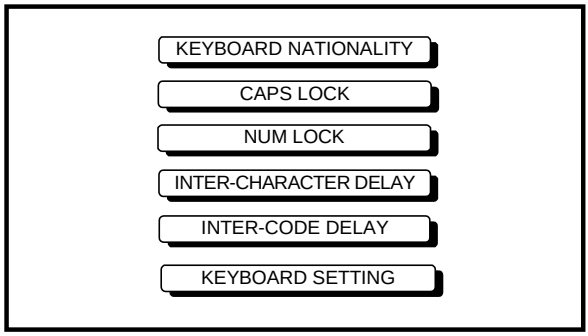
00 = TIMEOUT disabled
01-99 = TIMEOUT from **.1** to **9.9** seconds

◆ rx timeout 5 seconds

See par. 4.1.4 for details.

WEDGE PARAMETERS

PARAMETERS



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KEYBOARD NATIONALITY

Belgian

English

French

German

Italian

Spanish

Swedish

◆ USA

CAPS LOCK

◆ caps lock OFF

caps lock ON

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

Note: For **PC Notebook** interface selections, the caps lock status is automatically recognized, therefore this command is not necessary.

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

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

INTER-CHARACTER DELAY

delay between characters transmitted to Host

Read 2 numbers from the table where:

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

◆ delay disabled

INTER-CODE DELAY

delay between codes transmitted to Host

Read 2 numbers from the table where:

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

◆ delay disabled

KEYBOARD SETTING

ALPHANUMERIC KEYBOARD SETTING

The reader 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 reader how to send data corresponding to the keyboard used in the application. The keys must be set in a specific order.

Press and release a key to set it.

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

Example:

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

Each pressed and released key must generate an acoustic signal on the reader, 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 reader 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:

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:

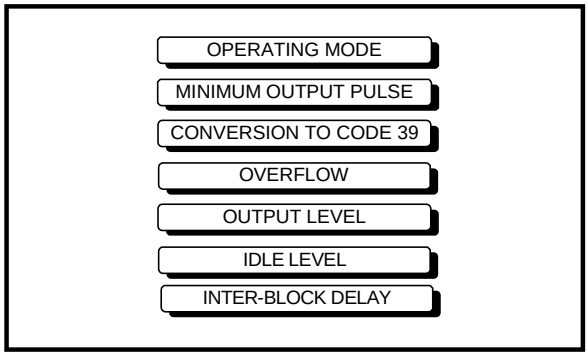
- **The first 4 characters (Shift, Alt, Ctrl, and Backspace) can only be substituted with keys not used, or substituted with each other.**
- characters can be substituted with other single symbols (e.g. "SPACE") even if not included in the barcode set used.
- characters can be substituted with others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

The reader 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**

PEN EMULATION

PARAMETERS



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PEN EMULATION

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

OPERATING MODE

◆ interpret mode

Interprets commands without sending them to the decoder.

transparent mode

Sends commands to the decoder without interpreting them.

PEN EMULATION

MINIMUM OUTPUT PULSE

high resolution code emulation

200 µs

400 µs

◆ 600 µs

800 µs

1 ms

1.2 ms

low resolution code emulation

See par. 4.2.1 for details.

PEN EMULATION

CONVERSION TO CODE 39

◆ disable

Transmits codes in their original format.

enable

Converts codes read into Code 39 format.

The following codes are ALWAYS converted into Code 39 format:
Codablock-A, Codablock-F Standard and EAN, MSI, Plessey, Telepen, Delta IBM, Code 11, Code 16K, Code 49, PDF417

OVERFLOW

narrow

◆ medium

wide

See par. 4.2.2 for details.

PEN EMULATION

OUTPUT LEVEL

◆ normal
(white = logic level 0)

inverted
(white = logic level 1)

See par. 4.2.3 for details.

IDLE LEVEL

◆ normal
(black level)

inverted
(white level)

See par. 4.2.3 for details.

INTER-BLOCK DELAY

delay between character blocks transmitted to Host

Read 2 numbers from the table where:

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

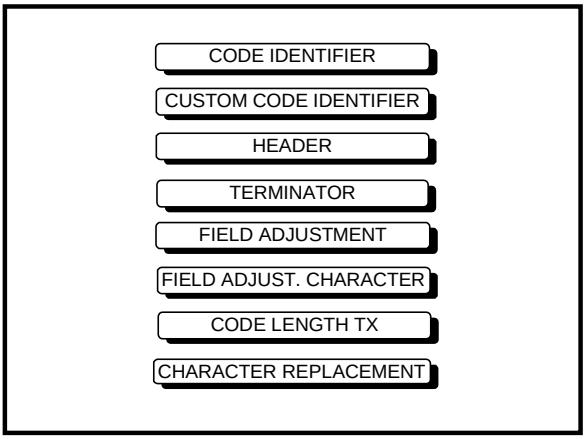
◆ DELAY disabled

See par. 4.2.4 for details

DATA FORMAT

NOT FOR PEN INTERFACES

PARAMETERS



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DATA FORMAT

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	
ABC CODABAR	] X y	S	
Code 128	] C y	T	
EAN 128	] C y	k	
ISBT 128	] C4	f	
Code 93	] G y	U	
CIP/39	] X y	Y	
CIP/HR	] X y	e	
Code 32	] X y	X	
Codablock-A	] O 6	n	
Codablock-F Std	] O 4	l	
Codablock-F EAN	] O 5	m	
MSI	] M y	Z	
Plessey Standard	] P 0	a	
Plessey Anker	] P 1	o	
Telepen	] X 0	d	
Delta IBM	] X 0	c	
Code 11	] H y	b	
Code 16K	] K 0	p	
Code 49	] T y	q	
PDF417	] L 0	r	

- 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.

DATA FORMAT

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 **00-7F**.

Example: To define Code 39 Code Identifier = @

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

DATA FORMAT

HEADER

no header

one character header

two character header

three character header

four character header

five character header

six character header

seven character header

eight character header

After selecting **one** of the desired Header codes, read the character(s) from the HEX table.

Example:

four character header

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

For more details about default and WEDGE Interface Extended Keyboard values, see par. 4.3.1.

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 about default and WEDGE Interface Extended Keyboard values, see par. 4.3.1.

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 define the field adjustment:

① Read the enable field adjustment code:

enable field adjustment

② Select the code type from the Code Identifier Table 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.

Example: To add 4 characters to the right of Standard Code 39 Codes:

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

FIELD ADJUST. 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 **00-7F**.

Example:

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

Read field adjustment character  + **41**

CODE LENGTH TX

code length transmitted

◆ code length not transmitted

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 define each character replacement:

① Read one of the following character replacement codes:

first character replacement

second character replacement

third character replacement

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

③ From the Hex/Numeric Table read two characters corresponding to the Hex value (**00**-**7F**) which identifies the character to be replaced.

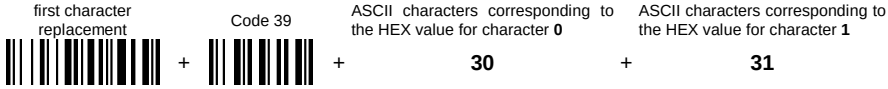
④ From the Hex/Numeric Table read two characters corresponding to the Hex value (**00**-**7F**) which identifies the new character to replace.
FF = the character to be replaced will be substituted with no character, that is, it will be removed from the code.

Example:

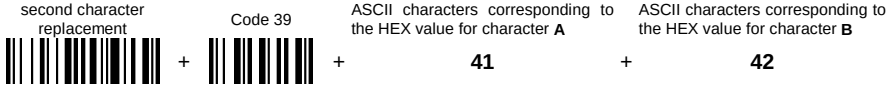
The following strings define:

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.



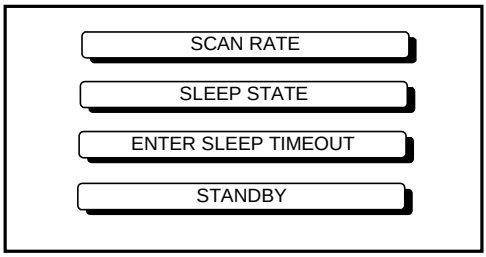
For Code 39 codes containing the string "**0**123", the contents transmitted will be "**1**123".



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

POWER SAVE

PARAMETERS



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

POWER SAVE

SCAN RATE

67 scans per sec.

135 scans per sec.

◆ 270 scans per sec.

A lower scan rate reduces power consumption but lengthens reading response time.

SLEEP STATE

◆ disable

enable

See par. 4.4.1 for details.

POWER SAVE

ENTER SLEEP TIMEOUT

enter sleep timeout

Read 2 numbers in the range 00-99:

00 = Enter Sleep state immediately

01-99 = corresponds to a max. 9.9 sec. delay before entering the Sleep state.

See par. 4.4.2 for details.

STANDBY

◆ disable

optimize for reading speed

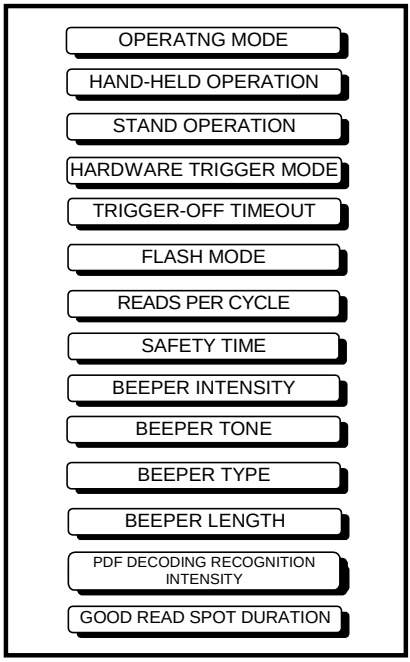
enable

optimize for low power consumption

See par. 4.4.3 for details.

READING PARAMETERS

PARAMETERS



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OPERATING MODE

Using the two codes below, you can switch the active operating environment between either Hand-Held or Stand operation.

◆ hand-held operation

stand operation

For each operating environment, both Hand-Held and Stand, you can pre-configure the operating mode. See par. 4.5.1 for details.

HAND-HELD OPERATION

◆ hardware trigger

software trigger

hardware trigger ready

automatic

always on

READING PARAMETERS

STAND OPERATION

hardware trigger

software trigger

always on

◆ automatic

HARDWARE TRIGGER MODE

◆ trigger active level

trigger active pulse

See par. 4.5.2 for details.

TRIGGER-OFF TIMEOUT

trigger-off timeout

Read 2 numbers in the range 00-99:

00 = disables the trigger-off timeout
01-99 = corresponds to a max. 99 sec. delay after the trigger press to allow the reader to turn off automatically.

◆ trigger-off timeout disabled

See par. 4.5.3 for details.

FLASH MODE

"FLASH" ON duration

"FLASH" OFF duration

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

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

READS PER CYCLE

◆ one read per cycle

multiple reads per cycle

See par. 4.5.4 for details.

SAFETY TIME

safety time

Limits same code consecutive reading.

Read 2 numbers in the range 00-99:

00 = no same code consecutive reading until reader is removed (no decoding) for at least 400 ms.

01 to 99 = timeout from .1 to 9.9 seconds before a consecutive read on same code.

◆ safety time = 0.5 sec

See par. 4.5.5 for details.

BEEPER INTENSITY

very low intensity

low intensity

medium intensity

◆ high intensity

The intensity parameter is effective for all operating conditions described in par. 1.1

BEEPER TONE

tone 1

◆ tone 2

tone 3

tone 4

Enter configuration

READING PARAMETERS

Exit and Save configuration

BEEPER TYPE

◆ monotone

bitonal

BEEPER LENGTH

long

◆ short

PDF DECODING RECOGNITION INTENSITY

◆ low

high

GOOD READ SPOT DURATION

disable

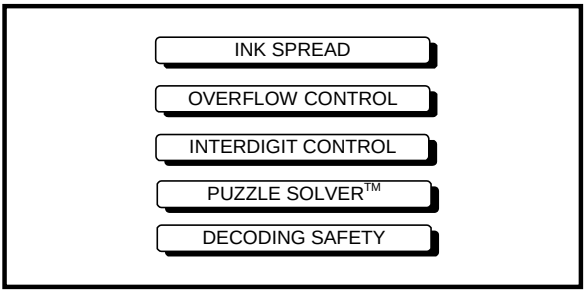
◆ medium

short

long

DECODING PARAMETERS

PARAMETERS



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

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

2. Read configuration codes from the desired groups.

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

INK-SPREAD

disable

◆ enable

See par. 4.6.1 for details.

OVERFLOW CONTROL

disable

◆ enable

See par. 4.6.2 for details.

DECODING PARAMETERS

INTERDIGIT CONTROL

disable

◆ enable

See par. 4.6.3 for details.

DECODING SAFETY

◆ one read

(decoding safety disabled)

two reads

three reads

four reads

Required number of good reads before accepting code.

PUZZLE SOLVER™

◆ disable

enable

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

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

Conditions:

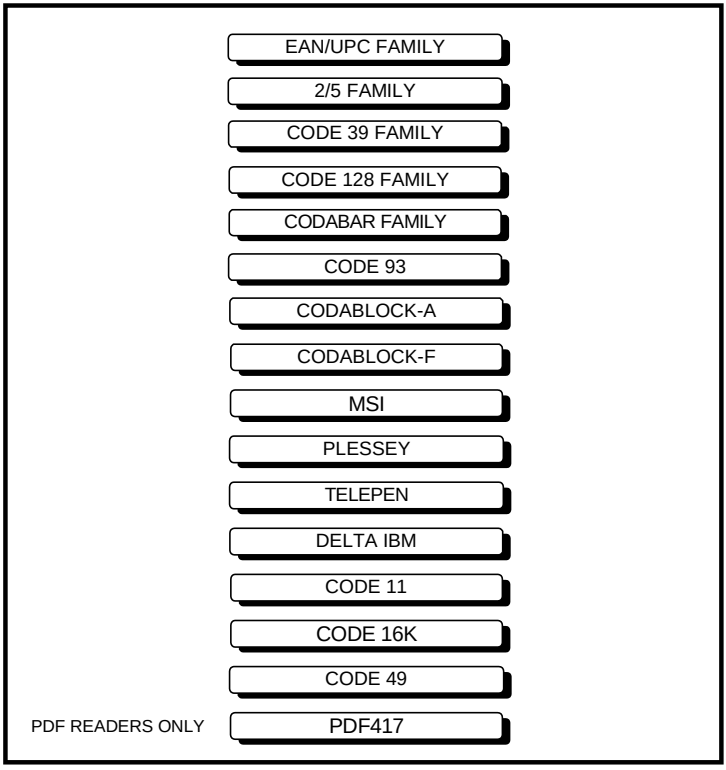
- This parameter is only valid for the following codes:

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

- Codablock-A and Codablock-F codes are automatically disabled.
- For Code 39, Check digit control without transmission is forced.
- PuzzleSolver™ is disabled when code ISBT 128 is enabled.

CODE SELECTION

PARAMETERS



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

2. Read configuration codes from the desired groups.

☞ = Read the code and follow the procedure given

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

DISABLES ALL CODE FAMILIES

NOTE

The reader 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.

CODE SELECTION

EAN/UPC FAMILY

disable the family

① Read the desired family code

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

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

WITHOUT ADD ON

◆ **EAN 8/EAN 13/UPC A/UPC E**

EAN 8/EAN 13

UPC A/UPC E

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 13

UPC A/UPC E

WITH ADD ON 5 ONLY

EAN 8/EAN 13

UPC A/UPC E

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

EAN 13

UPC A

UPC E

NO CHECK DIGIT TRANSMISSION

EAN 8

EAN 13

UPC A

UPC E

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 nor code length selections.

Code CIP/HR

French pharmaceutical code

② Read a check digit selection

CHECK DIGIT TABLE

no check digit control

◆ check digit control and transmission

check digit control without transmission

③ Read **4** numbers for the code length where:

– **First 2 digits** = minimum code length.

– **Second 2 digits** = maximum code length.

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

0199 = variable from 1 to 99 digits in the code.

1010 = 10 digit code length only.

CODE SELECTION

CODE 39 FAMILY

disables the family

① Read the desired family code

◆ **Standard Code 39**

Full ASCII Code 39

② Read a check digit selection

CHECK DIGIT TABLE

◆ no check digit control

check digit control
and transmission

check digit control
without transmission

CODE SELECTION

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

Code CIP39

French pharmaceutical code

Code 32

Italian pharmaceutical code

CODE LENGTH (optional)

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

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

First 2 digits = minimum code length.

Second 2 digits = maximum code length.

set code length

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

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

CODE SELECTION

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

ISBT 128

Read the ISBT 128 code and then select the appropriate concatenation code below.

◆ enable all concatenations

disable all concatenations

- Enabling ISBT 128 automatically disables Puzzle Solver™.

CODE SELECTION

CODE 93

◆ disables the code

Code 93

control without transmission
of check digit

CODE SELECTION

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

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

Codabar ABC

no start/stop character equality control but transmission.

Codabar ABC Forced Concatenation

enable Codabar ABC with forced concatenation

non start/stop character equality control but transmission

CODE LENGTH (optional)

The code length selection is valid for the entire Codabar family

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

CODABLOCK-A

◆ disables the code

Codablock-A

Notes:

- Enabling Codablock-A automatically disables the entire Code 39 family and vice-versa.
- Enabling Codablock-A automatically disables Puzzle Solver™.

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

CODABLOCK-F

◆ disables the family

Codablock-F Standard

Codablock-F EAN

Notes:

- Enabling Codablock-F automatically disables Puzzle Solver™.

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

CODE SELECTION

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

TELEPEN

◆ disables the family

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

Numeric Telepen

no check digit control

check digit control
check digit transmitted

check digit control
check digit not transmitted

Alphanumeric Telepen

no check digit control

check digit control
check digit transmitted

check digit control
check digit not transmitted

DELTA IBM

◆ disables the family

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

no check digit control

Type 1 check digit control

Type 2 check digit control

CODE SELECTION

CODE 11

◆ disables the family

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

no check digit control

Type C check digit control
check digit transmitted

Type C check digit control
check digit not transmitted

Type K check digit control
check digit transmitted

Type K check digit control
check digit not transmitted

Type C and Type K
check digit control
check digits transmitted

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

CODE 16K

◆ disables the code

Code 16K

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

CODE 49

◆ disables the code

Code 49

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

PDF417

disables the code

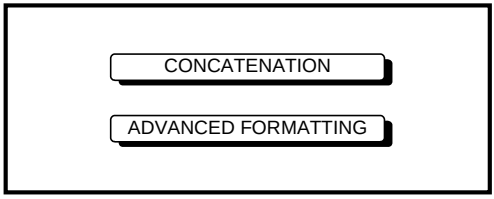
◆ **PDF417**

Only for PDF417 series readers.

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

ADVANCED FORMATTING

PARAMETERS



NOTE:

Please follow the setup procedure carefully for these parameters.

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

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

☞ = Read the code and follow the procedure given

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.

2 **Code 2**

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.

---

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

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

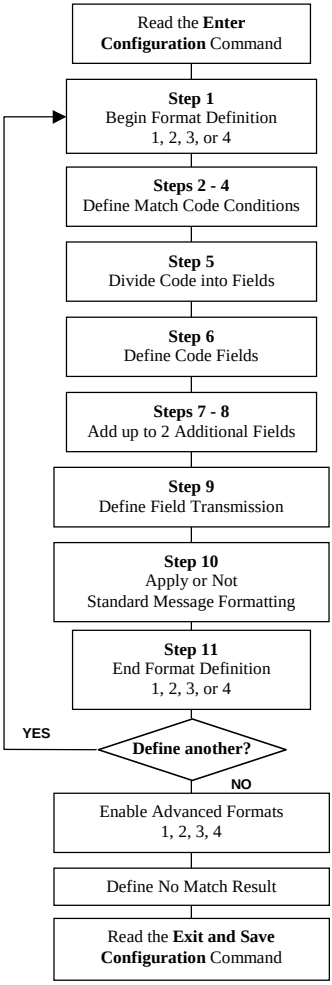
Define the timeout, which determines the valid waiting period between the two codes, in order to accept concatenation. If the timeout expires, the resulting action will be based on the following selection.

ADVANCED FORMATTING

ADVANCED FORMATTING

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

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



1 Begin Format Definition

begin Format 1 definition

begin Format 2 definition

begin Format 3 definition

begin Format 4 definition

2 Match Code Type

match code type

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

OR

any code type

3 Match Code Length

match code length

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

OR

any code length

4 **Match with Predefined Characters**

no match

OR

match with 1 character

match with a 2-character string

match with a 3-character string

match with a 4-character string

After selecting the predefined match code, read the character(s) from the HEX table. Range of characters = **00-7F**.

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.

OR BY

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

OR BY

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

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

DEFINE FIELD 1 BY:
EITHER

a) field separator

Read the field separator character from the HEX table. Range of characters = **00-7F**.

discard separator

include separator

OR

b) field length

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

OR

c) this is the last field (variable length)

AND

Field 1 Terminators

no field terminators

1 field terminator

2 field terminators

Read the field terminator character(s) from the HEX table.

Valid range of characters for RS232 Interface = **00-7F**.

Valid range of characters for WEDGE Interface = **00-9B**.

DEFINE FIELD 2 BY:
EITHER

a) field separator

Read the field separator character from the HEX table. Range of characters = **00-7F**.

discard separator

include separator

OR

b) field length

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

OR

c) this is the last field (variable length)

AND

Field 2 Terminators

no field terminators

1 field terminator

2 field terminators

Read the field terminator character(s) from the HEX table.

Valid range of characters for RS232 Interface = **00-7F**.

Valid range of characters for WEDGE Interface = **00-9B**.

DEFINE FIELD 3 BY:
EITHER

a) field separator

Read the field separator character from the HEX table. Range of characters = **00-7F**.

discard separator

include separator

OR

b) field length

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

OR

c) this is the last field (variable length)

AND

Field 3 Terminators

no field terminators

1 field terminator

2 field terminators

Read the field terminator character(s) from the HEX table.

Valid range of characters for RS232 Interface = **00-7F**.

Valid range of characters for WEDGE Interface = **00-9B**.

DEFINE FIELD 4 BY:
EITHER

a) field separator

Read the field separator character from the HEX table. Range of characters = **00-7F**.

discard separator

include separator

OR

b) field length

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

OR

c) this is the last field (variable length)

AND

Field 4 Terminators

no field terminators

1 field terminator

2 field terminators

Read the field terminator character(s) from the HEX table.

Valid range of characters for RS232 Interface = **00-7F**.

Valid range of characters for WEDGE Interface = **00-9B**.

DEFINE FIELD 5 BY:
EITHER

a) field separator

Read the field separator character from the HEX table. Range of characters = **00-7F**.

discard separator

include separator

OR

b) field length

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

OR

c) this is the last field (variable length)

AND

Field 5 Terminators

no field terminators

1 field terminator

2 field terminators

Read the field terminator character(s) from the HEX table.

Valid range of characters for RS232 Interface = **00-7F**.

Valid range of characters for WEDGE Interface = **00-9B**.

7 First Additional Fixed Field

no fixed field

1 character fixed field

2 character fixed field

3 character fixed field

4 character fixed field

5 character fixed field

6 character fixed field

After selecting **one** of the Additional Fixed Field codes, read the corresponding character(s) from the HEX table. Range of characters = **00-7F**.

Example:

4 Character Fixed Field

+ 4D + 41 + 49 + 4E = MAIN

8 Second Additional Fixed Field

no fixed field

1 character fixed field

2 character fixed field

3 character fixed field

4 character fixed field

5 character fixed field

6 character fixed field

After selecting **one** of the Additional Fixed Field codes, read the corresponding character(s) from the HEX table. Range of characters = **00-7F**.

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, see example.

field 1

field 2

field 3

field 4

field 5

additional field 1

additional field 2

Example:

The barcode is divided into 2 defined fields plus 1 additional fixed field.

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

Number of Fields to Transmit **+ 3 +** Field 2 **+** Additional Field 1 **+** Field 1

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).

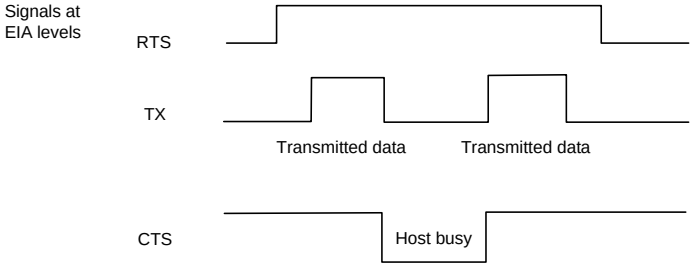
4 REFERENCES

4.1 RS232 PARAMETERS

4.1.1 Handshaking

Hardware handshaking: (RTS/CTS)

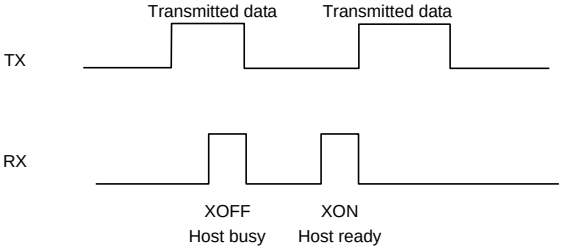
The RTS line is activated by the decoder before transmitting a character. Transmission is possible only if the CTS line (controlled by the Host) is active.



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 reader after every code transmitted. The Host sends an ACK character (06 HEX) in the case of good reception or the NACK character (15 HEX) requesting re-transmission, in the case of bad reception.
If the reader does not receive an ACK or NACK, transmission is ended after the RX Timeout (see par. 4.1.4).
Selection of the ACK/NACK protocol temporarily disables FIFO buffering see par. 4.1.3.

4.1.3 FIFO

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

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

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

4.1.4 RX Timeout

When the 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.

4.2 PEN PARAMETERS

4.2.1 Minimum Output Pulse

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

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

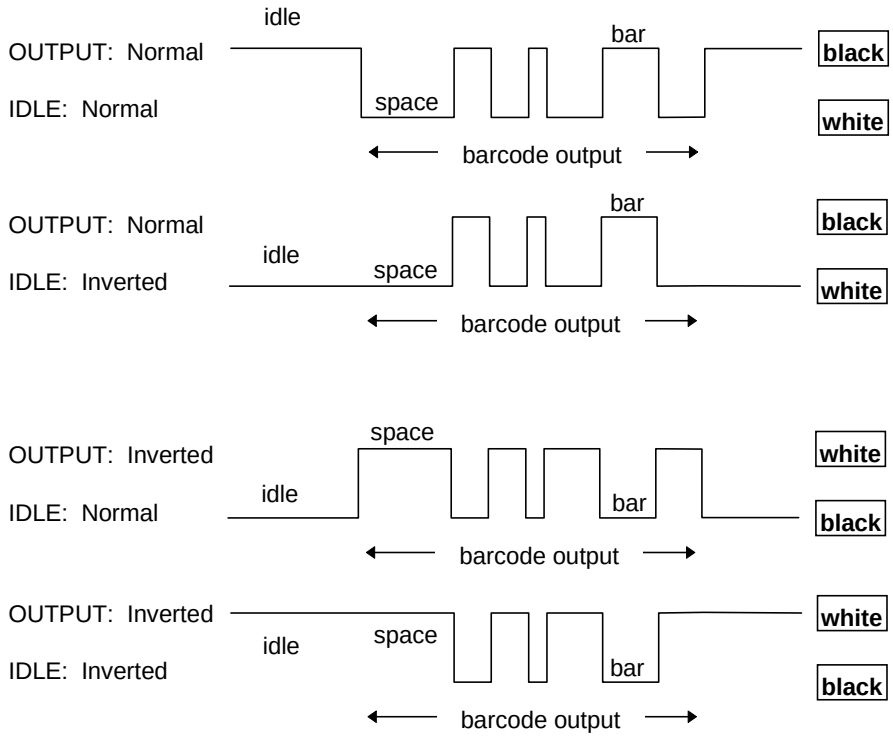
4.2.2 Overflow

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

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

4.2.3 Output and Idle Levels

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



Output and Idle Levels

4.2.4 Inter-Block Delay

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

4.3 DATA FORMAT

4.3.1 Header/Terminator Selection

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

RS232: no header, terminator CR-LF

WEDGE: no header, terminator ENTER

These default values are always restored through the reading of RS232 or WEDGE interface selection code, see chapter 2.

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

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

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 reader in this case pressing and releasing the different keys.

Example:

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

Each pressed and released key must generate an acoustic signal on the reader, 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 "Back space" to correct a wrong key entry. In this case the reader 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 reader 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**	

4.4 POWER SAVE

4.4.1 Sleep State

This mode allows the µP in the reader to enter a “Sleep” state for minimum power consumption. This command is only valid when hardware trigger type is selected.

Before entering Sleep mode, the following are verified:

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

To exit Sleep mode press the trigger.

Enabling the Sleep state implements Standby mode for CCD devices, see par. 4.4.3.

4.4.2 Enter Sleep Timeout

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

4.4.3 Standby

If this command is enabled, part of the CCD circuitry shuts down (Standby), in order to optimize low power consumption when not reading. When the trigger is pressed this circuitry powers up. This mode causes a minor delay of about 100 ms before the reader is ready.

4.5 READING PARAMETERS

4.5.1 Operating Modes

This group of parameters allows setting different reading modes for either Hand-Held operation or Stand operation:

- SoftwareTrigger: the reader is set in FLASH MODE. Code reading takes place during the *flash on* time;
- Hardware Trigger: the code reading is started with a trigger press (ON);
- Hardware Trigger Ready: the illuminator is switched ON when the reader sees a code. It functions as a pointer aiming at the code to be read. The reading phase starts only when the trigger is pressed. In this mode the reader is automatically set to **trigger active level** and **one read per cycle** parameters. (Only for Hand-held operation).
- Automatic: The illuminator is switched ON when the reader sees a code. The reading phase starts automatically.
- Always ON: the illuminator is always ON and the reader always ready for code reading.

4.5.2 Hardware Trigger Mode

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

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

4.5.3 Trigger-Off Timeout

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

4.5.4 Reads per Cycle

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

- For readers using the software trigger parameter (FLASH MODE), a reading cycle corresponds to the *flash on* + *flash off* times. Code reading takes place during the *flash on* time.

- For readers using the *hardware trigger* parameter, a reading cycle corresponds to a trigger press (ON) + one of the following OFF events:

  trigger release (for *trigger active level*)

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

  trigger-off timeout (see par. 4.5.3).

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

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

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

4.5.5 Safety Time

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

4.6 DECODING PARAMETERS

CAUTION

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

4.6.1 Ink-Spread

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

4.6.2 Overflow Control

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

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

This command is forced (enabled) when PDF417 codes are enabled.

4.6.3 Interdigit Control

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

4.7 CONFIGURATION EDITING COMMANDS

The barcode reading configuration method described in each section of chapter 3 of this manual is the most common way to configure your device.

However, additional editing commands are available and are described in this paragraph.

Command	Description
 **$+**	Enter configuration environment
 **$%**	Backspace - cancel an incomplete configuration sequence without exiting configuration environment
 **$/**	Cancel all modifications without exiting configuration environment
 **$-**	Exit and Save configuration in EEPROM

The Exit and Save command **$-** can be replaced by **$)** which exits saving the configuration only to RAM (without saving in EEPROM). The new configuration is valid as long as the decoder remains powered.

In this case, the following commands save in EEPROM, either the modified configuration in RAM, or the previously saved EEPROM configuration; then exit the configuration environment.

Command	Description
 **$)**	End of modifications (Exit saving to RAM without saving in EEPROM)
 **$+$(**	Save current configuration in RAM to EEPROM
 **$+$.**	Restore last configuration saved in EEPROM

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

Command	Description
 **$+$***	Restore system default configuration (see the relative Quick Reference Manual for default settings)
 **$+$!**	Transmit the Software release
 **$+$&**	The device configuration is transmitted in ASCII format. This command is not effective with Pen emulation interface.

4.8 CONFIGURATION COPY COMMAND

Procedure:

① Connect the **master** (correctly configured reader) and the **slave** (reader 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: CAB363 & CAB364 or CAB320 & CAB321

Power Supply: PG5

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

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

Copy Configuration

$+ZZ0$-

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.

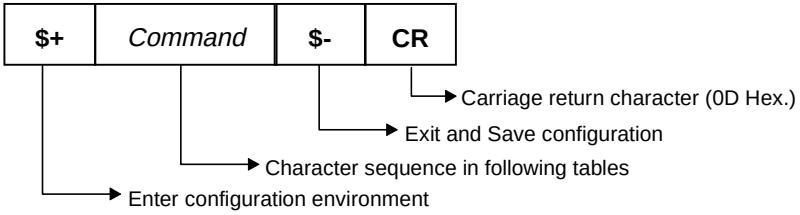
Note: The master device can be configured for any interface.

APPENDIX 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.

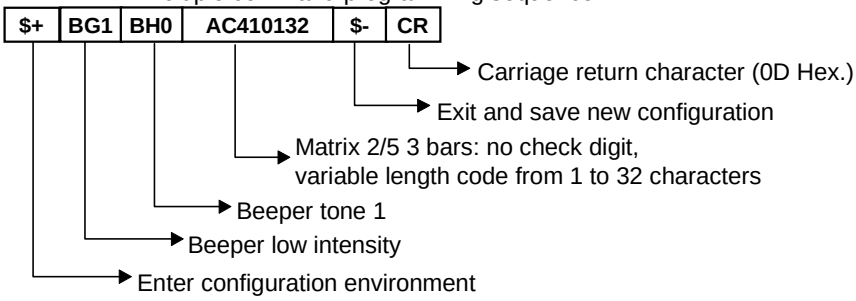
This method requires the RS232 interface.

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:



Example:

Multiple command programming sequence:



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 reader 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 Default	**$***
Transmit Software Release (not for PEN emulation)	**$!**

These commands do not require $-.

INTERFACE SELECTION			
DESCRIPTION			**STRING**
RS232			**CP0**
WEDGE	for IBM AT		**CP500**
	for IBM Terminals: 31xx, 32xx, 34xx, 37xx; make-break keyboard		**CP501**
	for IBM Terminals: 31xx, 32xx, 34xx, 37xx; make-only keyboard		**CP502**
	Keyboard Type for IBM Terminals 31xx, 32xx, 34xx, 37xx	typewriter	**FK0**
		advanced	**FK1**
	for IBM XT		**CP503**
	for IBM Terminal 3153		**CP504**
	for IBM PC Notebook		**CP505**
	for IBM SURE1		**CP506**
	for IBM AT - ALT mode		**CP507**
	for IBM PC Notebook - ALT mode		**CP508**
	for Wyse Terminal - ANSI Keyboard		**CP509**
	for Wyse Terminal - PC Keyboard		**CP510**
	for Wyse Terminal - ASCII Keyboard		**CP511**
	for Wyse Terminal - VT220 style Keyboard		**CP514**
	for Digital Terminals VT2xx/3xx/4xx		**CP512**
	for Apple ADB Bus		**CP513**
PEN EMULATION			**CP6**

RS232		
DESCRIPTION		**STRING**
Baud rate	150	**CD0**
	300	**CD1**
	600	**CD2**
	1200	**CD3**
	2400	**CD4**
	4800	**CD5**
	9600	**CD6**
	19200	**CD7**
	38400	**CD8**
Parity	none	**CC0**
	even	**CC1**
	odd	**CC2**

RS232 (continued)		
Data bits	7	**CA0**
	8	**CA1**
	9	**CA2**
Stop bits	1	**CB0**
	2	**CB1**
Handshaking	disable	**CE0**
	RTS/CTS	**CE1**
	XON/XOFF	**CE2**
ACK/NACK Protocol	disable	**CF0**
	enable	**CF3**
FIFO	disable	**EC0**
	enable	**EC1**
Inter-character delay *(ms)*		**CK00 - CK99**
RX Timeout *(100 ms)*		**CL00 - CL99**

WEDGE		
DESCRIPTION		**STRING**
Keyboard nationality	Belgian	**FJ7**
	English	**FJ4**
	French	**FJ2**
	German	**FJ3**
	Italian	**FJ1**
	Spanish	**FJ6**
	Swedish	**FJ5**
	USA	**FJ0**
Caps Lock	caps Lock ON	**FE1**
	caps Lock OFF	**FE0**
Num Lock	Toggle Num Lock	**FL1**
	Num Lock Unchanged	**FL0**
Delays	Inter-Character *(ms)*	**CK00 - CK99**
	Inter-Code *(s)*	**FG00 - FG99**

PEN		
DESCRIPTION		**STRING**
Operating mode	interpret (does not require **$+** or **$-**)	**$]**
	transparent (does not require **$+** or **$-**)	**$[**
Minimum output pulse	200µs	**DG0**
	400µs	**DG1**
	600µs	**DG2**
	800µs	**DG3**
	1 ms	**DG4**
	1.2 ms	**DG5**
Conversion to Code 39	disable	**DA0**
	enable	**DA1**
Output level	normal	**DD0**
	inverted	**DD1**
Idle level	normal	**DE0**
	inverted	**DE1**
Overflow	narrow overflow	**DH0**
	medium overflow	**DH1**
	wide overflow	**DH2**
Inter-Block delay *(100 ms)*		**CK00-CK99**

DATA FORMAT		
NOT FOR PEN EMULATION INTERFACES		
DESCRIPTION		**STRING**
Code Identifier	disable	**EB0**
	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 28.

b = Hex value of the first Custom Code Identifier character from **00** to **7F**;
FF = disable Code Identifier

c = Hex value of the second Custom Code Identifier character from **00** to **7F**;
FF = disable second character of Custom Code Identifier

x = for RS232: Hex value from **00** to **7F**

x = for WEDGE: Hex value from **00** to **9B**

DATA FORMAT (continued)		
NOT FOR PEN EMULATION INTERFACES		
DESCRIPTION		**STRING**
Code Length Tx	not transmitted	**EE0**
	transmitted	**EE1**
Field Adjustment	disabled	**EF0**
	right addition	**EF*a*0*bb***
	left addition	**EF*a*1*bb***
	right deletion	**EF*a*2*bb***
	left deletion	**EF*a*3*bb***
Field Adjustment Character		**EG*c***
Character Replacement	disable character replacement	**EO0**
	first character replacement	**EO1*acc***
	second character replacement	**EO2*acc***
	third character replacement	**EO3*acc***

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

a = ASCII character of the DATALOGIC STANDARD Code Identifier from the table on page 28.

b = Hex value of the first Custom Code Identifier character from **00** to **7F**;
FF = disable Code Identifier

c = Hex value of the second Custom Code Identifier character from **00** to **7F**;
FF = disable second character of Custom Code Identifier

POWER SAVE		
DESCRIPTION		**STRING**
Scan Rate	67 scans per sec.	**BT0**
	135 scans per sec.	**BT1**
	270 scans per sec.	**BT2**
Sleep State	disable	**BQ0**
	enable	**BQ1**
Enter Sleep Timeout *(100 ms)*		**BR00-BR99**
Standby	enable	**BM0**
	disable	**BM1**

READING PARAMETERS		
DESCRIPTION		**STRING**
Operating Mode	hand-held operation	**BP0**
	stand operation	**BP1**
Hand-Held Operation	software trigger	**BK0**
	hardware trigger	**BK1**
	automatic	**BK2**
	always on	**BK3**
	hardware trigger ready	**BK4**
Stand Operation	software trigger	**BU1**
	hardware trigger	**BU3**
	automatic	**BU0**
	always on	**BU2**
Hardware Trigger Mode	trigger active level	**BA0**
	trigger active pulse	**BA1**
Trigger-off Timeout *(s)*		**BD00 - BD99**
FLASH ON *(100 ms)*		**BB001 - BB099**
FLASH OFF *(100 ms)*		**BB101 - BB199**
Reads per Cycle	one read	**BC0**
	multiple reads	**BC1**
Safety Time *(100 ms)*		**BE00 - BE99**
Beeper Intensity	very low intensity	**BG0**
	low intensity	**BG1**
	medium intensity	**BG2**
	high intensity	**BG3**
Beeper Tone	tone 1	**BH0**
	tone 2	**BH1**
	tone 3	**BH2**
	tone 4	**BH3**
Beeper Type	monotone	**BJ0**
	bitonal	**BJ1**
Beeper Length	long	**BI0**
	short	**BI1**
PDF Decoding Recognition Intensity	low	**BW0**
	high	**BW1**
Good Read Spot - Duration	disabled	**BV0**
	short	**BV1**
	medium	**BV2**
	long	**BV3**

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

CODE SELECTION			
DESCRIPTION			**STRING**
DISABLE ALL FAMILY CODES			**AZ0**
EAN/UPC	disable EAN/UPC family		**AA0**
	EAN 8/EAN 13/UPC A/UPC E	without ADD ON	**AA1**
		with ADD ON	**AA5**
		with and without ADD ON	**AA8**
	EAN 8/EAN 13	without ADD ON	**AA3**
		with ADD ON 2 ONLY	**AAK**
		with ADD ON 5 ONLY	**AAL**
		with ADD ON 2 AND 5	**AA6**
	UPC A/UPC E	without ADD ON	**AA4**
		with ADD ON 2 ONLY	**AAM**
		with ADD ON 5 ONLY	**AAN**
		with ADD ON 2 AND 5	**AA7**
	EAN 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 length for all codes is 99 characters:

Examples:

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

1010 = 10 digit code length only.

CODE SELECTION (continued)				
DESCRIPTION				**STRING**
Codabar	disable Codabar family			**AD0**
	Standard	no start/stop character equality control nor transmission		**AD111**
		no start/stop character equality control but transmission		**AD112**
		start/stop character equality control but no transmission		**AD121**
		start/stop character equality control and transmission		**AD122**
	ABC Codabar	no start/stop character equality control but transmission		**AD212**
	Codabar ABC forced concatenation			**AD232**
	code length			**AD*xxxx***
	start/stop character case in transmission		lower case	**ADA0**
			upper case	**ADA1**
Code 128	disable Code 128 family			**AI0**
	enable Code 128 - control without transmission of check digit			**AI11**
	enable EAN 128 - control without transmission of check digit			**AI21**
	ISBT 128	enable ISBT 128		**AI31**
		enable all concatenations		**=&FNC3=<=>103d1**
		disable all concatenations		**=&FNC3=<=>103d0**
Code 93	disable Code 93 family			**AK0**
	enable Code 93 - control without transmission of check digit			**AK1**
Codablock-A	disable			**AO0**
	enable			**AO1**
Codablock-F	disable the family			**AN0**
	enable Standard			**AN1**
	enable EAN			**AN2**

xxxx = ASCII numbers that define the code length where:

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

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

The maximum code length for all codes is 99 characters:

EXAMPLES:

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

1010 = 10 digit code length only.

CODE SELECTION (continued)		
DESCRIPTION		**STRING**
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**
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**
Telepen	disable the family	**AL0**
	Numeric no check	**AL11**
	Numeric check - with tx	**AL12**
	Numeric check - no tx	**AL13**
	Alpha no check	**AL21**
	Alpha check - with tx	**AL22**
	Alpha check - no tx	**AL23**
Delta IBM	disable the family	**AH0**
	no check	**AH1**
	Type 1 check	**AH2**
	Type 2 check	**AH3**
Code 11	disable the family	**AG0**
	no check	**AG1**
	Type C with tx	**AG21**
	Type C no tx	**AG22**
	Type K with tx	**AG31**
	Type K no tx	**AG32**
	Type C and K with tx	**AG41**
	Type C and K no tx	**AG42**
Code 16K	disable	**AJ0**
	enable	**AJ1**
Code 49	disable	**AM0**
	enable	**AM1**
PDF417	disable	**AR0**
	enable	**AR1**

APPENDIX B CODE IDENTIFIER TABLE

2/5 Interleaved

2/5 normal 5 bars

EAN 8

UPC A

EAN 8 with 2 ADD ON

EAN 13 with 2 ADD ON

UPC A with 2 ADD ON

2/5 Industrial

2/5 matrix 3 bars

EAN 13

UPC E

EAN 8 with 5 ADD ON

EAN 13 with 5 ADD ON

UPC A with 5 ADD ON

UPC E with 5 ADD ON

Code 39 Full ASCII

ABC CODABAR

EAN 128

CIP/39

Code 32

UPC E with 2 ADD ON

Code 39

CODABAR

Code 128

Code 93

CIP/HR

ISBT 128

CODABLOCK-A

CODABLOCK-F EAN

Plessey Anker

Delta IBM

Code 16K

PDF417

CODABLOCK-F Standard

MSI

Plessey Standard

Telepen

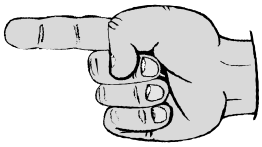
Code 11

Code 49

APPENDIX C HEX AND NUMERIC TABLE

OPEN THIS PAGE TO READ THE DESIRED

HEX AND NUMERIC SELECTIONS



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**

HEX / NUMERIC TABLE


0


1


2


3


4


5


6


7


8


9


A


B


C


D


E


F

Backspace

Cancels an incomplete configuration sequence