



## CR 55 Bar Code Reader



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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
CR	CCD based bar code reader (Code Reader)
DTM	Software device manager (Device Type Manager)
EMC	Electromagnetic compatibility
EN	European standard
FDT	Software frame for management of device managers (DTM) (Field Device Tool)
FE	Functional earth
GUI	Graphical User Interface
HID	Device class for input devices with which users directly interact (Human Interface Device)
IO or I/O	Input/Output
LED	Light Emitting Diode
PLC	Programmable Logic Control

## 2 Safety

This sensor 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 CR 55 bar code reader is designed as a stationary scanner with integrated decoder for all common bar codes used for automatic object detection.

#### Areas of application

The CR 55 bar code reader is intended especially for the following areas of application:

- automatic analyzers
- space-critical bar code reading tasks
- automation technology

<b>NOTICE</b>
<b>Comply with conditions and regulations!</b>
↳ 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

<b>NOTICE</b>
<b>Do not modify or otherwise interfere with the device.</b>
↳ 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.
The device must not be opened. There are no user-serviceable parts inside.
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 CR 55 bar code reader

The bar code reader is a CCD based line scanner with integrated decoder for all commonly used bar codes, e.g. 2/5 Interleaved, Code 39, Code 128, 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 its large reading field, the bar code reader can also be used in highly constrained spaces.

Information on technical data and characteristics: see chapter 11.

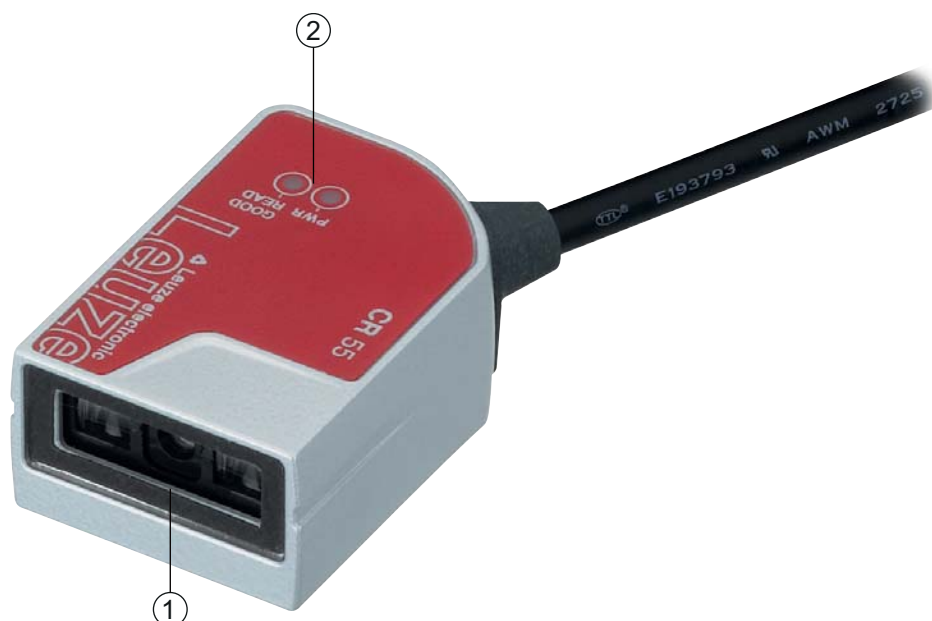
##### 3.1.2 Stand alone operation

The bar code reader is operated as a “stand-alone” single device. It is equipped with a six-wire cable with open ends for the electrical connection of the supply voltage, the interface, the switching input and the switching output.

#### 3.2 Performance characteristics

- High-performance CCD scanner with front beam exit
- Compact design for simple integration, even in constrained spaces
- Robust metal housing with cable connection
- RS 232 interface, one switching input, one switching output

#### 3.3 Device construction



- 1 Reading window with front beam exit
- 2 LED indicators

Figure 3.1: Device construction of the CR 55

#### 3.4 Connection technology

- Cable connection
- Alternative: customer-specific solutions

### 3.5 Display elements

Located on top of the bar code reader are two LEDs that indicates the readiness for operation and the read status of the bar code reader.

#### 3.5.1 LED indicators

Two LEDs on the top of the device indicate the device and read status:

Table 3.1: LED indicators

LED	State	Description
PWR	ON (continuous light)	Voltage supply OK
GOOD READ	ON (continuous light)	Reading successful

## 4 Mounting

You can fasten the bar code reader at the M2.5 mounting threads.

### 4.1 Selecting a mounting location



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

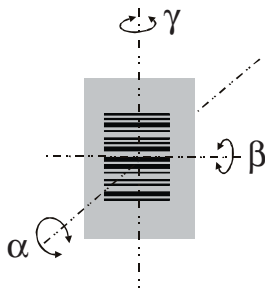
- size, orientation, and position tolerance of the bar codes on the objects to be scanned.
- The reading field of the bar code reader in relation to the bar code module width.
- The bar code reader is designed for reading codes in ladder orientation.
- the resulting minimum and maximum reading distance from the respective reading field; see figure 11.1.
- alignment of the bar code reader for avoiding reflections.
- distance between bar code reader and host system with respect to the interface.

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 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.




With front-side beam exit, the beam exits the bar code reader nearly perpendicular to the reading window. The bar 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:  $\gamma > 10^\circ$

Figure 4.1: Definition of the reading angles

## 5 Electrical connection

 **CAUTION**

**Safety notices**

- ↳ The bar code reader is completely sealed and must not be opened.
- ↳ Do not try to open the device under any circumstances, as this voids both degree of protection IP 54 and the warranty.
- ↳ 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 bar code reader is designed for connection to a 5 V supply voltage.

- +5 V DC (red)
- GND (violet)

Available as an accessory is an adapter circuit board with spring terminals and 9-pin SUB-D socket; see chapter 12.2 "Accessories".

- With the adapter circuit board, the conductors of the connection cable can be contacted via the spring terminals and connected to the PC via the 9-pin SUB-D socket with an RS 232 interconnection cable.
- With the adapter circuit board, the voltage supply from 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 of the connection cable

Wire	Assignment	Description	
Red	+5V DC	Operating voltage 5V DC	IN
Violet	GND	Operating voltage 0V DC / reference ground	IN
Black	SW OUT	Switching output	OUT
Orange	SW IN	Switching input	IN
White	RS 232 RxD	RxD signal line of the RS 232 interface	IN
Green	RS 232 TxD	TxD signal line of the RS 232 interface	OUT

### 5.3 Switching input/Switching output

The bar code reader is provided with a switching input **and** a switching output.

- The switching input is used to trigger reading.
- The switching output signals successful code reading.

#### 5.3.1 Switching input

By means of the SW IN switching input connection, you can trigger a read process in the **standard setting** (low = active) with the connection SW IN (orange) and GND (violet). We recommend wiring a 2.2 kΩ "pull-up" resistor as defined cable termination; see figure 5.1.

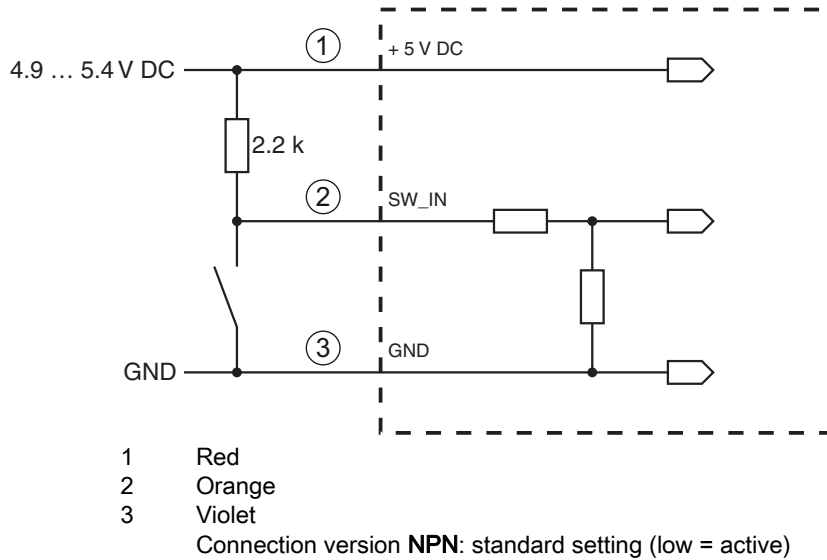


Figure 5.1: Wiring example of the trigger input

### 5.3.2 Switching output

The NPN switching output connection between SW OUT (black) and GND (violet) switches if a code is detected against GND.

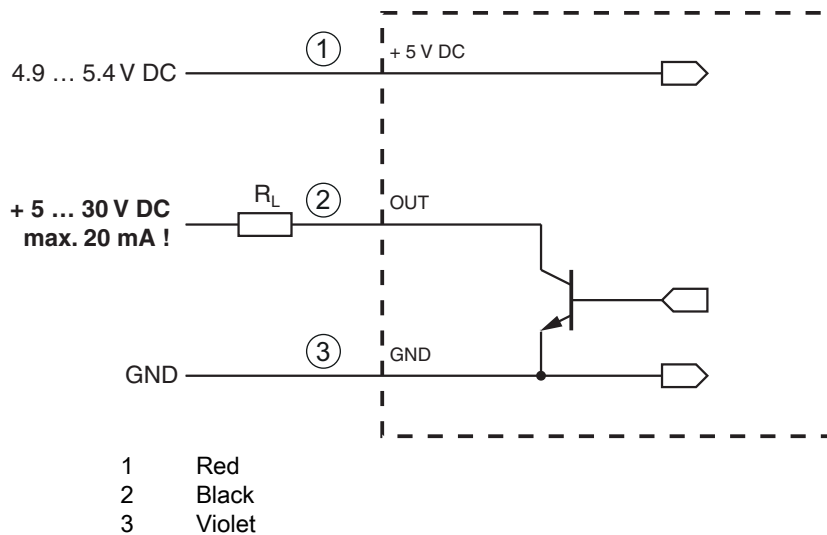


Figure 5.2: Switching output

**NOTICE**

**Maximum loading of the switching output**

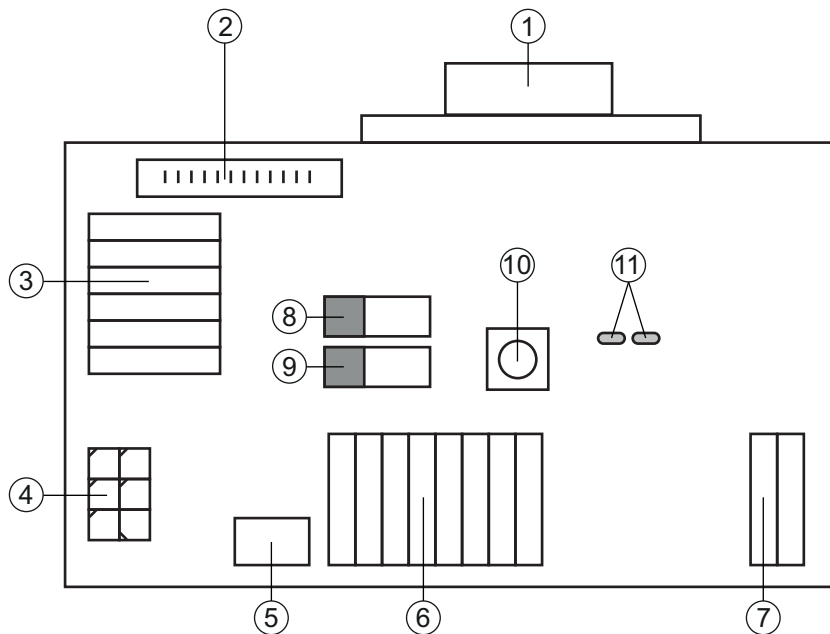
⚠ Do not load the switching output of the bar code reader with more than 20 mA at +5 ... 30V DC!

### 5.4 PC or terminal connection

Via the serial interface, you can configure the bar code reader 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 bar code reader.

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

- Direct connection of the bar code reader connection wires 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 individual wire contacting to SUB-D, 9-pin; see chapter 12.2.



- 1 RS 232 connection
- 2 CR 50 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

<p><b>NOTICE</b></p> <p><b>Using the adapter circuit board</b></p> <p>⚠ The MA-CR adapter circuit board is intended only for laboratory and test purposes and is <b>not</b> to be used for industrial applications!</p>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

### 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 bar code readers CR 55

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 CR 55-DTM in the project tree of the *Sensor Studio* FDT frame.

↗ Connect bar code reader to PC; see chapter 5.4

↗ Activate service interface on bar code reader; see chapter 7.3.2

### 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	<ul style="list-style-type: none"> <li>• Processor type: 1 GHz or higher</li> <li>• Serial COM interface</li> <li>• CD drive</li> <li>• Main memory (RAM): at least 64 MB</li> <li>• Keyboard and mouse or touchpad</li> </ul>
Graphics card	At least 1024 x 768 pixels
Required hard disk capacity for <i>Sensor Studio</i> 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](http://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](http://www.leuze.com).

### 6.2.1 Downloading configuration software

- ↗ Call up the Leuze home page: [www.leuze.com](http://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.



On delivery, the device is configured for HID operation (Human Interface Device). The device can thereby be operated directly via the Windows application.

If you would like to make other settings via the USB interface, you must download the USB driver from the Leuze home page (file name *SW\_CR5x\_Virtual\_COM\_Port\_Drivers...*).

### 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 CR 55.

### 6.2.4 Connecting bar code reader to PC

The bar code reader is connected to the PC via the RS 232 interface. For this, you need an RS 232 connection that establishes the RxD, TxD and GND connections between PC and bar code reader; see chapter 5.4.

- You need an RS 232 connection that establishes the RxD, TxD and GND connections between PC and bar code reader; 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 for connecting the bar code reader, 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 in via a micro USB connector.

## 6.3 Starting the *Sensor Studio*

configuration software

Prerequisites:

- The bar code reader has been mounted (see chapter 4) and connected (see chapter 5) correctly.
- The bar code reader is connected to the PC via the RS 232 interface (see chapter 6.2.4).
- The service interface is activated on the bar code reader; see chapter 7.3.2
- 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.

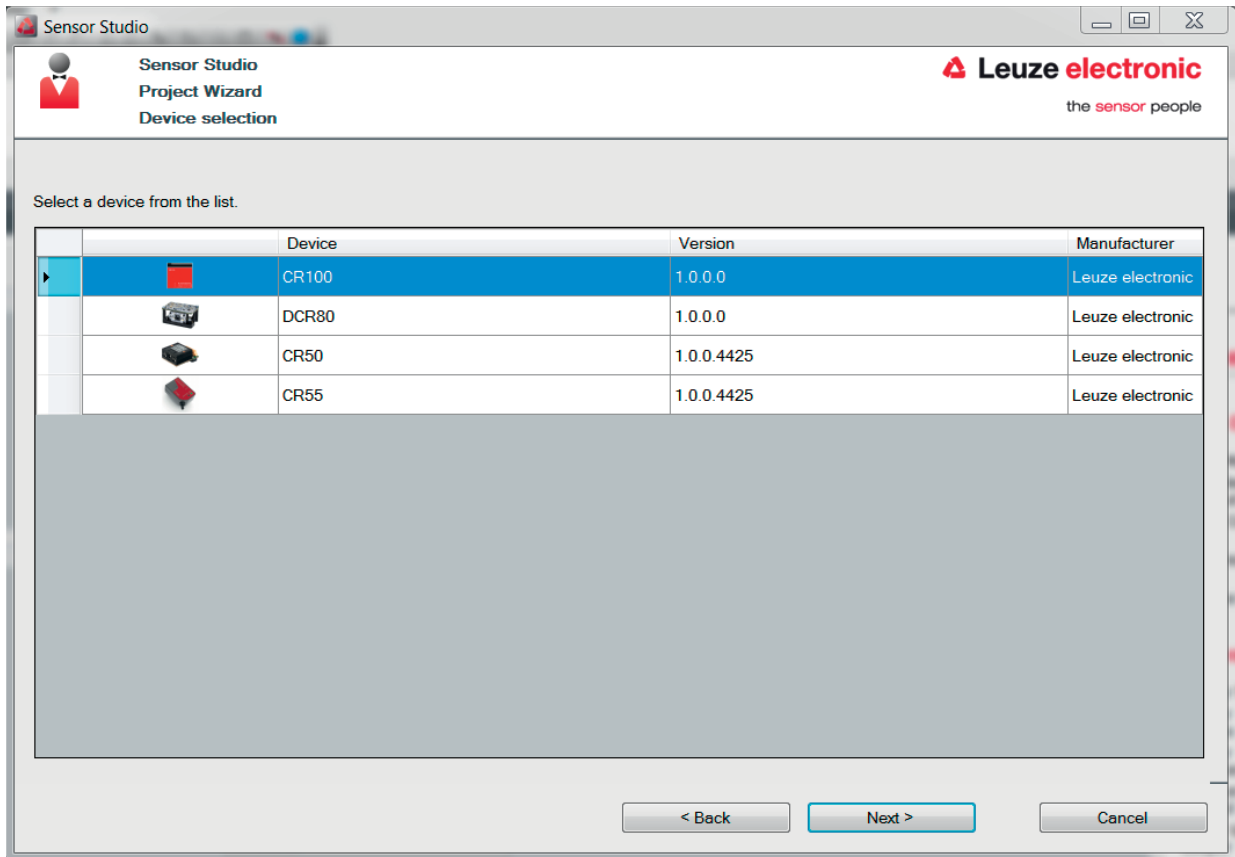




Figure 6.1: Device selection for bar code reader CR 55

☞ Select **CR 55** in the **device selection** and click on [Next].

The device manager (DTM) of the connected CR 55 starts with the offline view for the *Sensor Studio* configuration project.

☞ Establish the online connection to the connected CR 55.

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).

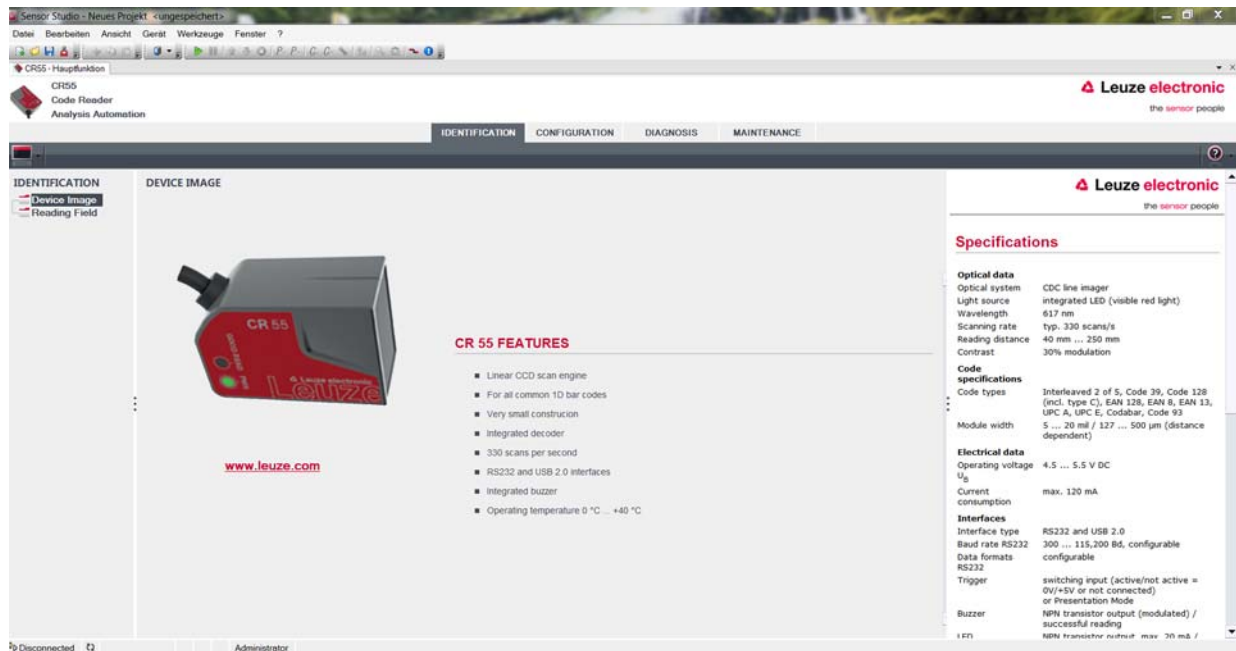


Figure 6.2: Configuration project: *Sensor Studio* device manager (DTM) for CR 55

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

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 CR 55 bar code reader.



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 CR 55 bar code readers of the *Sensor Studio* configuration software offers the following configuration functions:

- *General*
- *Decode*; see chapter 6.5.2
- *Host Interface*; see chapter 6.5.3
- *Diagnosis*
- *Change firmware (Maintenance)*; 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 General tab

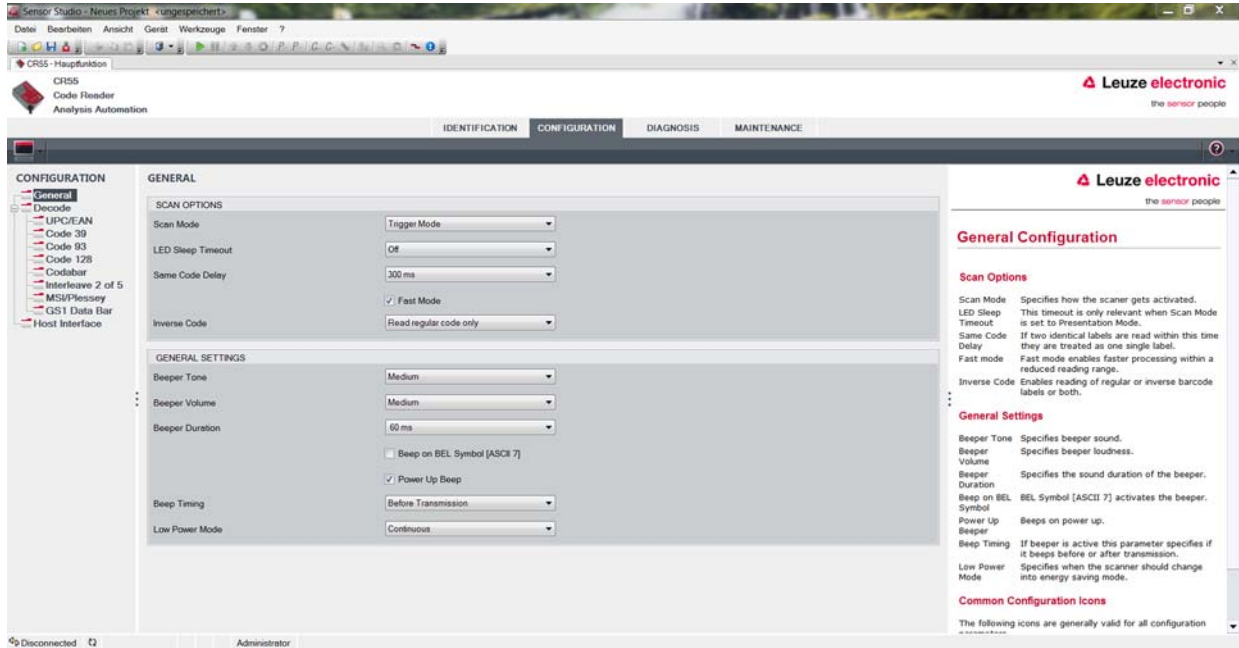


Figure 6.3: General tab

- Scan Mode** Here you can select how a read process is to be activated.
- LED Sleep Timeout** Setting for the length of time after which the read LED in presentation mode is switched off.
- Same Code Delay** Length of time during which identical codes are output only once during multiple reading.
- Inverse Code** Reading of inverse codes.
- General Settings** Settings for the integrated buzzer.

### 6.5.2 Decode tab

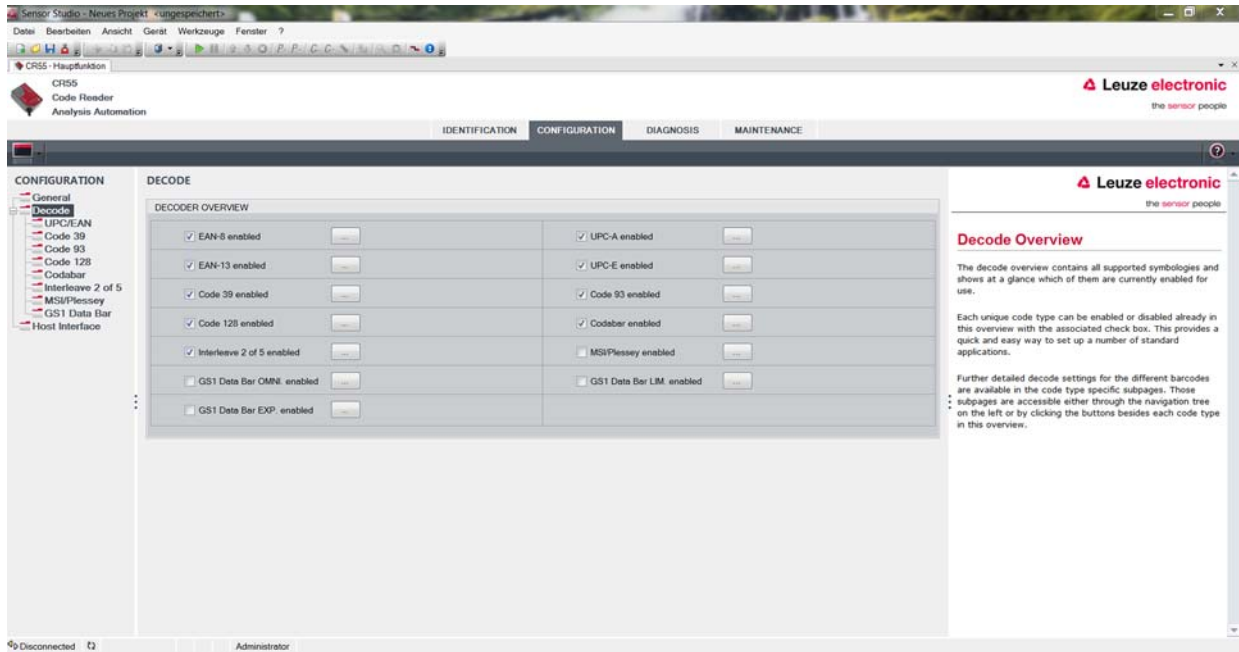


Figure 6.4: Decode tab

#### Code table (DECODER OVERVIEW)

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.

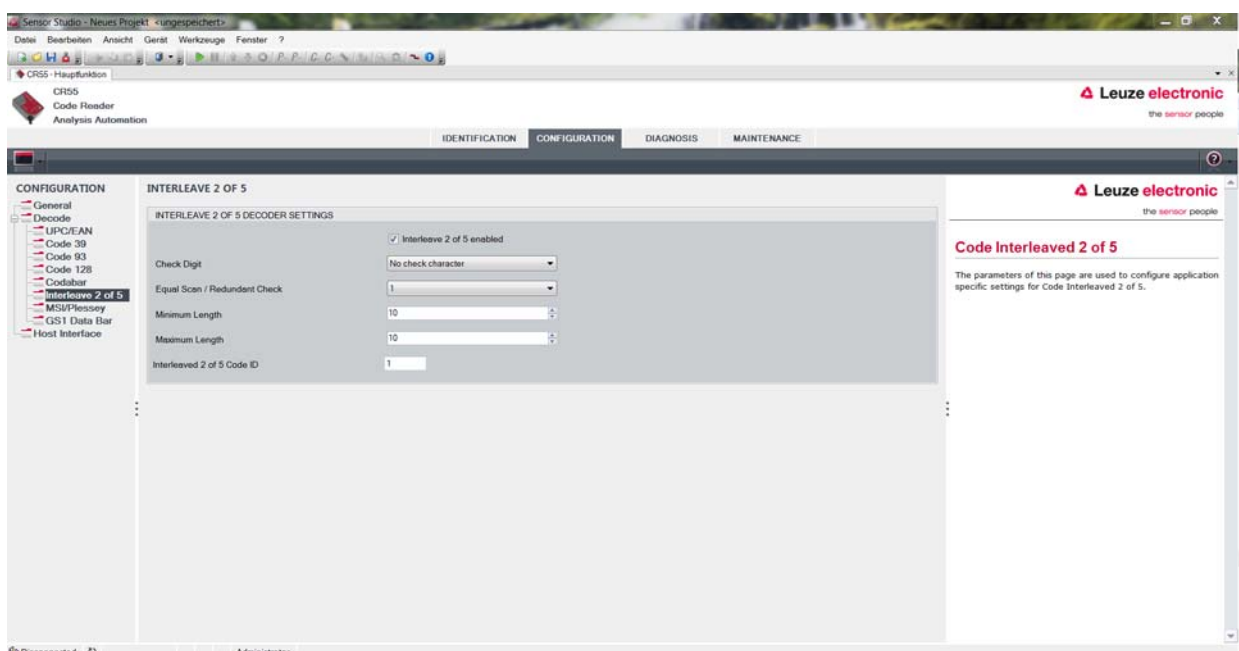


Figure 6.5: Standard settings for the Properties window (Symbology Properties) – Decode tab

### 6.5.3 Host interface tab

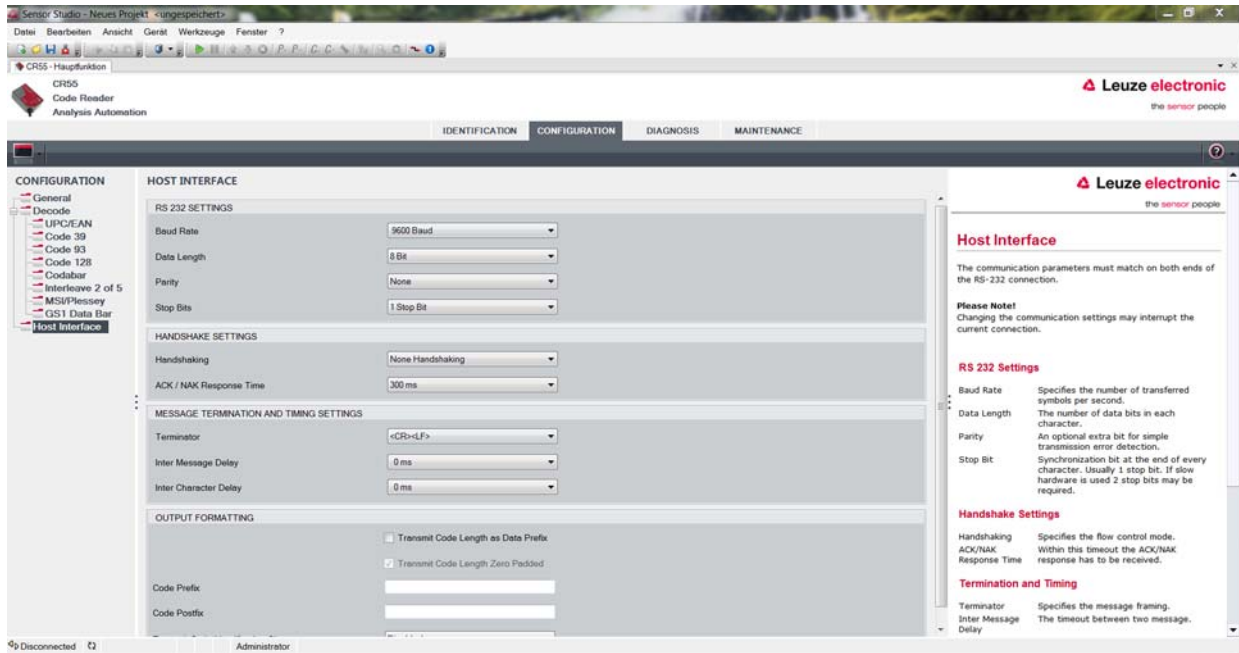


Figure 6.6: Host interface tab

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 Maintenance / software update

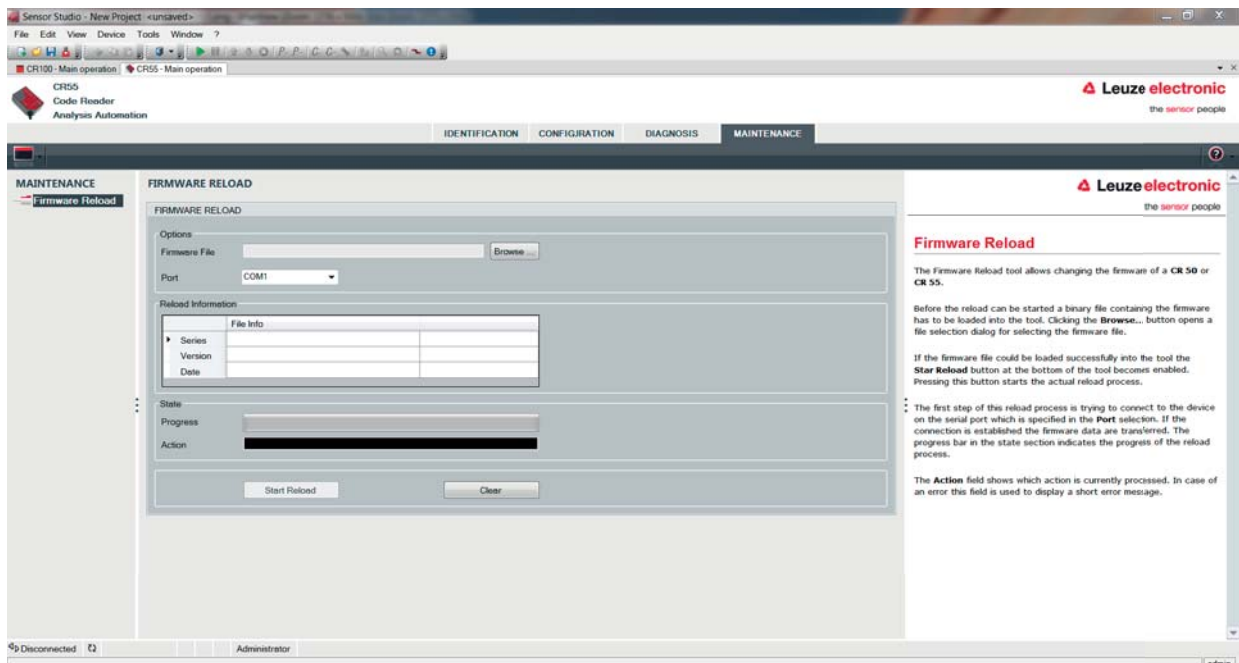


Figure 6.7: Firmware reload

With this tool, new firmware files can first be selected for the CR 50 or CR 55 bar code reader, then they can be loaded into the tool and subsequently executed.

## 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 bar code reader. 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 bar code reader can be individually configured according to your application. For information on the various configuration options, see chapter 6 or refer to the online help.

To operate the bar code reader, it is normally sufficient to set code type and code length in accordance with the bar codes that are to be read.

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

The various parameter sets are explained in brief to understand what is happening during parameter setting, see chapter 7.3.1.

The parameters are then set using the buttons under **CONFIGURATION**. To transfer the settings to the bar code reader, its RS 232 settings must be set to the "Service" operating mode, see chapter 7.3.2.

#### 7.3.1 Parameter sets

##### factory default parameter set

This parameter set contains the default settings made ex works for all parameters of the bar code reader. It is permanently stored in the FLASH ROM of the bar code reader.

The parameter set with the default settings is loaded into the memory of the bar code reader:

- the first time the device is commissioned after delivery
- following the command "Factory Default" in the configuration program (online command 'PC20')
- if the checksums of the current parameter set are invalid

##### Current parameter set

In this parameter set, the current settings for all device parameters are stored. When the bar code reader is in operation, the parameter set is stored in the EEPROM of the bar code reader.

The current set can be stored:

- by copying a valid parameter set from the host computer in the bar code reader
- by an off-line setup using the *Sensor Studio* configuration software and then subsequently copying to the bar code reader

The current parameter set is loaded into the memory of the bar code reader:

- by a parameter command, see chapter "Parametersatz kopieren"

### 7.3.2 "Service" operating mode

You can connect a PC or a terminal to the bar code reader via the serial interface and configure the bar code reader through this connection; see chapter 5.4 "PC or terminal connection".

Setting the required parameters is most easily carried out in the "Service" operating mode.

The operating mode "Service" provides the following defined operating parameters on the RS 232 interface, no matter how the bar code reader is configured for standard operation:

- transmission rate: 9600 baud
- no parity
- 8 data bits
- 1 stop bit

#### Activating the service interface

The service interface can be activated by holding a defined bar code label ("Service", see figure 7.1) in front of the reading window during power-up (initialization phase).



Figure 7.1: Bar code label "Service"

While the red light is switched on for approx. 1 s after power-up, the "Service" label is to be held up in front of the bar code reader at a suitable read distance. When the device is in "Service" mode, the status LED flashes.

## 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 bar code reader has to be connected to a computer (host) via the serial interface, see chapter 7.3.2.

Information about the transmission protocol: see chapter 0.1.4.

Using the “online” commands you can:

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

#### Syntax

“Online” commands consist of one or two ASCII characters followed by command parameters.

No separation characters may be entered between the command and the command parameter(s). Both small and capitalized letters can be used.

Example:

Command 'H':	Software reset
Parameter '+':	Activation
Transmitted is:	'H+'

#### Notation

Commands, parameters and returned data are enclosed between single quotation marks ' ' in the text of this manual.

Most online commands are acknowledged by the device and any requested data returned. For commands that are not acknowledged, command execution can be observed or monitored directly on the device.

### 8.2 General online commands

#### Software version number

Command	'V'
Description	Requests device version information
Parameter	none
Acknowledgment	Example: <b>'CR55 Series V 00.91 02.07.2014'</b> The device type appears in the first line followed by the device's version number and date. The data which is actually displayed may vary from the values given here.



You can use this command to check whether the communication between PC and scanner is functional. If you do not receive an acknowledgment, please check the interface connections or the protocol.

#### Software reset

Command	'H'
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	No
Acknowledgment	'S' (start signal)

### 8.3 Online commands for system control

#### Activating sensor input

<b>Command</b>	'+'
Description	The command activates decoding.
Parameter	none
Acknowledgment	none

#### Deactivating sensor input

<b>Command</b>	'-'
Description	The command deactivates decoding.
Parameter	none
Acknowledgment	none

## 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.

<b>NOTICE</b>
<b>Do not use aggressive cleaning agents!</b>
↪ 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?

<b>NOTICE</b>
<b>Please use this chapter as a master copy should servicing be required!</b>
↪ 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

Light source	LED 617 nm (visible red light)
Wavelength	617 nm
Beam exit	front
Scanning rate	typically 330 scans/s
Module width	5 ... 20 mil 127 ... 500 µm (distance dependent)
Reading distance	see chapter 11.2 "Reading fields"
Reading field opening	see chapter 11.2 "Reading fields"
Code types	2/5 Interleaved, Code 39, Code 128, EAN 128, EAN/UPC, EAN Addendum, Codabar, Code 93

Table 11.2: Electrical equipment

Interface type	RS 232 or USB 2.0 (virtual COM, HID)
Baud rate	300 ... 115200 baud
Supply voltage	4.5 ... 5.5 V DC, Safety Class III - PELV (Protective Extra Low Voltage) <b>Notice:</b> For UL applications: only for use in "Class 2" circuits according to NEC
Current consumption	max. 120 mA
Ports	1 switching input 5 V DC 1 switching output 5 ... 30V, 20 mA
LEDs	1 device status 1 read status

Table 11.3: Mechanics

Degree of protection	IP 54
Connection type	RS 232: fixed cable 2 m long, 6 x 0.081 mm <sup>2</sup> (AWG 28) USB: fixed cable, 1.8 m long
Weight	45 g (without cable)
Dimensions (HxWxD)	18.3 x 31x 45.5 mm
Housing	metal, die-cast aluminum

Table 11.4: Environmental data

Ambient temp. (operation/storage)	0 °C ... +50 °C/-20 °C ... +60 °C
Air humidity	max. 90 % rel. humidity, non-condensing
Electromagnetic compatibility	EN 55022 IEC 62471
Conformity	CE, FCC
Certifications	UL 60950-1 CSA C22.2 No. 60950-1-07

### 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.

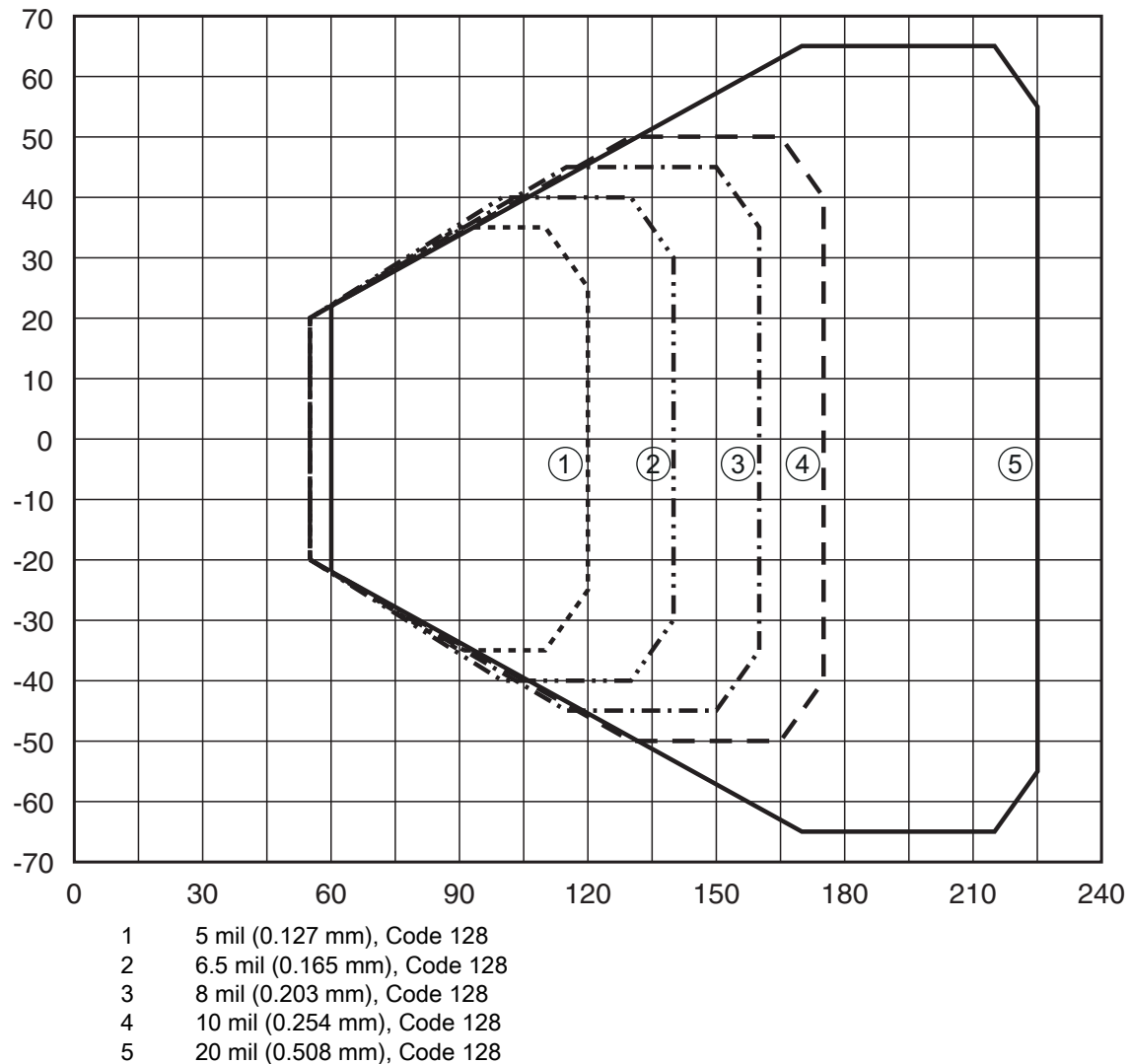


Figure 11.1: CR 55 read field

11.3 Dimensioned drawings

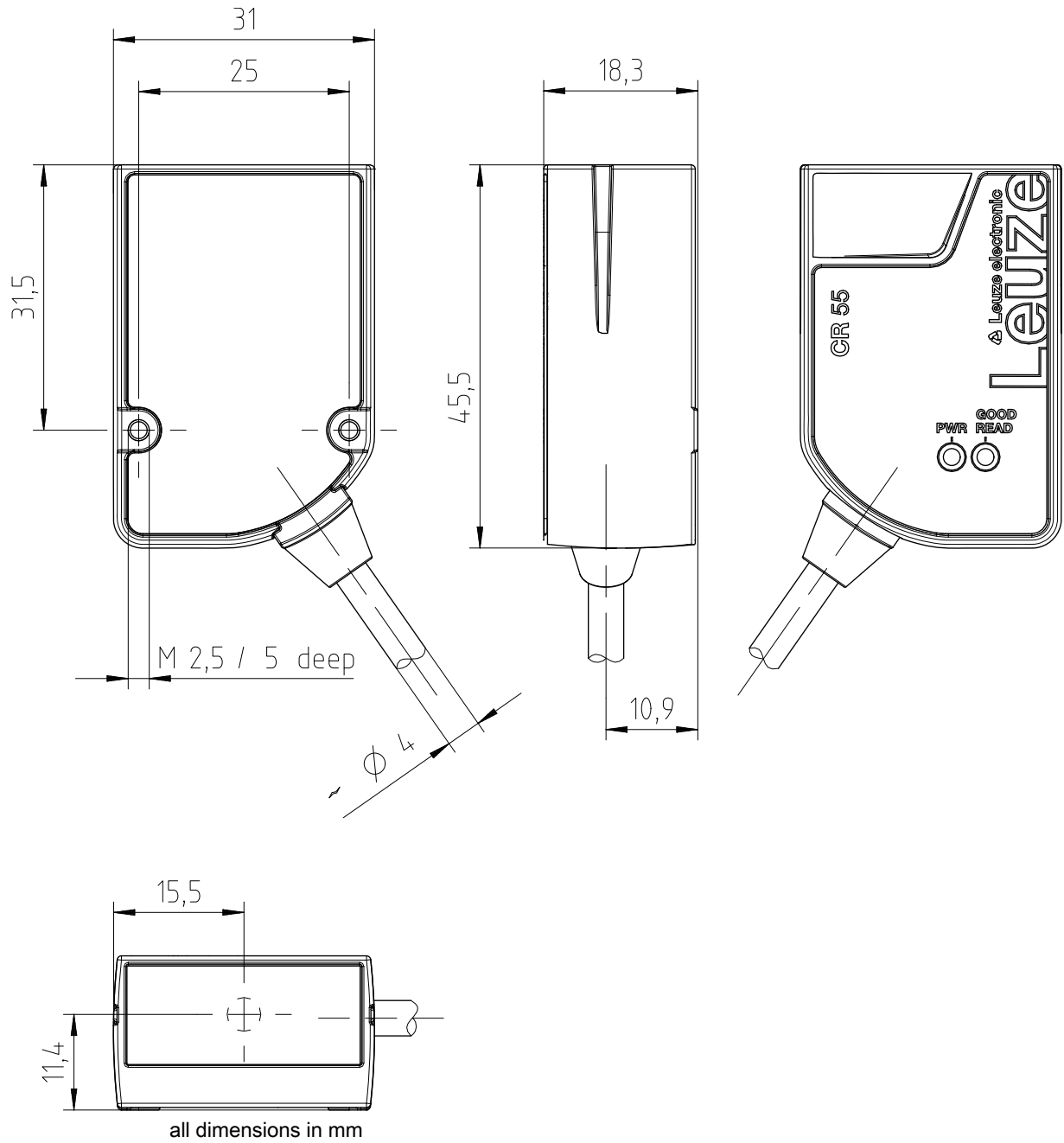


Figure 11.2: Dimensioned drawing of CR 55 with front beam exit

## 12 Ordering information and accessories

### 12.1 Type overview

Table 12.1: Part numbers

Part no.	Part designation	Description
50126080	CR55M2/R2	CCD line scanner, RS 232 interface, fixed cable, 2 m
50127723	CR55M2/UB-1800-S6	CCD line scanner, USB interface, fixed cable, 1.8 m

### 12.2 Accessories

Table 12.2: Accessories

Part no.	Part designation	Description
50128204	MA-CR	Adapter circuit board with spring terminals and 9-pin SUB-D socket
50113396	KB DSub-9P-3000	RS 232 interconnection cable, cable length 3 m
USB driver for configuring the CR 55 scanner Download at <a href="http://www.leuze.com">www.leuze.com</a>		
<i>Sensor Studio</i> configuration software Download at <a href="http://www.leuze.com">www.leuze.com</a> see chapter 6.2.1 "Downloading configuration software"		<i>Sensor Studio</i> designed according to the FDT/DTM concept. Contains: communication DTM and device DTM

**13 EC Declaration of Conformity**

The bar code readers of the CR 55 series have been developed and manufactured in accordance with the applicable European standards and directives.



## 14 Appendix

### 14.1 Bar code samples



1122334455

Module 0.3

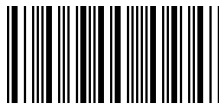
Figure 14.1: Code type 01: Interleaved 2 of 5



135AC

Module 0.3

Figure 14.2: Code type 02: Code 39



a121314a

Module 0.3

Figure 14.3: Code type 11: Codabar



abcde

Module 0.3

Figure 14.4: Code 128



leuze

Module 0.3

Figure 14.5: Code type 08: EAN 128



1 23456 78901 2

SC 2

Figure 14.6: Code type 06: UPC-A



3456 7890

SC 3

Figure 14.7: Code type 07: EAN 8



Figure 14.8: Code type 10: EAN 13 Add-on