✦DATALOGIC™

Dragon™ D131/M131

Reference Manual

Disclaimer

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DRAGON™ D131/M131 READERS

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**Laser Output
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Trigger

Figure A – DRAGON™ D131 and M131 Series Readers

LEDs

Keypad

Display

Laser Output Window
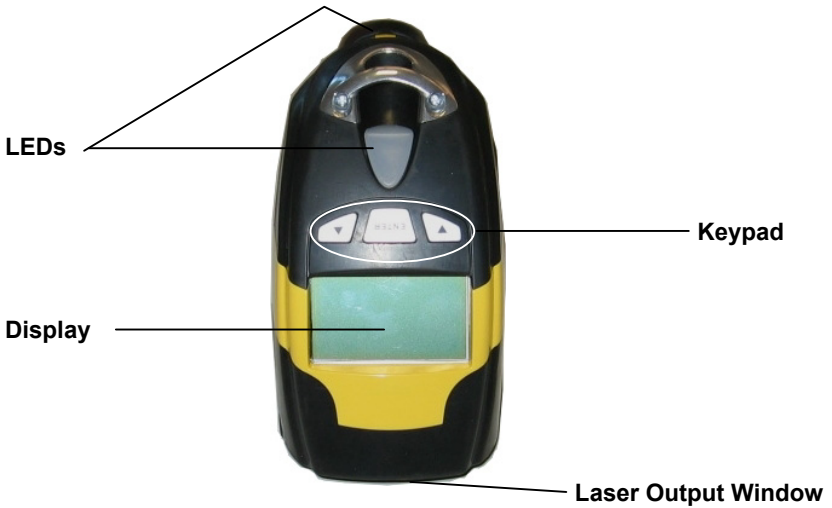
Figure B – DRAGON™ M131 Series Readers with Display

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1   INTRODUCTION

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

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

In all applications where mobility is a value, the new **Dragon™ M** represents the key to increase productivity and flexibility in the working area. **Dragon™ M** communicates through a low power, licence free radio in the 433 MHz band (910 MHz for USA version) and allows bi-directional communication between the base station and the host. **Dragon™ M** also includes a display and a 3 push-button keypad. Thanks to these features, the operator can receive information from the host, interact with the central system and visualise the code read. The cordless system offers scalable solutions to solve simple applications and complex projects:

- Point to point: each gun is associated with its own base station;

- Multipoint: up to 32 guns transmit data to one base station;

- Network: to cover a wide area, connecting up to 16 bases and 512 guns simultaneously working in automatic roaming.

Dragon™ M is 100% compatible with STAR-System™, the new Datalogic RF narrow band solution for mobile applications that provides the widest family of narrow band devices on the market.

Your **Dragon™** 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 the 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 provides all the necessary information for complete mechanical installation and system software configuration.

2 INSTALLATION

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

2.1 DRAGON™ DX31 INTERFACE CABLE CONNECTIONS

The Dragon™ D131 reader incorporates a multi-standard interface, which can be connected to a Host by plugging the correct interface cable into the connector and closing the cable cover.
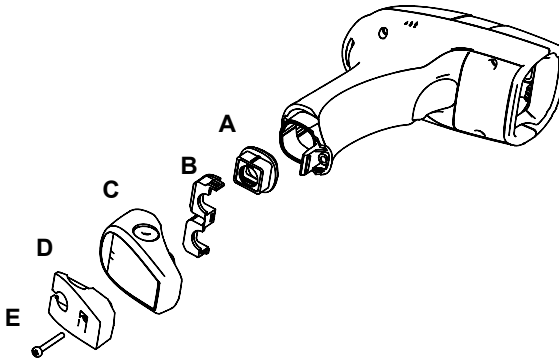
A. Rubber boot
B. Rubber boot clip
C. Cover
D. Strain relief
E. Screw

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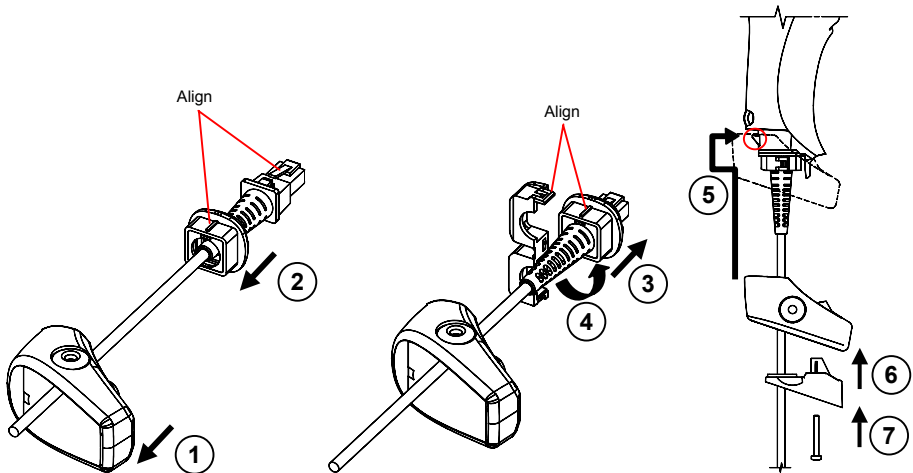
① Slip the cover over the cable.

② Push the rubber boot completely over the connector. Take care that the rubber boot mark is aligned to the connector clip.

③ Pull the rubber boot towards the connector until it covers and is flush with the connector moulding.

④ Lock the rubber boot clip around the rubber boot aligning them as shown in the figure.

⑤ Insert the assembly (connector + rubber boot locked through clip) into the reader connector. Push the cover along the cable towards the reader handle and make it hook over the yellow tooth therefore closing the handle.

⑥ Insert the strain relief into the cover.

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

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

2.2   OM-30X0 INTERFACE CABLE CONNECTIONS

Power

Interface Cable

OM-30X0 Connectors

The OM-30X0 incorporates a multi-standard interface, which can be connected to a Host by simply plugging the correct interface cable into the Host connector, placed on the base of the cradle. In addition the cradle must be connected to an external power supply.
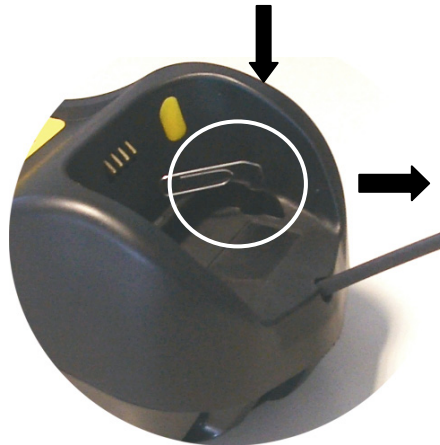
Disconnecting the OM-30X0 Cable

To disconnect the cable, insert a paper clip or other similar object into the hole corresponding to the Host connector on the body of the cradle.

Push down on the clip while unplugging the cable.

2.3 RS232 CONNECTION
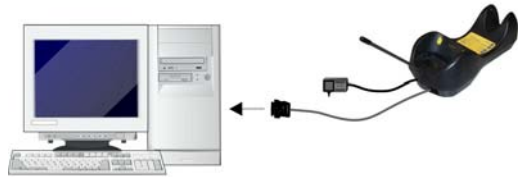
2.4 USB

(if required)

2.5   IBM USB POS

(if required)
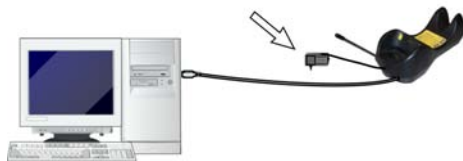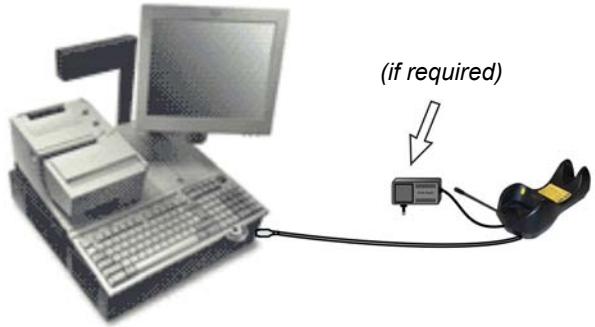
2.6   WEDGE CONNECTION
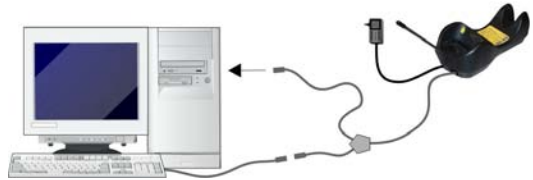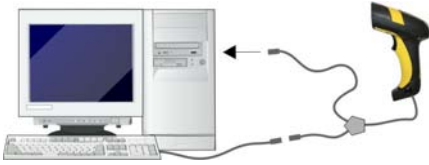
2.7   PEN EMULATION CONNECTION
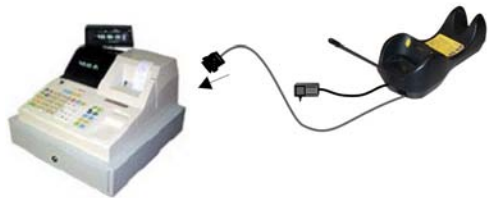
2.8   NETWORK CONNECTIONS

2.8.1   OM3000 Network Connectors

The multidrop network is a bus system which is propagated from one OM-3000 cradle to another using individual cables. This is possible thanks to the RS485 connector on the front panel of the cradle.

Power Supply

RS485
(OM-3000 only)

MULTI-INTERFACE
RS232, USB, Wedge,
PEN Emulation
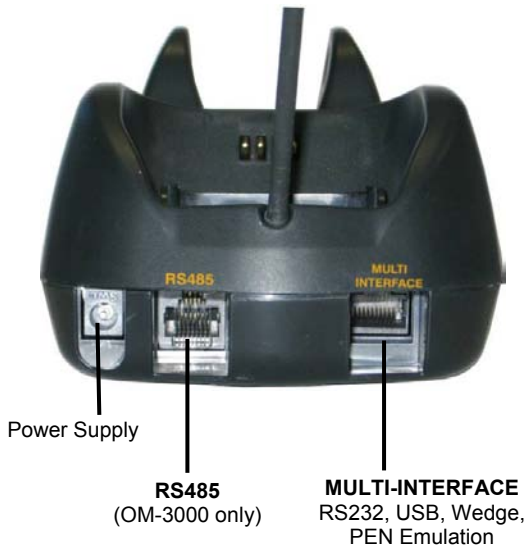
All cradles are connected together within the bus system through the Datalogic RS485 splitter cable (CAB-428, part number 90A051950), which must be inserted in the RS485 cradle connector.

Obviously cable length is to be kept to a minimum as with all bus systems.

2.8.2   Network Cabling

The Multidrop line is made using RJ45 connectors and a cable having the following specifications:

- twisted pair AWG 24 wires

- 120 Ω impedance

- maximum network cable length 1200 meters

Pin	Function
1	RS485 +
2	RS485 -
3	N.C.
4	VDC –
5	VDC –
6	N.C.
7	VDC +
8	VDC +
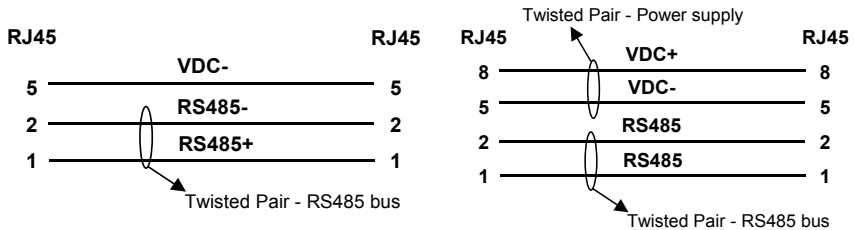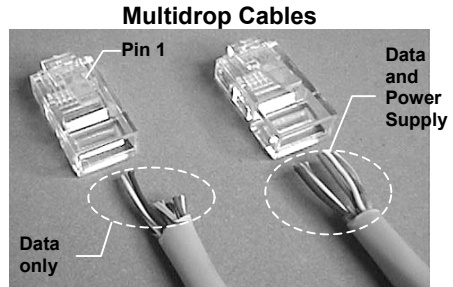
Multidrop Cables

When wiring the multidrop cables, note the following:

Pin 8 (or 7) can be connected only if the power has to be propagated from a cradle to a STARGATE™ base station or STAR-Box™ converter via the cable.

Pins 5 (or 4) should always be connected as reference ground.

To avoid excessive voltage drop, it is recommended not to propagate power between OM-3000 cradles when used as battery chargers but to supply each cradle individually. The total number of devices, which can be connected to a single power supply, depends on the power supply voltage, the wire length and resistance and therefore the voltage drop. Do NOT connect VDC+ between network devices that are individually powered.

2.8.3   Network Termination

The first and last cradles of the chain (the two ends of the bus) must be properly terminated. The cradle has an internal terminator that can be selected via jumper. For this selection you must open the device.
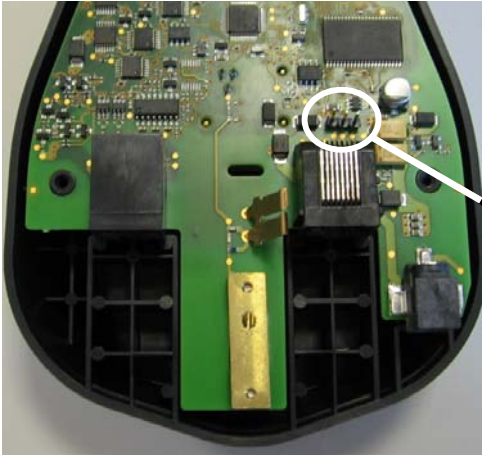
No Termination   Static   Dynamic

Terminator for Multidrop Network

Static termination works for all network configurations. However, the network is always under load even when no data transmission takes place.

Dynamic termination can be used for baud rates at or above 38400 and provides less load on the network when idle.

2.9   DRAGON™ MX31 BATTERY MAINTENANCE

2.9.1   Battery Charging

Once the system is connected and powered, you can place the Dragon™ Mx31 into the cradle to charge the battery.
When the reader is correctly inserted in the cradle, the "Reader" red LED on the cradle goes on to indicate that the battery is charging. The "Reader" green LED on the cradle goes on when the battery is completely charged.

2.9.2   Replacing Dragon™ Mx31 Batteries

To change the batteries in your Dragon™ Mx31 scanner, press the black button or unscrew the fixing screw on the handle cover and extract the battery pack from the reader handle.
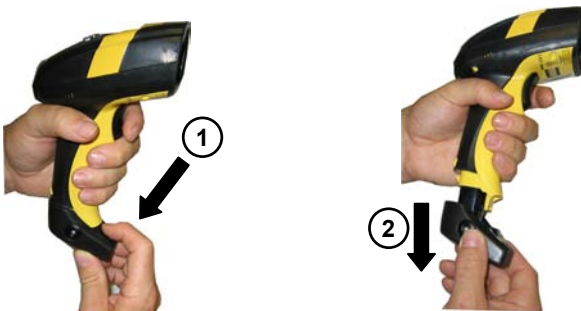
✋ **NOTE**	*When the batteries are extracted from the scanner, the timer maintains the current hour and date for about 1 minute.*

Replace the old battery pack with a new one by inserting it within the reader handle and pushing it until it clicks.

⚠ **WARNING**	*Do not incinerate, disassemble, short terminals or expose to high temperature. Risk of fire, explosion. Use specified charger only. Risk of explosion if the battery is replaced by an incorrect type. Dispose of the batteries as required by the relevant laws in force.*

2.10 MOUNTING THE OM-30X0 / C-3000 CRADLE

The cradle package contains the following items:

 OM-30X0 / C-3000 Cradle

 OM-30X0 Quick Reference / C-3000 Quick Reference

OM-3000 Antenna	2 wall-mounting lock hinges
2 adhesive strips	4 rubber feet
1 horizontal base	1 inclined base

The cradle (either OM-30X0 or C-3000) can be mounted for portable or fixed desktop usage, or it can be fixed to a wall. The horizontal base allows portable and fixed desktop usage, while the inclined base provides desktop and wall mounting guaranteeing a comfortable handling of the Dragon™ M131 reader.

OM-30X0/C-3000 Cradle mounted on the Horizontal Base

OM-30X0/C-3000 Cradle mounted on the Inclined Base

2.10.1   Desktop mounting

For desktop usage, you can mount the cradle either on the horizontal base, for reduced overall dimensions, or on the inclined base for a more ergonomic taking out and insertion of the reader onto the cradle.

Horizontal base

Mounting Tabs (4)

Mounting Holes (2)

Rubber Foot Seat (4)

Adhesive Strip Seat (2)

Cable Channels

Top View

Bottom View

Inclined base

Mounting Tabs (4)

Mounting Holes (4)

Adhesive Strip Seat (2)

Rubber Foot Seat (4)

Cable Channels

Top View

Bottom View
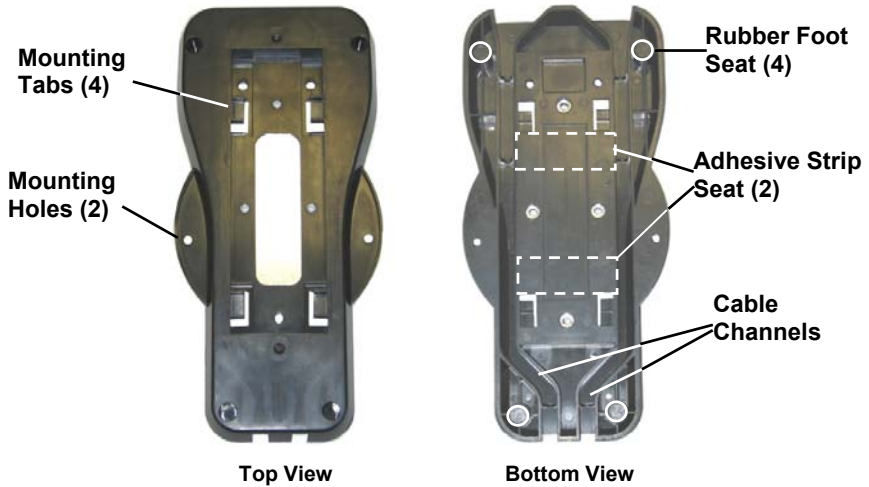
Portable Desktop Use

1. Correctly position the OM-30X0/C-3000 onto the base by sliding it along the mounting tabs until aligned.
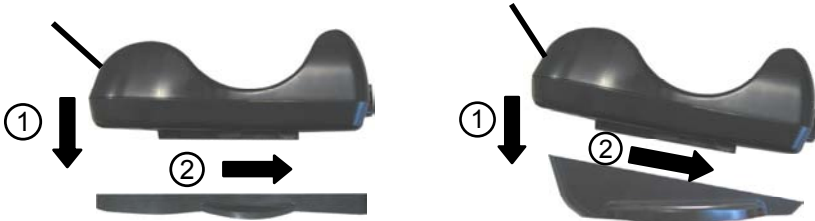
2. Carefully clean the rubber foot seats of the base to remove any impurities that could reduce adhesion.

3. Remove the protective plastic from the rubber feet and stick them onto the bottom surface of the base.

4. If mounting the OM-30X0 cradle, insert the antenna in the appropriate hole on the body of the cradle and screw it clockwise until tight.

Fixed Desktop Use

For fixed desktop installation, use the adhesive strips or fixing screws (not provided) according to your needs.

For mounting with adhesive strips:

1. Position the cradle onto the base by sliding it along the mounting tabs until aligned.

2. Carefully clean the adhesive strip seats of the base to remove any impurities that could reduce adhesion.

3. Remove the protective plastic from one side of the adhesive strips and stick them onto the base surface.

4. Position the cables to be connected to the OM-30X0/C-3000 cradle along the dedicated channels, as shown in the figures below:

Horizontal Base

Inclined Base

5. Remove the plastic from the other side of the strips and affix the base to the table.

6. If mounting the OM-30X0 cradle, insert the antenna in the appropriate hole on the body of the cradle and screw it clockwise until tight.

For mounting with screws:

1. Position the cables to be connected to the OM-30X0/C-3000 cradle along the dedicated channels, as shown in the figures below:

2. Position the base on the table and affix it by means of the screws (not provided).

3. Position the cradle on the base by sliding it along the mounting tabs until aligned.

4. If mounting the OM-30X0 cradle, insert the antenna in the appropriate hole on the body of the cradle and screw it clockwise until tight.

2.10.2 Wall Mounting

1. Remove the yellow caps and insert the two wall mounting lock hinges provided with your cradle.
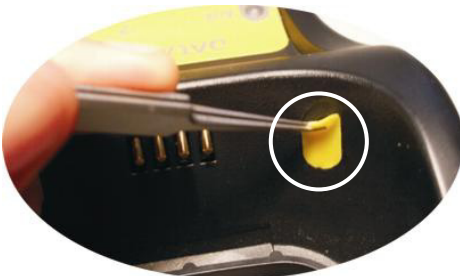
2. Position the cables to be connected to the OM-30X0/C-3000 cradle along the dedicated channels (see figures at page 14).

If using the **adhesive strips**:

3. Carefully clean the adhesive strip seats of the base to remove any impurities that could reduce adhesion.

4. Remove the protective plastic from one side of the adhesive strips and stick them onto the base surface.

5. Remove the plastic from the other side of the strips and affix the base to the wall as indicated in the figure below.

If using the **mounting screws**:

3. Using the mounting holes on the base as a pattern, mark the wall where you desire to mount the OM-30X0/C-3000.

4. Drill the appropriate size holes and insert the threaded dowels (not provided) into the holes.

5. Position the base on the wall as indicated in the figure below and affix it by means of the screws (not provided).

Inclined Base Wall-mounting

6. Attach the cradle on the base by sliding it along the mounting tabs until aligned.

7. If mounting the OM-30X0 cradle, insert the antenna in the appropriate hole on the body of the cradle and screw it clockwise until tight.

3 DRAGON™ M131 SYSTEM AND NETWORK LAYOUTS

There are two basic system layouts that can be employed: Stand Alone systems (including Point-to-Point layouts) and Multidrop STAR-System™ Networks.

3.1 STAND ALONE LAYOUTS

3.1.1 Point-to-Point Reader Layout
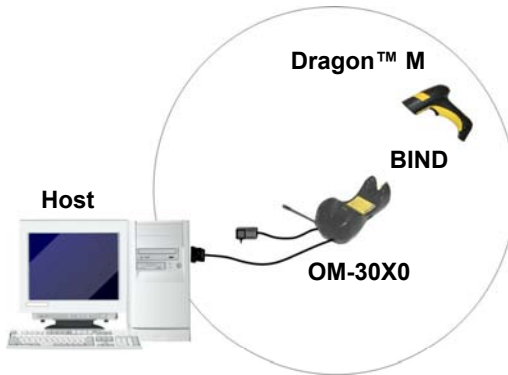
3.1.2 Stand Alone Layout with Multiple Readers
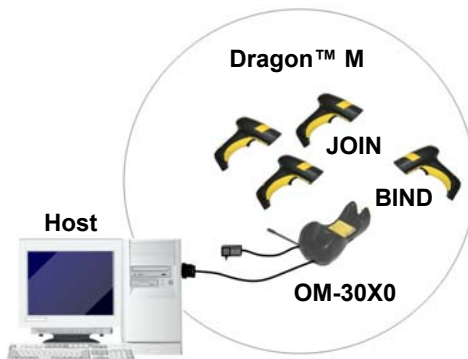
In stand alone systems, each cradle is connected to a single Host.

3.1.3   Multiple Stand Alone Layouts

Many stand alone connections can operate in the same physical area without interference, provided all readers and cradles in the system have different addresses.
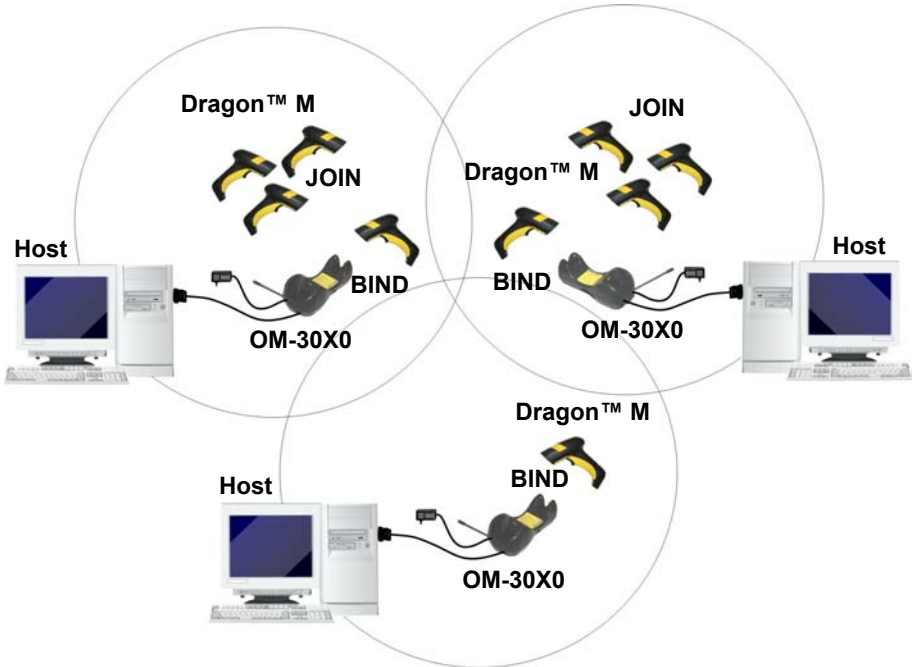
Multiple Stand Alone Systems in the Same Area

Since the cradles can communicate to multiple Dragon™ M131 readers, you might find it useful to employ one or more C-3000 battery chargers in addition to the OM-30X0 cradle, so that the battery re-charging operation can be performed for several scanners at the same time.

3.1.4   C-BOX Layout
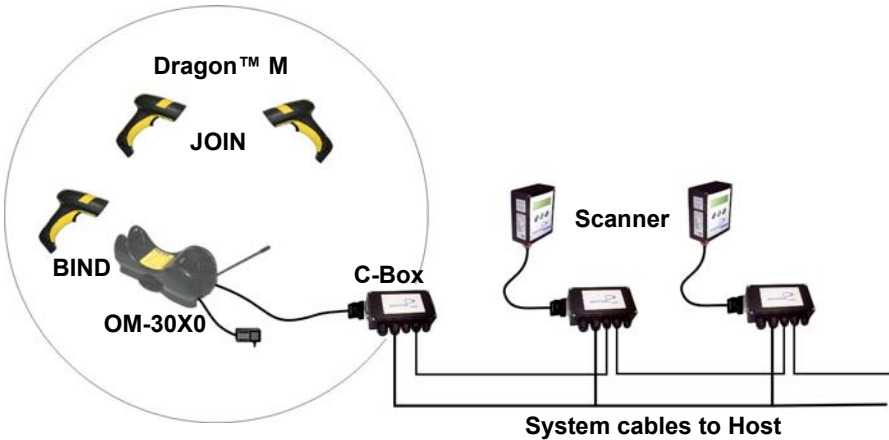
In this layout the OM-30X0 cradle is connected by a dedicated cable using the RS232 interface to a C-BOX connection box as part of a fixed scanner network. This allows the flexibility of a hand-held reading station integrated into a variety of fixed scanning applications so that all readers (both fixed and hand-held), in the system provide communications to the Host.

The various C-BOX models provide many interface types for the Host system such as RS232, RS485, Profibus.

3.2   MULTIDROP STAR-SYSTEM™ NETWORK LAYOUTS

Even though many stand alone systems can operate in the same physical area without interfering with each other, it may be desirable to bridge data from multiple base stations in a network to a single Host. Dragon™ M131 readers are compatible with STAR-System™ networks. These networks provide seamless active roaming for any RF reading device in the system.

3.2.1   Host Master Layout
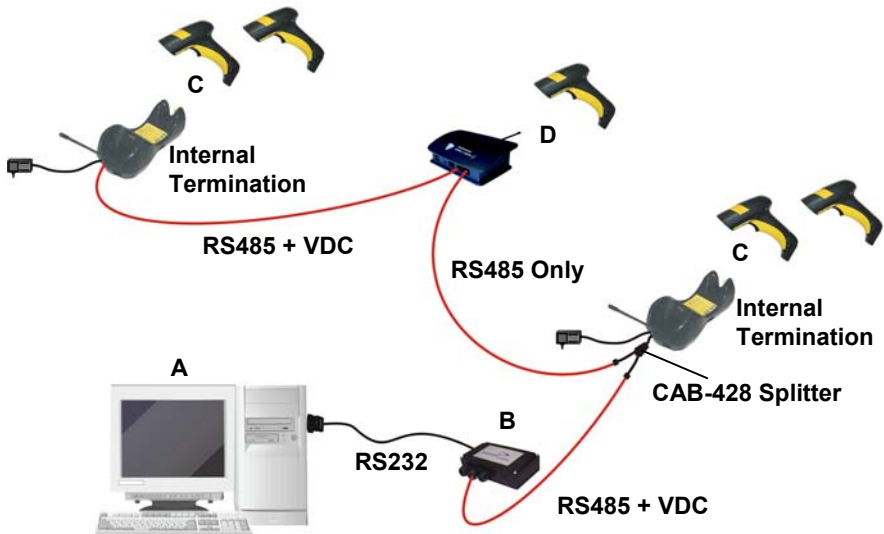
A.   Host Master with STAR-Link™
B.   STAR-Box™ converter
C.   OM-3000 slave cradles
D.   STARGATE™ base stations

Example Multidrop STAR-System™ Network with Host as Master

In this layout the Host acts as the Master using STAR-Link™ software. The Host is connected in RS232 to a STAR-Box™ converter which is connected to the first slave in the RS485 network. In this way the base stations provide communications between a single Host and all readers in the system. STARGATE™ base stations are used as slaves in this network. The Slaves at the ends of the network must be terminated (see the STARGATE™ and STAR-Box™ Installation Manuals and par. 2.8.3).

See par. 4.6 and 4.7 or the Datalogic Aladdin™ Help On-Line for system configuration specifications.

3.2.2   OM-3000 Master Layout
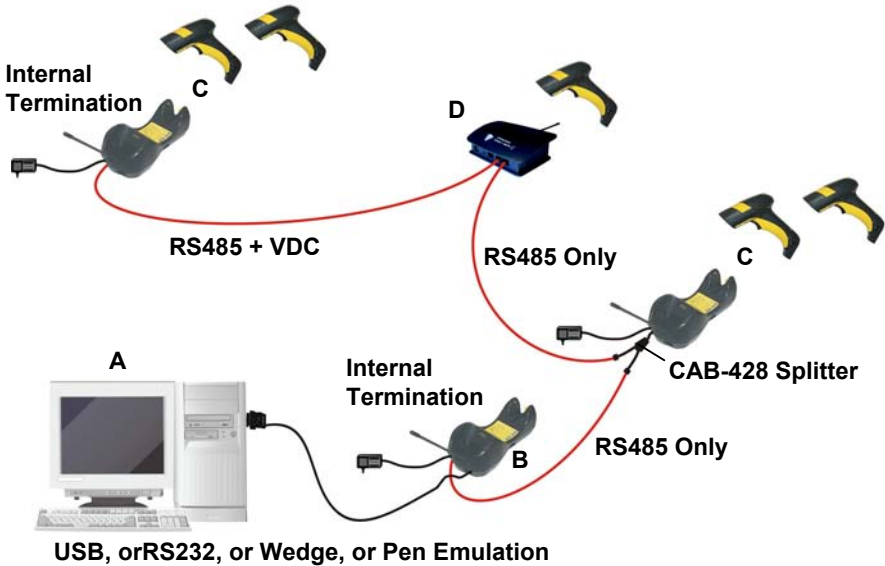
A.   Host
B.   OM-3000 Master cradle
C.   OM-3000 Slave cradles
D.   STARGATE™ base station

<p align="center">Example Multidrop STAR-System™ Network with OM-3000 as Master</p>

In this layout an OM-3000 cradle acts as the Master. The Host is connected to the OM-3000 Master using any one of the multi-standard interfaces (RS232, USB, WEDGE, or PEN Emulation). The Master is then connected to the slaves in the RS485 network. In this way the slave cradles provide communications between a single Host and all readers in the system. STARGATE™ base stations can also be used as slaves in this network. The devices at the ends of the network must be terminated (see par. **2.8.3**).

See pars. 4.6 and 4.7 or the Datalogic Aladdin™ Help On-Line for system configuration specifications.

3.2.3 Master OM-3000 Network Troubleshooting

Two diagnostic strings can be sent via RS232 from the Host to the Master cradle in order to have feedback about the network itself.

#+LSlave
Returns a list of all the Slaves recognized at boot up.

Example:
In a network where the Master cradle has address **0188** and one Slave cradle with address **0001**, the response is:

```
188
  1
```

#+Alive<xxxx>
Executes a continuous Alive request to the slave xxxx in order to monitor the performance of the connection. A diagnostic message is displayed on the Host.

Example:
If this command is sent for slave cradle with address **0032**, the response is:

```
/*32: OM-30X0 SOFTWARE RELEASE 1.00 20/10/2006*/
```
if there are no communication errors

```
/*32: FAIL*/
```
if there are communication errors.

To exit from this command, reset the system by cycling power to the Master cradle.

4 CONFIGURATION

4.1 CONFIGURATION METHODS

4.1.1 Reading Configuration Barcodes

This manual can be used for complete setup and configuration of your reader by following the setup procedures in this chapter (see par. 4.2 for an overview).

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

To configure your reader:

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

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

Reference notes describing the operation of the more complex parameters are given in chapter 5.

4.1.2 Using Datalogic Aladdin™

Datalogic Aladdin™ is a multi-platform utility program providing a quick and user-friendly configuration method via the RS232/USB-COM interface.
It also allows upgrading the software of the connected device (see the Datalogic Aladdin™ Help On-Line for more details).

4.1.3 Copy Command

A previously configured device (Master), can be used to send its configuration directly to other devices of the same type (Slaves). The particular procedure for each device is given in par. 5.14.

4.1.4 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.

4.2 SETUP PROCEDURES

For Dragon™ D131 Series readers, follow the setup procedures in pars. 4.3, and 4.8.

For Dragon™ M131 Series readers, the setup procedures depend on two basic applications, Stand Alone or STAR-System™.

Stand Alone applications allow communication with the Host by either the OM-30X0 cradle (par. 4.5), or by the STAR-Modem™ radio modem (par. 4.5.2).

STAR-System™ applications allow communication with the Host through an RS485 network by the STARGATE™ RF base station or by the OM-3000 cradle (par. 4.6 and par. 4.7).

Proceed as shown in the following diagram:
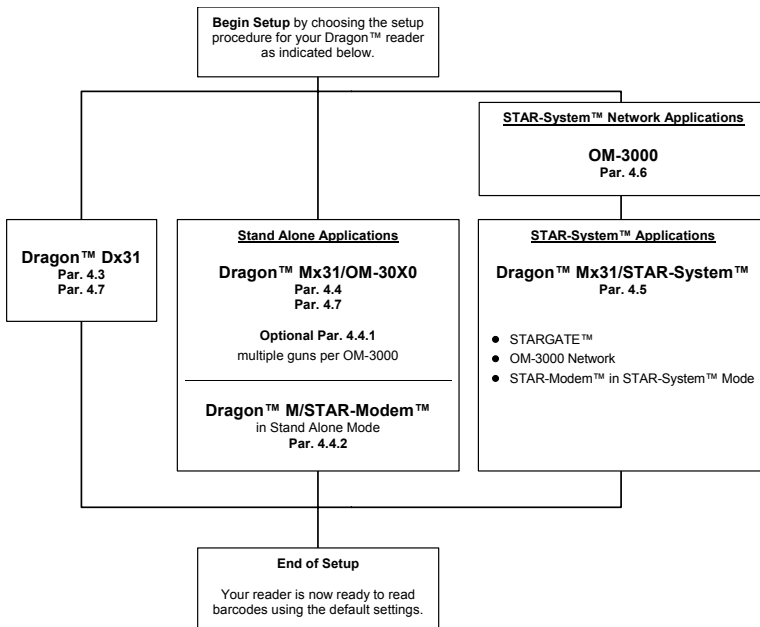
4.3 DRAGON™ D131 SETUP

1. Read the restore default parameters code below.

Restore Dragon™ D131 Default

After reading the above code, go to par. 4.8 Interface Selection.

4.4 DRAGON™ M131/OM-30X0 POINT-TO-POINT SETUP

A rapid configuration procedure has been devised for point-to-point applications where a single reader is associated exclusively with its own OM-30x0 base station and where it is not necessary to set the Date and Time parameters.

A special pre-printed bind-address label provided in the OM-30x0 base station package can be used to bind the Dragon™ M131 reader to the base station with the address coded on the label. The address is also written numerically on the label to be easily recognized. Valid addresses are in the range from 0000 to 1999. **Make sure that all cradles used in the same area have different addresses.**

To rapidly configure your point-to-point application:

1. Apply the bind-address label onto the OM-30x0 base station as indicated in the OM-30x0 Quick Reference Manual.

2. When the OM-30X0 cradle is connected and powered, read the **Bind-Address** label to pair the Dragon™ M131 to the OM-30X0 cradle.

 The green LED on the Dragon™ M131 will blink: the reader is ready to be positioned onto the cradle.

3. Firmly position the reader onto the cradle within 10 seconds, a beep will be emitted, signaling that the OM-30X0 cradle has been paired to the Dragon™ M131, and the green LED on the reader will go off.

Green LED

If it ever becomes necessary to change the reader, just read the bind-address label applied to the cradle and position the new reader onto the cradle.

Do not use multiple guns with this configuration method.

4. Configure the OM-30X0 cradle, refer to the "OM-30X0 Quick Reference".

END of procedure. YOUR READER IS NOW READY TO READ CODES.

4.5 DRAGON™ M131/OM-30X0 STAND ALONE SETUP

Read the restore default parameters code below.

1.

Restore Dragon™M131 Default

Follow the procedure below to set the radio address and bind Dragon™ M131 to the OM-30X0 cradle.

2.

Enter Configuration

3.

Set Date

+

six digits for Day, Month and Year (DDMMYY)

4.

Set Time

+

four digits for Hour and Minutes (HHMM)

5.

Set Radio Address

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

+

four digits for the Dragon™ M131 Address (from **0000** to **1999**).

All readers used in the same area must have different addresses.

6.

Exit and Save Configuration

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

7. Read the **Bind** code to pair the Dragon™ M131 to the OM-30X0 cradle.
The reader is dedicated to the cradle. Any previously **bound** reader will be excluded.

To connect several readers to the same cradle see the following paragraph 4.5.1, 'Using Multiple M Series Readers with Same Cradle'.

Bind

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

The green LED on the Dragon™ M131 will blink; the reader is ready to be inserted into the cradle.

8. Firmly insert the reader into the OM-30X0 cradle within 10 seconds, a beep will be emitted, signaling that the OM-30X0 cradle has been paired to the Dragon™ M131, and the green LED on the reader will go off.

green LED

9. Read the OM-30X0 restore default code:

Restore OM-30X0 Default

Go to par. 4.8 Interface Selection.

4.5.1 Using Multiple M-Series Readers With Same Cradle

If you want to use several M-Series readers with the same OM-30X0 cradle, you must first **Bind** the cradle with one of the readers (see previously described configuration procedure).

Successive readers can be associated with the same cradle by following the configuration procedure substituting the **Bind** command with **Join** (step 7).

7.

Join

The green LED on the Dragon™ M131 will blink: the reader is ready to be positioned onto the cradle. **Complete step 8.**

END of procedure.

⚠️ **CAUTION**	*All readers associated with the same cradle must have different addresses.*

YOUR READER IS NOW READY TO READ BARCODES.

To change the defaults see par. 4.10.

4.5.2   Dragon™ M131/STAR-Modem™ in Stand Alone Mode

To configure a Dragon™ M131 reader to communicate with STAR-Modem™ in Stand Alone Mode, follow the procedure in par. 4.5 substituting steps 6 and 7 with those below:

6.

STAR-Modem™ Address

Read the code above and the four-digit address of the STAR-Modem™.

7.

Exit and Save configuration

END of procedure.

YOUR READER IS NOW READY TO READ BARCODES.

To change the defaults see par. 4.10.

4.6   DRAGON™ M/STAR-SYSTEM™ SETUP

The following procedure allows configuring a Dragon™ M131 reader to communicate with various STAR-System™ devices such as STARGATE™ RF base stations.

1.

Restore DRAGON™ M131 Default

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

2.

Enter Configuration

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

3.

Set Date

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

+
six digits for Day, Month and Year (DDMMYY)

4.

Set Time

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

+
four digits for Hour and Minutes (HHMM)

5.   Set the connection according to the length of the codes to be read:

Code Length ≤240 Characters

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

Code Length >240 Characters
(not for systems with OM-3000 as Master)

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

6.

Set Radio Address

+

four digits from the Numeric Table in the range **0000-1999**.

All readers must have different addresses.

7.

First STAR-System™ Address

Read the code above <u>and the four-digit address</u> of the First STAR-System™ device in the system.

8.

Set Last STAR-System™ Address

Read the code above <u>and the four-digit address</u> of the Last STAR-System™ device in the system.

NOTE

Whenever the system is composed of a single base station, the first and last base station addresses (steps 7 and 8) must have the same value.

9.

Exit and Save Configuration

END of procedure.

YOUR READER IS NOW READY TO READ BARCODES.

To change the defaults see par. 4.10.

4.7   OM-3000 STAR-SYSTEM™ NETWORK SETUP

When the OM-3000 cradle model is used in an RS485 network, it must be initially configured. To do this using configuration barcodes, follow the procedure below using any Dragon™ M131 reader.

1.

Set OM-3000 Address

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

+

four digits for the OM-3000 Address (from **0000** to **1999**).

All cradles used in the network must have different addresses.

2.

Exit and Save configuration

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

3. Read the **Bind** code to pair the Dragon™ M131 to the OM-3000 cradle for configuration.

Bind

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

The green LED on the Dragon™ M131 will blink; the reader is ready to be inserted into the cradle.

4. Firmly insert the reader into the OM-3000 cradle within 10 seconds, a beep will be emitted, signaling that the OM-3000 cradle has been paired to the Dragon™ M131, and the green LED on the reader will go off.

green LED

5. Read the OM-3000 restore default code:

Restore OM-3000 Default

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

6. Read the desired Enable Network code.

Enable RS485 Master

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

Enable RS485 Slave

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

END of procedure.

For **Host Master Network Layouts** (see par. 3.2), The network configuration parameters can be changed through STAR-Link™ software running on the PC. Star-Link™ software can be downloaded for free from the web site: www.datalogic.com.

For **OM-3000 Master Network Layouts** (see par. 3.2), The network configuration parameters can be changed either through the Datalogic Aladdin™ configuration software running on the PC or by reading the barcode selections in the Network section of this manual starting on page 65. If using configuration barcodes, it is advised to completely configure the cradles before reconfiguring the Dragon™ M131 reader (see below).

☝ **NOTE**	*After completing the OM-3000 cradle configuration and connections in the network, you must reconfigure the Dragon™ M131 reader using the STAR-System™ procedure in par. 4.6.*

4.8   INTERFACE SELECTION

Read the interface selection code for your application.

RS232

Standard

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

POS TERMINALS

Nixdorf Mode A

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

Fujitsu

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

ICL Mode

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

For POS terminal default settings refer to par. 5.15.

PEN

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

WEDGE

IBM AT or PS/2 PCs

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

IBM XT

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

PC Notebook

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

IBM SURE1

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

IBM Terminal 3153

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

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

To select the interface for these IBM Terminals, read the correct 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

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

4.9   USB READER CONFIGURATION

The USB interface is available for Dragon D131, OM-30x0 and C-3000 devices and is compatible with the following Operating Systems:

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

USB Start-up

As with all USB devices, upon connection, the Host performs several checks by communicating with the device. During this phase normal operations are suspended (the LED on the Dragon™ D131 reader blinks). Two basic conditions must be met before the device is ready, the correct USB driver must be loaded and sufficient power must be supplied to the reader.

First Start-Up

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

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

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

① Connect device to Host

reader LED blinks

Load drivers
(if requested)

reader LED off - BEEP OK

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

Load drivers
(if requested)

Read test codes.
Device is READY

② At this point you can read the USB interface configuration code according to your application. Load drivers from the O.S. (if requested). When configuring the USB-COM interface, the relevant files and drivers must be installed from the USB Device Installation software, which can be downloaded from the web page http://www.datalogic.com.

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

USB

USB-KBD

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

USB-KBD-ALT-MODE

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

USB-KBD-APPLE

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

USB-COM*

||| || || ||||||| | ||||||| ||||| ||| |||
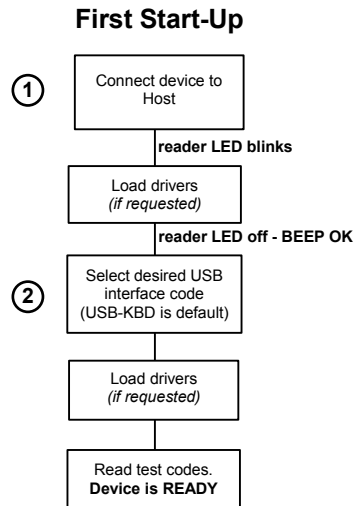
USB-IBM-Table Top

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

USB-IBM-Hand Held

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

* When configuring USB-COM, the relevant files and drivers must be installed from the USB Device Installation software, which can be downloaded from the web site http://www.datalogic.com.

4.10 CHANGING DEFAULT SETTINGS

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

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

The first four groups are for Standard Interface parameter configuration for all Dragon™ D131 series readers and Dragon™ M131/OM-30X0 Stand Alone configurations only:

RS232

USB

WEDGE

PEN EMULATION

NETWORK PARAMETERS are available only for OM-3000 Network configurations.

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. It cannot be used with Pen Emulation connections.

RADIO PARAMETERS (M131 series only) allow configuration of radio control parameters.

DISPLAY PARAMETERS (some M131 series models only) allow configuration of reader display parameters.

RS232 PARAMETERS

> **All Dragon™ D131 Series readers**
> **+**
> **Dragon™ M131/OM-30X0 configurations only**

⊙   *BAUD RATE*   ⊙

⊙   *PARITY*   ⊙

⊙   *DATA BITS*   ⊙

⊙   *STOP BITS*   ⊙

⊙   *HANDSHAKING*   ⊙

⊙   *ACK/NACK PROTOCOL*   ⊙

⊙   *FIFO*   ⊙

⊙   *INTER-CHARACTER DELAY*   ⊙

⊙   *RX TIMEOUT*   ⊙

⊙   *SERIAL TRIGGER LOCK*   ⊙

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

2.   Read configuration codes from the desired groups.

      ☞   = Read the code and follow the procedure given

      ◆   = Default value

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

RS232

BAUD RATE

300 baud

‖‖||‖|‖|‖‖‖‖

600 baud

‖‖||‖|‖|‖‖‖‖

1200 baud

‖‖||‖|‖|‖‖‖‖

2400 baud

‖‖||‖|‖|‖‖‖‖

4800 baud

‖‖||‖|‖|‖‖‖‖

◆ 9600 baud

‖‖||‖|‖|‖‖‖‖

19200 baud

‖‖||‖|‖|‖‖‖‖

38400 baud

‖‖||‖|‖|‖‖‖‖

PARITY

◆ none

‖‖||‖|‖|‖‖‖‖

even parity

‖‖||‖|‖|‖‖‖‖

odd parity

‖‖||‖|‖|‖‖‖‖

RS232

DATA BITS

7 bits

‖‖‖‖‖‖‖‖‖‖‖

◆ 8 bits

‖‖‖‖‖‖‖‖‖‖

9 bits

‖‖‖‖‖‖‖‖‖‖

STOP BITS

◆ 1 stop bit

‖‖‖‖‖‖‖‖‖‖

2 stop bits

‖‖‖‖‖‖‖‖‖‖

HANDSHAKING

◆ disable

‖‖‖‖‖‖‖‖‖‖

hardware (RTS/CTS)

‖‖‖‖‖‖‖‖‖‖

software (XON/XOFF)

‖‖‖‖‖‖‖‖‖‖

RTS always ON

‖‖‖‖‖‖‖‖‖‖

See par. 5.1.1 for details.

ACK/NACK PROTOCOL

◆ disable

enable

See par. 5.1.2 for details, particularly on implementing this parameter with Dragon™ M131.

FIFO

disable

◆ enable

See par. 5.1.3 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. 5.1.4 for details.

SERIAL TRIGGER LOCK

◆ disabled

enable and select characters

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

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

USB PARAMETERS

⊙   ***USB-COM***   ⊙

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

⊙   ***USB-KBD***   ⊙

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

⊙   ***USB-IBM***   ⊙

No parameter selection required.

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

2.   Read configuration codes from the desired groups.

      ☞   = Read the code and follow the procedure given

      ◆   = Default value

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

USB-COM

HANDSHAKING

◆ disable

hardware (RTS/CTS)

software (XON/XOFF)

RTS always ON

See par. 5.1.1 for details.

ACK/NACK PROTOCOL

◆ disable

enable

See par. 5.1.2 for details, particularly on implementing this parameter with Dragon™ M131.

FIFO

disable

◆ enable

See par. 5.1.3 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. 5.1.4 for details.

SERIAL TRIGGER LOCK

◆ disabled

‖‖‖ ‖ ‖ ‖‖ ‖‖‖‖‖‖‖ ‖‖

enable and select characters

‖‖‖ ‖ ‖ ‖‖ ‖‖‖‖‖‖ ‖‖

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

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

*K*EYBOARD *N*ATIONALITY

Not Available for USB-KBD-ALT-MODE Interface

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

Belgian

‖‖|‖|‖‖‖‖‖‖‖‖‖

English

‖‖|‖|‖‖‖‖‖‖‖‖

French

‖‖|‖|‖‖‖‖‖|‖‖

German

‖‖|‖|‖‖‖‖‖‖‖‖

Italian

‖‖|‖|‖‖‖‖‖|‖‖

Spanish

‖‖|‖|‖‖‖‖‖‖‖

Swedish

‖‖|‖|‖‖‖‖‖‖‖

◆ USA

‖‖|‖|‖‖‖‖‖|‖‖

USB-KBD

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

Japanese

‖‖‖ ‖ ‖‖‖‖ ‖‖‖‖‖ ‖‖‖

Russian (Latin)

‖‖‖ ‖ ‖ ‖‖‖‖ ‖‖‖‖ ‖‖

Russian (Cyrillic)

‖‖‖ ‖ ‖‖‖‖ ‖‖ ‖‖‖‖ ‖‖‖

Hungarian

‖‖‖ ‖ ‖ ‖‖‖‖ ‖ ‖‖‖‖ ‖‖

Slovenian, Croatian,
Serbian (Latin)

‖‖‖ ‖ ‖‖‖‖ ‖ ‖‖‖‖ ‖‖‖

Romanian

‖‖‖ ‖ ‖ ‖‖‖‖ ‖‖ ‖ ‖‖‖‖ ‖

Czech Republic

‖‖‖ ‖ ‖‖‖‖ ‖‖ ‖‖‖‖ ‖‖‖

FIFO

disable

‖‖‖ ‖ ‖ ‖ ‖ ‖‖‖‖‖‖ ‖‖

◆ enable

‖‖‖ ‖ ‖ ‖ ‖ ‖‖‖‖ ‖‖‖ ‖‖

See par. 5.1.3 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

INTER-CODE DELAY

delay between codes transmitted to Host

‖‖│││‖│‖│‖‖‖

Read 2 numbers from the table where:

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

◆ delay disabled

USB KEYBOARD SPEED

◆ Normal

‖│‖‖‖‖│‖│‖│‖│‖│‖‖│

Fast

‖│‖‖‖‖│‖│‖│‖│‖│‖‖│

WEDGE PARAMETERS

All Dragon™ D131 Series readers
+
Dragon™ M131/OM-30X0 configurations only

⊙   *KEYBOARD NATIONALITY*   ⊙

⊙   *CAPS LOCK*   ⊙

⊙   *CAPS LOCK AUTO-RECOGNITION*   ⊙

⊙   *NUM LOCK*   ⊙

⊙   *INTER-CHARACTER DELAY*   ⊙

⊙   *INTER-CODE DELAY*   ⊙

⊙   *KEYBOARD SETTING*   ⊙

⊙   *WEDGE CONTROL CHARACTER EMULATION*   ⊙

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

2.   Read configuration codes from the desired groups.

☞   = Read the code and follow the procedure given

◆   = Default value

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

WEDGE

KEYBOARD NATIONALITY

Belgian

‖‖ ‖ ‖ ‖‖‖ ‖‖‖‖‖ ‖‖

English

‖‖ ‖ ‖ ‖‖‖ ‖‖‖‖‖ ‖‖

French

‖‖ ‖ ‖ ‖‖‖ ‖‖‖ ‖‖ ‖‖

German

‖‖ ‖ ‖ ‖‖‖ ‖‖‖‖‖ ‖‖

Italian

‖‖ ‖ ‖ ‖‖‖ ‖‖‖‖ ‖ ‖‖

Spanish

‖‖ ‖ ‖ ‖‖‖ ‖‖‖‖‖ ‖‖

Swedish

‖‖ ‖ ‖ ‖‖‖ ‖‖‖‖‖ ‖‖

◆ USA

‖‖ ‖ ‖ ‖‖‖ ‖‖‖ ‖‖ ‖‖

WEDGE

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

Japanese

‖‖‖‖‖‖‖‖‖‖

Russian (Latin)

‖‖‖‖‖‖‖‖‖‖

Russian (Cyrillic)

‖‖‖‖‖‖‖‖‖‖

Hungarian

‖‖‖‖‖‖‖‖‖‖

Slovenian, Croatian,
Serbian (Latin)

‖‖‖‖‖‖‖‖‖‖

Romanian

‖‖‖‖‖‖‖‖‖‖

Czech Republic

‖‖‖‖‖‖‖‖‖‖

CAPS LOCK

◆ caps lock OFF

‖‖‖‖‖‖‖‖‖‖

caps lock ON

‖‖‖‖‖‖‖‖‖‖

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

Note: Caps lock manual configuration is ignored when Caps Lock Auto-Recognition is enabled.

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

CAPS LOCK AUTO-RECOGNITION (IBM AT COMPATIBLE ONLY)

disable

‖‖‖‖‖‖‖‖‖‖

◆ enable

‖‖‖‖‖‖‖‖‖‖

NUM LOCK

toggle num lock

‖‖‖‖‖‖‖‖‖

◆ num lock unchanged

‖‖‖‖‖‖‖‖‖

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

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

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

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

INTER-CHARACTER DELAY

delay between characters transmitted to Host

‖‖‖‖‖‖‖‖

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

◆ delay disabled

INTER-CODE DELAY

☞

delay between codes transmitted to Host

‖‖‖‖‖‖‖‖‖‖

Read 2 numbers from the table where:

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

◆ delay disabled

KEYBOARD SETTING

ALPHANUMERIC KEYBOARD SETTING

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

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

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

Press and release a key to set it.

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

Example:

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

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

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

☞

setting the alphanumeric keyboard

‖‖‖‖‖‖‖‖‖‖

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

WEDGE

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

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

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

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

Do not place the reader onto the OM-30X0 cradle during this procedure. Otherwise, the battery charging will occur modifying the LEDs functioning.

CAUTION

WEDGE

CONTROL CHARACTER EMULATION

◆ Ctrl + Shift + Key

Ctrl + Key

PEN EMULATION

**All Dragon™ D131 Series readers
+
Dragon™ M131/OM-30X0 configurations only**

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

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

2. Read configuration codes from the desired groups.

◆ = Default value

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

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.

MINIMUM OUTPUT PULSE

high resolution code
emulation

200 μs

‖‖‖ ‖‖ ‖ ‖ ‖‖‖‖‖ ‖‖

400 μs

‖‖‖ ‖‖ ‖‖ ‖‖‖‖‖ ‖ ‖‖‖

◆ 600 μs

‖‖‖ ‖‖ ‖ ‖ ‖‖‖‖ ‖‖ ‖‖‖

800 μs

‖‖‖ ‖‖ ‖ ‖ ‖‖‖‖ ‖ ‖‖‖

1 ms

‖‖‖ ‖‖ ‖ ‖ ‖‖‖‖ ‖‖ ‖‖‖

1.2 ms

‖‖‖ ‖‖ ‖ ‖ ‖‖‖‖ ‖‖ ‖‖‖

low resolution code
emulation
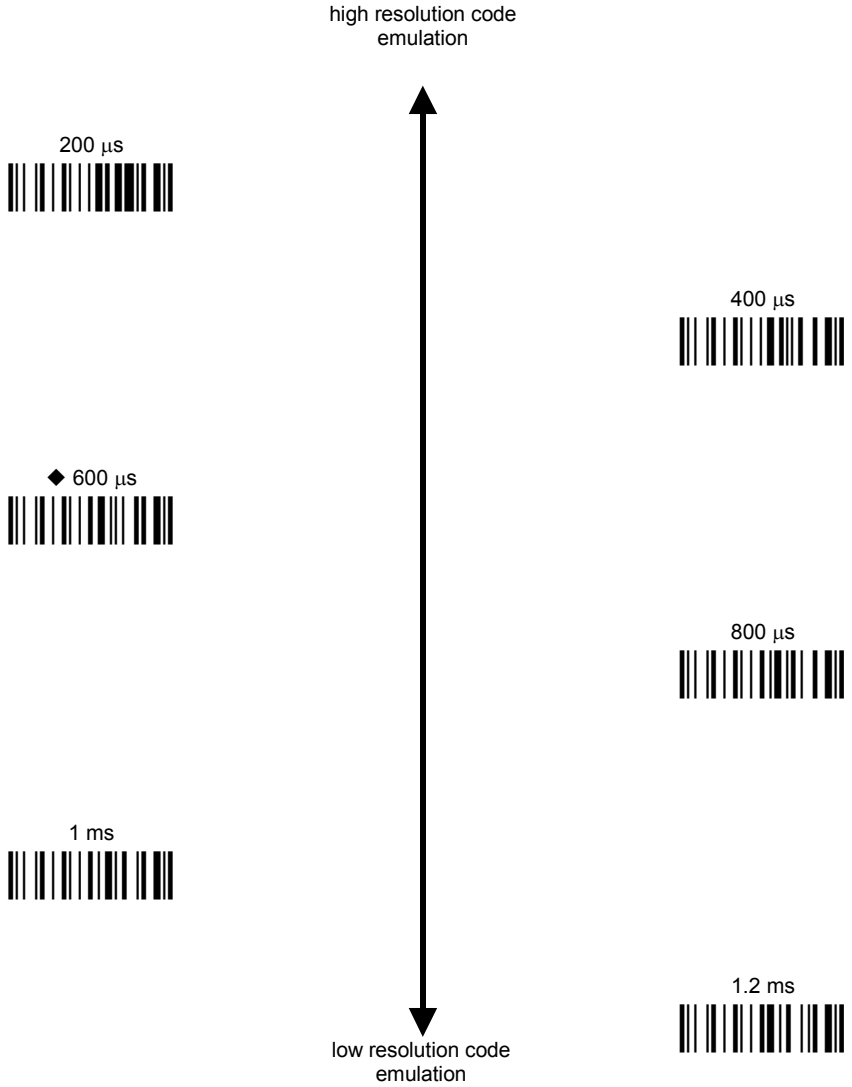
See par. 5.2.1 for details.

CONVERSION TO CODE 39 (D131 SERIES ONLY)

◆ disable conversion to
Code 39

‖‖‖‖‖‖‖‖‖‖

Transmits codes in their
original format.

enable conversion to Code 39

‖‖‖‖‖‖‖‖‖‖

Converts codes read into
Code 39 format.

See par. 5.2.2 for details.

CONVERSION TO CODE 39 AND CODE 128 (M131 SERIES ONLY)

◆ enable conversion to
Code 39

‖‖‖‖‖‖‖‖‖‖

Converts codes read into
Code 39 format.

enable conversion to
Code 128

‖‖‖‖‖‖‖‖‖‖

Converts codes read into
Code 128 format.

See par. 5.2.2 for details.

OVERFLOW

narrow

‖‖‖‖‖‖‖‖‖‖

◆ medium

‖‖‖‖‖‖‖‖‖‖

wide

‖‖‖‖‖‖‖‖‖‖

PEN EMULATION

See par. 5.2.3 for details.

OUTPUT LEVEL

◆ normal

‖‖ ‖‖ ‖ ‖ ‖‖‖‖‖‖‖

(white = logic level 0)

inverted

‖‖ ‖‖ ‖ ‖ ‖‖‖‖‖‖

(white = logic level 1)

See par. 5.2.4 for details.

IDLE LEVEL

◆ normal

‖‖ ‖‖ ‖ ‖ ‖‖‖‖ ‖‖

(black level)

inverted

‖‖ ‖‖ ‖ ‖ ‖‖‖‖ ‖‖

(white level)

See par. 5.2.4 for details.

INTER-BLOCK DELAY

☞

delay between character blocks transmitted to Host

‖‖ ‖ ‖ ‖‖‖ ‖‖‖

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

◆ delay disabled

See par. 5.2.5 for details.

NETWORK PARAMETERS

> **OM-3000 model configurations only**

⊙	*RS485 NETWORK*	⊙
⊙	*NETWORK BAUD RATE*	⊙
⊙	*SLAVE ADDRESS RANGE*	⊙
⊙	*NETWORK WARNING MESSAGE*	⊙
⊙	*RECEPTION WARNING MESSAGE*	⊙
⊙	*MASTER CRADLE HEADER*	⊙
⊙	*MASTER CRADLE TERMINATOR*	⊙

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

2. Read configuration codes from the desired groups.

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

RS485 NETWORK

◆ disable RS485 network

‖‖ ‖ ‖‖‖ ‖‖‖‖ ‖ ‖‖

enable RS485 slave

‖‖ ‖ ‖‖‖ ‖‖‖‖‖ ‖‖

enable RS485 master

‖‖ ‖ ‖‖‖ ‖‖‖‖‖ ‖‖

See par. 3.2 for details.

NOTE	*If an OM-3000 cradle is errantly configured as a Slave but not connected to a network, it may not be able to receive further commands from the gun. In this case it can be reconfigured by executing the bind procedure, which returns the cradle to Stand Alone configuration.*

NETWORK BAUD RATE

9600

‖‖ ‖‖‖ ‖ ‖ ‖‖‖ ‖‖ ‖‖

19200

‖‖ ‖‖‖ ‖ ‖ ‖‖‖‖‖ ‖‖‖

◆ 38400

‖‖ ‖‖‖ ‖ ‖ ‖‖‖‖ ‖‖ ‖‖

NETWORK PARAMETERS

SLAVE ADDRESS RANGE

First Address

Read the code above <u>and the four-digit address</u> of the First Slave device in the system.

Last Address

Read the code above <u>and the four-digit address</u> of the Last Slave device in the system.

See par. 5.3.1 for details.

NETWORK WARNING MESSAGE

◆ network warning
message not transmitted

network warning message
transmitted

See par. 5.3.2 for details.

RECEPTION WARNING MESSAGE

reception warning message
not transmitted

◆ reception warning
message transmitted

See par. 5.3.3 for details.

MASTER CRADLE HEADER

◆ no header

one character header

two character header

three character header

four character header

five character header

six character header

seven character header

eight character header

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

Valid characters are in the range: **00-FE**

Example:

four character header

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

For more details about default and WEDGE Interface Extended Keyboard values, see par. 5.3.4, 5.4.1 and 5.4.2.

MASTER CRADLE 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.

Valid characters are in the range: **00-FE**

Example:

two character terminator

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

For more details about default and WEDGE Interface Extended Keyboard values, see par. 5.3.4, 5.4.1 and 5.4.2.

DATA FORMAT

> **NOT FOR PEN INTERFACES**

⊙	*CODE IDENTIFIER*	⊙
⊙	*CUSTOM CODE IDENTIFIER*	⊙
⊙	*HEADER*	⊙
⊙	*TERMINATOR*	⊙
⊙	*SPECIAL KEYS*	⊙
⊙	*FIELD ADJUSTMENT*	⊙
⊙	*FIELD ADJ. CHARACTER*	⊙
⊙	*CODE LENGTH TX*	⊙
⊙	*CHARACTER REPLACEMENT*	⊙
⊙	*ADDRESS STAMPING*	⊙
⊙	*ADDRESS DELIMITER*	⊙
⊙	*TIME STAMPING*	⊙
⊙	*TIME DELIMITER*	⊙

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

2. Read configuration codes from the desired groups.

    ☞ = Read the code and follow the procedure given

    ◆ = Default value

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

DATA FORMAT

CODE IDENTIFIER TABLE			
CODE	**AIM STANDARD**	**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	
MSI	] M *y*	Z	
Code 11	] H *y*	b	
Code 16K	] K 0	p	
Code 49	] T *y*	q	
RSS Expanded Linear and Stacked	] e 0	t	
RSS Limited	] e 0	v	
RSS 14 Linear and Stacked	] e 0	u	

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

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

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

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

CODE IDENTIFIER

◆ disable

‖‖‖‖‖‖‖‖‖‖‖

Datalogic standard

‖‖‖‖‖‖‖‖‖‖‖

AIM standard

‖‖‖‖‖‖‖‖‖‖‖

custom

‖‖‖‖‖‖‖‖‖‖‖

CUSTOM CODE IDENTIFIER

define custom code identifier(s)

‖‖‖‖‖‖‖‖‖

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

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

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

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

define custom code identifier(s)   Code 39

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

HEADER

no header

one character header

two character header

three character header

four character header

five character header

six character header

seven character header

eight character header

After selecting **one** of the desired Header codes, read the character(s) from the HEX table. Valid characters are in the range **00-FE.** For Wedge and USB-KBD interfaces, it is also possible to read the **Special Key(s)** on page 75.

Example:

four character header

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

For more details see par. 5.4.1 and par. 5.4.2.

DATA FORMAT

TERMINATOR

no terminator

‖‖ ‖ ‖‖ ‖ ‖‖‖‖‖‖‖ ‖

one character terminator

☞ ‖‖ ‖ ‖‖‖ ‖‖‖‖‖‖ ‖‖

two character terminator

☞ ‖‖ ‖ ‖‖ ‖ ‖‖‖‖‖‖ ‖‖

three character terminator

☞ ‖‖ ‖ ‖‖ ‖ ‖‖‖‖‖‖ ‖‖

four character terminator

☞ ‖‖ ‖ ‖‖ ‖ ‖‖‖‖‖ ‖‖‖

five character terminator

☞ ‖‖ ‖ ‖‖ ‖ ‖‖‖‖‖ ‖‖ ‖‖‖

six character terminator

☞ ‖‖ ‖ ‖‖ ‖ ‖‖‖‖‖ ‖‖ ‖‖

seven character terminator

☞ ‖‖ ‖ ‖‖ ‖ ‖‖‖‖‖‖ ‖‖ ‖‖

eight character terminator

☞ ‖‖ ‖ ‖‖ ‖ ‖‖‖‖‖‖ ‖ ‖‖

After selecting **one** of the desired Header codes, read the character(s) from the HEX table. Valid characters are in the range **00-FE.** For Wedge and USB-KBD interfaces, it is also possible to read the **Special Key(s)** on page 75.

Example:

two character terminator

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

SPECIAL KEYS

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

NOTE

It is necessary to define each Special Key by following the procedure given in par. 5.4.2.

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

Special Key 1

Special Key 2

Special Key 3

Special Key 4

Special Key 5

FIELD ADJUSTMENT

◆ disable field adjustment

‖‖‖‖‖‖‖‖‖‖

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

① Read the enable field adjustment code:

enable field adjustment

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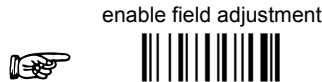
② Select the code type from the <u>Code Identifier Table</u> in Appendix B.

③ Select the type of adjustment to perform:

right addition

‖‖‖‖‖‖‖‖

left addition

‖‖‖‖‖‖‖‖

right deletion

‖‖‖‖‖‖‖‖

left deletion

‖‖‖‖‖‖‖‖

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

Conditions:

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

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

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

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

enable field adjustment   Code 39   right addition

Read   ‖‖‖‖‖‖‖‖   +   ‖‖‖‖‖‖‖   +   ‖‖‖‖‖‖‖   +   **04**

FIELD ADJUSTMENT CHARACTER

① Read the field adjustment character code:

field adjustment character

☞

② Read the hexadecimal value corresponding to the character you want to use for field adjustment. Valid characters are in the range **00-FE**. For Wedge and USB-KBD interfaces, it is also possible to read the **Special Key(s)** on page 75.

Example:

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

field adjustment character

Read   + **41**

CODE LENGTH TX

◆ code length not transmitted

code length transmitted in variable-digit format

code length transmitted in fixed 4-digit format

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

CHARACTER REPLACEMENT

◆ disable character replacement

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

① Read one of the following character replacement codes:

first character replacement

☞

second character replacement

☞

third character replacement

☞

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

③ From the Hex/Numeric Table read two characters corresponding to the Hex value (**00**-**FE**), which identifies the character to be replaced. For Wedge and USB-KBD interfaces, it is also possible to read the **Special Key(s)** on page 75.

④ From the Hex/Numeric Table read two characters corresponding to the Hex value (**00**-**FE**) which identifies the new character to replace. For Wedge and USB-KBD interfaces, it is also possible to read the **Special Key(s)** on page 75.
FF = the character to be replaced will be substituted with no character, that is, it will be removed from the code.

Example:

The following strings define:

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

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

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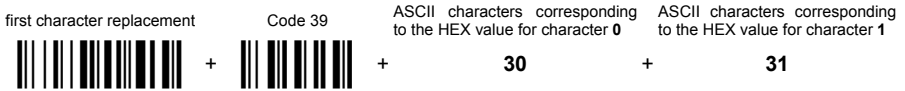
For Code 39 codes containing the string "**0**123", the contents transmitted will be "**1**123".

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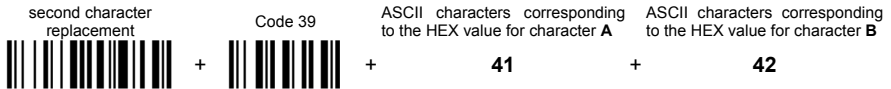
For Code 39 codes containing the string "**A**BCD", the contents transmitted will be "**B**BCD".

DATA FORMAT

ADDRESS STAMPING (M131 SERIES ONLY)

◆ disable reader address stamping

◆ disable cradle address stamping

enable reader address stamping

enable cradle address stamping

See par. 5.4.3 for details.

ADDRESS DELIMITER (M131 SERIES ONLY)

◆ disable reader address delimiter

◆ disable cradle address delimiter

enable reader address delimiter and select characters

enable cradle address delimiter and select characters

Read 2 HEX characters in the range **00-FE**. | Read 2 HEX characters in the range **00-FE**.

See par. 5.4.4 for details.

DATA FORMAT

TIME STAMPING (M131 SERIES ONLY)

◆ disable

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

hour/minutes/seconds
month/day/year

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

hour/minutes/seconds
day/month/year

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

hour/minutes/seconds

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

month/day/year

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

day/month/year

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

See par. 5.4.5 for details.

TIME STAMPING DELIMITER (M131 SERIES ONLY)

◆ disable

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

☞

select delimiter

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

Read 2 HEX characters in the range **00-FE**.

See par. 5.4.6 for details.

POWER SAVE

⊙   *SLEEP STATE*   ⊙

⊙   *ENTER SLEEP TIMEOUT*   ⊙

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

2.   Read configuration codes from the desired groups.

☞   = Read the code and follow the procedure given

◆   = Default value

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

POWER SAVE

SLEEP STATE

◆ disable

‖‖‖‖‖‖‖‖‖‖

enable

‖‖‖‖‖‖‖‖‖‖

See par. 5.5.1 for details.

For M131 series readers, sleep state is entered immediately after reading a code and is not configurable.

ENTER SLEEP TIMEOUT

enter sleep timeout

‖‖‖‖‖‖‖‖‖

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

◆ enter sleep timeout = 0.6 sec.

See par. 5.5.2 for details.

READING PARAMETERS

⊙	*TRIGGER TYPE*	⊙
⊙	*TRIGGER SIGNAL*	⊙
⊙	*TRIGGER CLICK*	⊙
⊙	*TRIGGER-OFF TIMEOUT*	⊙
⊙	*FLASH MODE*	⊙
⊙	*READS PER CYCLE*	⊙
⊙	*SAFETY TIME*	⊙
⊙	*BEEPER INTENSITY*	⊙
⊙	*BEEPER TONE*	⊙
⊙	*BEEPER TYPE*	⊙
⊙	*BEEPER LENGTH*	⊙
⊙	*GOOD READ SPOT DURATION*	⊙
⊙	*AIMING SYSTEM*	⊙
⊙	*CRADLE BEEPER INTENSITY*	⊙

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

2. Read configuration codes from the desired groups.

    ☞   = Read the code and follow the procedure given

    ◆   = Default value

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

TRIGGER TYPE

◆ hardware trigger

‖‖‖‖‖‖‖‖‖‖

Restores TRIGGER MODE

software trigger

‖‖‖‖‖‖‖‖‖‖

Enables FLASH MODE

always on

‖‖‖‖‖‖‖‖‖‖

TRIGGER SIGNAL

◆ trigger active level

‖‖‖‖‖‖‖‖‖‖

trigger active pulse

‖‖‖‖‖‖‖‖‖‖

See par. 5.6.1 for details.

TRIGGER CLICK

◆ disable

‖‖‖‖‖‖‖‖‖‖

enable

‖‖‖‖‖‖‖‖‖‖

See par. 5.6.2 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. 5.6.3 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. 5.6.4 for details.

READING PARAMETERS

SAFETY TIME

☞

safety time

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

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

◆ safety time = 0.5 sec

See par. 5.6.5 for details.

BEEPER INTENSITY

* very low intensity

low intensity

medium intensity

◆ high intensity

*   This sets the beeper OFF for data entry, while for all other beeper signals it has the meaning "very low intensity". The Beeper Intensity parameter is effective for all operating conditions described in par. 7.5.

BEEPER TONE

tone 1

◆ tone 2

tone 3

tone 4

BEEPER TYPE

◆ monotone

bitonal

BEEPER LENGTH

long

◆ short

READING PARAMETERS

GOOD READ SPOT DURATION

disable

short

◆ medium

long

AIMING SYSTEM

◆ disabled

enabled

CRADLE BEEPER INTENSITY

disable

low intensity

medium intensity

◆ high intensity

DECODING PARAMETERS

⊙   *INK SPREAD*   ⊙

⊙   *OVERFLOW CONTROL*   ⊙

⊙   *INTERDIGIT CONTROL*   ⊙

⊙   *DECODING SAFETY*   ⊙

⊙   *PUZZLE SOLVER™*   ⊙

⚠ **CAUTION**   *Before changing these parameter values read the descriptions in par. 5.7.*

---

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

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

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

DECODING PARAMETERS

INK SPREAD

disable

◆ enable

See par. 5.7.1 for details.

OVERFLOW CONTROL

disable

◆ enable

See par. 5.7.2 for details.

INTERDIGIT CONTROL

disable

◆ enable

See par. 5.7.3 for details.

DECODING SAFETY

◆ one read

(decoding safety disabled)

two reads

three reads

four reads

Required number of good reads before accepting code.

PUZZLE SOLVER™

◆ disable

enable

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

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

Conditions:

• This parameter is only valid for the following codes:

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

• For Code 39, Check digit control is forced.

• PuzzleSolver™ is not valid for ISBT 128 code.

CODE SELECTION

⊙   *AUTO-CONFIGURATION*   ⊙
⊙   *EAN/UPC FAMILY*   ⊙
⊙   *2/5 FAMILY*   ⊙
⊙   *CODE 39 FAMILY*   ⊙
⊙   *CODE 128 FAMILY*   ⊙
⊙   *CODABAR FAMILY*   ⊙
⊙   *CODE 93*   ⊙
⊙   *MSI*   ⊙
⊙   *CODE 11*   ⊙
⊙   *CODE 16K*   ⊙
⊙   *CODE 49*   ⊙
⊙   *RSS CODES*   ⊙

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

2. Read configuration codes from the desired groups.

     ☞ = Read the code and follow the procedure given

     ◆ = Default value

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

Code selections may be performed according to two different procedures:

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

AUTO-CONFIGURATION

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

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

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

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

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

☞
auto-configuration

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

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

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

save auto-configuration

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

If you need to change the configuration, repeat the auto-configuration procedure, follow the manual configuration by setting the parameters for each single code family or read the "Restore Default" code on page 163. Be careful that in the latter case all reader parameters will be restored.

DISABLE ALL CODE FAMILIES

NOTE

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

SINGLE SELECTIONS =

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

Example

5 code selections:

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

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

CODE SELECTION

EAN/UPC FAMILY

disable the family

‖‖ ‖ ‖ ‖ ‖‖‖‖ ‖‖

① Read the desired family code

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

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

‖‖ ‖ ‖ ‖ ‖‖‖‖ ‖‖

WITHOUT ADD ON

◆ **EAN 8/EAN 13/UPC A/UPC E**

‖‖ ‖ ‖ ‖ ‖‖‖‖ ‖‖

EAN 8/EAN 13

‖‖ ‖ ‖ ‖‖‖‖ ‖‖

UPC A/UPC E

‖‖ ‖ ‖ ‖‖‖‖ ‖‖

WITH ADD ON 2 AND 5

EAN 8/EAN 13/UPC A/UPC E

‖‖ ‖ ‖ ‖‖‖‖ ‖‖

EAN 8/EAN 13

‖‖ ‖ ‖ ‖‖‖‖ ‖‖

UPC A/UPC E

‖‖ ‖ ‖ ‖‖‖‖ ‖‖

CODE SELECTION

WITH ADD ON 2 ONLY

EAN 8/EAN 13

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

UPC A/UPC E

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

WITH ADD ON 5 ONLY

EAN 8/EAN 13

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

UPC A/UPC E

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

WITH AND WITHOUT ADD ON

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

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

EAN/UPC Autodiscrimination ADD ON by Prefix

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

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

SELECT EAN/UPC PREFIXES

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

◆ <u>**Cancel All Selections**</u>

‖‖ ‖ ‖ ‖‖ ‖‖‖‖‖ ‖‖

OR

select one or more of the following prefixes:

<u>**378/379**</u>

‖‖‖ ‖ ‖‖ ‖‖‖‖‖‖‖‖‖ ‖‖ ‖‖‖‖‖‖‖‖‖ ‖‖

<u>**434/439**</u>

‖‖‖ ‖ ‖‖ ‖‖‖‖‖‖‖‖ ‖‖ ‖‖‖‖‖‖‖‖ ‖‖

<u>**414/419**</u>

‖‖‖ ‖ ‖‖ ‖‖‖‖‖‖‖‖‖ ‖‖‖‖‖‖‖‖ ‖‖ ‖‖

<u>**977**</u>

‖‖ ‖ ‖ ‖‖ ‖‖‖‖‖‖‖‖ ‖‖ ‖‖

<u>**978**</u>

‖‖‖ ‖ ‖ ‖‖ ‖‖‖‖‖‖‖‖ ‖‖ ‖‖

<u>**979**</u>

‖‖ ‖ ‖ ‖‖ ‖‖‖‖‖‖‖ ‖‖ ‖‖

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

Example:

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

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

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

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

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

EAN/UPC Autodiscrimination ADD ON by Prefix

434/439

+

+

977

978

+

+

To clear the current prefix selections:

1. *Cancel all Selections*

Cancel All Selections

CODE SELECTION

EAN/UPC CHECK DIGIT TX SELECTIONS

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

CHECK DIGIT TRANSMISSION

NO CHECK DIGIT TRANSMISSION

◆ EAN 8

EAN 8

◆ EAN 13

EAN 13

◆ UPC A

UPC A

◆ UPC E

UPC E

100

CONVERSION OPTIONS

UPC E to UPC A conversion

UPC E to EAN 13 conversion

UPC A to EAN 13 conversion

EAN 8 to EAN 13 conversion

Enable only ISBN conversion

Enable only ISSN conversion

Enable both ISBN and ISSN
conversion

Disable both ISBN and ISSN
conversion

2/5 FAMILY

disable the family

‖‖ ‖ ‖ ‖ ‖‖‖‖‖ ‖‖

① Read the desired family code

◆ **Interleaved 2/5**

☞ ‖‖ ‖ ‖ ‖ ‖‖‖‖ ‖‖‖

Normal 2/5 (5 Bars)

☞ ‖‖ ‖ ‖ ‖ ‖‖‖‖‖ ‖‖‖

Industrial 2/5 (IATA)

☞ ‖‖ ‖ ‖ ‖ ‖‖‖‖‖ ‖‖‖

Matrix 2/5 (3 Bars)

☞ ‖‖ ‖ ‖ ‖ ‖‖‖‖‖ ‖‖‖

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

Code CIP/HR

‖‖ ‖ ‖ ‖‖‖‖‖ ‖‖ ‖‖

French pharmaceutical code

---

② Read a check digit selection

CHECK DIGIT TABLE

no check digit control

‖‖ ‖ ‖‖‖‖‖‖

◆ check digit control and transmission

‖‖ ‖‖‖‖‖‖‖

check digit control without transmission

‖‖ ‖‖‖‖‖‖

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

− **First 2 digits** = minimum code length.
− **Second 2 digits** = maximum code length.

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

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

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

CODE 39 FAMILY

disables the family

① Read the desired family code

② Read a check digit selection

CHECK DIGIT TABLE

◆ **Standard Code 39**

◆ no check digit control

Full ASCII Code 39

check digit control
and transmission

check digit control
without transmission

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

Code CIP39

French pharmaceutical code

Code 32

Italian pharmaceutical code

CODE LENGTH (optional)

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

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

First 2 digits = minimum code length.

Second 2 digits = maximum code length.

set code length

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

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

103

CODE 128 FAMILY

disables the family

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

control without transmission of
check digit

ISBT 128

Enabling ISBT 128 automatically
disables Puzzle Solver™.

EAN 128

control without transmission of
check digit

Transmit GS Before Code

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

◆ disable

enable

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

CODE LENGTH (optional)

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

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

set code length

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

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

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

CODE 93

◆ disables the code

‖‖‖‖‖‖‖‖‖

Code 93

‖‖‖‖‖‖‖‖‖

control without transmission
of check digit

CODABAR FAMILY

◆ disable the family

‖‖‖‖‖‖‖‖‖

① Read the desired equality control code

② Read a start/stop transmission selection

START/STOP CHARACTER TRANSMISSION

Standard Codabar

☞ ‖‖‖‖‖‖‖‖‖

no start/stop character equality control

no transmission

‖‖‖‖‖‖

Standard Codabar

☞ ‖‖‖‖‖‖‖‖‖

start/stop character equality control

transmission

‖‖‖‖‖‖

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

Codabar ABC

‖‖‖‖‖‖‖‖‖‖

no start/stop character equality control but transmission.

Codabar ABC Forced Concatenation

enable Codabar ABC with forced concatenation

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

non start/stop character equality control but transmission

CODE LENGTH (optional)

The code length selection is valid for the entire Codabar family
Read the code + **4** numbers for the code length where:

set code length

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

First 2 digits = minimum code length.
Second 2 digits = maximum code length.
The maximum code length is **99** characters.
The minimum code length must always be less than or equal to the maximum.

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

START/STOP CHARACTER CASE IN TRANSMISSION

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

transmit start/stop characters in lower case

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

transmit start/stop characters in upper case

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

CODE SELECTION

MSI

◆ disable the family

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

no check digit control

MOD10 check digit control
no check digit transmission

MOD10 check digit control
check digit transmission

MOD11 - MOD10 check digit control
no check digit transmission

MOD11 - MOD10 check digit control
check digit transmission

MOD10 - MOD10 check digit control
no check digit transmission

MOD10 - MOD10 check digit control
check digit transmission

CODE 11

◆ disable the family

‖‖ ‖‖ ‖‖ ‖ ‖‖‖‖ ‖‖

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

no check digit control

‖‖ ‖‖ ‖‖ ‖ ‖‖‖‖‖ ‖‖

Type C check digit control
check digit transmitted

‖‖ ‖‖ ‖‖ ‖ ‖‖‖‖‖‖‖ ‖‖

Type C check digit control
check digit not transmitted

‖‖ ‖‖ ‖‖ ‖ ‖‖‖‖‖‖ ‖‖‖

Type K check digit control
check digit transmitted

‖‖ ‖‖ ‖‖ ‖ ‖‖‖‖‖ ‖‖‖

Type K check digit control
check digit not transmitted

‖‖ ‖‖ ‖‖ ‖ ‖‖‖‖‖‖ ‖‖‖

Type C and Type K
check digit control
check digits transmitted

‖‖ ‖‖ ‖‖ ‖ ‖‖‖‖‖‖ ‖‖‖

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

‖‖ ‖‖ ‖‖ ‖ ‖‖‖‖‖‖ ‖‖‖

CODE 16K

◆ disable the code

‖‖‖‖‖‖‖‖‖‖‖

Code 16K

‖‖‖‖‖‖‖‖‖‖

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

CODE 49

◆ disable the code

‖‖‖‖‖‖‖‖‖

Code 49

‖‖‖‖‖‖‖‖‖

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

RSS CODES

◆ disable the family

DISABLE CODE

ENABLE CODE

disable RSS Expanded Linear and Stacked

enable RSS Expanded Linear and Stacked

disable RSS Limited

enable RSS Limited

disable RSS 14 Linear and Stacked

enable RSS 14 Linear and Stacked

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

ADVANCED FORMATTING

```
┌─────────────────────────────────────────┐
│          NOT FOR PEN INTERFACES          │
└─────────────────────────────────────────┘
```

⊙   *CONCATENATION*   ⊙

⊙   *ADVANCED FORMATTING*   ⊙

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

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

---

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

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

         ☞ = Read the code and follow the procedure given

         ◆ = Default value

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

CONCATENATION

◆ disable

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

enable

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

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

The order of transmission is CODE 1-CODE 2.

Define Concatenation

---

1   **Code 1**

code ID

☞ ||| | || || || ||||| | ||| |

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

code length

☞ ||| | || | || ||||| | ||| |

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

2   **Code 2**

code ID

☞

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

code length

☞

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

---

3   **Concatenation Result Code ID**

use code 1 ID

use code 2 ID

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

---

4   **Concatenation Timeout**

timeout

☞

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

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

ADVANCED FORMATTING

5   **Transmission after Timeout**

no code transmitted
after timeout

‖‖ | ‖ ‖‖‖‖ ‖| ‖‖

only code 1 transmitted
(if read) after timeout

‖‖ | ‖ ‖‖‖‖‖‖ | ‖ ‖

only code 2 transmitted
(if read) after timeout

‖‖ | ‖ ‖‖‖ ‖‖‖ ‖‖‖

either code 1 or code 2 transmitted
after timeout

‖‖ | ‖ ‖‖‖ ‖‖‖‖‖ ‖‖

ADVANCED FORMATTING

ADVANCED FORMATTING

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

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

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

ADVANCED FORMATTING

---

1   **Begin Format Definition**

begin Format 1 definition

☞

begin Format 2 definition

☞

begin Format 3 definition

☞

begin Format 4 definition

☞

---

2   **Match Code Type**

match code type

☞

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

OR   any code type

---

3   **Match Code Length**

match code length

☞

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

OR   any code length

---

4   **Match with Predefined Characters**

no match

OR

match with 1 character

☞

match with a 2-character string

☞

match with a 3-character string

☞

match with a 4-character string

☞

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

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

Match with a 2-character string

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

AND   position of first character in predefined string

☞

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

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

See par. 5.8.1 for details.

5   **Divide Code into Fields**

divide code into fields

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

---

6   **Define Code Fields**

define code fields

Each code field length can be set by either:

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

OR BY

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

OR BY

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

OR BY

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

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

ADVANCED FORMATTING

DEFINE FIELD 1 BY:
EITHER

a) ☞

field separator

‖‖‖‖‖‖‖‖‖

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

discard separator

‖‖‖‖‖‖‖

include separator

‖‖‖‖‖‖‖

OR

b) ☞

match character

‖‖‖‖‖‖‖‖

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

OR

c) ☞

field length

‖‖‖‖‖‖‖‖

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

OR

d) ☞

this is the last field (variable length)

‖‖‖‖‖‖‖‖

AND

Field 1 Terminators

no field terminators

‖‖‖‖‖‖‖‖

☞   1 field terminator

‖‖‖‖‖‖‖‖

☞   2 field terminators

‖‖‖‖‖‖‖‖

Read the field terminator character(s) from the HEX table. Valid range of characters for all readers = **00-FE**. For Wedge and USB-KBD interface, it is also possible to read the **Special Key(s)** on page 75.

ADVANCED FORMATTING

‖‖ ‖ ‖‖‖‖ ‖‖‖

DEFINE FIELD 2 BY:
EITHER

field separator

a) ☞ ‖‖‖‖‖‖‖‖‖ ‖‖‖

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

discard separator

‖‖ ‖‖‖‖‖ ‖‖‖

include separator

‖‖ ‖‖‖‖‖ ‖‖‖

OR

match character

b) ☞ ‖‖‖‖‖‖‖‖ ‖‖‖

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

OR

field length

c) ☞ ‖‖‖‖‖‖‖‖ ‖‖‖

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

OR

this is the last field (variable length)

d) ☞ ‖‖‖‖‖‖‖‖ ‖‖‖

AND

Field 2 Terminators

no field terminators

‖‖‖‖‖‖‖‖‖ ‖‖‖

1 field terminator

☞ ‖‖‖‖‖‖‖‖‖ ‖‖‖

2 field terminators

☞ ‖‖‖‖‖‖‖‖‖ ‖‖‖

Read the field terminator character(s) from the HEX table. Valid range of characters for all readers = **00-FE**. For Wedge and USB-KBD interface, it is also possible to read the **Special Key(s)** on page 75.

ADVANCED FORMATTING

‖‖ ‖ ‖‖‖‖‖ ‖‖‖

DEFINE FIELD 3 BY:
EITHER

field separator

a) ☞ ‖‖ ‖ ‖ ‖ ‖‖‖ ‖‖‖

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

discard separator   include separator

‖‖ ‖‖‖ ‖‖‖   ‖ ‖‖‖‖ ‖‖‖

OR

match character

b) ☞ ‖‖ ‖‖ ‖ ‖‖‖ ‖‖‖

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

OR

field length

c) ☞ ‖‖ ‖ ‖ ‖ ‖‖‖ ‖‖‖

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

OR

this is the last field (variable length)

d) ☞ ‖‖ ‖ ‖ ‖ ‖‖‖ ‖‖‖

AND

Field 3 Terminators

no field terminators

‖‖ ‖ ‖ ‖‖‖‖ ‖‖‖

1 field terminator   2 field terminators

☞ ‖‖ ‖ ‖ ‖‖‖‖ ‖‖‖   ☞ ‖‖ ‖ ‖‖‖‖ ‖‖‖

Read the field terminator character(s) from the HEX table. Valid range of characters for all readers = **00-FE**. For Wedge and USB-KBD interface, it is also possible to read the **Special Key(s)** on page 75.

ADVANCED FORMATTING

‖‖ ‖ ‖‖‖‖‖ ‖‖‖

DEFINE FIELD 4 BY:
EITHER

field separator

a) ☞

‖‖ ‖ ‖‖‖‖‖‖ ‖‖‖

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

discard separator   include separator

‖‖‖ ‖‖‖‖‖ ‖‖‖   ‖‖‖ ‖‖‖‖‖ ‖‖‖

OR

match character

b) ☞

‖‖ ‖‖‖‖ ‖‖‖‖ ‖‖‖

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

OR

field length

c) ☞

‖‖ ‖ ‖‖‖ ‖‖‖‖ ‖‖‖

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

OR

this is the last field (variable length)

d) ☞

‖‖ ‖‖‖‖ ‖‖‖‖ ‖‖‖

AND

Field 4 Terminators

no field terminators

‖‖ ‖ ‖‖‖‖‖‖ ‖‖‖

1 field terminator   2 field terminators

☞ ‖‖ ‖‖‖‖‖‖‖ ‖‖‖   ☞ ‖‖ ‖‖‖‖‖‖‖ ‖‖‖

Read the field terminator character(s) from the HEX table. Valid range of characters for all readers = **00-FE**. For Wedge and USB-KBD interface, it is also possible to read the **Special Key(s)** on page 75.

ADVANCED FORMATTING

DEFINE FIELD 5 BY:
EITHER

field separator

a) ☞

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

discard separator   include separator

OR

match character

b) ☞

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

OR

field length

c) ☞

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

OR

this is the last field (variable length)

d) ☞

AND

Field 5 Terminators

no field terminators

1 field terminator   2 field terminators

☞   ☞

Read the field terminator character(s) from the HEX table. Valid range of characters for all readers = **00-FE**. For Wedge and USB-KBD interface, it is also possible to read the **Special Key(s)** on page 75.

ADVANCED FORMATTING

‖‖ ‖ ‖‖‖‖ ‖‖‖

---

7   **First Additional Fixed Field**

no fixed field
‖‖ ‖ ‖‖ ‖ ‖‖‖ ‖‖ ‖‖

1 character fixed field
👉   ‖‖ ‖ ‖‖ ‖ ‖‖‖‖ ‖ ‖‖

2 character fixed field
👉   ‖‖ ‖ ‖‖ ‖ ‖‖‖ ‖‖ ‖‖

3 character fixed field
👉   ‖‖ ‖ ‖‖ ‖ ‖‖‖‖‖ ‖‖

4 character fixed field
👉   ‖‖ ‖ ‖‖ ‖ ‖‖‖‖ ‖‖

5 character fixed field
👉   ‖‖ ‖ ‖‖ ‖ ‖‖‖‖ ‖‖ ‖

6 character fixed field
👉   ‖‖ ‖ ‖‖ ‖ ‖‖‖‖‖ ‖‖

After selecting **one** of the Additional Fixed Field codes, read the corresponding character(s) from the HEX table. Range of characters **= 00-FE**. For Wedge and USB-KBD interface, it is also possible to read the **Special Key(s)** on page 75.

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-FE**. For Wedge and USB-KBD interface, it is also possible to read the **Special Key(s)** on page 75.

Example:

3 Character Fixed Field

‖‖‖ ‖ ‖‖‖‖‖‖‖‖‖ ‖‖   + **53** + **45** + **54** =   **SET**

9   **Field Transmission**

number of fields to transmit

‖‖ ‖ ‖‖‖ ‖‖‖‖‖ ‖‖

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

Field Order Transmission

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

field 1

‖‖ ‖ ‖‖‖‖‖ ‖‖

field 2

‖‖ ‖‖‖‖‖‖ ‖‖

field 3

‖‖ ‖‖‖‖‖‖ ‖

field 4

‖‖ ‖ ‖‖‖ ‖‖ ‖

field 5

‖‖ ‖‖‖‖‖‖ ‖

additional field 1

‖‖ ‖‖‖‖‖‖ ‖

additional field 2

‖‖ ‖‖‖‖‖ ‖

Example:

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

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

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

‖‖ ‖‖‖‖‖‖‖ ‖ + **4** + ‖‖ ‖‖‖‖‖ ‖ +   ‖‖ ‖‖‖‖‖ ‖   + ‖‖ ‖‖‖‖‖‖+ ‖‖ ‖‖‖‖‖ ‖

10   **Standard Formatting**

do not apply standard formatting

‖‖ ‖ ‖ ‖ ‖‖‖‖ ‖ ‖‖

apply standard formatting

‖‖ ‖ ‖ ‖‖‖‖‖‖‖ ‖‖

DRAGON™ D: 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.

DRAGON™ M: After performing Advanced Formatting on the barcode read, Standard Formatting (Code Length, Code ID) 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

‖‖ ‖ ‖ ‖‖‖ ‖‖‖‖ ‖‖‖ ‖‖

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).

RADIO PARAMETERS

Dragon™ M131 Series readers only

◉   *RADIO PROTOCOL TIMEOUT*   ◉

◉   *POWER-OFF TIMEOUT*   ◉

◉   *TRANSMISSION MODE*   ◉

◉   *BEEPER CONTROL FOR RADIO RESPONSE*   ◉

◉   *SINGLE STORE*   ◉

◉   *BATCH MODE*   ◉

◉   *FIND ME*   ◉

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

2. Read configuration codes from the desired groups.

    ☞ = Read the code and follow the procedure given

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

RADIO PROTOCOL TIMEOUT

radio protocol timeout

☞

Read a number from the table where:

02-19 =   timeout from **2** to **19** seconds

◆ 2 seconds

See par. 5.9.1 for details.

POWER-OFF TIMEOUT

power-off timeout

☞

Read 2 numbers in the range 00-99:

00 =   Power-off disabled; reader always ready

01-99 =   corresponds to a max. 99 hour delay before power-off.

◆ power-off after 4 hours.

See par. 5.9.2 for details.

TRANSMISSION MODE

◆ One Way

‖‖ ‖ ‖‖‖ ‖ ‖‖‖ ‖‖ ‖‖

Two-ways

‖‖ ‖ ‖‖‖ ‖ ‖‖‖‖‖ ‖‖

See par. 5.9.3 for details.

BEEPER CONTROL FOR RADIO RESPONSE

◆ normal

‖‖ ‖ ‖‖‖ ‖ ‖‖‖‖ ‖‖ ‖‖‖

only good decode

‖‖ ‖ ‖‖‖ ‖ ‖‖‖‖ ‖‖ ‖‖‖

only good reception

‖‖ ‖ ‖‖‖ ‖ ‖‖‖‖ ‖‖ ‖‖‖

off

‖‖ ‖ ‖‖‖ ‖ ‖‖‖‖‖‖ ‖ ‖‖‖

See par. 5.9.4 for details.

RADIO PARAMETERS

SINGLE STORE

◆ disable

one attempt

two attempts

three attempts

four attempts

five attempts

six attempts

seven attempts

eight attempts

nine attempts

See par. 5.9.5 for details

RADIO PARAMETERS

BATCH MODE

◆ disable batch

‖‖|‖|‖‖‖‖‖‖‖

enable normal batch

‖‖|‖|‖‖|‖‖‖‖‖

enable automatic batch

‖‖|‖|‖‖|‖‖‖‖‖

See par. 5.9.6 for details.

The following batch management parameters are complete commands and do not require reading the Enter and Exit configuration codes.

start normal batch transmission

‖‖|‖|‖|‖|‖|‖|‖ |‖|‖‖‖ |‖| ‖|‖

#+BFlush

delete batch data

‖‖| ‖|‖|‖|‖|‖‖‖ |‖‖|‖ |‖‖‖|‖‖

#+BReset

FIND ME

disable

‖‖| ‖|‖ |‖‖‖‖|‖‖|

◆ enable

‖‖|‖|‖ ‖|‖‖‖‖|‖‖‖

See par. **5.9.7** for details.

DISPLAY PARAMETERS

<div style="border:1px solid black">

Dragon™ M131 Series readers only

</div>

⊙   *DATE AND TIME*   ⊙

⊙   *CONTRAST*   ⊙

⊙   *FONT SIZE*   ⊙

⊙   *BACKLIGHT*   ⊙

⊙   *DISPLAY OFF TIMEOUT*   ⊙

⊙   *DISPLAY MODE*   ⊙

⊙   *KEYPAD*   ⊙

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

2. Read configuration codes from the desired groups.

☞ = Read the code and follow the procedure given

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

DISPLAY PARAMETERS

DATE AND TIME

set date

‍☞

Read 6 numbers for DDMMYY

set time

‍☞

Read 4 numbers for HHMM

CONTRAST

lighter

darker

Read the code until the desired contrast is reached.

FONT SIZE

◆ small

medium

large

BACKLIGHT

◆ backlight off

backlight on

136

DISPLAY PARAMETERS

DISPLAY-OFF TIMEOUT

timeout

☞

Read 2 numbers in the range 00-99:

00 = disables display timeout (always on)

01 to 99 = timeout from 1 to 99 seconds.

◆ display-off after 8 seconds.

◆ delay disabled

DISPLAY MODE

normal

◆ local echo

clear display after decode

See par. 5.10.1 for details.

KEYPAD

disable reader keypad

‖‖ ‖ ‖ ‖‖‖ ‖‖‖‖‖ ‖‖ ‖‖

◆ enable reader keypad and select characters

☞

‖‖ ‖ ‖ ‖‖‖ ‖‖‖‖‖‖ ‖ ‖‖‖

Read 3 HEX characters in the range **00-FE**, corresponding to the left, center and right keys respectively.

FF = KeyID disabled

◆ left = '<'
  center = '='
  right = '>'

See par. 6.2 for details.

5 REFERENCES

5.1 RS232 PARAMETERS

5.1.1 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
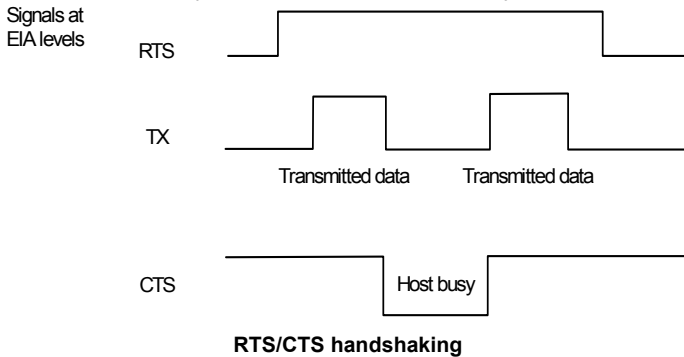
Software handshaking: (XON/XOFF)

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
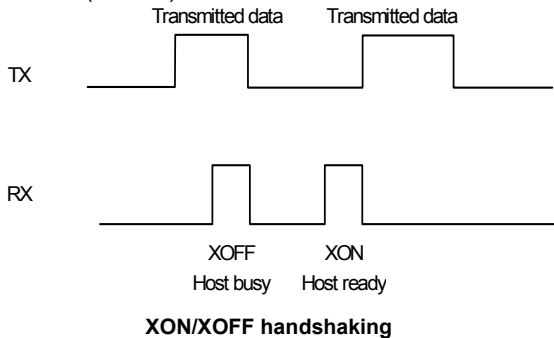
5.1.2 ACK/NACK Protocol

Dragon™ D131 Readers
This parameter sets a transmission protocol in which the Host responds to the reader after every code transmitted. The Host sends an ACK character (06 HEX) in the case of good reception or the NACK character (15 HEX) requesting re-transmission, in the case of bad reception.
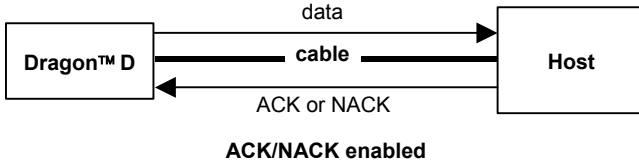
ACK/NACK enabled

If the reader does not receive an ACK or NACK, transmission is ended after the RX Timeout (see par. 5.1.4).

When ACK/NACK protocol is enabled, FIFO must be disabled manually, see par. 5.1.3.

Dragon™ M131 Readers
The transmission protocol takes place between reader, cradle and Host. The reader passes its data (code read) to the cradle, which sends it to the Host. The management of responses (from Host or cradle) depends on the Transmission Mode parameter, see par. 5.9.3.

In the following descriptions the completed transmission is indicated by the Beeper Control for Radio Response parameter with its default setting to Normal, see par. 5.9.4.

When ACK/NACK is disabled (in One-Way tx mode), there is no control from cradle to Host transmission, the reader responds with the good reception tone.

Transmission Mode = One-Way

ACK/NACK disabled
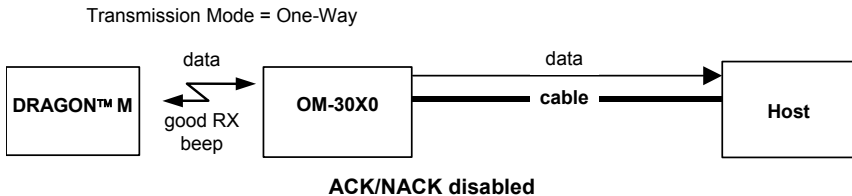
Transmission Mode = Two-Ways
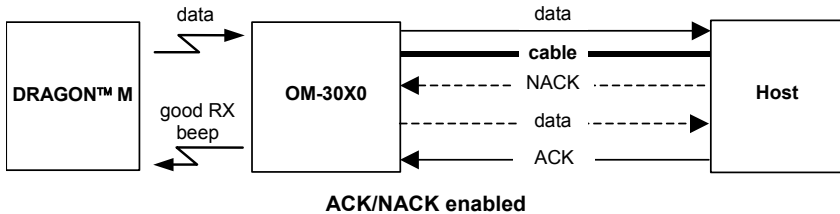
ACK/NACK enabled

When ACK/NACK is enabled (in Two-Way tx mode), 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. Only after the ACK character is received by the OM-30X0 does the reader respond with the good reception tone.

If the OM-30X0 does not receive an ACK or NACK, transmission is ended after the RX Timeout, see par. 5.1.4. See also Radio Protocol Timeout, par. 5.9.1.

When ACK/NACK protocol is enabled, FIFO must be disabled manually, see par. 5.1.3.

5.1.3   FIFO

Dragon™ D131 Readers
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.

Dragon™ M131 Readers
If enabled, the OM-30X0 collects all messages sent by Dragon™ M131 and sends them in order of acquisition to the connected Host.

If disabled, Dragon™ M131 blocks message transmission until the OM-30X0 has completed transmission towards the Host.

5.1.4   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.

5.2   PEN PARAMETERS

5.2.1   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.

5.2.2   Conversion to Code 39 and Code 128

Dragon™ D131 Series Readers
When using these readers it is possible to convert all codes to Code 39. By disabling this option the decoded codes will be transmitted in their original format; except for the following codes, which are <u>ALWAYS</u> converted into Code 39 format:
MSI, Code 11, Code 16K, Code 49, RSS.

Dragon™ M131 Series Readers
When using these readers it is possible to choose between converting the decoded codes into either Code 39 format or Code 128 format. It is not possible to disable conversion.

5.2.3   Overflow

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

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

5.2.4   Output and Idle Levels

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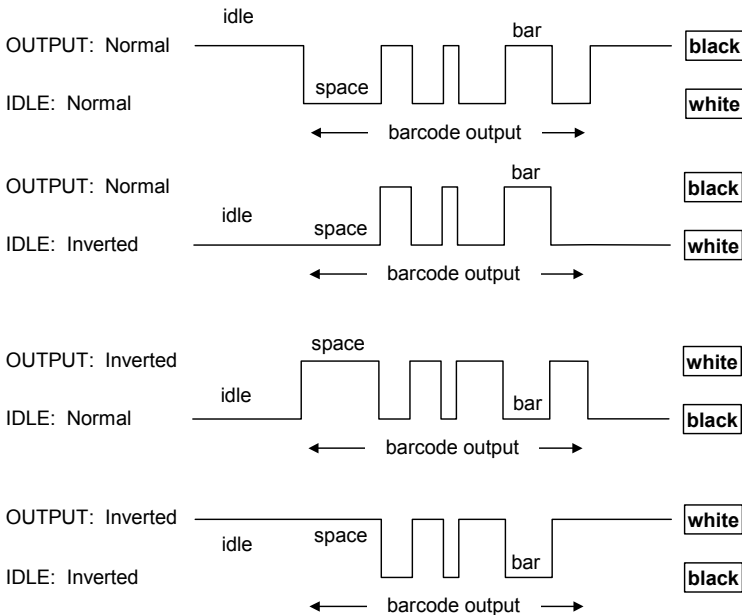
Output and Idle Levels

5.2.5   Inter-Block Delay

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

5.3   NETWORK PARAMETERS

5.3.1   Slave Address Range First/Last

These parameters define the valid addresses for the Slave cradles on the network. Valid values are in the range 0 to 1999. However, the maximum number of cradles in a single network is 16, (including the Master if present). All cradles in the system must have different addresses.

To reduce system boot time, it is recommended to number the Slaves consecutively, while it is not necessary that the Master cradle address is contained in the range. The network addresses correspond to the radio addresses, see par. 4.7.

At system power-up, the Master searches for and initializes all the Slaves found in the valid address range. During this phase the yellow LED on the Master cradle blinks. The time to complete the start up procedure varies depending on the complexity of the network but is typically between a few seconds to a few minutes. Start up cannot be interrupted. At the end of this procedure the system will be operative and can collect data from all devices.

⚠ **CAUTION**	*All Slaves must be powered up either before or together with the Master. Slaves successively powered will not be recognized by the system even if their address is in the specified range.*

5.3.2   Network Warning Message

The Master cradle can transmit warning messages to the Host regarding some network errors.

/*Slave xxxx not responding*/: when the Master can no longer communicate with the specified Slave previously identified at start up.

/*Frame out of sequence for terminal xxxx*/: if a gun is sending data packets out of sequence. This can happen if there are transmission problems on the network (either connection or communication), or if the gun has correctly transmitted data to a device not on the network (gun configuration error).

The message is sent in the following format:

"Message" CR LF

5.3.3   Reception Warning Message

The Master cradle can transmit warning messages to the Host regarding wrong reception of data. Example:

/*Two-Ways Out of Sequence!(.....)*/

This message is transmitted to the Host by the Master cradle when the Master cradle receives a closing string from the Host for a Two-way tx communication, but this was either not open or already closed, therefore the data will be lost. See par. 5.9.3.

5.3.4   Master Header/Terminator Selection

In addition to the standard header/terminator selection, the Master cradle can add its own header/terminator to the entire message sent to the Host.

In the STAR-System™ network headers and terminators for all RF Devices are disabled by default.

The Master header and terminator default values are as follows depending on the interface selection towards the Host:

RS232:	no header, terminator CR-LF
WEDGE:	no header, terminator ENTER

See par. 5.4.1 and 5.4.2.

5.4   DATA FORMAT

For an overview of Message Formatting see Chapter 6.

5.4.1   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

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

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

‖‖ ‖‖ ‖‖‖‖‖‖‖

5.4.2 Define Special Key Sequence

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

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

Follow the procedure to define the desired Special Key sequence:

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

Define Special Key 1

‖‖‖ ‖ ‖‖‖‖‖‖‖ ‖ ‖‖‖‖ ‖‖‖

Define Special Key 2

‖‖‖ ‖ ‖‖‖‖‖‖‖ ‖‖‖‖ ‖‖ ‖‖‖

Define Special Key 3

‖‖‖ ‖ ‖‖‖‖‖‖‖ ‖‖ ‖‖‖‖ ‖‖‖

Define Special Key 4

‖‖‖ ‖ ‖‖‖‖‖‖‖ ‖ ‖‖‖‖‖ ‖‖‖

Define Special Key 5

‖‖‖ ‖ ‖‖‖ ‖‖‖ ‖ ‖‖‖‖‖‖‖ ‖‖‖

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

SHIFT

OR

CTRL

OR

ALT

OR

CTRL + SHIFT

OR

ALT + SHIFT

OR

CTRL + ALT

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

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

The following character values change according to the keyboard nationality.

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

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

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

👉 **NOTE**

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

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

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

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

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

EXAMPLES

- Defining Special Key Sequences -

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

Read   enter configuration   +   define Special Key 1   +   SHIFT   +

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

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

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

+   codes from Appendix **C** corresponding to the character value for s (lower case) **01B**   +   exit & save configuration
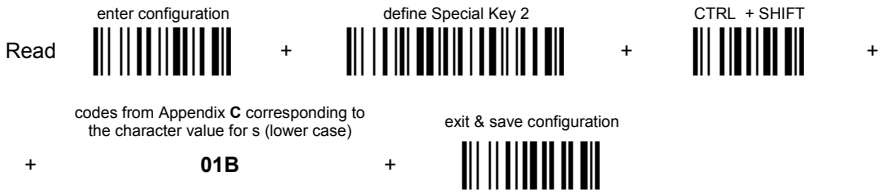
3. the following example allows defining Special Key 3 as Alt + F6:

Read   enter configuration   +   define Special Key 3   +   ALT   +

+   codes from Appendix **C** corresponding to the character value for F6 **00B**   +   exit & save configuration
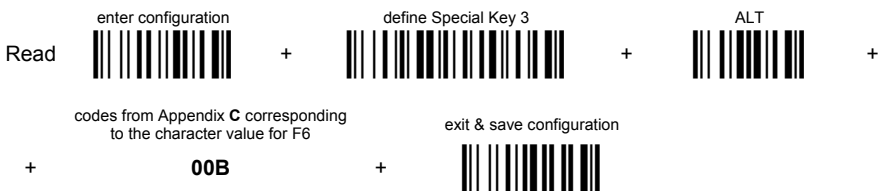
4. the following example allows defining Special Key 4 as Alt + Shift + F1:

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

+   codes from Appendix **C** corresponding to the character value for F1 **005**   +   exit & save configuration
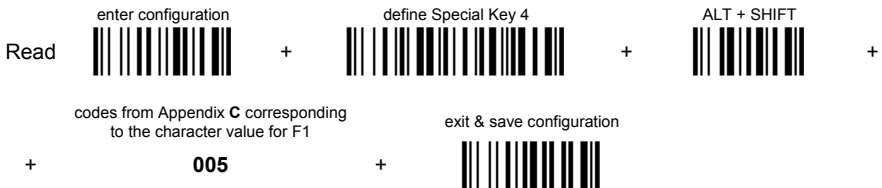
- Integrating Special Keys in Headers/Terminators -

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

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

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

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

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

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

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

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

	exit & save configuration
+	‖‖‖‖‖‖‖
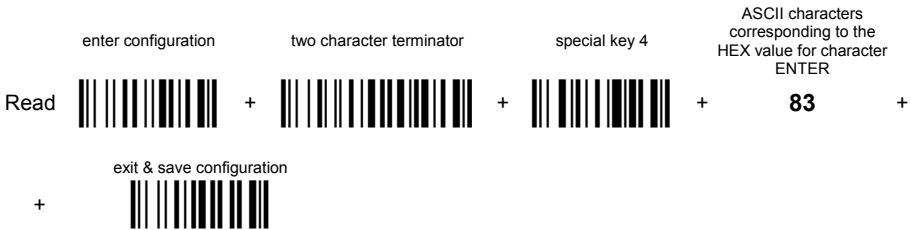
5.4.3 Address Stamping

It is possible to include the reader address in the message sent to the host. The Reader Address Stamping and the Cradle Address Stamping parameters consist of a 4-digit number in the range 0000 to 1999.
For message output format, refer to chapter 6.

5.4.4 Address Delimiter

The Address Delimiter allows a character to be included to separate the reader Address stamping field from the next field in the message. Any character can be included in the hexadecimal range from 00 to FE.
For message output format, refer to chapter 6.

5.4.5   Time Stamping Format

The Time Stamping parameter sets the format for hour and date information. It consists of 1 or 2 groups of numbers, each one made up of 6 decimal digits.

For example, setting the Hour/Minutes/Seconds/Month/Day/Year format, the information *17:03:16* on *June 12, 2002* will be formatted as 170316061202.

5.4.6   Time Stamping Delimiter

The Time Stamping Delimiter allows a character to be included to separate the Time Stamping field from the next field in the message. Any character can be included in the hexadecimal range from 00 to FE.

5.5   POWER SAVE

5.5.1   Sleep State

When using interfaces other than USB, this mode allows the µP in the reader to enter a "Sleep" state for minimum power consumption. For D-series readers, 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. 5.5.2)

To exit Sleep mode press the trigger.

For M131 series readers, sleep state is entered immediately after reading a code and is not configurable. To exit Sleep mode press the trigger.

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

5.5.2   Enter Sleep Timeout

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

5.6   READING PARAMETERS

5.6.1   Trigger Signal

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

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

5.6.2   Trigger Click

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

5.6.3   Trigger-Off Timeout

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

5.6.4   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. 5.6.3).

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

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

The Safety Time parameter should be used in this case to avoid unwanted multiple reading of the same code, see par. 5.6.5.

5.6.5   Safety Time

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

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

5.7   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.*

5.7.1   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.

5.7.2   Overflow Control

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

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

5.7.3 Interdigit Control

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

5.8 ADVANCED FORMATTING

5.8.1 Match Conditions

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

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

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

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

5.9 RADIO PARAMETERS (M131 SERIES ONLY)

5.9.1 Radio Protocol Timeout

This parameter sets the valid time to wait before transmission between the M131 series reader and OM-30X0 cradle is considered failed.

This parameter should be set taking into consideration the radio traffic (number of readers in the same area).

If the RS232 interface is used with ACK/NACK enabled, this parameter should be at least equal to the RX Timeout parameter for low traffic environments. It should be increased if there are many readers in the same area.

It can be set between 2 and 19 seconds.

5.9.2   Power-Off Timeout

If this command is enabled, after the desired timeout in hours, the Dragon™ batteries are disconnected and all power consumption ceases. To restore power, press the trigger once. The reader will now be ready to read codes.

Power-off does not affect configuration parameters.

5.9.3   Transmission Mode

This parameter determines whether the reader receives responses or messages from the Host or not. In One-Way tx mode, neither Host nor cradle responds to the reader.

In Two-Way tx mode, the reader <u>must</u> receive a response from either the cradle or the Host.

The cradle responds (empty message) to the reader, only after good transmission to the Host, for the following conditions: ACK/NACK enabled, see par. 5.1.2; WEDGE or PEN interface. For these conditions, it is suggested to prolong the Radio Protocol Timeout, see par. 5.9.1.

Enabling Two-Way tx mode temporarily disables FIFO buffering see par. 5.1.3.

With ACK/NACK disabled, the Host responds to the reader (through the cradle) with an answer message (message to reader display or command to reader), see par. 6.1 and the following figure.

Transmission Mode = Two-Ways
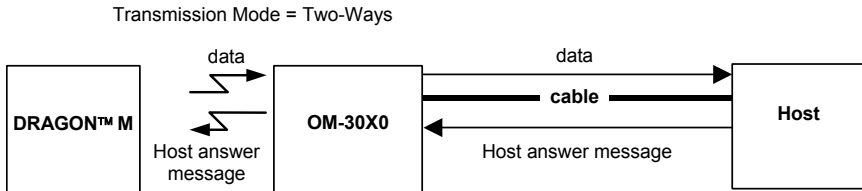
5.9.4 Beeper Control for Radio Response

For M131 series readers, the data entry good read tone normally results in two beeps; the first indicates that the reader has decoded the code, the second indicates whether OM-30X0 has received the data.

This can be changed according to the following selections:

♦ Normal: both good decode and good reception are signaled (two beeps).
♦ Only Good Decode: only the first beep indicating a good read is signaled.
♦ Only Good Reception: only the second beep indicating a good reception is signaled.
♦ Off: Neither good read nor good reception beeps are signaled.

For all configurations, any transmission errors will always be signaled.

5.9.5 Single Store

When single store mode is enabled, if the Dragon™ M131 fails to transmit a code to the cradle, it enters a special operating mode that prevents the user from reading barcodes. When such operating mode is entered, the trigger no longer enables barcode reading but is used to retry transmission itself for the number of attempts selected in configuration. Once the transmission is successful the reader returns to the standard mode. If transmission is not successful after the number of configured attempts, the code is discarded.

Single store may be useful if you often read codes at the limit of the coverage area and there is a chance that code transmission can fail. In such case single store allows you to move to a more favorable position or location (i.e. closer to the cradle) and retry transmission without the necessity of re-reading the code since it is already stored in the reader.

Conversely, if single store is disabled, and the user wants to retry transmission, the code must be read again, and therefore the attempt must be made from basically the same location. If the user gives up, he does not know if the transaction was successful. (Actually the transmission could have been successful but the cradle may have been unable to acknowledge the message). There are applications in which there is no risk of transmission failure. In such cases it may be better to disable single store so that the user perceives a more consistent behavior of the trigger in that it always corresponds to code reading.

5.9.6   Batch Mode

This Operating Mode allows storing read codes in the internal gun RAM memory. The stored codes are transmitted to the base station at a later time according to the type of batch mode selected.

Batch mode can be enabled either manually (normal batch mode) or automatically.

Normal batch mode temporarily suspends radio communication between gun and base station allowing codes to be stored in the gun on a FIFO basis. This can be useful for example, if codes must be read from a location where there is no radio network. Upon returning to the system working area, this mode requires reading the **Start Normal Batch Transmission** barcode to successively transmit the list of stored codes to the base station. The FIFO management assures that the first code read will be the first code to be transmitted to the base station.

The **Delete Batch Data** barcode allows canceling all barcode data stored in the gun.

Automatic batch mode allows codes to be stored in the gun on a FIFO basis whenever the gun is out of radio range. In this case radio communication is not suspended and transmission is attempted after each code read. If transmission cannot be successfully completed, then the code is added to the list. When the gun returns in range, transmission of the codes to the base station resumes automatically, according to the selected communication protocol, upon simply pressing and releasing the trigger or by successfully reading a new code.

Each code is listed on the gun display together with its identifying position number and its total number of characters. The three keys under the display have the following function in batch mode:

	Key	Function
▲	(left) Key	Scroll up in list
ENTER	(center) Key	Delete highlighted code
▼	(right) Key	Scroll down in list

In batch mode, the selected Transmission Mode determines the behavior of the gun at the time the list of codes is transmitted. If One-way mode is enabled, the codes are transmitted one after the other without interruption. In Two-way mode, after transmitting each code, the gun waits for the Host answer message to be shown on the display. Therefore, in Two-way transmission mode and normal batch mode, the **Start Normal Batch Transmission** barcode must be read after each code to continue, whereas with automatic batch mode just pull and release the trigger after each code.

The code which has a transmission pending is shown on the display in reverse video indicating that it cannot be deleted.

5.9.7   Find Me (Dragon M131 only)

If enabled, after a timeout of a few minutes in which Dragon™ M131 is not used, it enters stand-by mode and its green LED starts blinking in order to signal its location.

5.10 DISPLAY PARAMETERS (SOME M131 MODELS ONLY)

5.10.1   Display Mode

The user can control the gun display behavior according to the following selections:

>   **Normal mode**: When a barcode is read with the gun:
* The code is sent to the Host.
* The gun display is <u>not cleared</u>. Therefore if any previous data was displayed on the gun screen it remains.
* There is no Local Echo to the gun display.

>   **Clear Display After Decode mode**: When a barcode is read with the gun:
* The code is sent to the Host.
* The gun display <u>is cleared</u>. Therefore if any previous data was displayed on the gun screen it is cancelled and the screen remains blank.
* There is no Local Echo of the code to the gun display.

>   **Local Echo mode**: When a barcode is read with the gun:
* The code is sent to the Host.
* The gun display <u>is cleared</u>.
* The code is also sent to the gun display (Local Echo).
* The cursor is positioned after the last printed character on the gun display.

<u>Host messages sent to the gun</u> are always written to the gun display.

5.11 CONFIGURATION EDITING COMMANDS

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

Command	Description
‖‖ ‖‖‖‖‖‖‖‖‖ ‖‖ ‖‖‖	Restore Dragon™ reader default configuration (see the relative Quick Reference Manual for default settings)
‖‖ ‖‖‖‖‖‖‖‖‖ ‖‖ ‖‖‖	Transmit the Dragon™ D131 or Dragon™ M131 software release
‖‖ ‖‖‖‖‖‖‖‖‖ ‖‖ ‖‖‖	Transmit Dragon™ reader configuration in ASCII format. This command is not effective with Pen emulation interface.
‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖‖‖	Restore OM-30X0 default configuration (see the relative Quick Reference Manual for default settings)
‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖‖‖	Transmit the OM-30X0 Software release.
‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖‖‖	Transmit OM-30X0 configuration in ASCII format. This command is not effective with Pen emulation interface.

5.12 CUSTOM DEFAULT CONFIGURATION

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

Save User-defined Configuration as Custom Default

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

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

Restore Custom Default Configuration

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

5.13 CODE TYPE RECOGNITION

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

Follow the given procedure:

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

code type recognition

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

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

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

exit code type recognition mode

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

5.14 CONFIGURATION COPYING COMMANDS

5.14.1 Copy Dragon™ D131 Series

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

Power Supply: <u>PG5</u>

② Using the **slave** reader, read the Restore Default barcode and then the RS232 interface barcode from chapter 4 of this manual or from the Quick Reference Manual.

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

Copy Configuration

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

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

5.14.2   Copy Dragon™ M131 Series

Procedure:

① Using the **slave** reader and its OM-30X0 cradle, follow the initialization procedure in chapter 4 of this manual or from the Quick Reference Manual.

② With the **master** Dragon™ M131 (correctly configured reader), read the Copy Configuration barcode below. Then place it onto an OM-30X0 cradle within 10 seconds. The reader will beep indicating the configuration has been copied.

The configuration will be simultaneously sent over the RS232 interface of the OM-30X0. If this causes undesired effects disconnect the RS232 cable between the PC and OM-30X0 during this process.

Copy Configuration

③ With the **slave** Dragon™ M131, read the Get Configuration barcode below. Then place it onto the **same** OM-30X0 cradle used in the step above. The slave reader's address will not be changed.

Get Configuration

The configuration will be copied from the master to the slave Dragon™ M131. The slave Dragon™ M131 signals the end of the procedure with a series of beeps. It is now ready to be used with its own OM-30X0 cradle.

④ Repeat the procedure above to configure other slave readers. The OM-30X0 can continue to configure slave readers until it receives another command or data.

5.14.3   Copy OM-30X0

Procedure:

① Using the **slave** reader and its OM-30X0 cradle, read the Restore Default barcode, set the radio address, and then read the RS232 interface barcode from chapter 4 of this manual or from the Quick Reference Manual.

② Connect the **master** OM-30X0 and the **slave** OM-30X0 (cradle 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 & CAB328

Power Supply: PG12

③ Read the Configuration Copy barcode below with a reader. Then place it onto the **master** OM-30X0 cradle.

Copy Configuration

The configuration will be copied from the master OM-30X0 to the slave OM-30X0. The reader signals the end of the procedure with a series of beeps.

④ Repeat the procedure above to configure other slave cradles.

Note: The master OM-30X0 can be configured for any interface.

5.15 DEFAULT PARAMETERS FOR POS TERMINALS

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

	NIXDORF Mode A	FUJITSU	ICL Mode
RS232 Group			
Baud Rate	9600	9600	9600
Parity	Odd	None	Even
Data Bits	8	8	8
Stop Bits	1	1	1
Handshaking	Hardware (RTS/CTS)	None	RTS always ON
ACK/NACK Protocol	Disabled	Disabled	Disabled
FIFO	Disabled	Enabled	Enabled
Inter-Character Delay	Disabled	Disabled	Disabled
RX Timeout	9.9 sec	2 sec	9.9 sec
Serial Trigger Lock	Disabled	Disabled	Disabled
Data Format Group			
Code Identifier	Custom	Custom	Custom
Header	No Header	No Header	No Header
Terminator	CR	CR	CR
Field Adjustment	Disabled	Disabled	Disabled
Code Length TX	Not Transmitted	Not Transmitted	Not Transmitted
Character Replacement	Disabled	Disabled	Disabled
Address Stamping	Disabled	Disabled	Disabled
Address Delimiter	Disabled	Disabled	Disabled
Time Stamping	Disabled	Disabled	Disabled
Time Delimiter	Disabled	Disabled	Disabled

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

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

5.16 FIRMWARE UPGRADE

Device firmware upgrades can be performed using the Downloader utility tool
(downloadable from the web site: http://www.datalogic.com) from your PC through
the USB communication.

Procedure:

① Launch the Downloader tool on your PC.

② Connect the device to the PC via USB interface.

③ Read the code given below and position the reader onto the cradle:

<div align="center">

prepare device for firmware upgrade

</div>

The device will automatically be reset.

④ Proceed with the firmware upgrade (see the Downloader utility help on-line for details).

⚠ **CAUTION**　　　*Do not interrupt firmware upgrade downloading for any reason.*

---

6   MESSAGE FORMATTING

The system always provides gun to host data communication using the following message formatting:

Output Message from <u>Dragon™ D131 or Dragon™ M131 Stand Alone</u> Towards Host

[Header] [Gun_Addr] [Gun_Addr_delimiter]] [Cradle_Addr] [Cradle_Addr_delimiter] [Time stamp] [Ts_delimiter] [Code ID] [Code Length] CODE [Terminator]

[Items in square brackets are optional.]

Output Message from <u>Dragon™ M131 STAR-System™</u> Towards Host

[Time stamp] [Ts_delimiter] [Header] [Code ID] [Code Length] CODE [Terminator]

[Items in square brackets are optional.]

For Dragon™ M131 models with display, if the RS232 interface is selected for communication between the Host and the OM-30X0 cradle, then the following additional communications between <u>Host</u> and <u>Gun</u> can occur:

- The Host can send messages to any gun associated with that cradle to control the Gun's display, LEDs and beeper.

- The Gun can send up to 3 user-defined characters to the Host using the 3 command keys on the gun.

These communications and their relative message formatting are detailed in the following paragraphs.

6.1   MESSAGES FROM HOST TO GUN

The general format is:

[Gun_Addr] [Gun_Addr_delimiter] MESSAGE CR

NOTE:

- If you have enabled the Gun Address Stamping or the Gun Address Delimiter, you **must** specify them in every message.

- If you have **not** enabled the Gun Address Stamping or the Gun Address Delimiter, you **must not** specify them. In this case all messages will be implicitly addressed to the 'binded' gun of the cradle directly connected to the serial line.

- The gun can only receive messages only if two-way mode is enabled. (See par. 5.9.3, "Transmission Mode", command is on page 132).

- Messages cannot start with '$+' because they would be interpreted as a configuration command.

- You can send a message to the gun only while it is on. This happens when it has sent a message to the host and the radio timeout has not yet expired. (See par. 5.9.1, "Radio Protocol Timeout"; command is on page 131).

- If you want to control the gun's beeper from the host, you will also probably want to disable the good transmission beep that is emitted when the code is received from the cradle. (See command on page 87).

The message field can store plain text and escape sequences.

- Escape sequences are interpreted as commands.

- Plain text is directly printed on the display. If writing beyond the end of line, the display does not wrap automatically. Extra characters are ignored. Control characters are not interpreted (i.e. LF, FF, etc.).

6.1.1   Cursor Control

ESC [*n* A	Up *n* rows, no scroll
ESC [*n* B	Down *n* rows, no scroll
ESC [*n* C	Right *n* columns
ESC [*n* D	Left *n* columns
ESC [G	CR
ESC [*r* ; *c* H	Move to row *r*, column *c*
	(ESC[1;1H is the upper left character position of the display)
ESC D	Down 1 row, with scroll
ESC E	CR and cursor down 1 row with scroll
ESC M	Up 1 row and scroll

NOTES:
- Since CR is used as the message terminator, you must use ESC [G or ESC E to print a CR.

- The cursor row position **is not** affected by the currently selected font. The display always has 4 rows, so when writing with the large font, actually two rows are written to: the current one and the one below it. You will need <u>two</u> ESC E commands to step from one row to the next when using the large font.

- The cursor column position **is** affected by the currently selected font. Therefore, <u>column 6</u> is 36 pixels from the left border only if you last selected the 6x8 font; otherwise it could be 48 or 72 pixels from the left border.

6.1.2   Font Selection

ESC [0 m	Normal mode
ESC [7 m	Reverse mode
ESC # 4	Large font: subsequent characters are written on the current row and the row below it using the 12x16 font which allows for two rows of eight characters on the display.
ESC # 5	Normal font: subsequent characters are written using the 6x8 font which allows for four rows of sixteen characters on the display.
ESC # 7	Medium font: subsequent characters are written using the 8x8 font which allows for four rows of twelve characters on the display.

6.1.3   Clearing Display

ESC [0 K	From cursor position to end of line inclusive
ESC [1 K	From beginning of line to cursor position (not inclusive)
ESC [2 K	Entire line
ESC [0 J	From cursor position to end of display inclusive
ESC [1 J	From beginning of display to cursor position (not inclusive)
ESC [2 J	Entire display; moves cursor to upper left corner on display

6.1.4   LED and Beeper Control

ESC [0 q	Emit short High tone + short delay
ESC [1 q	Emit short Low tone + short delay
ESC [2 q	Emit long Low tone + short delay
ESC [3 q	Emit good read tone
ESC [4 q	Emit bad tx tone
ESC [5 q	Wait 100 ms
ESC [6 q	Turn on the green LED
ESC [7 q	Turn off the green LED
ESC [8 q	Turn on the red LED
ESC [9 q	Turn off the red LED

The LED control escape sequences are intended to activate the LEDs for underline short periods of time and can be used in combination with the Beeper. The LED and Beeper will be controlled by the system after the entire command sequence is interpreted.

Example:

ESC [6 q ESC [3 q ESC [7 q   Turns on the green LED, emits a good read tone, and turns off the green LED.

ESC [6 q ESC [5 q ESC [7 q   Turns on the green LED for 100 ms and then turns off the green LED.

6.1.5   Setting RTC

ESC [0 p *d d m m y y*   Set date to day, month, year
ESC [1 p *h h m m*   Set time to hours, minutes; seconds are automatically set to 00.

6.2   MESSAGES FROM GUN COMMAND KEYS

The Dragon™ M131 series guns with display have 3 command keys that can each be associated with a character to send to the host.

By pressing the keys on the gun, the associated character with its relative message formatting is sent to the Host. For example, keys can be used to select items from a menu sent to the gun display by the application program.

The general format is:

[Header] [Gun_Addr] [Gun_Addr_delimiter]] [Cradle_Addr] [Cradle_Addr_delimiter] [Time stamp] [Ts_delimiter] [Code ID] [Code Length] KeyID [Terminator]

[Items in square brackets are optional.]

The messages are handled by the system as if they were barcodes, that's why **KeyID** can have so many fields appended to it. If in your application there is some chance of reading a 1-char barcode identical to **KeyID**, the way you can distinguish between the two is to enable the Code ID: The **KeyID** is the only 1-character long EAN 8 code.

Refer to par. 5.3 for a compete description of the optional message fields in square brackets.

The default characters associated with each key (**KeyID**) are shown in the following table:

Default Key Identifiers		
Key		**KeyID**
▲	(left) Key	'<'
ENTER	(center) Key	'='
▼	(right) Key	'>'

7   TECHNICAL FEATURES

7.1   DRAGON™ D131

Electrical Features		
Supply Voltage	4 to 30 Vdc	
Consumption @ 4V @ 5V @ 30 V Sleep Mode	420 mA 310 mA 62 mA 4 mA	
Indicators	Good Read LED (**green**) Good Read Spot (**green**), **Beeper**	
Host Interfaces		
RS232	300 to 38400 baud	
WEDGE	IBM AT or PS/2, XT, PC Notebook, IBM SURE1, IBM 3153, 31xx, 32xx, 34xx, 37xx terminals, Wyse terminals, Digital VT terminals, Apple ADB Bus supported	
PEN Emulation	Selectable minimum pulse from 200 μS to 1.2 mS	
USB	USB-KBD, USB-KBD-ALT-MODE, USB-KBD APPLE, USB-COM, USB-IBM-Table Top, USB-IBM-Hand Held	
Laser Features	**D131**	**D131 LR**
Light Source	VLD between 630~680 nm	
Scan Rate	35 ± 5 scans/sec	
Power (max) in mW	0.9 mW	1.4 mW
Scan Angle	42°	23°
PCS minimum (Datalogic Test Chart)	15%	40%
Resolution maximum	0.076 mm (3 mils)	0.25 mm (10 mils)
Reading Field Width	see reading diagrams (par. 7.6)	
Laser Safety Class EN 60825-1 / CDRH	2	
Environmental Features		
Working Temperature	-30° to +50 °C / -22° to +122 °F	
Storage Temperature	-30° to +70 °C / -22° to +158 °F	
Humidity	90% non condensing	
Drop resistance (on concrete) IEC 68-2-32 Test ED	2 m	
Protection class	IP64	
Mechanical Features		
Weight (without cable)	about 295 g (10.4 oz)	
Dimensions	205 x 114 x 69 mm (8.07 x 4.49 x 2.72 in)	
Cable length	2 m (6 ft 6 in)	
Material	Polycarbonate molded with rubber	

7.2 DRAGON™ M131

Electrical and General Features		
Battery Type	2150 Li-Ion battery pack	
Recharge Time	max. 4 hours with external power supply max 10 hours with Host power	
Operating autonomy (continuous reading)	60,000 reads (typical)	
Display (Only available with some models)	LCD 4 lines x 16 chars Programmable font and backlight	
Indicators	Good Read LED (**green**) Good Read Spot (**green**), **Beeper**	
Laser Features	**M131**	**M131 LR**
Light Source	VLD between 630~680 nm	
Scan Rate	35 ± 5 scans/sec	
Power (max) in mW	0.9 mW	1.4 mW
Scan Angle	42°	23°
PCS minimum (Datalogic Test Chart)	15%	40%
Resolution maximum	0.076 mm (3 mils)	0.25 mm (10 mils)
Reading Field Width	see reading diagrams (par. 7.6)	
Laser Safety Class EN 60825-1 / CDRH	2	
Environmental Features		
Working Temperature	-20° to +50 °C / -4° to +122 °F	
Storage Temperature	-20° to +70 °C / -4° to +158 °F	
Humidity	90% non condensing	
Drop resistance (on concrete) IEC 68-2-32 Test ED	2 m	
Protection Class	IP64	
Mechanical Features		
Weight (with batteries)	about 400 g (14.10 oz)	
Dimensions	205 x 114 x 69 mm (8.07 x 4.49 x 2.72 in) (w/ display) 210 x 114 x 69 mm (8.27 x 4.49 x 2.72 in)	
Material	Polycarbonate molded with rubber	

7.3   OM-30X0 / C-3000

	OM-30X0	C-3000
Electrical and General Features		
Supply Voltage		
External Power	10 to 30 Vdc	
Host Power	5 Vdc ±10%	
Power Consumption		
External Power	max. 10 W (charging)*	
Host Power	max. 500 mA (charging)	
Indicators	Ext. Power /Data **yellow** LED Host Power/Data **yellow** LED Reader batt. state **green/red** LED Aux. batt. state **green/red** LED (OM-3000/C-3000 only) **beeper**	
Recharge Time		
External Power	max. 4 hours with 2150 mAh Li-Ion battery	
Host Power	max. 10 hours with 2150 mAh Li-Ion battery	
Host Interfaces		
RS232	300 to 38400 baud	9600 baud
WEDGE	IBM AT or PS/2, XT, PC Notebook, IBM SURE1, IBM 3153, 31xx, 32xx, 34xx, 37xx terminals, Wyse terminals, Digital VT terminals, Apple ADB Bus supported	Not supported
PEN Emulation	Selectable minimum pulse from 200 μS to 1.2 mS	Not supported
USB	USB-KBD, USB-KBD-ALT-MODE, USB-KBD APPLE, USB-COM, USB-IBM-Table Top, USB-IBM-Hand Held	USB-COM
Environmental Features		
Working Temperature	-20° to +50 °C / -4° to +122 °F**	
Storage Temperature	-20° to +70 C / -4° to +158° F	
Humidity	90% non condensing	
Protection	IP40	
Mechanical Features		
Weight without cable	about 380 g / 13.4 oz	
Dimensions (without antenna)	204 x 108 x 95 mm / 9.44 x 4.25 x 3.74 in	
Material	ABS	

*   Having a switching regulator inside, the OM-30X0 and C-3000 draw the same power, regardless of the supply voltage. i.e. as the input voltage increases the current drawn decreases.

**   Batteries must be charged at a temperature ranging from 0° to +40 °C / +32° to +104 °F.

7.4 SYSTEM AND RADIO FEATURES

Radio Features	European Models	USA Models
Working Frequency	433.92 MHz	910 MHz
Bit Rate	19200	36800
Range (in open air)	50 m	30 m
System Configurations	**OM-3000 model only**	**STARGATE™**
Maximum number of devices per base station	32	255
Maximum number of devices in the same reading area	2000	
Maximum number of base stations in network	16 (including cradle Master)	

7.5 STATUS INDICATORS

The reader has two indicator LEDs and a Beeper. The OM-3000 and C-3000 cradles have four LED indicators (three for OM-3010 model) and a Beeper. They signal several operating conditions which are described in the tables below.

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

Dragon™ D131/M131 READER START-UP

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

Dragon™ D131/M131 READER CONFIGURATION

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

Dragon™ D131/M131 READER DATA ENTRY

Beeper[1]	LED	Good Read Spot	Meaning
one beep[2]	ON	ON	Correct read of a code in normal mode
H L long			TX buffer full (when FIFO is enabled) or TX error between Dragon™ M131 and OM-3000
H long	ON	ON	Successful advanced format concatenation
H H H			Timeout expired – operation not completed
H H long			Error in advanced data formatting
	OFF	OFF	Ready to read a code

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

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

For M-series readers, normally this results in two beeps; the first indicates that the reader has decoded the code, the second indicates whether OM-30X0 has received the data. See also par. 5.9.4.

Dragon™ M131 POWER

Beeper	LED	Meaning
10 short H	10 short blinks	Low Battery
H M L		Power off

H = high tone
M = medium tone
L = low tone

Dragon™ M131 BIND, JOIN, COPY COMMANDS

Beeper[1]	LED	Meaning
	Blinking	Command accepted; reader ready to be inserted into the cradle
L		Success
H L long tones		Failure

OM-30X0/C-3000 POWER/COMMUNICATION

Aux LED	Host LED	Meaning
Yellow	Yellow	
OFF	OFF	Device off
ON		Power applied through an external power supply
	ON	Power applied through the Host
Flashing	Flashing	Transmission over the Host port

OM-30X0/C-3000 CHARGE STATUS

Reader LED			Meaning
Red	Green	Beeper	
OFF	OFF		No reader battery inserted
ON			Reader battery in charge
	ON	single beep	Reader battery completely charged
Flashing orange			Reader battery fault
Alternating red/green		repetitive beep	Charging out of temperature range, over-current or over-voltage conditions
Alternating red/green every 30 seconds		beep every 30 seconds	Reader not correctly inserted onto cradle, no charging takes place
Spare LED (not for OM-3010)			Meaning
Red	Green	Beeper	
OFF	OFF		No Spare battery inserted in the SBS-3000 slot
ON			Spare battery in charge
	ON		Spare battery completely charged
Flashing orange			Spare battery fault
Alternating red/green		repetitive beep	Charging out of temperature range, over-current or over-voltage conditions
Alternating red/green every 30 seconds		beep every 30 seconds	Spare battery not correctly inserted into SBS-3000, no charging takes place

7.6   READING DIAGRAMS

DRAGON™ D/M131
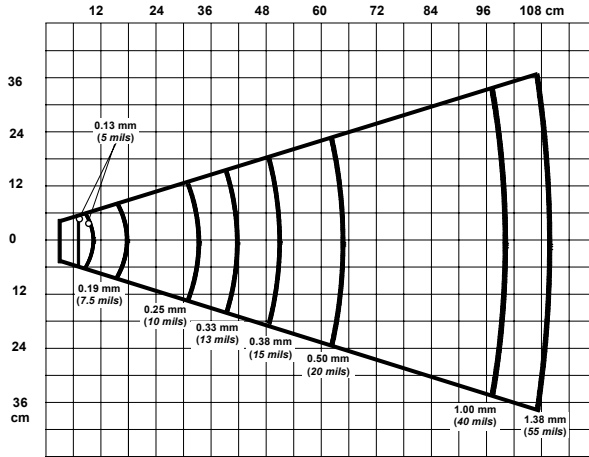
DRAGON™ D/M131 LR
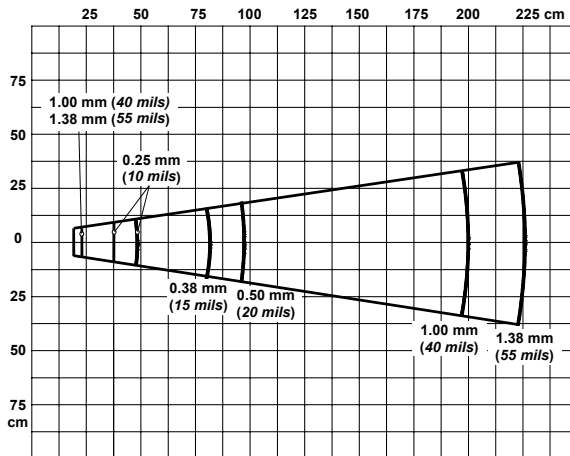
A   HOST CONFIGURATION STRINGS

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:

$+	*Command*	**$-**	**CR**

→ Carriage return character (0D Hex.)

→ Exit and Save configuration

→ Character sequence in following tables

→ Enter configuration environment
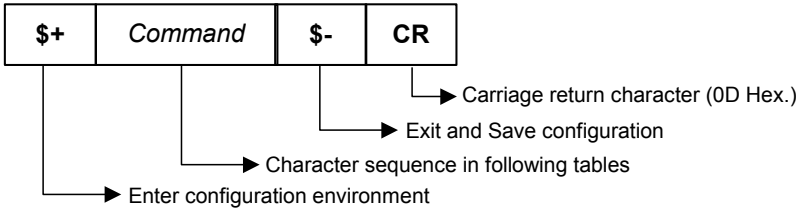
Example:

Multiple command programming sequence:

$+	**BG1**	**BH0**	**AC410132**	**$-**	**CR**

→ Carriage return character (0D Hex.)

→ Exit and save new configuration

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

→ Beeper tone 1

→ Beeper low intensity

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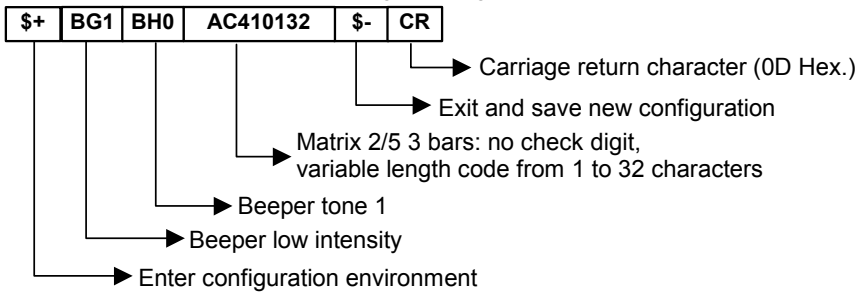
Each configuration parameter setting removes the condition previously active for that parameter.

NOTE

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

SERIAL CONFIGURATION STRINGS

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

These commands do not require $-.

INTERFACE SELECTION		
DESCRIPTION		**STRING**
RS232	Standard	**CP0**
	ICL Mode	**CM0**
	Fujitsu	**CM1**
	Nixdorf Mode A	**CM2EC0**
WEDGE	for IBM AT	**CP500**
	for IBM Terminals: 31xx, 32xx, 34xx, 37xx; make-break keyboard	**CP501**
	for IBM Terminals: 31xx, 32xx, 34xx, 37xx; make-only keyboard	**CP502**
	Keyboard Type for IBM Terminals 31xx, 32xx, 34xx, 37xx — typewriter	**FK0**
	Keyboard Type for IBM Terminals 31xx, 32xx, 34xx, 37xx — advanced	**FK1**
	for IBM XT	**CP503**
	for IBM Terminal 3153	**CP504**
	for IBM PC Notebook	**CP505**
	for IBM SURE1	**CP506**
	for IBM AT - ALT mode	**CP507**
	for IBM PC Notebook - ALT mode	**CP508**
	for Wyse Terminal - ANSI Keyboard	**CP509**
	for Wyse Terminal - PC Keyboard	**CP510**
	for Wyse Terminal - ASCII Keyboard	**CP511**
	for Wyse Terminal - VT220 style Keyboard	**CP514**
	for Digital Terminals VT2xx/3xx/4xx	**CP512**
	for Apple ADB Bus	**CP513**
PEN EMULATION		**CP6**
USB	USB-KBD	**UA03**
	USB-KBD-ALT-MODE	**UA04**
	USB-KBD-APPLE	**UA05**
	USB-COM	**UA02**
	USB-IBM-Table Top	**UA00**
	USB-IBM-Hand Held	**UA01**

RS232		
DESCRIPTION		**STRING**
Baud Rate	300	**CD1**
	600	**CD2**
	1200	**CD3**
	2400	**CD4**
	4800	**CD5**
	9600	**CD6**
	19200	**CD7**
	38400	**CD8**
Parity	none	**CC0**
	even	**CC1**
	odd	**CC2**
Data Bits	7	**CA0**
	8	**CA1**
	9	**CA2**
Stop Bits	1	**CB0**
	2	**CB1**
Handshaking	disable	**CE0**
	RTS/CTS	**CE1**
	XON/XOFF	**CE2**
	RTS always On	**CE3**
ACK/NACK Protocol	disable	**ER0**
	enable	**ER1**
FIFO	disable	**EC0**
	enable	**EC1**
Inter-character Delay *(ms)*		**CK00 - CK99**
RX Timeout *(100 ms)*		**CL00 - CL99**
Serial Trigger Lock	disable	**CR0**
	enable and select characters	**CR1*ab***

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

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

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

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

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

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

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

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

NETWORK		
DESCRIPTION		**STRING**
RS485 Network	Disable Network	**RZ0**
	Enable RS485 Slave	**RZ1**
	Enable RS485 Master	**RZ2**
Slave Address Range	Minimum Address	**JB0000-1999**
	Maximum Address	**JC0000-1999**
Network Baud Rate	9600	**JE0**
	19200	**JE1**
	38400	**JE2**
Network Warning Message	not transmitted	**JG0**
	transmitted	**JG1**
Transmission Warning Message	not transmitted	**JH0**
	transmitted	**JH1**
Master Header	no header	**JA00**
	one character	**JA01*x***
	two characters	**JA02*xx***
	three characters	**JA03*xxx***
	four characters	**JA04*xxxx***
	five characters	**JA05*xxxxx***
	six characters	**JA06*xxxxxx***
	seven characters	**JA07*xxxxxxx***
	eight characters	**JA08*xxxxxxxx***
Master Terminator	no terminator	**JA10**
	one character	**JA11*x***
	two characters	**JA12*xx***
	three characters	**JA13*xxx***
	four characters	**JA14*xxxx***
	Five characters	**JA15*xxxxx***
	six characters	**JA16*xxxxxx***
	seven characters	**JA17*xxxxxxx***
	eight characters	**JA18*xxxxxxxx***

x =   Hex value from **00** to **FE** representing an ASCII character

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 71.

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

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

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

DATA FORMAT (continued)		
NOT FOR PEN EMULATION INTERFACES		
DESCRIPTION		**STRING**
Code Length Tx	not transmitted	**EE0**
	transmitted in variable-digit format	**EE1**
	transmitted in fixed 4-digit format	**EE2**
Field Adjustment	disable	**EF0**
	right addition	**EF*a*0*d***
	left addition	**EF*a*1*d***
	right deletion	**EF*a*2*d***
	left deletion	**EF*a*3*d***
Field Adjustment Character		**EG*e***
Character Replacement	disable character replacement	**EO0**
	first character replacement	**EO1*afg***
	second character replacement	**EO2*afg***
	third character replacement	**EO3*afg***
Address Stamping	disable reader address stamping	**RU0**
	enable reader address stamping	**RU1**
	disable cradle address stamping	**RW0**
	enable cradle address stamping	**RW1**
Address Delimiter	disable reader address delimiter	**RV0**
	enable reader address delimiter and select character	**RV1*h***
	disable cradle address delimiter	**RY0**
	enable cradle address delimiter and select character	**RY1*h***
Time Stamping	disable	**IL0**
	hour/minutes/seconds/month/day/year	**IL1**
	hour/minutes/seconds/day/month/year	**IL2**
	hour/minutes/seconds	**IL3**
	month/day/year	**IL4**
	day/month/year	**IL5**
Time Stamping Delimiter	disable time stamping delimiter	**IM0**
	enable time stamping delimiter and select character	**IM1*h***

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

a = ASCII character of the DATALOGIC STANDARD Code Identifier from the table on page 71.

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

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

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

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

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

POWER SAVE		
DESCRIPTION		**STRING**
Sleep State	disable	**BQ0**
(only for D131 series)	enable	**BQ1**
Enter Sleep Timeout *(100 ms)*		**BR00-BR99**

READING PARAMETERS		
DESCRIPTION		**STRING**
Trigger Type	software trigger	**BK0**
	hardware trigger	**BK1**
	always on	**BK3**
Trigger Signal	trigger active level	**BA0**
	trigger active pulse	**BA1**
Trigger Click	disable	**Bc0**
	enable	**Bc1**
Trigger-off Timeout *(s)*		**BD00 - BD99**
FLASH ON *(100 ms)*		**BB001 - BB099**
FLASH OFF *(100 ms)*		**BB101 - BB199**
Reads per Cycle	one read	**BC0**
	multiple reads	**BC1**
Safety Time *(100 ms)*		**BE00 - BE99**
Beeper Intensity	very low intensity	**BG0**
	low intensity	**BG1**
	medium intensity	**BG2**
	high intensity	**BG3**
Beeper Tone	tone 1	**BH0**
	tone 2	**BH1**
	tone 3	**BH2**
	tone 4	**BH3**
Beeper Type	monotone	**BJ0**
	bitonal	**BJ1**
Beeper Length	long	**BI0**
	short	**BI1**
Good Read Spot Duration	disable	**BV0**
	short	**BV1**
	medium	**BV2**
	long	**BV3**
Aiming System	disabled	**Bj0**
	enabled	**Bj1**
Cradle Beeper Intensity	disable	**JI0**
	low intensity	**JI1**
	medium intensity	**JI2**
	high intensity	**JI3**

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

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

CODE SELECTION (continued)			
DESCRIPTION			**STRING**
	UPC A check digit transmission	disable	**AAI0**
		enable	**AAI1**
	UPC E check digit transmission	disable	**AAJ0**
		enable	**AAJ1**
	conversions	UPC E to UPC A	**AAA**
		UPC E to EAN 13	**AAB**
		UPC A to EAN 13	**AAC**
		EAN 8 to EAN 13	**AAD**
	ISBN Conversion codes	enable ISBN	**AP1**
		enable ISSN	**AP2**
		enable ISBN and ISSN	**AP3**
		disable ISBN and ISSN	**AP0**
Code 39	disable Code 39 family		**AB0**
	Standard	no check digit control	**AB11**
		check digit control and transmission	**AB12**
		check digit control without transmission	**AB13**
	Full ASCII	no check digit control	**AB21**
		check digit control and transmission	**AB22**
		check digit control without transmission	**AB23**
	CIP 39		**AB3**
	Code 32		**AB4**
	code length		**AB*****xxxx**
2/5	disable Code 2/5 family		**AC0**
	Interleaved 2/5	no check digit control	**AC11xxxx**
		check digit control and transmission	**AC12xxxx**
		check digit control without transmission	**AC13xxxx**
	Normal 2/5 5 bars	no check digit control	**AC21xxxx**
		check digit control and transmission	**AC22xxxx**
		check digit control without transmission	**AC23xxxx**
	Industrial 2/5 (IATA)	no check digit control	**AC31xxxx**
		check digit control and transmission	**AC32xxxx**
		check digit control without transmission	**AC33xxxx**
	Matrix 2/5 3 bars	no check digit control	**AC41xxxx**
		check digit control and transmission	**AC42xxxx**
		check digit control without transmission	**AC43xxxx**
	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**
	Transmit GS before Code	disable	**EQ0**
		enable	**EQ1**
	ISBT 128	enable ISBT 128	**AI31**
	code length		**AILxxxx**
Code 93	disable Code 93 family		**AK0**
	enable Code 93 - control without transmission of check digit		**AK1**
MSI	disable the family		**AE0**
	no check		**AE1**
	MOD10 no tx		**AE2**
	MOD10 with tx		**AE3**
	MOD11-MOD10 no tx		**AE4**
	MOD11-MOD10 with tx		**AE5**
	MOD10-MOD10 no tx		**AE6**
	MOD10-MOD10 with tx		**AE7**

xxxx = ASCII numbers that define the code length where:

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

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

The maximum code length for all codes is 99 characters:

EXAMPLES:

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

1010 = 10 digit code length only.

CODE SELECTION (continued)		
DESCRIPTION		**STRING**
Code 11	disable the family	**AG0**
	no check	**AG1**
	Type C with tx	**AG21**
	Type C no tx	**AG22**
	Type K with tx	**AG31**
	Type K no tx	**AG32**
	Type C and K with tx	**AG41**
	Type C and K no tx	**AG42**
Code 16K	disable	**AJ0**
	enable	**AJ1**
Code 49	disable	**AM0**
	enable	**AM1**
RSS Codes	disable the family	**AQ0**
	disable RSS Expanded Linear and Stacked	**AQ10**
	enable RSS Expanded Linear and Stacked	**AQ11**
	disable RSS Limited	**AQ20**
	enable RSS Limited	**AQ21**
	disable RSS 14 Linear and Stacked	**AQ30**
	enable RSS 14 Linear and Stacked	**AQ31**

RADIO PARAMETERS		
DESCRIPTION		**STRING**
Radio Protocol Timeout	enable (seconds)	**RH02-RH19**
Power-Off Timeout		**RP00-RP99**
Transmission Mode	one-way	**RI0**
	two-way	**RI1**
Beeper Control For Radio Response	normal	**BF0**
	only good decode	**BF1**
	only good reception	**BF2**
	off	**BF3**
Single Store	disable	**RO0**
	one attempt	**RO1**
	two attempts	**RO2**
	three attempts	**RO3**
	four attempts	**RO4**
	five attempts	**RO5**
	six attempts	**RO6**
	seven attempts	**RO7**
	eight attempts	**RO8**
	nine attempts	**RO9**
Find Me	disable	**Bk0**
	enable	**Bk1**

DISPLAY PARAMETERS		
DESCRIPTION		**STRING**
Date		**IA***ddmmyy*
Time		**IB***hhmm*
Contrast	lighter	**IC0**
	darker	**IC1**
Font Size	small	**ID0**
	medium	**ID1**
	large	**ID2**
Backlight	off	**IE0**
	on	**IE1**
Display-Off Timeout		**IF***a*
Display Mode	normal	**IG0**
	local echo	**IG1**
	clear display after decode	**IG2**
Keypad	disabled keys	**IK0**
	enable and select KeyID characters	**IK1***bbb*

ddmmyy =   numbers from the Hex/Numeric Table representing day, month, year
hhmm =   numbers from the Hex/Numeric Table representing hour, minutes
a =   a number from the Hex/Numeric Table
b =   HEX values representing an ASCII character

a = a number in the range **00-99** (sec.) from the Hex/Numeric Table
   00 = Timeout disabled (always on).
b = 3 Hex values from **00** to **FE** representing the left, center and right keys.
   FF = KeyID disabled.

B   CODE IDENTIFIER TABLE

2/5 Interleaved

||| ||| ||| ||

2/5 Industrial

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

2/5 normal 5 bars

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

2/5 matrix 3 bars

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

EAN 8

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

EAN 13

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

UPC A

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

UPC E

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

EAN 8 with 2 ADD ON

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

EAN 8 with 5 ADD ON

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

EAN 13 with 2 ADD ON

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

EAN 13 with 5 ADD ON

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

UPC A with 2 ADD ON

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

UPC A with 5 ADD ON

UPC E with 2 ADD ON

UPC E with 5 ADD ON

Code 39

Code 39 Full ASCII

CODABAR

ABC CODABAR

Code 128

EAN 128

Code 93

CIP/39

CIP/HR

Code 32

ISBT 128

MSI

Code 16K

Code 11

Code 49

RSS Expanded Linear and Stacked

RSS Limited

RSS 14 Linear and Stacked

C   HEX AND NUMERIC TABLE

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

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