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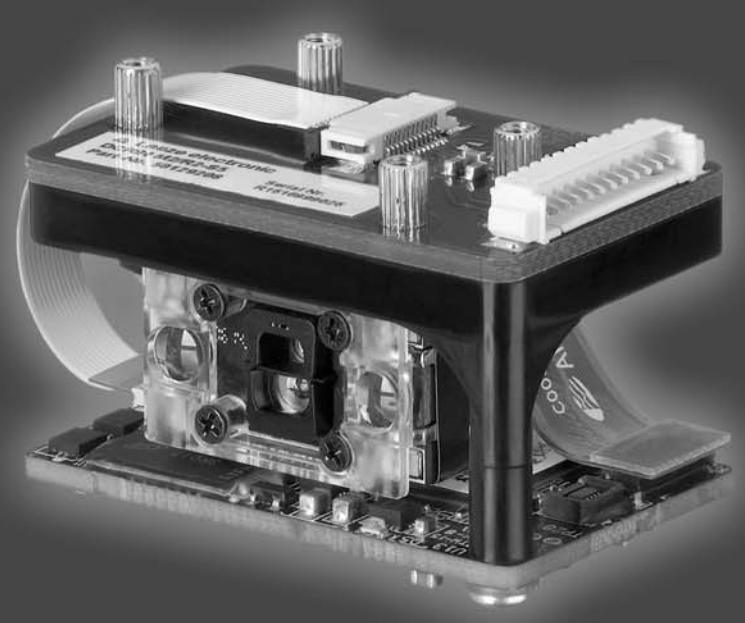
SMART
SENSOR
BUSINESS

DCR 80

Scan Engine



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We reserve the right to
make technical changes

Original operating instructions

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1 About this document

1.1 Used symbols and signal words

Table 1.1: Warning symbols and signal words

	Symbol indicating dangers to persons
NOTICE	Signal word for property damage Indicates dangers that may result in property damage if the measures for danger avoidance are not followed.

Table 1.2: Other symbols

	Symbol for tips Text passages with this symbol provide you with further information.
	Symbols for action steps Text passages with this symbol instruct you to perform actions.

Table 1.3: Terms and abbreviations

BCL	Bar code reader
CMOS	Semiconductor process for implementing integrated circuits (**C**omplementary **M**etal-**O**xide-**S**emiconductor)
DCR	Image-based code reader (**D**ual **C**ode **R**eader)
DTM	Software device manager (**D**evice **T**ype **M**anager)
EMC	Electromagnetic compatibility
EN	European standard
FDT	Software frame for management of device managers (DTM) (**F**ield **D**evice **T**ool)
FE	Functional earth
GUI	**G**raphical **U**ser **I**nterface
HID	Device class for input devices with which users directly interact (**H**uman **I**nterface **D**evice)
IO or I/O	Input/Output
LED	**L**ight **E**mitting **D**iode
PLC	Programmable Logic Control

2 Safety

This scan engine was developed, manufactured and tested in line with the applicable safety standards. It corresponds to the state of the art.

2.1 Intended use

The DCR 80 scan engine is designed as an installation scanner with integrated decoder for all of the most popular 1D and 2D codes for automatic object recognition.

Areas of application

The DCR 80 scan engine is intended especially for the following areas of application:

- automatic analyzers
- For space-critical code reading tasks
- For installation in a housing or beneath covers

⚠ CAUTION

Observe intended use!

↳ Only operate the device in accordance with its intended use.

The protection of personnel and the device cannot be guaranteed if the device is operated in a manner not complying with its intended use.

Leuze electronic GmbH + Co. KG is not liable for damages caused by improper use.

↳ Read these original operating instructions before commissioning the device.

Knowledge of the original operating instructions is an element of proper use.

NOTICE

Comply with conditions and regulations!

↳ Observe the locally applicable legal regulations and the rules of the employer's liability insurance association.

2.2 Foreseeable misuse

Any use other than that defined under “Intended use” or which goes beyond that use is considered improper use.

In particular, use of the device is not permitted in the following cases:

- Rooms with explosive atmospheres
- Circuits relevant to safety
- Operation for medical purposes

NOTICE

Do not modify or otherwise interfere with the device.

↳ Do not carry out modifications or otherwise interfere with the device.

The device must not be tampered with and must not be changed in any way.

There are no user-serviceable parts inside the device.

Repairs must only be performed by Leuze electronic GmbH + Co. KG.

2.3 Competent persons

Connection, mounting, commissioning and adjustment of the device must only be carried out by competent persons.

Prerequisites for competent persons:

- They have a suitable technical education.
- They are familiar with the rules and regulations for occupational safety and safety at work.
- They are familiar with the technical description of the device.
- They have been instructed by the responsible person on the mounting and operation of the device.

Certified electricians

Electrical work must be carried out by a certified electrician.

Due to their technical training, knowledge and experience as well as their familiarity with relevant standards and regulations, certified electricians are able to perform work on electrical systems and independently detect possible dangers.

In Germany, certified electricians must fulfill the requirements of accident-prevention regulations BGV A3 (e.g. electrician foreman). In other countries, there are respective regulations that must be observed.

2.4 Disclaimer

Leuze electronic GmbH + Co. KG is not liable in the following cases:

- The device is not being used properly.
- Reasonably foreseeable misuse is not taken into account.
- Mounting and electrical connection are not properly performed.
- Changes (e.g., constructional) are made to the device.

3 Device description

3.1 Device overview

3.1.1 The DCR 80 scan engine

The code reader is based on a scan engine with CMOS imager with integrated decoder for all of the most popular 1D and 2D codes such as DataMatrix, Aztec, QR Code, 2/5 Interleaved, Code 39, Code 128, UPC/EAN etc.

The many possible configurations of the device allow it to be adapted to a multitude of reading tasks. Due to the small dimensions of the unit and the large reading field, the scan engine can also be used in highly constrained spaces.

Information on technical data and characteristics: see chapter 11.

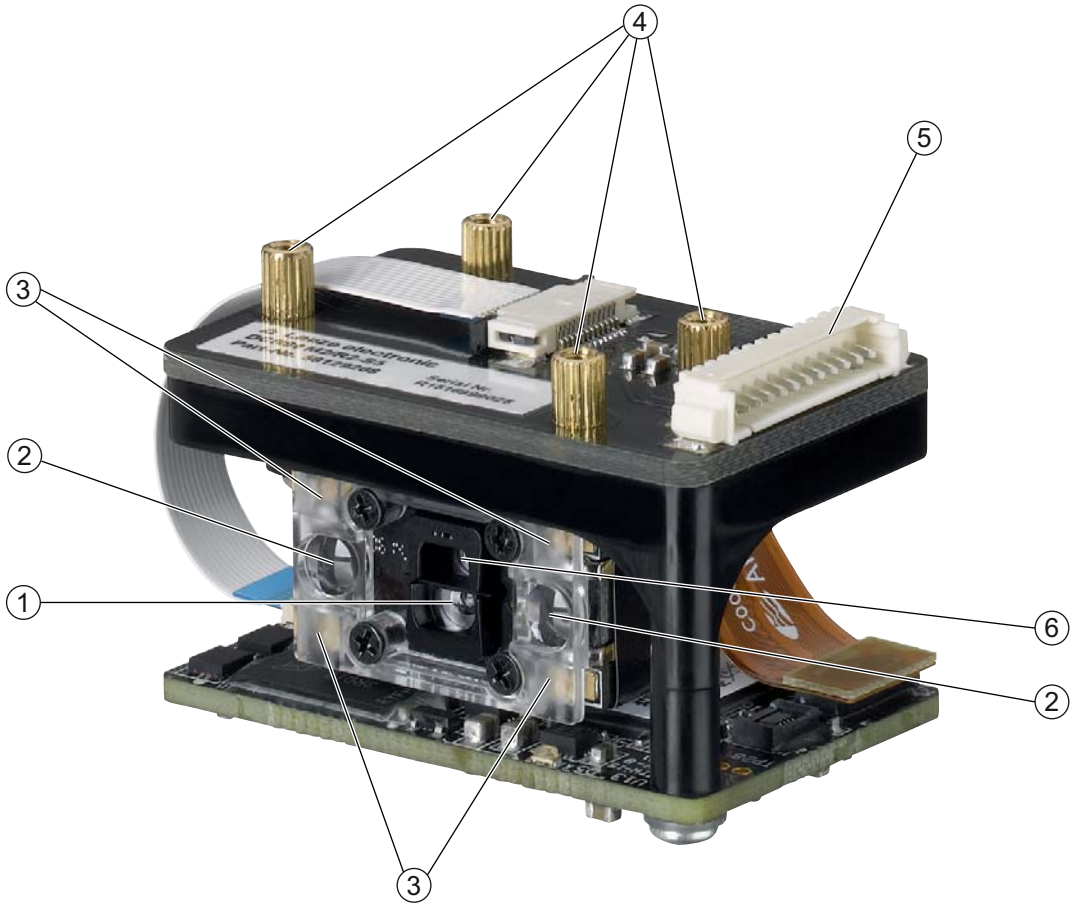
3.1.2 Stand alone operation

The scan engine is operated as a single “stand-alone” device. It is equipped with a 12-pin Molex plug connector for the power supply electrical connection, the interface, the trigger input and the switching output.

3.2 Performance characteristics

- High-performance miniature CMOS imager scan engine
- Compact design for simple integration, even in constrained spaces
- Reading of extremely small high-density codes and recording of standard codes in a large reading area using a special optical system
- Reading of shiny surfaces using a gloss reduction process
- Excellent decoding characteristics
- Clearly visible alignment LED
- RS 232 interface, triggering input, switching output, buzzer output (GOOD READ)

3.3 Device construction



1 Wide-range reading field lens
2 Alignment LEDs (blue light)
3 LEDs for illumination (red light)
4 Studs for mounting, M2 internal thread
5 Molex connector (53398-1271), 12-pin
6 High resolution reading field lens

Figure 3.1: DCR 80 device construction

3.4 Connection technology

Molex connector (53398-1271), 12-pin

4 Mounting

The scan engine can be attached at four studs with an M2 internal thread.

4.1 Selecting a mounting location

The size of the code module influences the maximum reading distance and the width of the reading field. Therefore, when selecting a mounting location and/or the code label, take into account the different reading characteristics of the scanner with various code modules.

NOTICE
Observe when choosing the mounting location!
↳ Maintaining the required environmental conditions (temperature, humidity).
↳ Possible soiling of the reading window due to liquids, abrasion by boxes, or packaging material residues.
↳ Lowest possible chance of damage to the scanner by mechanical collision or jammed parts.
↳ Possible extraneous light influence (no direct sunlight).

In order to select the right mounting location, several factors must be considered:

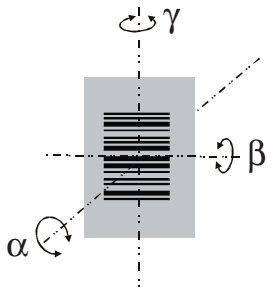
- Size, orientation, and position tolerance of the bar codes or Data Matrix codes on the objects to be scanned.
- The reading field of the scan engine depends on the code module width.
- the resulting minimum and maximum reading distance from the respective reading field; see figure 11.1.
- Scan engine alignment for avoiding reflections.
- Distance between scan engine and host system with respect to the interface.

It is advisable to use a transparent, double-sided anti-reflective coated material when installing the scan engine behind a pane of glass. Recommended pane thickness: 1 mm; optics as flush as possible with the glass.

The best read results are obtained when

- the reading distance lies in the middle area of the reading field.
- there is no direct sunlight and extraneous light is avoided.
- the bar code labels are of good print quality and have good contrast ratios.
- you do not use high-gloss labels.
- the bar code or the Data Matrix code is moved past the reading window with a rotational angle of 10° to 15°.
- the red light beam is narrowed down for its respective reading task in order to avoid reflections on shiny components.

The front beam exit of the scan engine is almost vertical to the optics. The code label must be rotated by > 10° to avoid a total reflection of the red light beam in the case of glossy labels.



α Azimuth angle
β Angle of inclination
γ Angle of rotation
Recommended angle of rotation: γ > 10°

Figure 4.1: Definition of the reading angles

5 Electrical connection

CAUTION

Safety notices

- Before connecting the device, be sure that the supply voltage agrees with the value printed on the name plate.
- Connection of the device and maintenance work while under voltage must only be carried out by a qualified electrician.
- The power supply unit for the generation of the supply voltage for the bar code reader and the corresponding connection units must have a secure electrical insulation according to IEC 60742 (PELV). For UL applications: only for use in “class 2” circuits according to NEC.
- If faults cannot be corrected, the device should be removed from operation and protected against possible commissioning.

5.1 Voltage supply

The scan engine is designed for connection to a 5 V supply voltage.

- +5 V DC (pin 1)
- GND (pin 2)

An adapter circuit board with spring terminals, Molex plug connector and 9-pin SUB-D socket is available as an accessory; see chapter 12.2 "Accessories".

- With the adapter circuit board, the 12-pin plug connector of the scan engine can be contacted via a 150 mm long interconnection cable with a 12-pin Molex terminal strip and connected to the PC via the 9-pin SUB-D socket using an RS 232 interconnection cable.
- With the adapter circuit board, the voltage supply of 10 … 30 V DC can be fed in via spring terminals or, alternatively, 5 V DC can be fed in via a micro USB connector.

5.2 Pin assignment

Pin	Signal	Description
1	+5 V DC Power	IN
2	GND	IN
3	BUZZER	OUT
4	SWITCHING OUTPUT	OUT
5	TRIGGER	IN
6	RS 232 RxD	IN
7	RS 232 TxD	OUT
8	RS 232 RTS	OUT
9	RS 232 CTS	IN
10	---	not connected
11	---	not connected
12	---	not connected

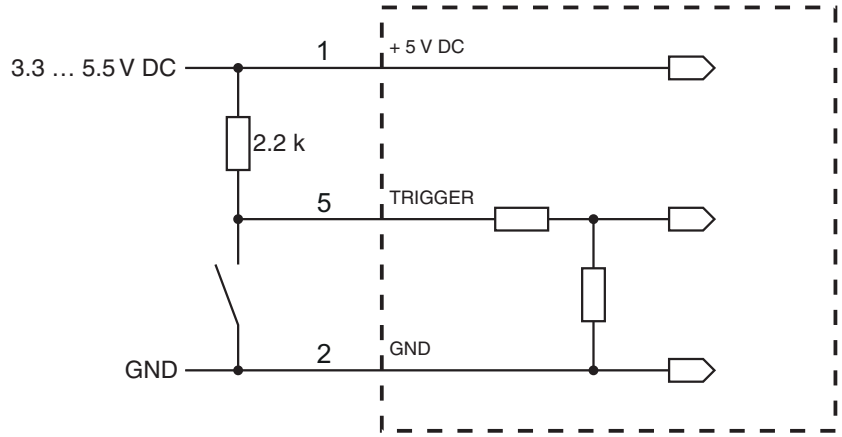
5.3 Switching input/Switching output

The scan engine has a switching input **and** a switching output.

- The switching input is used to trigger reading.
- The switching output signals successful code reading.
- An additional BUZZER output supplies a modulated signal for connecting a buzzer. The buzzer signals successful code reading.

5.3.1 Switching input

A read process can be triggered using the trigger input (pin 5) in the **standard setting** (low = active) via the connection to GND (pin 2). We recommend wiring a 2.2 kΩ “pull-up” resistor as defined cable termination; see figure 5.1.



Connection version **NPN**: standard setting (low = active)

Figure 5.1: Wiring example of the trigger input

5.3.2 Switching output

The NPN switching output connection between switching output (pin 4) and GND (pin 2) switches if a code is detected against GND.

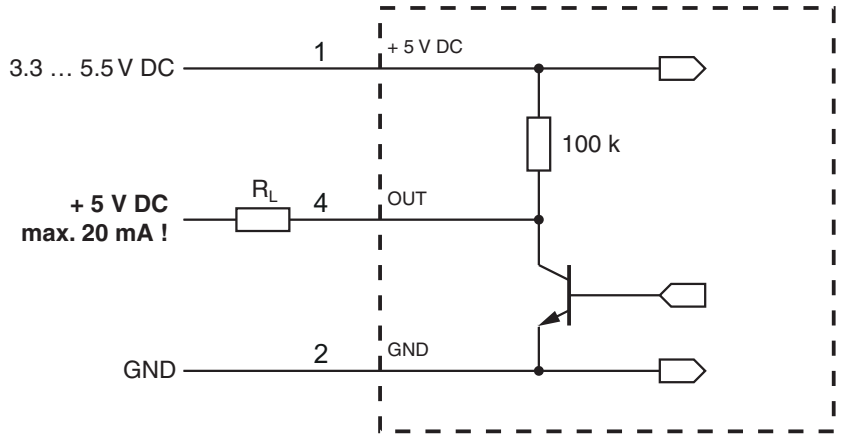


Figure 5.2: Switching output

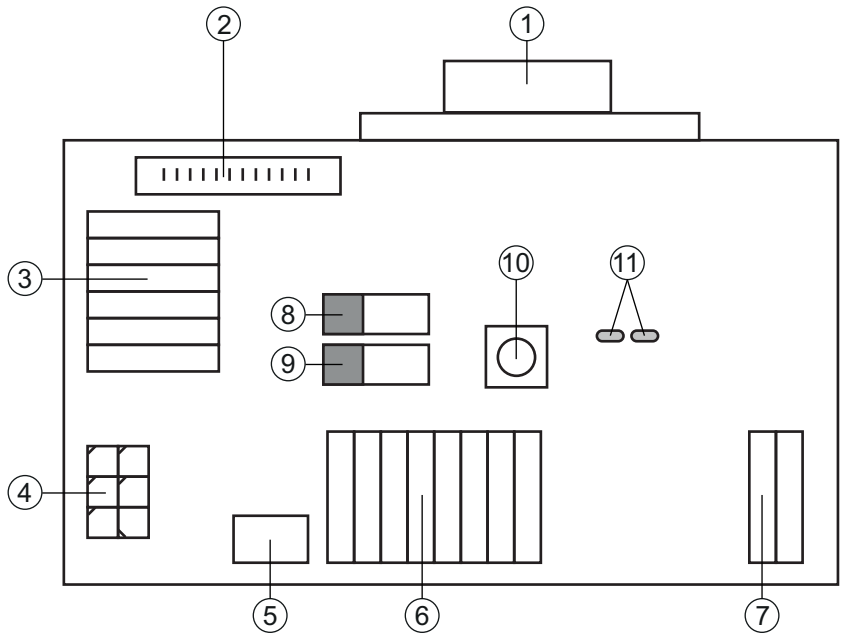
NOTICE
Maximum loading of the switching output
↳ Do not load the switching output of the scan engine with more than 20 mA at +5 … V DC!

5.4 PC or terminal connection

Via the serial interface, you can configure the scan engine by means of a PC or terminal. For this, you need an RS 232 connection that establishes the RxD, TxD and GND connections between PC and scan engine.

The RS 232 connection can be established in the following ways:

- Direct connection of the plug connector of the scan engine to the PC or terminal via its own connector.
- Connection via an MA-CR adapter circuit board
  To simplify the connection of the connection wires to the PC interface, an adapter circuit board (MA-CR) is available for implementing the 12-pin plug connector to SUB-D, 9-pin; see chapter 12.2.



1 RS 232 connection
2 CR 50 or DCR 80 connection
3 CR 100 or CR 55 connection
4 Molex Micro-Fit, 6-pin
5 USB connection
6 Connection to machine control, PLC, external voltage supply 5 VDC
7 External voltage supply 10 … 30 VDC
8 SWIN DIP switch (level for trigger button; 5 V if the scanner high switching input is active, GND if the low input is active)
9 USB/PWR DIP switch (USB position if voltage is supplied via USB; PWR position if voltage is supplied via (7))
10 Trigger button
11 Status LEDs

Figure 5.3: Connection options for MA-CR adapter circuit board

5.5 Cable lengths and shielding

The maximum cable length is 3 m.

Should a cable extension be necessary, make certain that the cables of the RS 232 interface are shielded.

6 Configuration and diagnostic software - *Sensor Studio*

The *Sensor Studio* configuration software provides a graphical user interface for the operation, configuration and diagnosis of the device via the RS 232 interface.

A device that is not connected to the PC can be configured offline.

Configurations can be saved and reopened as projects for transferring back to the device at a later time.

Only use the *Sensor Studio* configuration software for products manufactured by **Leuze electronic.**

The *Sensor Studio* configuration software is offered in the following languages: German, English, French, Italian and Spanish.

The FDT frame application of the *Sensor Studio* supports all languages; all languages may not be supported in the device DTM (Device Type Manager).

The *Sensor Studio* configuration software is designed according to the FDT/DTM concept:

- You make the individual configuration settings for the bar code reader in the Device Type Manager (DTM).
- The individual DTM configurations of a project can be called up via the frame application of the Field Device Tool (FDT).
- Communication DTM for bar code readers: *LeCommInterface*
- Device DTM for scan engine DCR 80

Procedure for the installation of the software and hardware:

↳ Install the *Sensor Studio* configuration software on the PC.

↳ Install the communication and device DTM.

Communication and device DTM are included in the *LeAnalysisCollectionSetup* installation package.

↳ Create DCR 80-DTM in the project tree of the *Sensor Studio* FDT frame.

↳ Connect scan engine to PC; see chapter 5.4

6.1 System requirements

To use the *Sensor Studio* configuration software, you need a PC or laptop with the following specifications:

Table 6.1: *System requirements for Sensor Studio* installation

Operating system	Windows XP or higher (32 bit, 64 bit) Windows Vista Windows 7 Windows 8
Computer	Processor type: 1 GHz or higher Serial COM interface CD drive Main memory (RAM): at least 64 MB Keyboard and mouse or touchpad
Graphics card	At least 1024 x 768 pixels
Required hard disk capacity for *Sensor Studio* and communication DTM	35 MB

Administrator privileges on the PC are necessary for installing *Sensor Studio*.

6.2 Installing *Sensor Studio* configuration software

The installation files of the *Sensor Studio* configuration software must be downloaded from the Internet at **www.leuze.com**.

For subsequent updates, you can find the most recent version of the *Sensor Studio* installation software on the Internet at **www.leuze.com**.

6.2.1 Downloading configuration software

↳ Call up the Leuze home page: **www.leuze.com**

↳ Enter the type designation or part number of the device as the search term.

↳ The configuration software can be found on the product page for the device under the *Downloads* tab.

6.2.2 Installing the *Sensor Studio* FDT frame

NOTICE
First install the software!
↳ Do not yet connect the device to the PC. First install the software.

If FDT frame software is already installed on your PC, you do not need the *Sensor Studio* installation.

You can install the communication DTM and the device DTM in the existing FDT frame. Communication DTM and device DTM are included in the *LeAnalysisCollectionSetup* installation package.

↳ Start the PC.

↳ Download the configuration software from the Internet to the PC; see chapter 6.2.1.

Unpack the installation package.

↳ Start the *SensorStudioSetup.exe* file.

↳ Follow the instructions on the screen.

The Installation Wizard installs the software and places a shortcut on the desktop ().

6.2.3 Install the communication DTM and device DTM

Prerequisites:

- An FDT frame is installed on the PC.

↳ Start the *LeAnalysisCollection.exe* file from the installation package and follow the instructions on the screen.

The installation wizard installs communication DTM and device DTM for DCR 80.

6.2.4 Connecting device to PC

The device is connected to the PC via the RS 232 interface.

- You need an RS 232 connection that establishes the RxD, TxD and GND connections between PC and device; see chapter 5.4.
- The 5 V DC voltage supply is to be fed in externally; see chapter 5.1.

The MA-CR adapter circuit board with spring terminals and plug connector for connecting the device, as well as 9-pin SUB-D socket for connecting an RS 232 interconnection cable, is available as an accessory. An RS 232 interconnection cable to the PC is also available as an accessory; see chapter 12 "Ordering information and accessories".

The adapter circuit board requires 10 V … 30 V DC as external voltage supply, which can be fed in via spring terminals. Alternatively, 5 V DC can be fed via the 12-pin plug connector of the DCR 80 using a 150 mm long interconnection cable with 12-pin Molex terminal strip.

6.3 Starting the *Sensor Studio*

configuration software

Prerequisites:

- The device has been mounted (see chapter 4) and connected (see chapter 5) correctly.
- The device is connected to the PC via the RS 232 interface (see chapter 6.2.4).
- The service interface is activated on the device; see chapter 0.0.3
- The *Sensor Studio* configuration software is installed on the PC (see chapter 6.2 "Installing Sensor Studio configuration software").

↳ Start the *Sensor Studio* configuration software by double-clicking the *Sensor Studio* icon ( ).

The **mode selection** of the **Project Wizard** is displayed.

↳ Select the **Device selection without communication connection (offline)** configuration mode and click on [Next].

The **Project Wizard** displays the **device selection** list of the configurable devices.

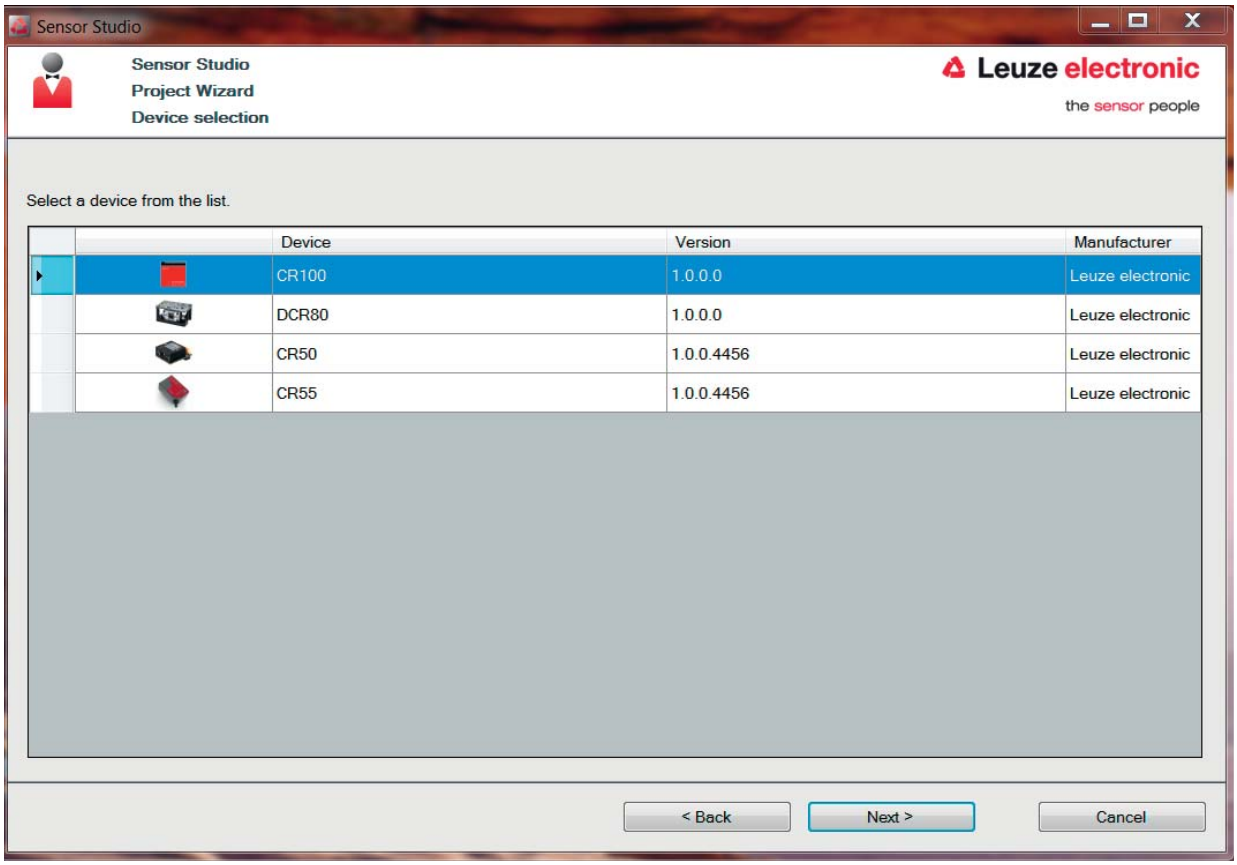


Figure 6.1: Device selection for scan engine DCR 80

↳ Select **DCR 80** in the **device selection** and click on [Next].

The device manager (DTM) of the connected DCR 80 starts with the offline view for the *Sensor Studio* configuration project.

↳ Establish the online connection to the connected DCR 80.

In the *Sensor Studio* FDT frame, click on the [Establish connection with device] button ( ).

In the *Sensor Studio* FDT frame, click on the [Upload parameters to device] button ( ).

The current configuration data is displayed in the device manager (DTM).

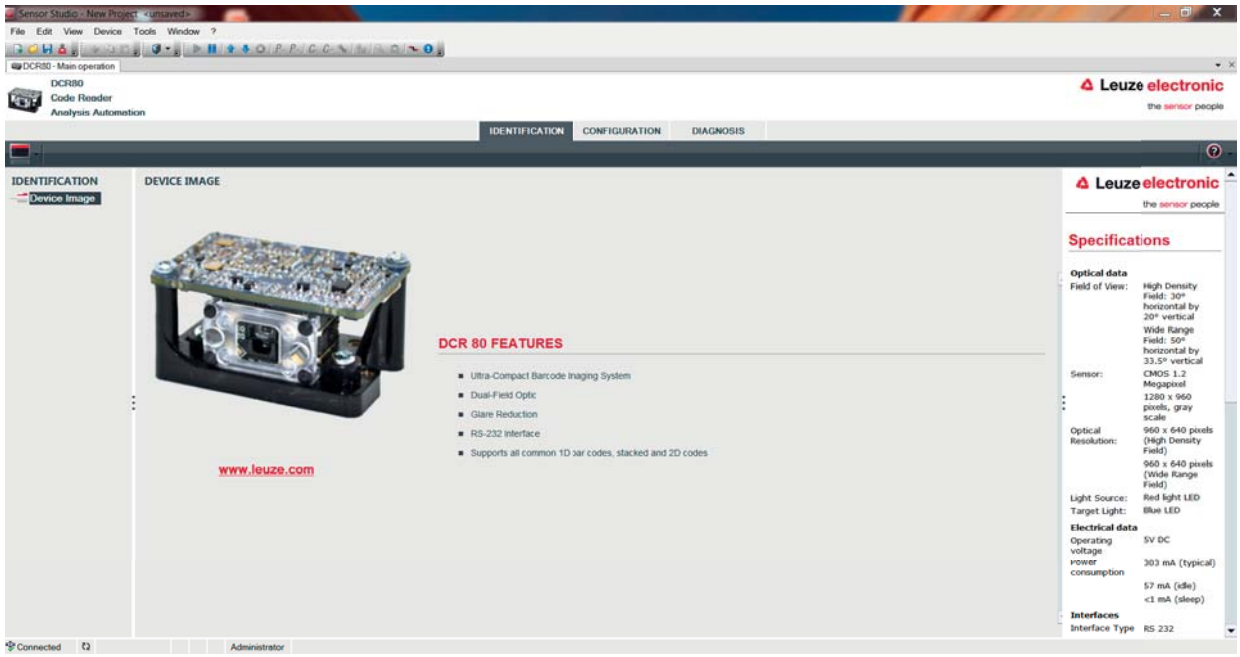


Figure 6.2: Configuration project: *Sensor Studio* device manager (DTM) for DCR 80

↳ The menus of the *Sensor Studio* device manager (DTM) can be used to change or read out the configuration of the connected device.

The user interface of the *Sensor Studio* device manager (DTM) is largely self-explanatory.

The online help system provides information on the menu items and adjustment parameters. Select the **Help** menu item in the menu [?] ( ).

↳ Transfer the modified configuration parameters to the device.

If a connection exists, click on the [Download parameters to device] button ( ) on the task bar.

6.4 Exiting *Sensor Studio*

After completing the configuration settings, close the *Sensor Studio* configuration software

↳ Exit the program via **File > Exit**.

↳ Save the configuration settings as a configuration project on the PC.

You can open the configuration project again at later time via **File > Open** or with the *Sensor Studio* **Project Wizard** ( ).

6.5 Configuration parameters

In this chapter, you will find information and explanations on the configuration parameters of the device manager (DTM) for the scan engine DCR 80.

This chapter does not include a complete description of the *Sensor Studio* configuration software.

Complete information on the FDT frame menu and on the functions in the device manager (DTM) can be found in the online help system.

The device manager (DTM) for the scan engine DCR 80 of the *Sensor Studio* configuration software offers the following configuration functions:

- *General (Control)*
- *Decode*; see chapter 6.5.2
- *Host Interface;* see chapter 6.5.3
- *Diagnosis*; see chapter 6.5.4

The online help system displays information on the menu items and configuration parameters for each function. Select the **Help** menu item in the menu [?]

6.5.1 Control tab

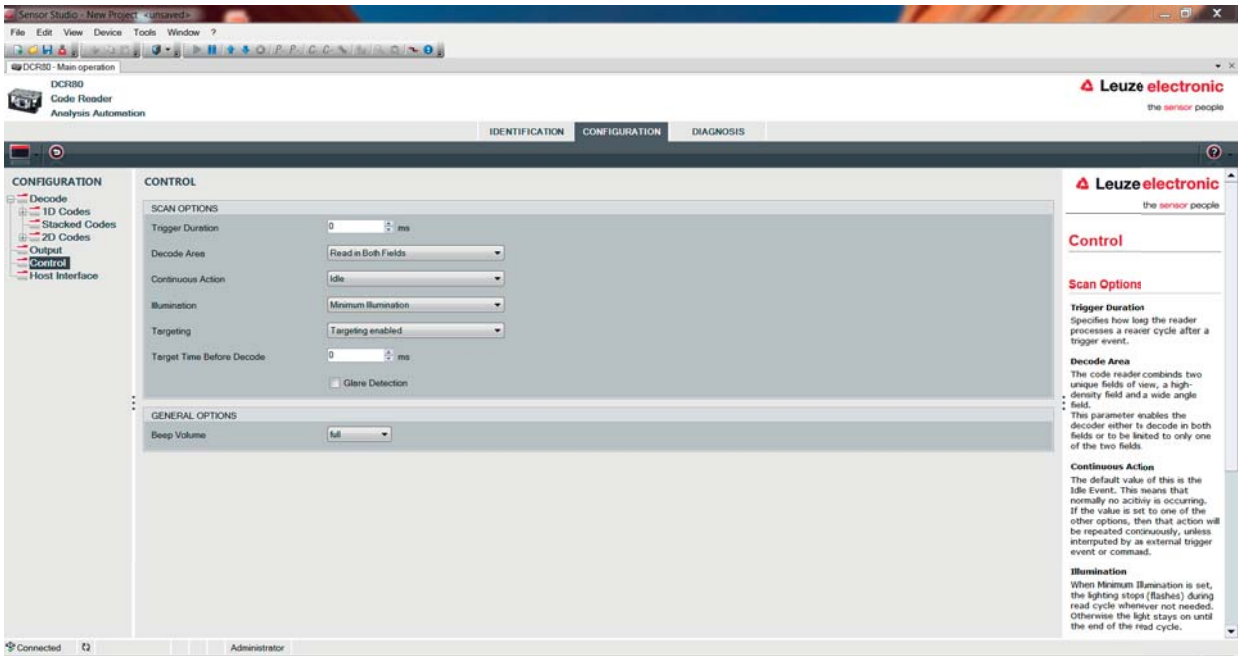


Figure 6.3: Control tab

Trigger duration
Set the time, for which a read cycle remains active after a trigger event. Example: trigger duration = 3000 ms means that the scanner tries to decode a code for a maximum of three seconds after a trigger event. The read cycle ends after successful decoding or after the time that has been preset here has relapsed.

Reading fields (Decode Area)
Selection of the reading field. The scan engine has two reading fields:
- High resolution reading field
- Wide-range reading field

Scan Mode (Continuous Action)
Selection of the reading behavior:
- Read when triggered
- Presentation mode
- Duration reading

LED illumination (Illumination)
Set the illumination time of the LEDs after successful reading.

Target illumination (**Targeting**)	Switch the blue alignment LEDs on and off.
Target illumination time setting (**Target Time before Decode**)	Setting of the time until which reading takes place after a trigger event. The blue alignment LEDs light up immediately when the trigger event occurs.
General Settings (**General Options**)	Settings for the buzzer

6.5.2 Decode tab

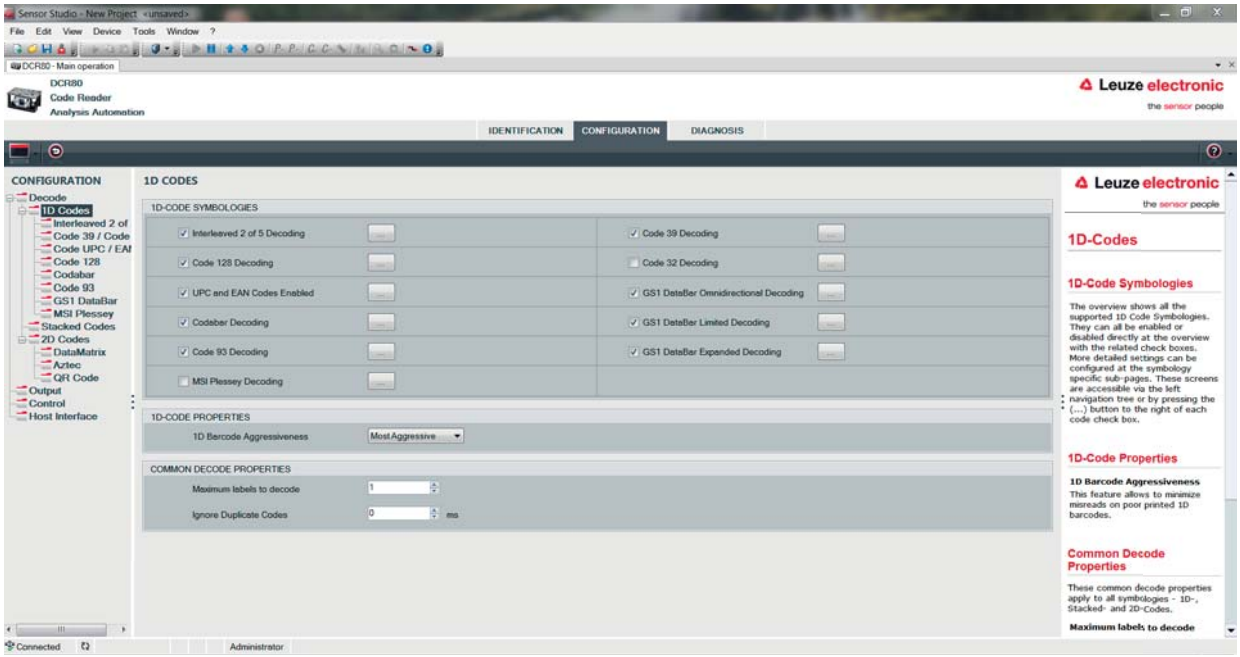


Figure 6.4: Decode tab

Code table (**DECODE**)	Here, the codes which are to be decoded are set. We recommend enabling only the code types which are to actually be read with the corresponding element numbers. Codes which are not enabled are not decoded!
Properties (**SYMBOLOGIES**)	Use the […] button to the right of the given code to select the code-specific settings. Alternatively, the property settings can be selected directly via the navigation tree under the [Decode] button. The properties can be individually set for each **code type**.

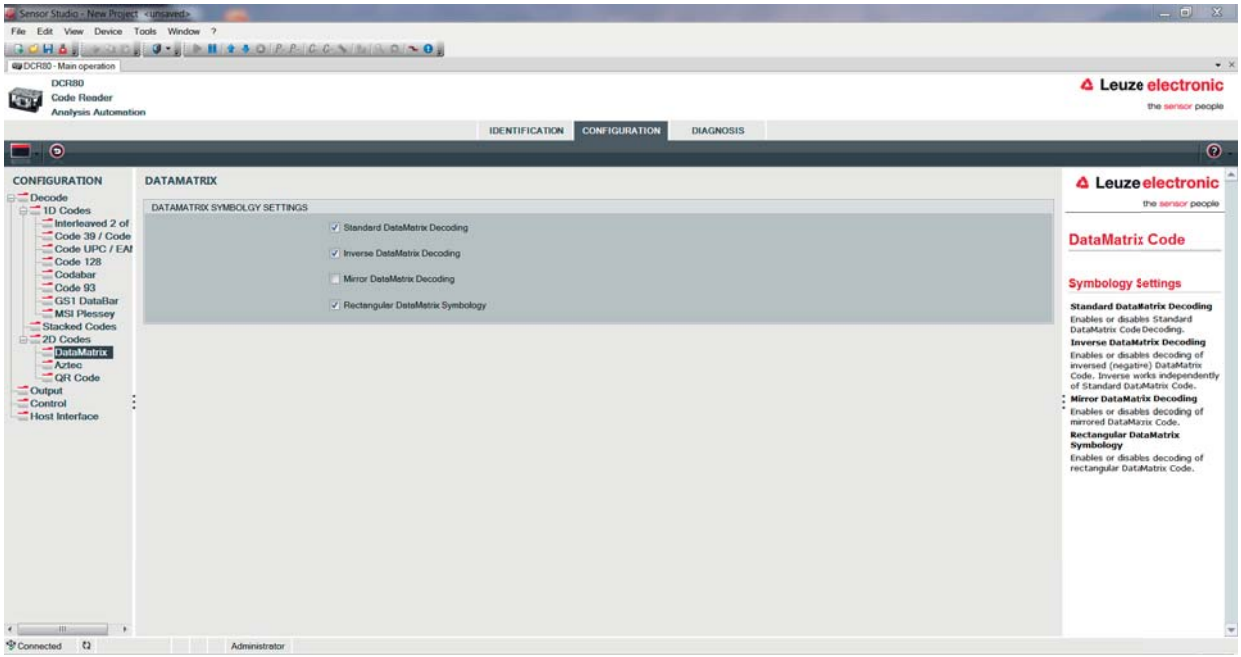


Figure 6.5: Standard settings for the Properties window (SYMBOLOGY SETTINGS) – Decode tab

6.5.3 Host interface tab

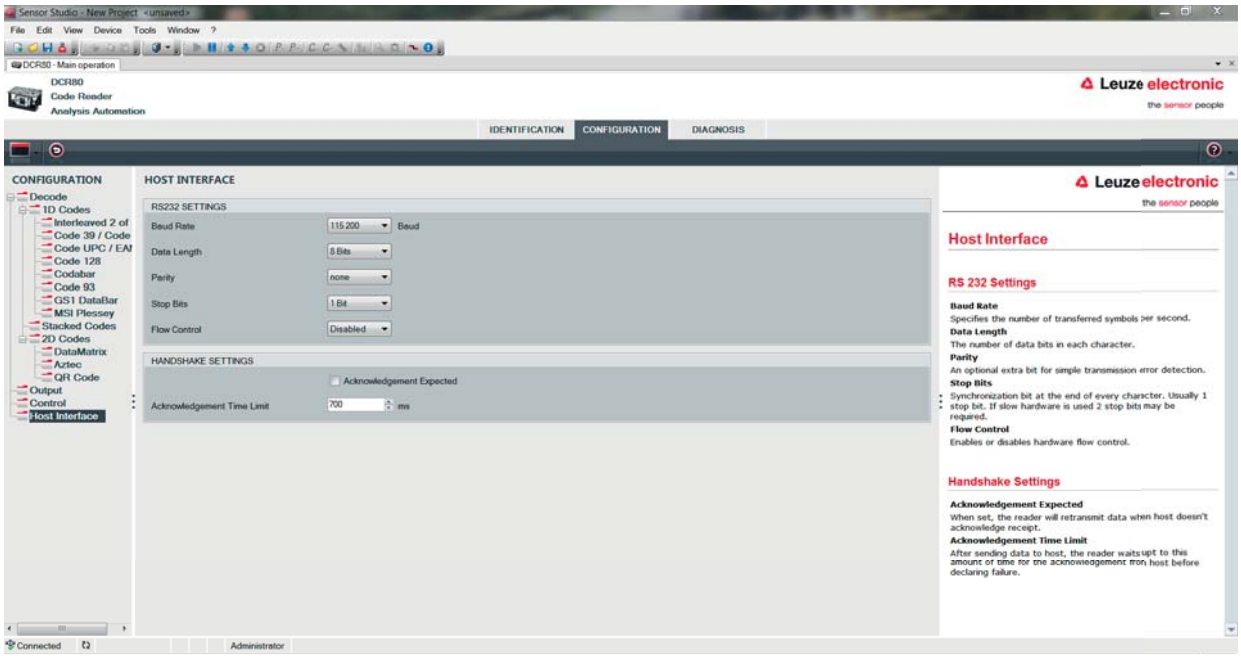


Figure 6.6: Host interface tab

Select the desired baud rate, the stop bits, the data bits, the parity and various transmission modes here. The desired acknowledgment settings are also to be set in this selection window.

6.5.4 Diagnosis / Terminal

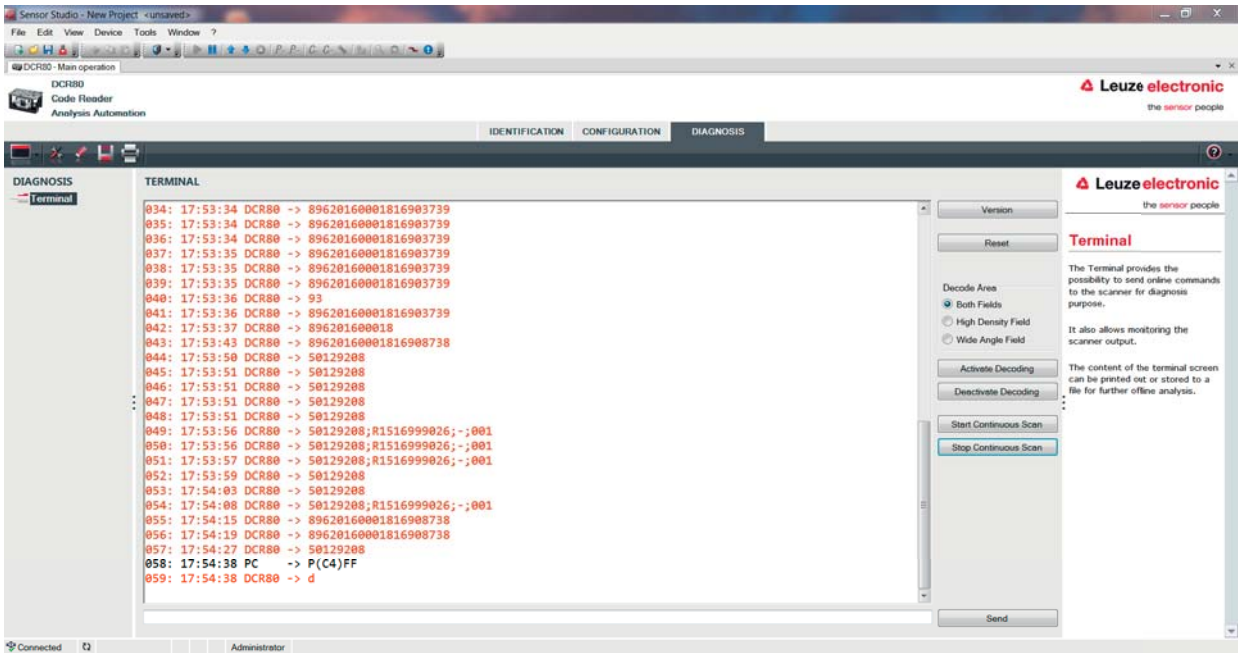


Figure 6.7: Terminal

The Terminal tab provides the following functions:

- Send online commands to the scan engine for diagnostic purposes.
- Visualize the output of the scan engine.

The contents of the terminal display can be printed out or saved in a file for subsequent offline evaluation.

7 Starting up the device - Configuration

7.1 Measures to be performed prior to the initial commissioning

NOTICE
↳ Please observe the notices for device arrangement, see chapter 4.1.
↳ If possible, always trigger the scanner with the aid of commands or an external signal transmitter (photoelectric sensor).
↳ Before commissioning, familiarize yourself with the operation and configuration of the device(s).
↳ Before connecting the supply voltage, recheck all connections and ensure that they have been properly made.

7.2 Starting the device

7.2.1 Interface

Proper function of the interface can be most easily tested in service operation using the serial interface with the *Sensor Studio* configuration software and a notebook computer.

7.2.2 “Online commands”

Using the “Online” commands, important device functions can be checked, e.g. reading activation.

7.2.3 Problems

If a problem occurs that cannot be rectified even after checking all electrical connections and settings on the devices and on the host, contact your responsible Leuze electronic subsidiary or Leuze electronic customer service, see chapter 10.

7.3 Setting the communication parameters

You have now commissioned the device. Usually, you will have to configure it before you can use it. Using the configuration options offered in the *Sensor Studio* or by means of the device DTM, the device can be individually configured according to your application. For information on the various configuration options, see chapter 6 or refer to the online help.

It is normally sufficient to set the code type and code length in accordance with the 1D or 2D codes that are to be read in order to be able to operate the scan engine.

The setting of code type and code length is usually accomplished by using the *Sensor Studio* configuration software, see chapter 6.

8 Online commands

8.1 Overview of commands and parameters

Online commands can be used to send commands directly to the device for control and configuration. For this, the scan engine has to be connected to a computer (host) via the serial interface.

Using the “online” commands you can:

- query the device version.
- activate and deactivate code reading.
- perform a software reset.

Command syntax

<cmd-prefix><cmd-type><data-size>[<data>]<reserved><crc>	
<cmd-prefix>	<0xEE><0xEE><0xEE><0xEE>
<cmd-type>	One ASCII character
<data-size>	Byte value 0 … 240 Number of bytes in <data>
[<data>]	Optional: command data (byte values) in range of 0 … 255
<reserved>	One byte, always <0x00>
<crc>	Two bytes crc16 check sum

Answer syntax

<start-tag><packet-type>[<packet-data>]<EOT>	
<start-tag>	<0x01>X<0x1E>ap/
<packet-type>	One ASCII character
[<packet-data>]	Optional: answer data
<EOT>	One byte <EOT> (<0x04> hex.)

8.2 General online commands

Software version number

Command	<cmd-prefix>I<0x00><0x00><0x03><0x3C>
Description	Requests device version information
Parameter	none
Answer	<start-tag>iVVVVWWWWXXXXSSSSSSSSSSAOODYYYYHHIIIIJJJJKKKKLLLL<TAB>Z…Z<EOT> • i: “I” string output • VVVV: application firmware version number • WWWW:core application firmware version number • XXXX: reserved • A: current execution state: “A”: core is running • OO: OEM identifier • D: display type “0”: no display device • YYYY: reserved • HH: hardware version • IIII: hardware type identifier (value in register 21B) • JJJJ: boot application version • KKKK: operating system kernel version • LLLL: root file-system version • <TAB>: ASCII TAB character • Z…Z: OEM decoder version: null-terminated string of printable ASCII characters Example: i10261026none0020366861A060000008000600160066000 2 -> cd(14.2.0)

Software reset

Command	<cmd-prefix>Z<0x01>1<0x00><0x1C><0x04>
Description	Carries out a software reset. The device is restarted and reinitialized, leaving it in the same state as when the supply voltage is switched on.
Parameter	none
Acknowledgment	<start-tag>d<EOT> “d”: done response

Start decoding

Command	<cmd-prefix>P<0x0C>(35)7FFFFFFF<0x00><0x57><0x5F> <cmd-prefix>$<0x01><0x03><0x00><0x1F><0x5C>
Description	The command consists of two individual commands. • The first command sets the decoder duration to infinity. • The second command activates decoding.
Parameter	none
Acknowledgment	<start-tag>d<EOT> “d”: done response (twice)

Stop decoding

Command	<cmd-prefix>P<0x0C>(35)0<0x00><0x57><0x5F>
Description	The command sets the decoder duration to zero and stops decoding.
Parameter	none
Acknowledgment	<start-tag>d<EOT> “d”: done response

Start continuous decoding

Command	<cmd-prefix>P<0x06>(C4)03<0x00><0x01><0x75>
Description	The command activates duration decoding. The read result is continuously output until it is terminated by a command.
Parameter	none
Acknowledgment	<start-tag>d<EOT> “d”: done response

End continuous decoding

Command	<cmd-prefix>P<0x06>(C4)FF<0x00><0x1C><0x71>
Description	The command ends duration decoding.
Parameter	none
Acknowledgment	<start-tag>d<EOT> “d”: done response

9 Care, maintenance and disposal

Usually, the bar code reader does not require any maintenance by the operator.

9.1 Cleaning

Clean the glass window of the bar code reader with a soft cloth before mounting.

NOTICE
Do not use aggressive cleaning agents!
↳ Do not use aggressive cleaning agents such as thinner or acetone to clean the device.

9.2 Servicing

Repairs to the device must only be carried out by the manufacturer.

↳ For repairs, contact your responsible Leuze electronic subsidiary or Leuze electronic customer service (see chapter 10).

9.3 Disposing

↳ For disposal observe the applicable national regulations regarding electronic components.

10 Service and support

24-hour on-call service at:
+49 (0) 7021 573-0

Service hotline:
+49 (0) 7021 573-123
Monday to Friday 8.00 a.m. to 5.00 p.m. (UTC+1)

E-mail:
service.identify@leuze.de

Return address for repairs:
Service center
Leuze electronic GmbH + Co. KG
In der Braike 1
D-73277 Owen / Germany

10.1 What to do should servicing be required?

NOTICE
Please use this chapter as a master copy should servicing be required!
↳ Enter the contact information and fax the form together with your service order to the fax number given below.

Customer data (please complete)

Device type:	
Serial number:	
Firmware:	
Display messages:	
LED states:	
Error description:	
Company:	
Contact person/department:	
Phone (direct):	
Fax:	
Street/No:	
ZIP code/City:	
Country:	

Leuze Service fax number:
+49 (0) 7021 573-199

11 Technical data

11.1 General specifications

Table 11.1: Optics

Optical system	CMOS Imager, Rolling Shutter (1280 x 960)
Optical resolution	High-resolution reading field 960 x 640 Wide-range reading field 960 x 640
Reading area	20 mm … 300 mm
Contrast	1D code: 25 % 2D code: 35 %
Resolution	1D code: m =0 .076 mm (3 mil), distance dependent 2D code: m = 0.127 mm (5 mil), distance dependent
Light sources • Illumination • Alignment LEDs (Aimer)	Integrated LEDs • visible red light • visible blue light

Table 11.2: Code specifications

Code type: 1D	Codabar, Code 11, Code 32 , Code 39, Code 93, Code 128, Interleaved 2 of 5, GS1 DataBar (RSS), MSI Plessey, Pharmacode, UPC/EAN, 2 of 5 (IATA, Matrix, Hong Kong, Straight, NEC), Telepen
Code type: Stacked 1D	PDF417, MicroPDF, GS1 Composite, Codablock F
Code type: 2D	Data Matrix, Aztec Code, QR Code, Micro QR, MaxiCode
Postal Codes	Australian Post, Intelligent Mail, Japan Post, KIX Code, Korea Post, Planet, Postnet, UK Royal Mail, UPU ID Tags

Table 11.3: Interfaces

Interface type	RS 232
Baud rate	9600 … 115200 baud, configurable
Data formats	Configurable

Trigger	• Switching input
	  • active: 0 V
	  • inactive: +5 V or not connected
	• Presentation Mode (Motion Control)

Switching output	NPN transistor output, max. 20 mA, Good Read
Buzzer	NPN transistor output, modulated, Good Read

Table 11.4: Electrical equipment

Supply voltage	3.3 … 5.5 V DC
Current consumption	Duration reading: typ. 350 mA Inactive illumination: typ. 75 mA

Table 11.5: Mechanics

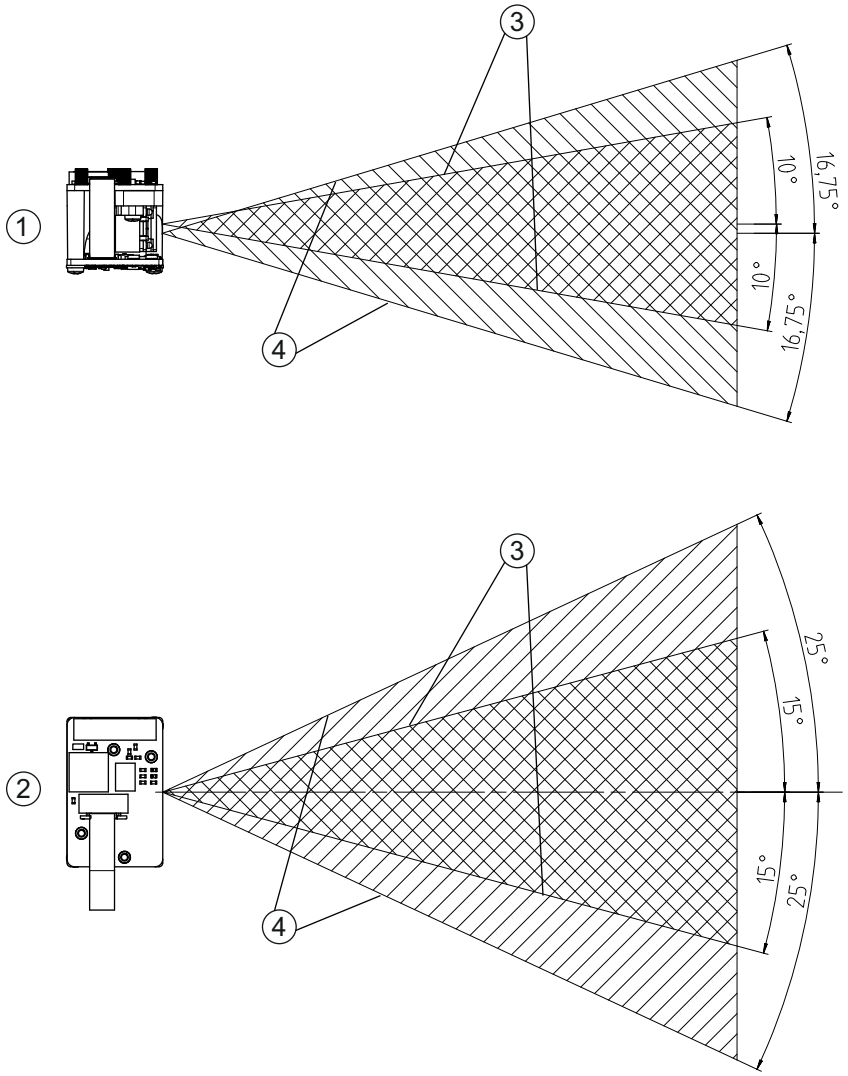
Connection type	Molex Inc. (53398-1271), 12-pin
Weight	20 g
Dimensions (HxWxD)	27 x 45 x 25 mm
Fastening	4x M2 threaded inserts, 2 mm deep

Table 11.6: Environmental data

Ambient temp. (operation/storage)	0 °C … +50 °C/-20 °C … +60 °C
Air humidity	10 % … 90 % rel. humidity, non-condensing
Ambient light	Max. 100000 Lux
Electromagnetic compatibility	EN 55022:2006 Class B IEC 62471:2006
Conformity	CE, FCC

11.2 Reading fields

Please note that the actual reading fields are also influenced by factors such as labeling material, printing quality, scanning angle, printing contrast etc., and may thus deviate from the reading fields specified here. The origin of the read distance always refers to the front edge of the housing of the beam exit.



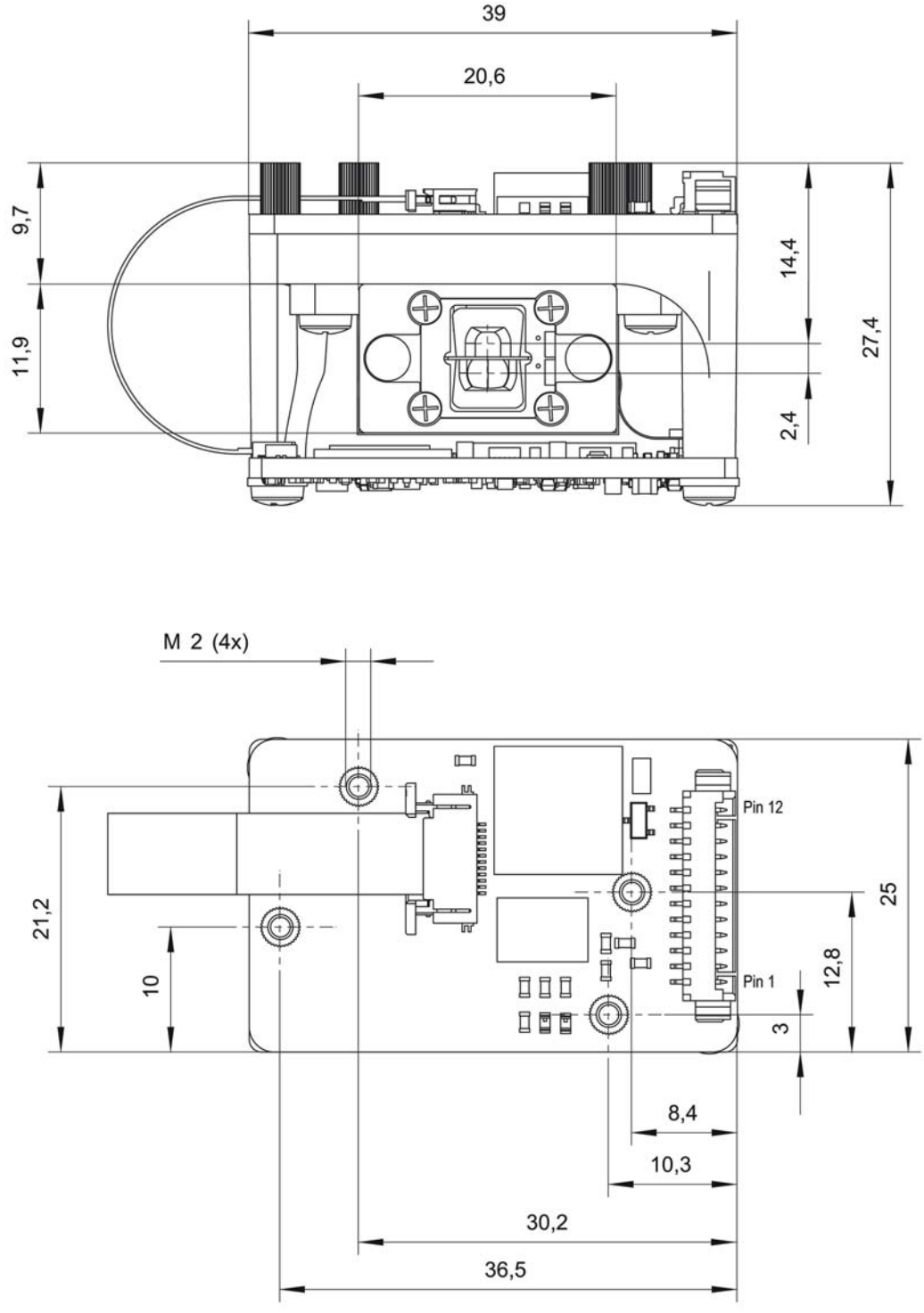
1 Reading fields – side view
2 Reading fields – top view
3 High-resolution reading field
4 Wide-range reading field

Figure 11.1: DCR 80 reading field

Table 11.7: Reading fields

Code type	Resolution	Typical reading distance [mm]
Code 39	0.076 mm (3 mil)	80 – 102
Code 39	0.190 mm (7.5 mil)	33 – 182
GS1 Data bar	0.267 mm (10.5 mil)	20 – 220
UPC Data bar	0.330 mm (13 mil)	28 – 280
Data Matrix	0.127 mm (5 mil)	43 – 115
Data Matrix	0.160 mm (6.3 mil)	33 – 150
Data Matrix	0.254 mm (10 mil)	20 – 180
Data Matrix	0.528 mm (20.8 mil)	28 – 343

11.3 Dimensioned drawings



all dimensions in mm

Figure 11.2: DCR 80 dimensioned drawing

It is advisable to use a transparent, double-sided anti-reflective coated material when installing the scan engine behind a pane of glass. Recommended pane thickness: 1 mm; optics as flush as possible with the glass.

12 Ordering information and accessories

12.1 Type overview

Table 12.1: Part numbers

Part no.	Part designation	Description
50129208	DCR80M2/R2-S5	CMOS Imager Scan Engine for 1D and 2D codes, RS 232 interface, Molex 53398-1271 connection, 12-pin

12.2 Accessories

Table 12.2: Accessories

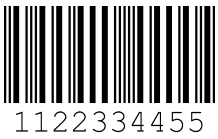
Part no.	Part designation	Description
50128204	MA-CR	Adapter circuit board for contacting the 12-pin plug connector and conversion to SUB-D, 9-pin
50113396	KB DSub-9P-3000	RS 232 interconnection cable, cable length 3 m
Sensor Studio configuration software Download at www.leuze.com see chapter 6.2.1 "Downloading configuration software"		*Sensor Studio* designed according to the FDT/DTM concept. Contains: communication DTM and device DTM

13 EC Declaration of Conformity

The scan engines of the DCR 80 series have been developed and manufactured in accordance with the applicable European standards and directives.

14 Appendix

14.1 Bar code samples



Module 0.3

Figure 14.1: Code type 01: Interleaved 2 of 5

Module 0.3

Figure 14.2: Code type 02: Code 39

Module 0.3

Figure 14.3: Code type 11: Codabar

Module 0.3

Figure 14.4: Code 128

Module 0.3

Figure 14.5: Code type 08: EAN 128

SC 2

Figure 14.6: Code type 06: UPC-A

SC 3

Figure 14.7: Code type 07: EAN 8

Figure 14.8: Example codes

14.2 Configuration via configuration codes

The scan engine DCR 80 can also be configured using parameter codes. The device parameters in the device are set and permanently saved after reading this code.

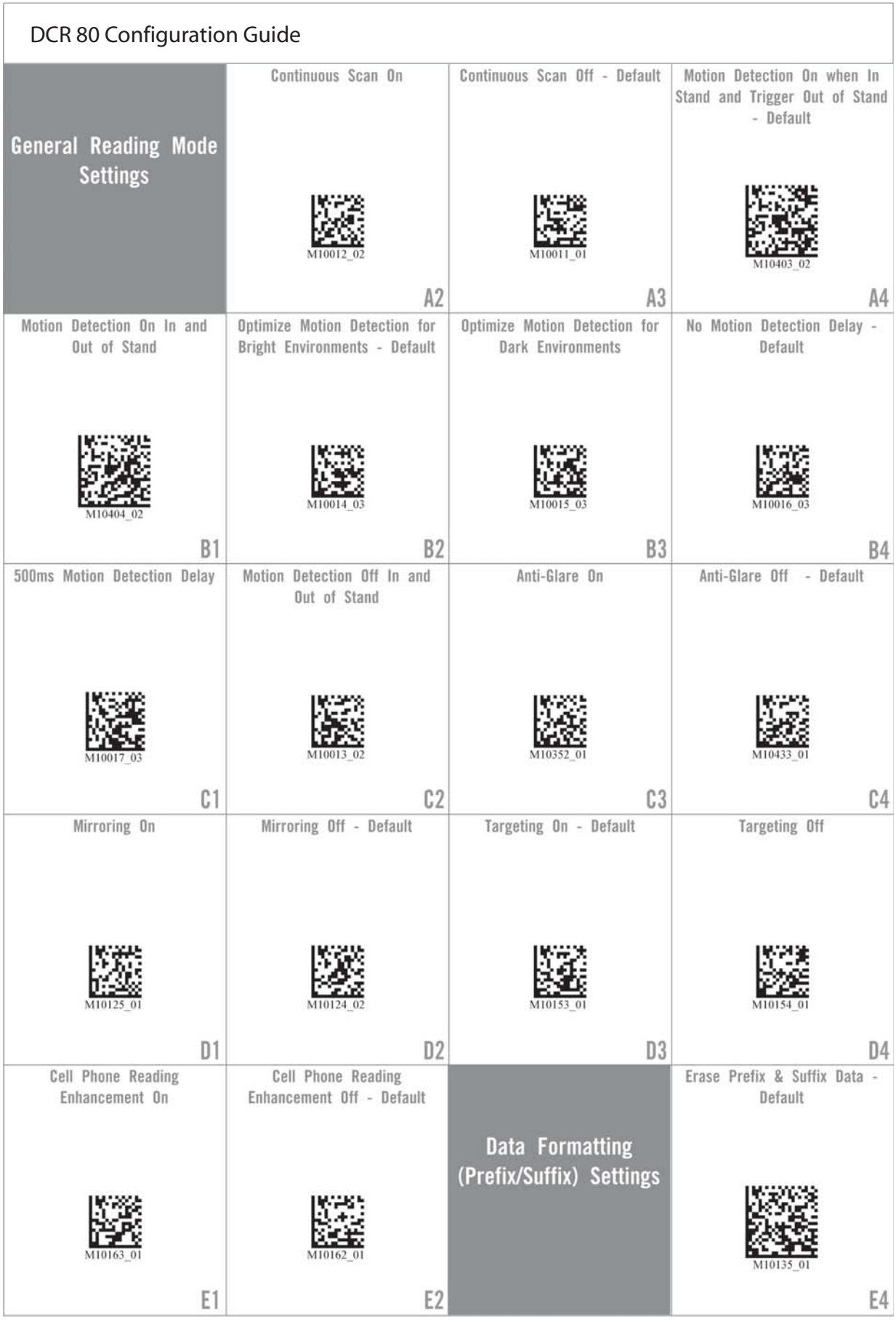


Figure 14.9: DCR 80 Configuration Guide

Figure 14.10:DCR 80 Configuration Guide

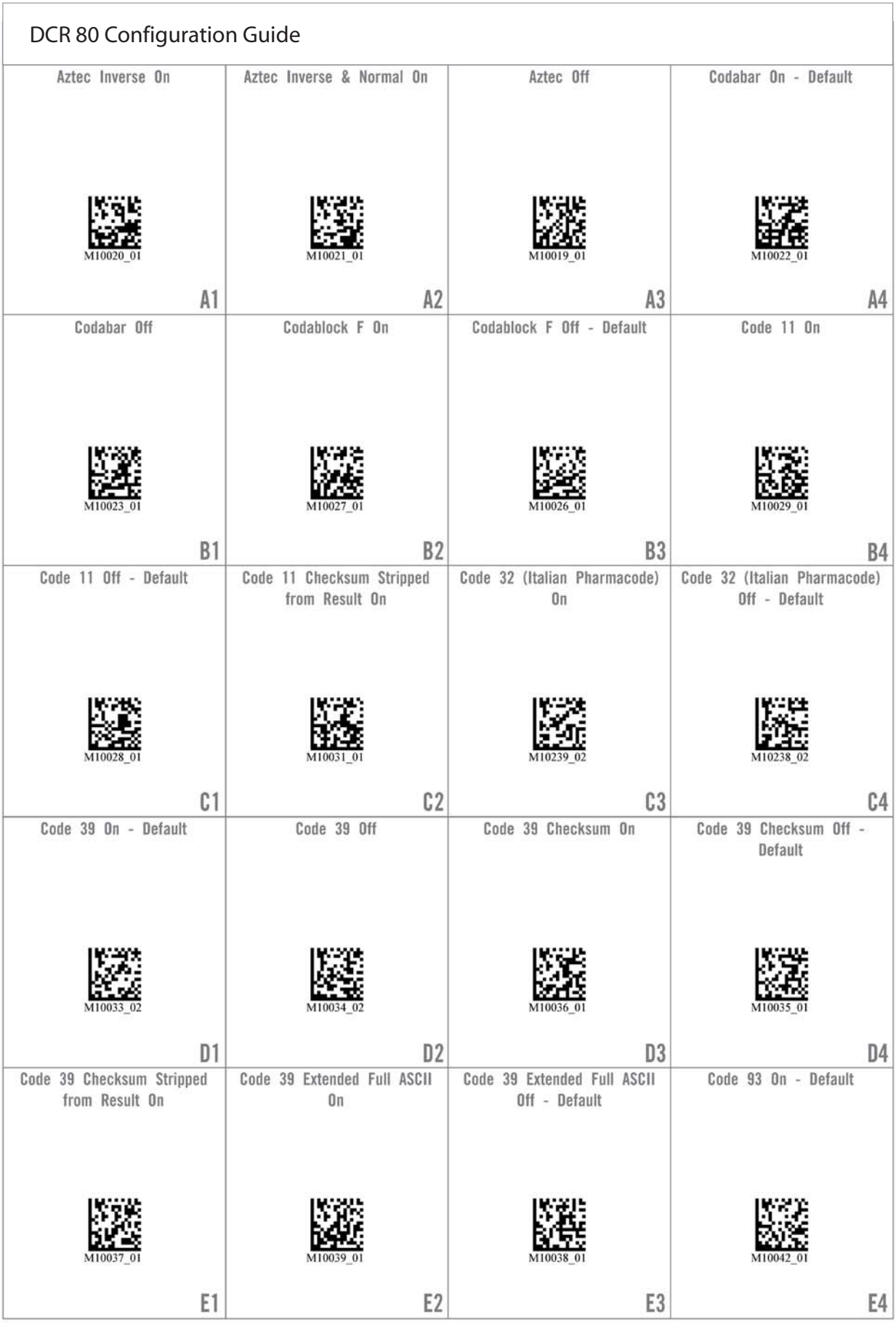


Figure 14.11:DCR 80 Configuration Guide

Figure 14.12:DCR 80 Configuration Guide

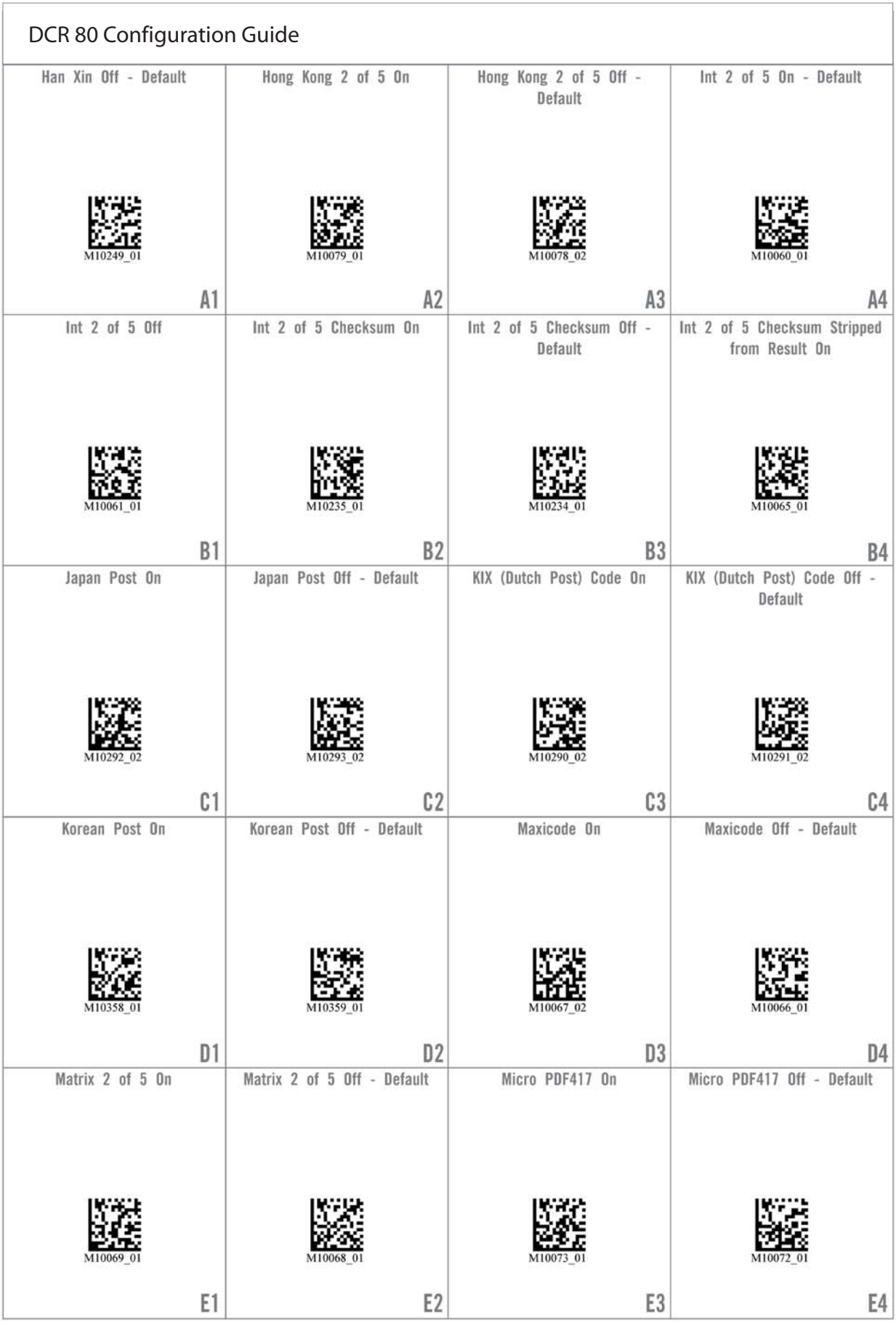


Figure 14.13:DCR 80 Configuration Guide

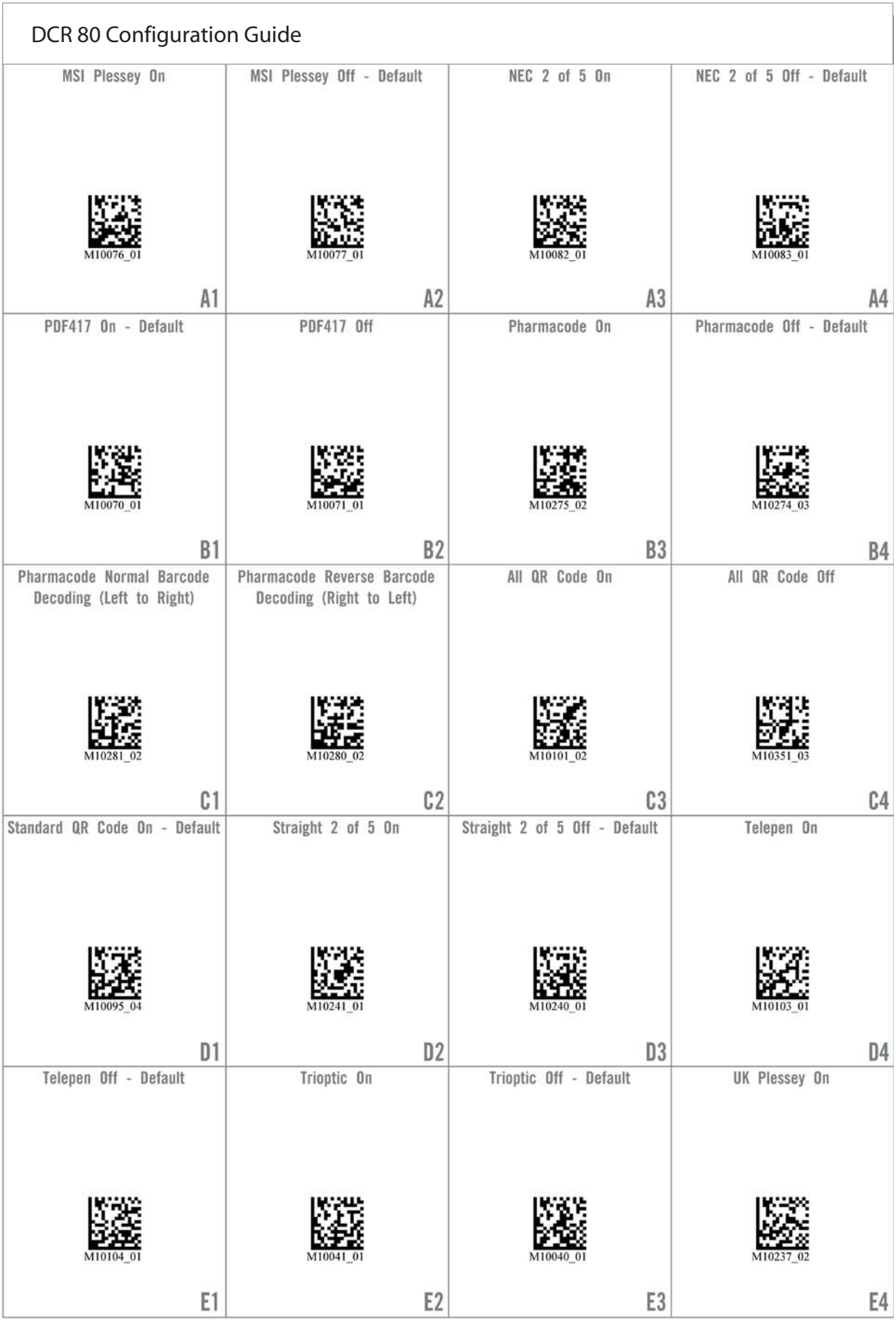


Figure 14.14:DCR 80 Configuration Guide

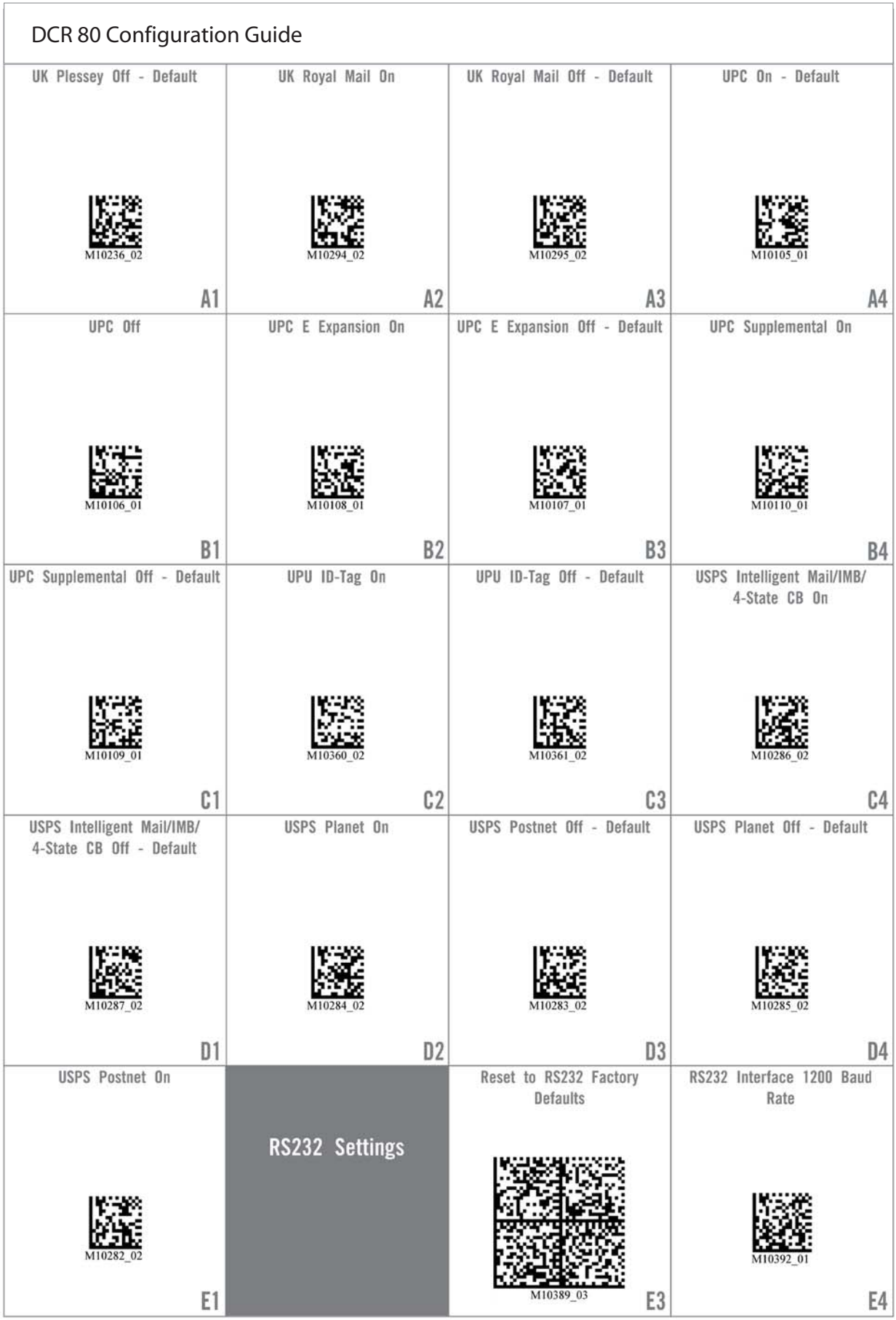


Figure 14.15:DCR 80 Configuration Guide

Figure 14.16:DCR 80 Configuration Guide

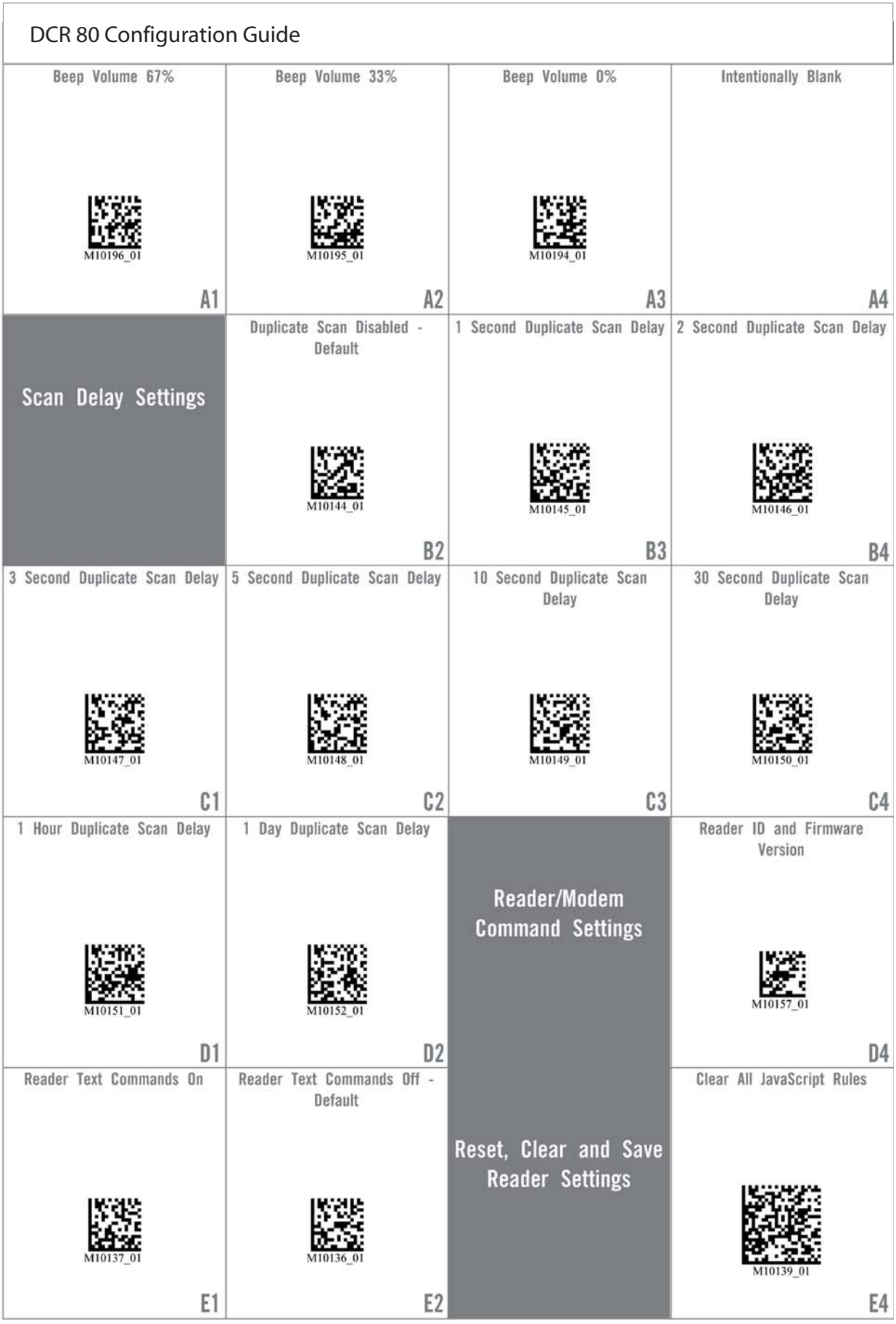


Figure 14.17:DCR 80 Configuration Guide

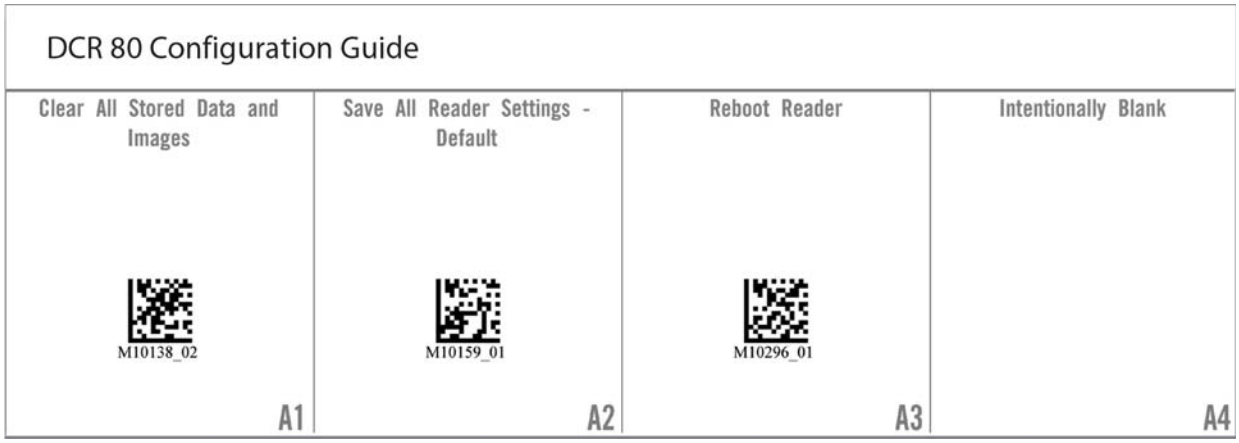


Figure 14.18: DCR 80 Configuration Guide