

**OHV110-F228-R2**

**1-D/2-D Code Handheld  
Reader**

**Manual**



**CE**

Your automation, our passion.

**FP** PEPPERL+FUCHS

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<b>1</b>	<b>Introduction.....</b>	<b>5</b>
1.1	Content of this Document.....	5
1.2	Target Group, Personnel .....	5
1.3	Symbols Used .....	6
<b>2</b>	<b>Product Description .....</b>	<b>7</b>
2.1	Use and Application .....	7
2.2	Indicators and Operating Elements .....	8
2.3	Notifications .....	8
2.4	Accessories.....	8
2.5	Storage and Disposal.....	9
<b>3</b>	<b>Installation.....</b>	<b>10</b>
3.1	Connection .....	10
3.1.1	Installing/Removing the Cable .....	10
3.1.2	Establishing a USB Connection .....	11
3.1.3	Establishing an RS-232 Connection .....	11
3.2	Installing Device Drivers .....	12
<b>4</b>	<b>Configuration .....</b>	<b>13</b>
4.1	Selecting the Operating Mode.....	13
4.1.1	Keyboard Mode .....	13
4.1.2	Vision Configurator Mode .....	14
4.1.3	Keyboard Layout.....	15
4.2	Configuring the Handheld Reader .....	15
4.3	Using Vision Configurator.....	16
4.3.1	Layout of Application Window .....	17
4.3.2	Sensor Data.....	17
4.3.3	Test Statistics.....	18
4.3.4	Updating Firmware .....	18
4.3.5	Read Result .....	19
4.3.6	Script .....	19
4.3.7	Edited Parameters .....	23
4.4	Configuration Using Control Codes.....	24
4.4.1	Control Codes.....	24
<b>5</b>	<b>Operation.....</b>	<b>47</b>
5.1	Reading Codes.....	47
5.2	Operation Using a Mounting Bracket.....	48
5.3	Reading Firmware Version and Serial Number .....	50

<b>6</b>	<b>Maintenance .....</b>	<b>51</b>
<b>7</b>	<b>Troubleshooting .....</b>	<b>52</b>

# 1 Introduction

## 1.1 Content of this Document

This document contains information required to use the product in the relevant phases of the product life cycle. This may include information on the following:

- Product identification
- Delivery, transport, and storage
- Mounting and installation
- Commissioning and operation
- Maintenance and repair
- Troubleshooting
- Dismounting
- Disposal



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### Note

For full information on the product, refer to the further documentation on the Internet at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

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The documentation comprises the following parts:

- This document
- Datasheet

In addition, the documentation may comprise the following parts, if applicable:

- EU-type examination certificate
- EU declaration of conformity
- Attestation of conformity
- Certificates
- Control drawings
- Instruction manual
- Other documents

## 1.2 Target Group, Personnel

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismantling lies with the plant operator.

Only appropriately trained and qualified personnel may carry out mounting, installation, commissioning, operation, maintenance, and dismantling of the product. The personnel must have read and understood the instruction manual and the further documentation.

Prior to using the product make yourself familiar with it. Read the document carefully.

## 1.3 Symbols Used

This document contains symbols for the identification of warning messages and of informative messages.

### Warning Messages

You will find warning messages, whenever dangers may arise from your actions. It is mandatory that you observe these warning messages for your personal safety and in order to avoid property damage.

Depending on the risk level, the warning messages are displayed in descending order as follows:




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#### **Danger!**

This symbol indicates an imminent danger.

Non-observance will result in personal injury or death.

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#### **Warning!**

This symbol indicates a possible fault or danger.

Non-observance may cause personal injury or serious property damage.

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#### **Caution!**

This symbol indicates a possible fault.

Non-observance could interrupt the device and any connected systems and plants, or result in their complete failure.

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### Informative Symbols




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#### **Note**

This symbol brings important information to your attention.

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#### **Action**

This symbol indicates a paragraph with instructions. You are prompted to perform an action or a sequence of actions.

## 2 Product Description

### 2.1 Use and Application

**Caution!**

Irritation caused by optical radiation

The optical unit on the handheld reader is equipped with very bright LEDs that can cause irritation in dark environments.

Do not point the handheld reader at people.

Do not look directly into the optical unit on the handheld reader.

The handheld is a compact handheld reader for all common 1-D and 2-D codes. Special technology to prevent glare allows the device to read codes accurately on highly reflective surfaces. With its patented dual lens and a resolution of 1.2 million pixels, it can read small and large codes from a wide range of distances. A different-colored target projection makes it easier to see the relevant code. The device responds via a vibration or a visual or audio signal.

The Vision Configurator software can be used to create rule sets for formatting read results without the need for extensive programming work. This enables easy integration into ERP systems. Data is transferred via USB or RS-232 depending on which connection cable is selected. With its rugged housing and IP54 protection, the handheld reader is ideally suited for heavy-duty industrial use.



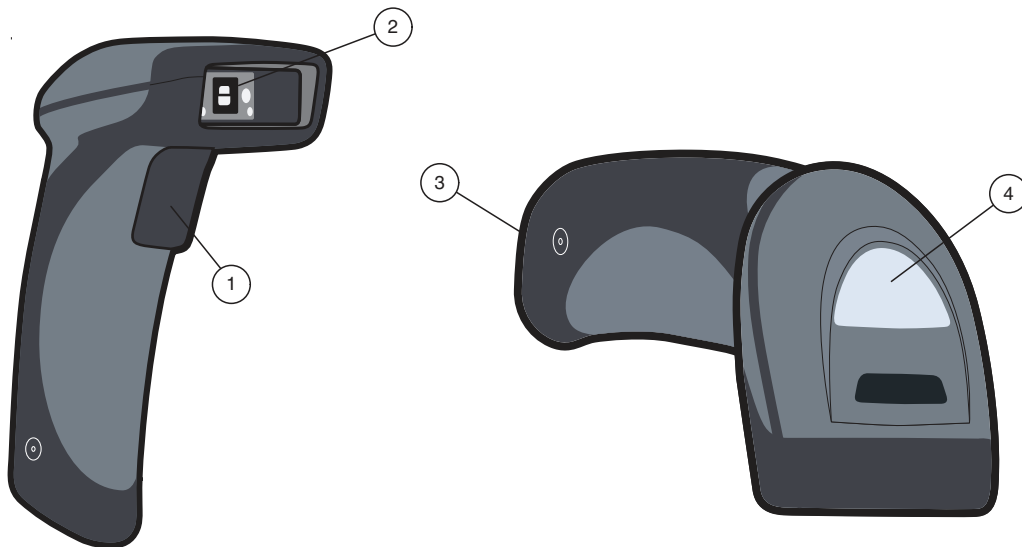
Figure 2.1 Handheld reader

The device is only approved for appropriate and intended use. Ignoring these instructions will void any warranty and absolve the manufacturer from any liability.

Use the device only within the specified ambient and operating conditions.

Protection of the personnel and the plant is not ensured if the device is not used according to its intended use.

## 2.2 Indicators and Operating Elements



1. Trigger button
2. Optical unit
3. 10-pin connector socket
4. Function indicator

## 2.3 Notifications

Action	Function indicator	Audible signal	Vibration
Handheld reader successfully switched on	Off	Beeps twice	Vibrates once
Handheld reader ready	Off	No audible signal	No vibration
Code read successfully	Function indicator briefly lights up green	Beeps once	Vibrates once
Control code read successfully	Function indicator briefly lights up green	Beeps twice	Vibrates once

## 2.4 Accessories

Designation	Description
V45-G-2M-PVC-ABG-USB-G	Connection cable for USB connection, approx. 1.8 meters
V45-G-2M-PVC-SUBD9	Connection cable for RS-232 connection, approx. 2.4 meters (extended) Data connection: Sub-D socket, 9-pin Power supply: DC connector socket, 5.5 mm
ODZ-MAH-SUPPLY	Power supply for RS-232 connection 5 VDC, 1.2 A, short-circuit protected
OHV-BRACKET	Table mounting bracket
Vision Configurator	Configuration software for camera-based sensors When using OHV handheld readers, you can download the software free of charge from <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> .



## 2.5 Storage and Disposal

Keep the original packaging. Always store and transport the device in the original packaging.

Store the device in a clean and dry environment. The permitted ambient conditions must be considered, see datasheet.

The device, built-in components, packaging, and any batteries contained within must be disposed in compliance with the applicable laws and guidelines of the respective country.

## 3 Installation

### 3.1 Connection

You can connect the handheld reader to the following interfaces.

- USB
- RS-232

#### 3.1.1 Installing/Removing the Cable



##### Installing the Cable

1. Hold the end of the cable with the RJ50 plug and insert the plug into the RJ50 socket underneath the handle.

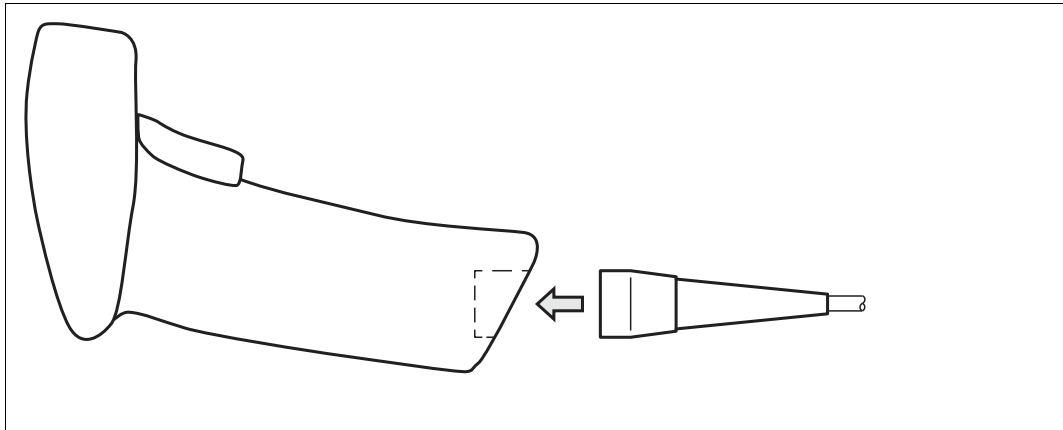


Figure 3.1 Inserting the cable

2. Make sure that the cable audibly snaps into place.



##### Removing the Cable

1. Insert a thin object such as a straightened paper clip into the hole on the side at the bottom of the handle.

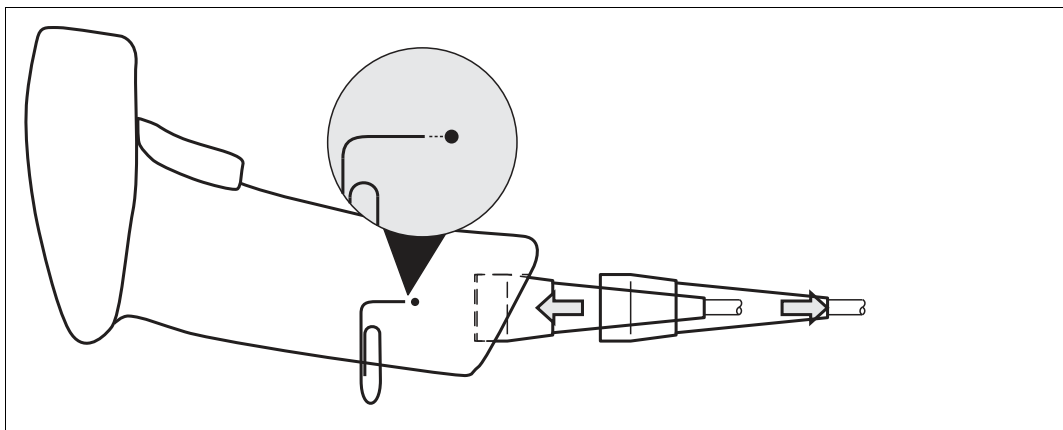


Figure 3.2 Removing the cable

2. Carefully pull the cable and the RJ50 plug out of the handle.

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### 3.1.2 Establishing a USB Connection



#### Establishing a USB Connection

1. Insert the USB plug on the connection cable into a free USB port on the PC. This step can be carried out even during operation.
2. When the handheld reader is successfully connected, an audible signal will be emitted and the handheld reader will vibrate.  
↳ The handheld reader is now ready.

### 3.1.3 Establishing an RS-232 Connection



#### Establishing an RS-232 Connection

1. Switch off the PC.
2. Insert the RS-232 plug on the connection cable into the RS-232 port on the PC.
3. Insert the low-voltage plug on the power supply unit into the low-voltage socket on the RS-232 connection cable.
4. Connect the mains power plug on the power supply unit to the mains.
5. Switch on the PC.  
↳ Once you have switched on the PC, the handheld reader will switch itself on automatically.
6. If the connection is successful, the function indicator lights up green, an acoustic signal sounds, and the handheld reader vibrates.  
↳ The handheld reader is now ready.
7. Read the following code using the handheld reader.

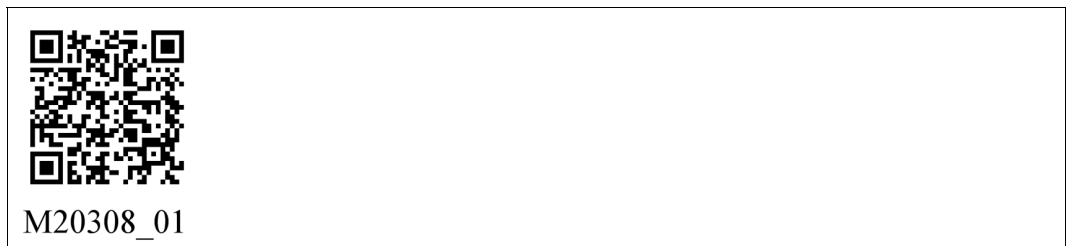


Figure 3.3 RS-232 Connection

↳ The function indicator on the handheld reader lights up green. An RS-232 connection is established.

The handheld reader uses the following RS-232 factory settings:

- 115,200 baud
- 8 data bits
- No parity

## 3.2 Installing Device Drivers

The handheld reader registers itself as an input device or keyboard. Special device drivers are not needed.

The operating system automatically installs the drivers for input devices (Human Interface Device).

## 4 Configuration

The handheld reader is configured using control codes (see chapter 4.4.1). The control codes can be used to set the communication mode, general read mode settings, keyboard language, and other settings of the handheld reader.

You can use the Vision Configurator software to adjust the following settings. For example, you can modify the output string, edit the read result and assign a prefix or suffix to the read result, generate user-defined control codes, and perform a firmware update.

### 4.1 Selecting the Operating Mode

The handheld reader has two different operating modes.

Mode	Description
<b>Keyboard mode</b>	In keyboard mode, the handheld reader acts like a keyboard; see chapter 4.1.1. The read codes are transferred to the PC as a combination of letters and digits.
<b>Vision Configurator mode</b>	Vision Configurator mode is used only for communication with Vision Configurator; see chapter 4.1.2. When the configuration is complete, return to the operating mode.

#### 4.1.1 Keyboard Mode



##### Activating Keyboard Mode

Read the following code using the handheld reader.



Figure 4.1 Keyboard Mode

↳ The function indicator on the handheld reader briefly lights up green.



##### Note

Data is transferred using a US English keyboard layout by default.

If data is not transferred correctly in keyboard mode, modify the keyboard layout.

## 4.1.2 Vision Configurator Mode

To install Vision Configurator and activate Vision Configurator mode, proceed as follows.



### Installing Vision Configurator

1. Download the latest version of Vision Configurator from <http://www.pepperl-fuchs.com>.
2. Run the setup file.
3. Select a language.
4. Follow the instructions in the setup wizard.
5. Before exiting the setup wizard, select **Install OHV USB driver**. This installs a virtual COM port which Vision Configurator uses to communicate with OHV handheld readers.



### Activating Vision Configurator Mode

1. Open Vision Configurator on your PC.  
↳ The Vision Configurator main menu opens.

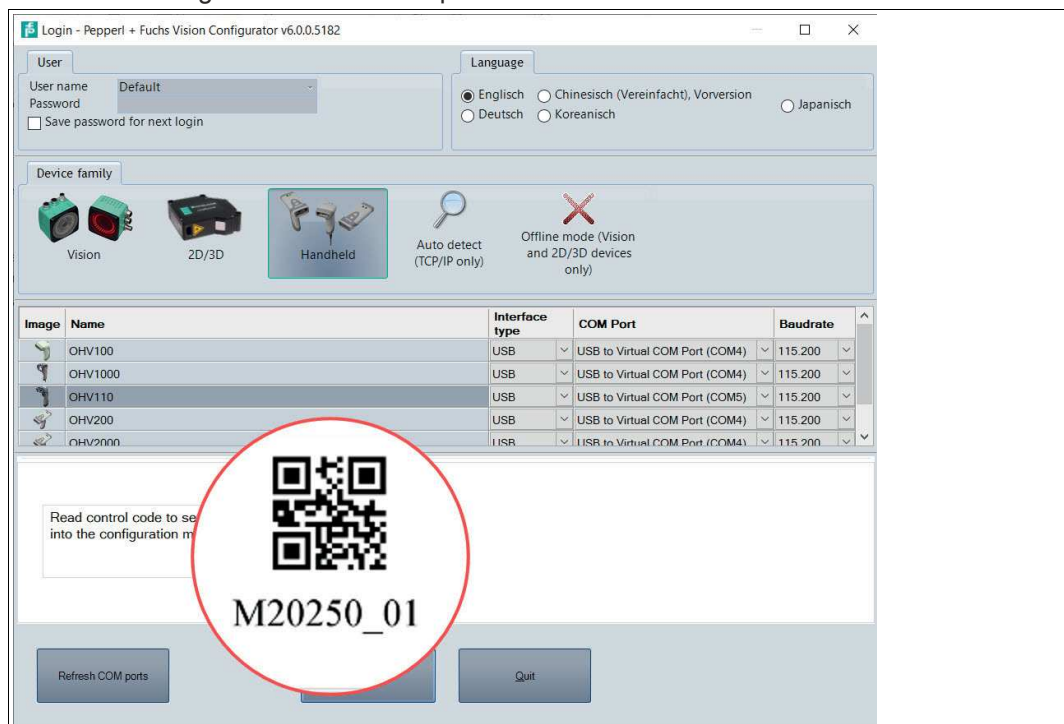


Figure 4.2 Vision Configurator Mode

2. Read the control code using the handheld reader.  
↳ If the reading operation is successful, the function indicator on the handheld reader briefly lights up green. Once Vision Configurator mode is activated, an audible signal is emitted and the handheld reader vibrates. The handheld reader is in Vision Configurator mode.
3. Click the "OK" button to go to the application window.

### 4.1.3 Keyboard Layout

You can use the following control codes to modify the keyboard layout for the current operating mode.

#### Microsoft Windows

German (Germany)



M20188\_01

Italian



M20363\_01

Spanish (Spain)



M20195\_01

English (US International)



M20198\_01

Japanese



M20192\_01

Chinese (Simplified)



M20362\_01

French (France)



M20185\_01

Russian



M20194\_01

US English (default)



M20182\_01

## 4.2 Configuring the Handheld Reader

The handheld reader is configured using control codes (see chapter 4.4.1). Control codes allow direct configuration without using a PC. To change a parameter, scan the appropriate control code using the handheld reader.

## 4.3 Using Vision Configurator

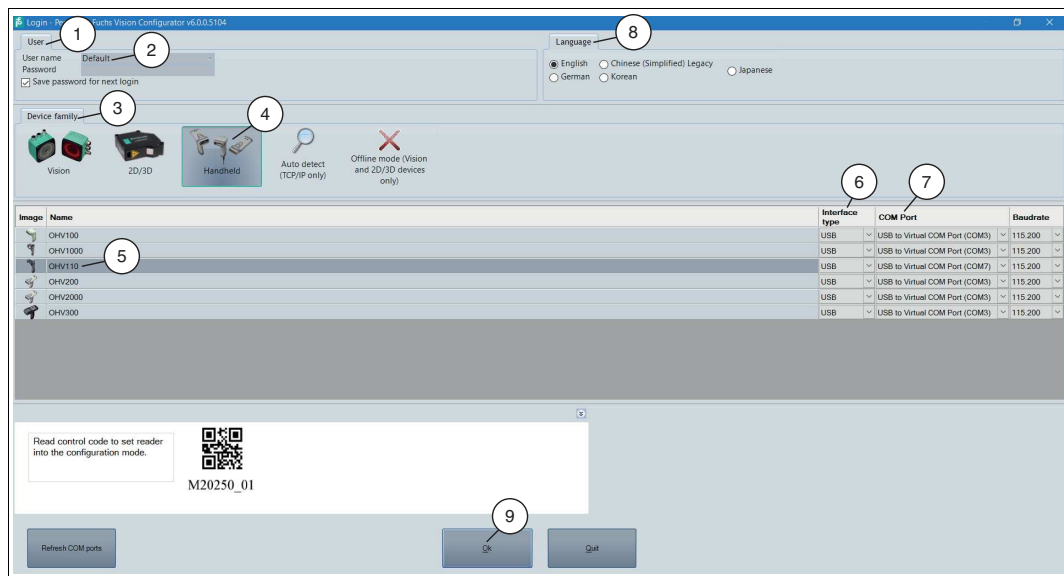
To use Vision Configurator, you must activate Vision Configurator mode. This mode is used exclusively for communication with Vision Configurator. If you are configuring the handheld reader using control codes, you do not need to switch to Vision Configurator mode.

### Note

Once configuration has been completed, switch back to keyboard mode; see chapter 4.1.1.



### Starting Vision Configurator



1. Start Vision Configurator.
2. Select the user name **Default** (2) in the **User** section (1). There are no different user rights for OHV handheld readers.
3. Select **Handheld** (4) in the **Device family** section (3).
4. Select the handheld reader (5), the connection type (6), and, where necessary, the connection port (7) from the list.
5. Select a language in the **Language** section (8).
6. Read the control code using the handheld reader.
  - ↳ If the reading operation is successful, the function indicator on the handheld reader briefly lights up green. Once Vision Configurator mode is activated, an audible signal is emitted and the handheld reader vibrates. The handheld reader is in Vision Configurator mode and the connection to Vision Configurator has been established.
7. Click the "OK" button to go to the application window.



### 4.3.1 Layout of Application Window

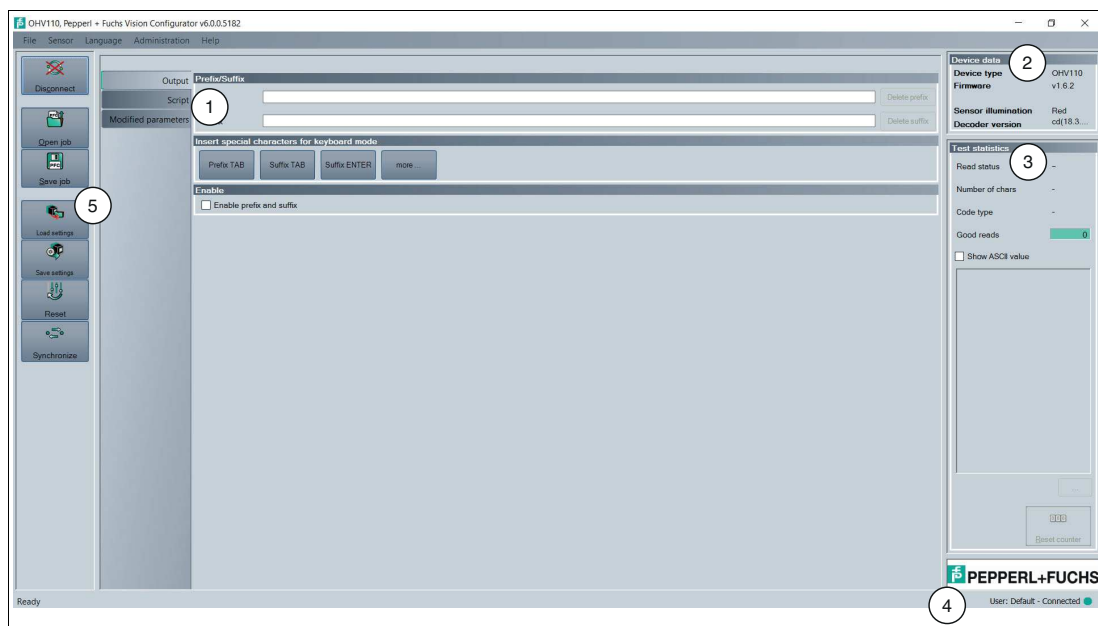


Figure 4.3 Application screen

1. The **parameter area** is split into several subareas and contains sensor-specific parameters.
2. The **Sensor data** area shows information about the connected sensor.
3. The **Test statistics** area shows information on the read codes.
4. The **status bar** shows information about the user who is logged in as well as the sensor connection status.
5. The **toolbar** allows direct access to selected menu items.

### 4.3.2 Sensor Data

This area shows information about the connected sensor.

Device data	
Device type	OHV110
Firmware	v1.6.2
Sensor illumination	Red
Decoder version	cd(18.3....

Figure 4.4 Device data

### 4.3.3 Test Statistics

This area shows information about the read code.

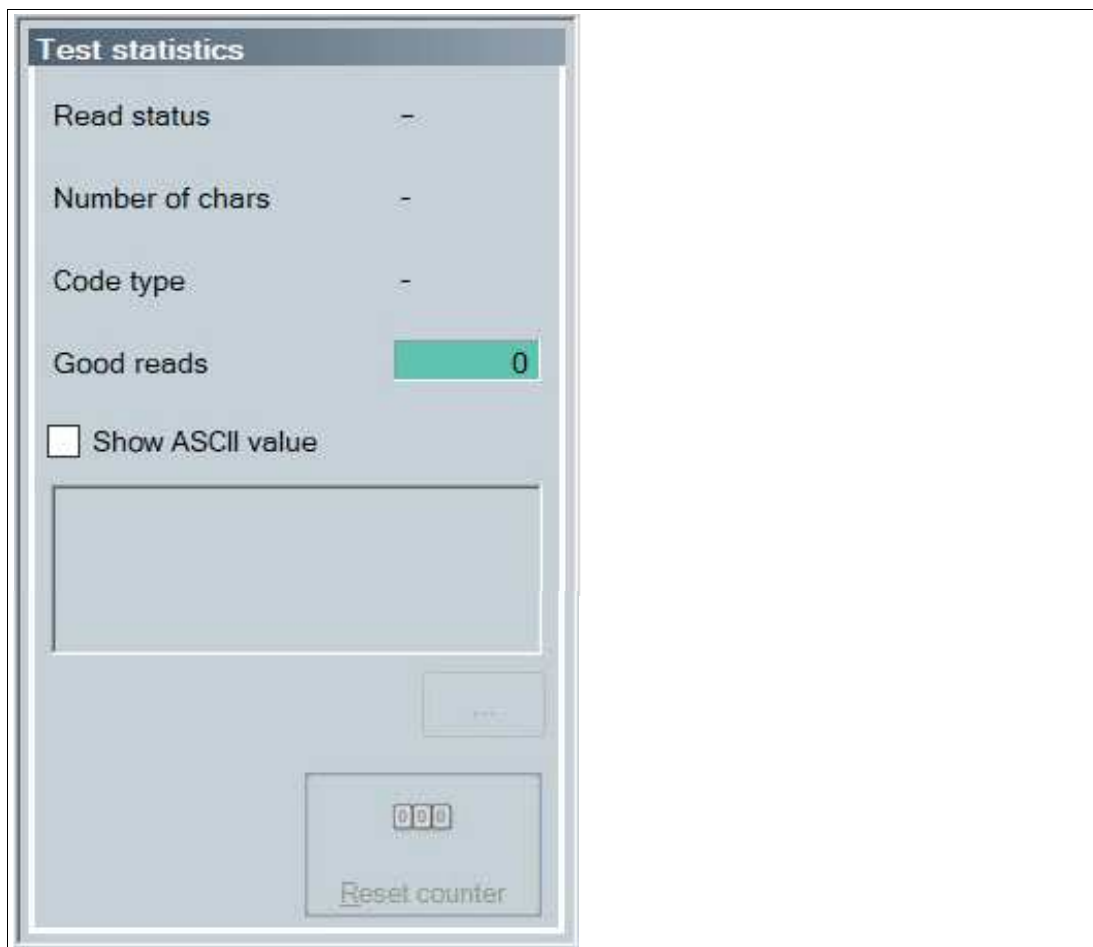


Figure 4.5 Test statistics

Display ASCII value	Enable this option to display the read result in ASCII characters.
Reset	Clears the contents of the <b>Test statistics</b> area.

### 4.3.4 Updating Firmware



1. Click on **Upload new file to sensor** or select **Sensor > Update Firmware** in the menu bar.
  2. Select a firmware file with the extension **crz**.
  3. The firmware file is transferred to the handheld reader. Uploading the firmware takes a few minutes.
  4. Once the file has been transferred, the handheld reader automatically restarts.
- ↳ The firmware is now updated. You can check the firmware version in the **Device data** area.

### 4.3.5 Read Result

You can edit the read result and assign a prefix or suffix to the result here. The prefix is placed in front of the read result and the suffix is placed at the end of the read result.



#### Prefix/Suffix

<b>Prefix</b>	You can input a value for the prefix here. To delete the prefix, click <b>Delete prefix</b> .
<b>Suffix</b>	You can input a value for the suffix here. To delete a suffix, click <b>Delete suffix</b> .

#### Inserting Special Characters for Keyboard Mode

<b>Prefix TAB</b>	Click <b>Prefix TAB</b> to insert a tab character into the prefix field.
<b>Suffix TAB</b>	Click <b>Suffix TAB</b> to insert a tab character into the suffix field.
<b>Suffix ENTER</b>	Click <b>Suffix ENTER</b> to insert an input character into the suffix field.
<b>More...</b>	Click <b>More...</b> to call up a list of additional special characters. To insert a special character from the list, click the <b>+</b> icon in the corresponding line. Different special characters are available depending on whether the handheld reader is connected to the Vision Configurator via USB or via RS-232.

#### Additional Outputs

<b>Enable prefix and suffix</b>	Click the checkbox to switch <b>Prefix and Suffix</b> on or off.
---------------------------------	--

### 4.3.6 Script

Here you can edit the read result using JavaScript. You can input your own source code or assemble a script from predefined blocks.

If a prefix or a suffix is assigned to the read result, the prefixes or suffixes are assigned immediately after processing of the script.



## Input Codes

The following predefined blocks are available:

`SUBSTRING_FROM_POSITION_x_ON_y_CHARS`

Only returns one part of the code. `x` refers to the position from which the characters are output, where `x = 0` represents the first character of the code. `y` denotes the number of characters that are output after position `x`.

Example: `SUBSTRING_FROM_POSITION_6_ON_3_CHARS` returns characters 7 to 9.

`SUBSTRING_FROM_POSITION_x_ON_ALL_CHARS`

Only returns one part of the code. `x` refers to the position from which all subsequent characters are output, where `x = 0` represents the first character of the code.

`OUTPUT_LAST_x_CHARS`

Returns the last `x` characters of the code.

Example: `OUTPUT_LAST_3_CHARS` returns the last three characters.

`OUTPUT_ALL_CHARS_BETWEEN_abc_AND_def`

Returns the characters of the code that are between a data string `abc` and a data string `def`. If there are multiple occurrences of the data strings `abc` and `def`, only the characters between the first occurrence are returned. If the data string `abc` does not appear, no characters are returned.

`OUTPUT_ALL_CHARS_BEFORE_abc`

Returns the characters of the code that appear before a data string `abc`. If there are multiple occurrences of the data string `abc`, all characters before the first occurrence are returned. If the data string `abc` does not appear, no characters are returned.

`OUTPUT_ALL_CHARS_AFTER_abc`

Returns the characters of the code that follow the data string `abc`. If the data string `abc` appears multiple times, all characters from the first occurrence are returned and subsequent occurrences of the data string `abc` are deleted. If the data string `abc` does not appear, no characters are returned.

`OUTPUT_x_CHARS_AFTER_abc`

Returns `x` characters of the code that follow the data string `abc`. If the data string `abc` appears multiple times, `x` characters from the first occurrence are returned and subsequent occurrences of the data string `abc` are deleted. If the data string `abc` does not appear, no characters are returned.

`DELETE_FROM_POSITION_x_ON_y_CHARS`

Deletes part of the code. `x` refers to the position from which `y` characters are removed, where `x = 0` represents the first character of the code.

Example: `DELETE_FROM_POSITION_0_ON_5_CHARS` deletes characters 1 to 5.

`DELETE_SUBSTRING_abc`

Deletes the data string `abc` from the code. If the data string occurs multiple times, only the first occurrence of the data string is deleted.

`DELETE_LAST_x_CHARS`

Deletes the last `x` characters of the code.

Example: `DELETE_LAST_4_CHARS` deletes the last four characters.

`DELETE_ALL_CHARS_BEFORE_abc`

Deletes all characters of the code that appear before a data string `abc`. If there are multiple occurrences of the data string `abc`, only the characters that appear before the first occurrence are deleted.

`DELETE_ALL_CHARS_AFTER_abc`

Deletes all characters of the code that follow a data string `abc`. If there are multiple occurrences of the data string `abc`, all characters after the first occurrence are deleted.

`INSERT_abc_AT_POSITION_x`

Adds the data string `abc` at position `x`, where `x = 0` represents the position before the first character of the code.

`INSERT_abc_AFTER_def`

Adds the data string `abc` to the data string `def`. If the data string `def` appears multiple times, the data string `abc` is appended to the first occurrence. If the data string `def` does not appear, no characters are inserted.

`APPEND_STRING_abc`

Appends the data string `abc` to the code.

`IF_GOODREAD_OUTPUT_abc`

Returns the data string `abc` if a code has been read successfully.

`REPLACE_STRING_abc_WITH_def`

Replaces the data string `abc` with the data string `def`. If the data string `abc` occurs multiple times, only the first occurrence is replaced.

`REPLACE_ALL_abc_AFTER_POSITION_x_WITH_def`

Replaces the data string `abc` with the data string `def` after position `x`. If the data string `abc` appears after position `x` multiple times, all occurrences are replaced.

`IF_CODE_CONTAINS_abc_OUTPUT_def`

Returns the data string `def` if the data string `abc` appears in the code. If the data string `abc` appears multiple times, the data string `def` is returned only once.

`APPEND_FROM_ORIGINAL_ALL_CHARS_AFTER_abc`

All characters that follow the data string `abc` in the read code are appended to the output. This rule applies directly to the read code and is independent of any other rules already applied to the code. If the data string `abc` appears multiple times, all characters from the first occurrence are appended and subsequent occurrences of the data string `abc` are deleted. If the code does not contain the data string `abc`, no characters are appended.

`APPEND_FROM_ORIGINAL_x_CHARS_AFTER_abc`

Appends `x` characters that follow the data string `abc` in the read code to the output. This rule applies directly to the read code and is independent of any other rules already applied to the code. If the data string `abc` appears multiple times, `x` characters from the first occurrence are appended and subsequent occurrences of the data string `abc` are deleted. If the code does not contain the data string `abc`, no characters are appended.

## Source Code

You can edit the source code for the script in the source code area. You can use the **Insert special characters** button to insert certain special characters.

## Example

In this area you can use an example to test the result.

## Transferring Script

Button	Description
Open	Opens a locally stored script file.
Save	Saves the current script to a local file.
Send script to sensor	Saves the script on the sensor.
Delete script from sensor	Deletes the script from the sensor.
Save and restart	Saves the script on the sensor. The sensor then restarts and the script is activated.
Reset with code	Creates a control code that can be used to reset the sensor. After reading the control code, the sensor restarts.
Create control code	Generates a control code for the script. After reading the control code, the sensor restarts and the script is activated if the script has been saved on the sensor.



## Creating a Script

1. In the **Source code** area, click on a cell in the first column to edit the corresponding line.
2. Click **+** to insert a predefined block in the selected line. You can also insert multiple commands and combine these with one another.

The screenshot shows the 'Source code' area with a red background, indicating an error. A red arrow points to the 'Command' column of the first row in the table below.

Insert	Command	Description	Codomain
+	APPEND_STRING_abc	Append string abc	abc: string
+	DELETE_ALL_CHARS_AFTER_abc	Delete all chars after string abc	abc: string
+	DELETE_ALL_CHARS_BEFORE_abc	Delete all chars before string abc	abc: string
+	DELETE_FROM_POSITION_x_ON_y_CHARS	Delete y chars from position x, zero based	x: int, y: int
+	DELETE_LAST_x_CHARS	Delete last x chars	x: int

The 'Source code' table has the following structure:

	Codesymbology	Prefix read code	Prefix current code	Command
✓	none			DELETE_ALL_CHARS_AFTER_abc
*	none			

The 'Example' area shows 'Read code' as 'abc123abc123' and 'Output' as 'abc'.

↳ The command appears in the selected line. If the source code is red, the source code is incomplete or contains errors. If the source code is green, the source code is error-free.

3. Complete the variables so that the command can be executed.  
If a command should be executed only for a specific code type, select the relevant code type in the **Code symbology** column.  
If a command should be executed only if the read code begins with a certain data string, input the relevant data string in the **Prefix of read code** column.  
If a command should be executed only if the current processing result begins with a certain data string, input the relevant data string in the **Prefix of current code** column.  
To insert special characters, click **Insert special characters**.
4. If the source code is green, you can test the source code in the **Example** area. To do this, enter a sample value in the **Read code** field.

The screenshot shows the 'Source code' area with a green background, indicating it is error-free. A red arrow points to the 'Command' column of the first row in the table below.

Insert	Command	Description	Codomain
+	APPEND_STRING_abc	Append string abc	abc: string
+	DELETE_ALL_CHARS_AFTER_abc	Delete all chars after string abc	abc: string
+	DELETE_ALL_CHARS_BEFORE_abc	Delete all chars before string abc	abc: string
+	DELETE_FROM_POSITION_x_ON_y_CHARS	Delete y chars from position x, zero based	x: int, y: int
+	DELETE_LAST_x_CHARS	Delete last x chars	x: int

The 'Source code' table has the following structure:

	Codesymbology	Prefix read code	Prefix current code	Command
✓	none			DELETE_ALL_CHARS_AFTER_abc
*	none			

The 'Example' area shows 'Read code' as 'abc123abc123' and 'Output' as 'abc'.

↳ The commands from the **Source code** area are applied to the sample value in the **Read code** field and the result is displayed in the **Output** field.



#### Note

Note that JavaScripts must always be deleted separately. To do this, click on the "Remove script from device" button or scan the following code with the handheld reader.



CC005634

Figure 4.6 Delete JavaScript

### 4.3.7 Edited Parameters

Here you can find an overview of all settings you have changed that now deviate from the factory settings.

To generate a control code that contains all affected settings, click on **Create control code for own settings**.

If you check the **First completely reset sensor** check box, a reset command is integrated in the control code. When the control code is read, all settings are first reset to factory defaults before the new settings are applied.



#### Note

Scripts for processing the read result are not included in this overview.



#### Tip

This function allows your configured settings to be transferred to multiple sensors by scanning the control code.

Parameters not on default value		
Parametername	Default value	Current value
Data Formatting Enable	0	1

Custom settings	
<input checked="" type="checkbox"/> Reset device first	<input type="button" value="Create control code for custom settings"/>

## 4.4 Configuration Using Control Codes















The handheld reader is configured using control codes. Control codes allow direct configuration without using a PC. To change a parameter, scan the appropriate control code using the handheld reader.

### 4.4.1 Control Codes

Configuration instructions			
Communication mode settings			
	M20238_01 Activate package mode	M20239_01 Activate raw mode—default	
Data formatting			
	M20255_02 Convert hex output	M20222_01 Convert data to lower case	M20221_01 Convert data to upper case






Configuration instructions			
Data formatting prefix and suffix settings	 M20223_02 Deactivate data formatting—default	 M20322_01 Delete prefix and suffix data	 M20207_01 Delete prefix data
	 M20208_01 Delete suffix data	 M20343_01 Prefix AIM ID off—default	 M20344_01 Prefix AIM ID on
	 M20209_01 Prefix comma	 M20210_01 Prefix space	 M20211_01 "Prefix" tab (RS-232 mode only)
	 M20218_02 "Prefix" tab (USB keyboard mode only)	 M20212_01 Suffix line break (RS-232 mode only)	 M20213_01 Suffix line feed in line break (RS-232 mode only)—default
	 M20215_01 Suffix comma	 M20219_02 Suffix enter (USB keyboard mode only)	 M20214_01 Suffix line feed (RS-232 mode only)

Configuration instructions			
<p>Data formatting prefix and suffix settings</p> <p>Data verification</p> <p>General read mode settings</p> <p>General read mode settings</p> <p>General read mode settings</p>	 M20216_01 Suffix space	 M20217 "Suffix" tab (RS-232 mode only)	 M20220_02 "Suffix" tab (USB keyboard mode only)
	 M20258_02 Activate ISO 15434 and ISO 15418 validation	 M20257_02 Activate ISO 15434 validation	 M20256_02 Activate UDI/HIBC validation
	 M20329_01 Beep on and vibration on—default	 M20228_04 500 ms scan delay with motion detection on a stand—default	 M20332_01 Beep off and vibration off
	 M20330_01 Beep off and vibration on	 M20331_01 Beep on and vibration off	 M20339_01 Beep volume 0 %
	 M20342_01 Beep volume 100 %—default	 M20340_01 Beep volume 33 %	 M20341_01 Beep volume 67 %

Configuration Guide			
general-reading-mode- settings	 <b>M20224_01</b> Continuous Scan Mode On	 <b>M20241_02</b> Disable Cell Phone Reading Enhancement - Default	 <b>M20295_01</b> Disable Target LED During Image Capture
	 <b>M20334_02</b> Disable Targeting-Always-On	 <b>M20240_03</b> Enable Cell Phone Reading Enhancement	 <b>M20302_01</b> Enable Stand Detection - Default
	 <b>M20294_01</b> Enable Target LED During Image Capture - Default	 <b>M20333_02</b> Enable Targeting-Always-On	 <b>M20199_01</b> Motion Detect Always On
	 <b>M20200_01</b> Motion Detect or Continuous Scan Off (Out of Stand) - Default	 <b>M20297_02</b> Motion Detection On In Stand - Default	 <b>M20227_03</b> No Scan Delay with Motion Detection in stand
	 <b>M20325_01</b> Reader Raw Text Commands Off - Default	 <b>M20326_01</b> Reader Raw Text Commands On	 <b>M20244_01</b> Set Motion Detect Maximum Brightness to 100% - Default

Configuration Guide			
general-reading-mode- settings			
	M20247_01 Set Motion Detect Maximum Brightness to 25%	M20246_01 Set Motion Detect Maximum Brightness to 50%	M20245_01 Set Motion Detect Maximum Brightness to 75%
			
keyboard-language- settings	M20352_01 Control Character Input - Alt + Keypad	M20351_01 Control Character Input - Ctrl + Character	M20350_01 Control Character Input - Language Default - Default
			
keyboard-language- settings	M20353_01 Control Character Input - Alt + Leading Zero	M20205_01 Data Encoding: ASCII to Unicode Codepoint - Alt Sequences for Windows	M20203_01 Data Encoding: Raw ASCII to Keyboard XML File Lookup - Default
keyboard-language- settings			
			M20184_01 Keyboard Support: English Keyboard Mapping for Apple
keyboard-language- settings			
	M20186_01 Keyboard Support: French Keyboard Mapping for Apple	M20185_01 Keyboard Support: French Keyboard Mapping for Windows	M20181_01 Keyboard Support: French-Belgian Keyboard Mapping for Windows


Configuration instructions			
Keyboard language settings	 <p>M20187_01</p> <p>Keyboard support: German keyboard layout for Apple</p>	 <p>M20188_01</p> <p>Keyboard support: German keyboard layout for Windows</p>	 <p>M20189_01</p> <p>Keyboard support: Swiss German keyboard layout for Apple</p>
	 <p>M20190_01</p> <p>Keyboard support: Swiss German keyboard layout for Windows</p>	 <p>M20191_01</p> <p>Keyboard support: Italian keyboard layout for Apple</p>	 <p>M20192_01</p> <p>Keyboard support: Japanese keyboard layout for Windows</p>
	 <p>M20194_01</p> <p>Keyboard support: Russian keyboard layout for Windows</p>	 <p>M20362_01</p> <p>Keyboard support: Simplified Chinese keyboard layout for</p>	 <p>M20196_01</p> <p>Keyboard support: Spanish keyboard layout for Apple</p>
	 <p>M20195_01</p> <p>Keyboard support: Spanish keyboard layout for Windows</p>	 <p>M20193_01</p> <p>Keyboard support: Latin American Spanish keyboard layout for Windows</p>	 <p>M20197_01</p> <p>Keyboard support: UK English keyboard layout for Windows</p>
	 <p>M20182_01</p> <p>Keyboard support: US English keyboard layout for Windows—default</p>	 <p>M20198_01</p> <p>Keyboard support: US International (Universal) keyboard layout for Windows</p>	 <p>M20180_01</p> <p>List of installed languages</p>

Configuration instructions			
Keyboard language settings	 <b>M20363_01</b> Set Italian as active language for Windows	 <b>M20364_01</b> Set Portuguese as active language for Windows	
Operating system settings	 <b>M20306_01</b> Alternative operating system (Linux/Mac) off—default	 <b>M20305_01</b> Alternative operating system (Linux/Mac) on	
Read modem command settings	 <b>M20361_01</b> Reader information, limited		
Reset—delete and save—reader settings	 <b>M20345_01</b> Restart the reader (RCSRS)	 <b>M20111_01</b> Reset to factory settings (USB)	 <b>M20335_01</b> Save all reader settings

Configuration instructions			
RS-232 settings	 <b>M20309_01</b> Activate RS-232 interface sequence control—one-way		
	 <b>M20112_01</b> Reset to RS-232 factory settings	 <b>M20170_01</b> RS-232 interface—1 stop bit—default	 <b>M20167_01</b> RS-232 interface—baud rate 115200—default value
	 <b>M20160_01</b> RS-232 interface—baud rate 1200	 <b>M20164_01</b> RS-232 interface—baud rate 19200	 <b>M20171_01</b> RS-232 interface—2 stop bits
	 <b>M20161_01</b> RS-232 interface—baud rate 2400	 <b>M20165_01</b> RS-232 interface—baud rate 38400	 <b>M20162_01</b> RS-232 interface—baud rate 4800
	 <b>M20166_01</b> RS-232 interface—baud rate 57600	 <b>M20168_01</b> RS-232 interface—7 data bits	 <b>M20169_01</b> RS-232 interface—8 data bits—default


Configuration instructions				
Configuration instructions	RS-232 settings	 M20163_01 RS-232 interface—baud rate 9600	 M20172_01 RS-232 interface—even parity	 M20173_01 RS-232 interface—no parity
	RS-232 settings	 M20174_01 RS-232 interface—odd parity	 M20176_01 RS-232 interface sequence control off—default	 M20175_01 RS-232 interface sequence control on
	Scan delay settings	 M20237_01 1 day delay for duplicate scan	 M20236_01 1 hour delay for duplicate scan	 M20230_01 1 second delay for duplicate scan
	Scan delay settings	 M20234_01 10 second delay for duplicate scan	 M20231_01 2 second delay for duplicate scan	 M20232_01 3 second delay for duplicate scan
	Scan delay settings	 M20235_01 30 second delay for duplicate scan	 M20233_01 5 second delay for duplicate scan	 M20229_01 Deactivate delay for duplicate scan—default


















Configuration instructions			
Code symbology settings	 <p>M20131_01 Do not convert EAN-8 to EAN-13—default</p>	 <p>M20001_01 Australian Post off—default</p>	 <p>M20000_01 Australian Post on</p>
	 <p>M20004_01 Aztec inverse and normal on</p>	 <p>M20005_01 Aztec inverse off—default</p>	 <p>M20319_01 Aztec mirror off—default</p>
	 <p>M20318_01 Aztec mirror on</p>	 <p>M20003_01 Aztec off</p>	 <p>M20002_01 Aztec on—default</p>
	 <p>M20007_01 BC412 off—default</p>	 <p>M20006_01 BC412 on</p>	 <p>M20009_01 Canada Post off—default</p>
	 <p>M20008_01 Canada Post on</p>	 <p>M20013_01 Codabar checksum off—default</p>	 <p>M20012_01 Codabar checksum on</p>

Configuration instructions			
Code symbology settings	 M20011_01 Codabar off	 M20010_01 Codabar on—default	 M20019_01 Codablock F off—default
	 M20018_01 Codablock F on	 M20023_01 Code 11 checksum deducted from result—default	 M20022_01 Code 11 checksum removed from result activated
	 M20031_01 Switch off code 11 checksum test—default	 M20021_01 Code 11 off—default	 M20020_01 Code 11 on
	 M20032_01 Code 11 one-digit checksum	 M20033_01 Code 11 two-digit checksum—default	 M20035_01 Code 128 off
	 M20034_01 Code 128 on—default	 M20025_01 Code 32 (Italian Pharmacode) off—default	 M20024_01 Code 32 (Italian Pharmacode) on


Configuration Guide			
code-symbology- settings	 M20029_01 Code 39 Checksum Off - Default	 M20028_01 Code 39 Checksum On	 M20030_01 Code 39 Checksum Stripped from Result On
	 M20320_02 Code 39 Extended Full ASCII Off - Default	 M20321_02 Code 39 Extended Full ASCII On	 M20027_01 Code 39 Off
	 M20026_01 Code 39 On - Default	 M20264_01 Code 49 Off - Default	 M20263_01 Code 49 On
	 M20266_01 Code 93 Off	 M20265_01 Code 93 On - Default	 M20037_01 Composite Off - Default
	 M20036_01 Composite On	 M20136_01 Convert Bookland EAN-13 to ISBN	 M20138_01 Convert Bookland EAN-13 to ISSN

Configuration instructions			
Code symbology settings	 <p>M20130_01 Convert from EAN-8 to EAN-13</p>	 <p>M20134_01 Convert from UPC-A to EAN-13</p>	 <p>M20292_01 User-defined QR code off—default</p>
Code symbology settings	 <p>M20291_01 User-defined QR code on</p>	 <p>M20040_01 DataMatrix Inverse and Normal on—default</p>	 <p>M20041_01 DataMatrix Inverse off</p>
Code symbology settings	 <p>M20043_01 DataMatrix mirroring off—default</p>	 <p>M20042_01 DataMatrix mirroring on</p>	 <p>M20039_01 DataMatrix off</p>
Code symbology settings	 <p>M20038_02 DataMatrix on—default</p>	 <p>M20047_01 DataMatrix rectangular extension off—default</p>	 <p>M20046_01 DataMatrix rectangular extension on</p>
Code symbology settings	 <p>M20045_01 Rectangular DataMatrix off</p>	 <p>M20044_01 Rectangular DataMatrix on—default</p>	 <p>M20260_02 Deactivate BC412 Regular and Reverse—default</p>

Configuration instructions			
Code symbology settings	 <p>M20274_01 Deactivate GS1 DataBar Expanded</p>	 <p>M20276_01 Deactivate GS1 DataBar Expanded Stacked</p>	 <p>M20278_01 Deactivate GS1 DataBar Limited</p>
Code symbology settings	 <p>M20268_01 Deactivate GS1 DataBar Omnidirectional and GS1 DataBar Truncated</p>	 <p>M20272_01 Deactivate GS1 DataBar Stacked and GS1 DataBar Stacked Omnidirectional</p>	 <p>M20137_01 Do not convert Bookland EAN-13 to ISBN—default</p>
Code symbology settings	 <p>M20139_01 Do not convert Bookland EAN-13 to ISSN—default</p>	 <p>M20135_01 Do not convert UPC-A to EAN-13—default</p>	 <p>M20151_01 Do not transmit EAN-13 check digit—default</p>
Code symbology settings	 <p>M20149_01 Do not transmit EAN-8 check digit—default</p>	 <p>M20143_01 Do not transmit UPC-A numbering system—default</p>	 <p>M20145_01 Do not transmit UPC-E check digit—default</p>
Code symbology settings	 <p>M20147_01 Do not transmit UPC-E numbering system—default</p>	 <p>M20259_02 Activate BC412—deactivate BC412 Reverse</p>	 <p>M20357_01 Activate GoCode and GoCode Mirror decoding</p>






Configuration instructions			
Code symbology settings	 <b>M20273_01</b> Activate GS1 DataBar Expanded—default	 <b>M20275_01</b> Activate GS1 DataBar Expanded Stacked—default	 <b>M20277_01</b> Activate GS1 DataBar Limited—default
Code symbology settings	 <b>M20271_01</b> Activate GS1 DataBar Stacked and GS1 DataBar Stacked Omnidirectional—default	 <b>M20282_01</b> GridMatrix Inverse off—default	 <b>M20281_01</b> GridMatrix Inverse on
Code symbology settings	 <b>M20284_02</b> GridMatrix Mirror off—default	 <b>M20284_02</b> GridMatrix Mirror on	 <b>M20049_01</b> GridMatrix off—default
Code symbology settings	 <b>M20048_01</b> GridMatrix on	 <b>M20051_02</b> GS1 DataBar off	 <b>M20050_02</b> GS1 DataBar on—default
Code symbology settings	 <b>M20055_01</b> Han Xin Inverse off—default	 <b>M20054_01</b> Han Xin Inverse on	 <b>M20057_01</b> Han Xin Mirror off—default

Configuration instructions			
Code symbology settings	 M20056_01 Han Xin Mirror on	 M20304_01 Han Xin Normal and Inverse on	 M20053_01 Han Xin off—default
Code symbology settings	 M20052_01 Han Xin on	 M20059_01 Hong Kong 2 of 5 off—default	 M20058_01 Hong Kong 2 of 5 on
Code symbology settings	 M20063_01 Interleaved 2 of 5 checksums off—default	 M20062_01 Interleaved 2 of 5 checksums on	 M20077_01 Interleaved 2 of 5 checksums removed from result—default
Code symbology settings	 M20064_01 Interleaved 2 of 5 checksums removed from result on	 M20061_01 Interleaved 2 of 5 off	 M20060_01 Interleaved 2 of 5 on—default
Code symbology settings	 M20066_01 Japan Post off—default	 M20065_01 Japan Post on	 M20015_01 Retain Codabar start and stop characters—default







Configuration instructions			
Code symbology settings	 <p>M20122_01 Retain trioptic start and stop character</p>	 <p>M20068_01 KIX (Dutch Post) off—default</p>	 <p>M20067_01 KIX (Dutch Post) on</p>
Code symbology settings	 <p>M20070_01 Korean Post off—default</p>	 <p>M20069_01 Korean Post on</p>	 <p>M20072_01 Matrix 2 of 5 off—default</p>
Code symbology settings	 <p>M20071_01 Matrix 2 of 5 on</p>	 <p>M20074_01 MaxiCode off—default</p>	 <p>M20073_01 MaxiCode on</p>
Code symbology settings	 <p>M20091_01 MicroPDF417 off—default</p>	 <p>M20090_01 MicroPDF417 on</p>	 <p>M20104_01 Micro QR code off—default</p>
Code symbology settings	 <p>M20103_01 Micro QR code on</p>	 <p>M20106_01 Mode 1 QR code off—default</p>	 <p>M20105_01 Mode 1 QR code on</p>











Configuration instructions			
Code symbology settings	 <b>M20079_01</b> MSI Plessey checksum must be Mod 10	 <b>M20080_02</b> MSI Plessey checksum must be Mod 10/10	 <b>M20081_02</b> MSI Plessey checksum must be Mod 11/10
	 <b>M20078_01</b> MSI Plessey checksum off—default	 <b>M20083_01</b> MSI Plessey checksum removed from result off—standard	 <b>M20082_01</b> MSI Plessey checksum removed from result on
	 <b>M20076_01</b> MSI Plessey off—default	 <b>M20075_01</b> MSI Plessey on	 <b>M20087_01</b> NEC 2 of 5 checksum off
	 <b>M20086_01</b> NEC 2 of 5 checksum on—default	 <b>M20085_01</b> NEC 2 of 5 off—default	 <b>M20084_01</b> NEC 2 of 5 on
	 <b>M20116_01</b> Output Telepen as ASCII	 <b>M20117_01</b> Telepen as numeric output—default	 <b>M20089_01</b> PDF417 off

Configuration instructions			
Code symbology settings	 <p>M20088_01 PDF417 on—default</p>	 <p>M20290_01 Pharmacode color off—default</p>	 <p>M20289_01 Pharmacode color on</p>
Code symbology settings	 <p>M20095_01 Pharmacode normal barcode decoding (from left to right)—default</p>	 <p>M20093_01 Pharmacode off—default</p>	 <p>M20092_01 Pharmacode on</p>
Code symbology settings	 <p>M20094_01 Pharmacode reverse barcode decoding (from right to left)</p>	 <p>M20100_01 QR code inverse and normal on</p>	 <p>M20099_01 QR code inverse only</p>
Code symbology settings	 <p>M20102_01 QR code mirroring off—default</p>	 <p>M20101_01 QR code mirroring on</p>	 <p>M20097_01 QR code off</p>
Code symbology settings	 <p>M20096_01 QR code on—default</p>	 <p>M20098_01 Standard QR code only—default</p>	 <p>M20014_01 Remove Codabar start and stop characters</p>

Configuration instructions			
Code symbology settings	 M20123_01 Remove trioptic start and stop characters—default	 M20262_02 BC412 reverse off—default	 M20261_01 BC412 reverse on
	 M20121_01 Trioptic reverse off—default	 M20120_01 Trioptic reverse on	 M20286_01 Royal Mail checksum off
	 M20285_01 Royal Mail checksum on	 M20108_01 Straight 2 of 5 off—default	 M20107_01 Straight 2 of 5 on
	 M20110_01 Telepen off—default	 M20109_01 Telepen on	 M20150_01 Transmit EAN-13 check digit
	 M20148_01 Transmit EAN-8 check digit	 M20140_01 Transmit UPC-A check digit	 M20142_01 Transmit UPC-A numbering system

Configuration instructions			
Code symbology settings	 M20144_01 Transmit UPC-E check digit	 M20144_01 Transmit UPC-E check digit on	 M20146_01 Transmit UPC-E numbering system on
Code symbology settings	 M20119_01 Trioptic off—default	 M20118_01 Trioptic on	 M20288_01 UK Plessey off—default
Code symbology settings	 M20287_01 UK Plessey on	 M20125_01 UK Royal Mail off—default	 M20124_01 UK Royal Mail on
Code symbology settings	 M20133_01 UPC-E expansion off—default	 M20132_01 UPC-E expansion on	 M20129_01 UPC expansion off—default
Code symbology settings	 M20128_01 UPC expansion on	 M20127_01 UPC/EAN off	 M20126_01 UPC/EAN on—default

Configuration instructions			
Code symbology settings	 M20153_01 UPU ID tags off—default	 M20152_01 UPU ID tags on	 M20155_01 USPS Intelligent Mail off—default
Code symbology settings	 M20154_01 USPS Intelligent Mail on	 M20157_01 USPS PLANET off—default	 M20156_01 USPS PLANET on
Code symbology settings	 M20159_01 USPS POSTNET off—default	 M20158_01 USPS POSTNET on	

Configuration instructions			
USB settings	 M20250_01 Activate USB VCOM mode	 M20399_01 Set device to full-speed USB mode	 M20400_01 Set device to high-speed USB mode—default
		 M20178_01 USB keyboard mode—default	
USB settings			



## 5 Operation

### 5.1 Reading Codes

The handheld reader reads both very small 2-D codes (e.g., QR codes) and larger 1-D codes (e.g., barcodes). The handheld reader offers a field of view comprising two areas that can be read at the same time. This covers a read range between 4 cm and 31 cm. The optimal read range is 10 cm.

By default, the read range is indicated by two blue bars. However, you can deactivate the display of the blue bars.



#### Tip

If several codes are located right next to each other, we recommend you cover the codes that you do not wish to read. This prevents you from inadvertently reading another code.



#### Reading Codes

The handheld reader registers itself with other devices as an input device or keyboard. Before you read a code, start or activate the application to which the read result is to be transferred.

1. Hold the handheld reader so that the contrast between the code and surface is as high as possible. A reading angle between 45° and 90° is optimal. The reading distance is approximately 10 cm, depending on the code type and code size.

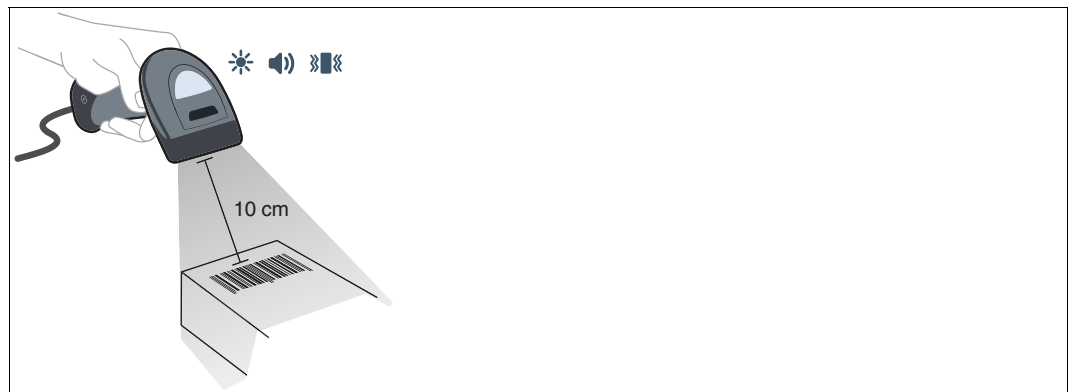


Figure 5.1 Code recognition

2. Press the trigger button
  - ↳ If the reading process is successful, the function indicator on the handheld reader briefly lights up green. When activated, an audible signal is emitted and the handheld reader vibrates.
3. If the code is not recognized, change the reading angle or the reading distance and press the trigger button again.



## 5.2 Operation Using a Mounting Bracket

The handheld reader features a motion detection system. If motion detection is activated, the handheld reader automatically attempts to read a code as soon as a movement is detected in the read range. It is not necessary to actuate the trigger button.

If the OHV-BRACKET is used, the handheld reader is set at the factory in such a way that motion detection is automatically activated when the handheld reader is inserted into the bracket and automatically deactivated when the handheld reader is removed from the bracket. However, you can change this setting.

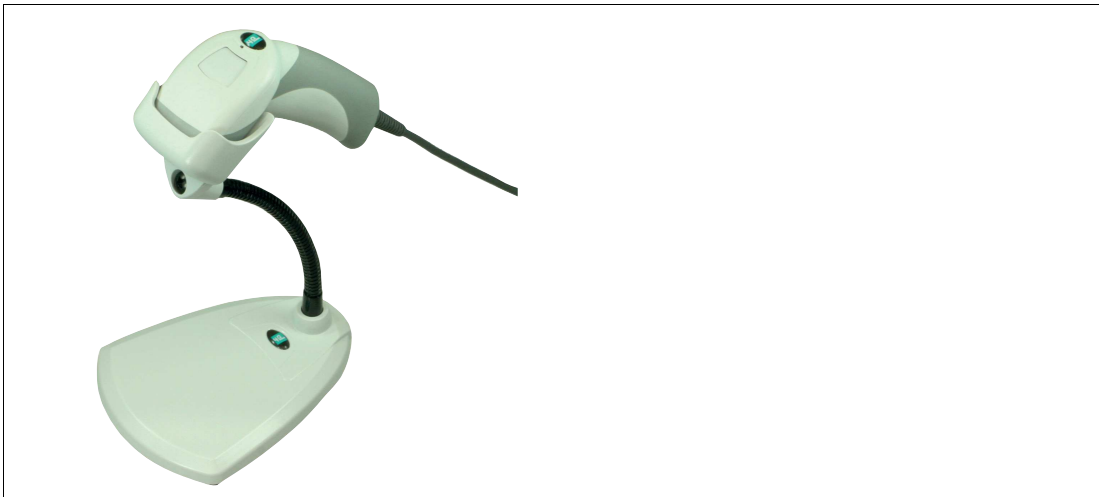











Figure 5.2 Operation using a mounting bracket (schematic diagram)

Control code	Function
 M20199_01	Activates motion detection regardless of whether the handheld reader is in the OHV-BRACKET.
 M20297_02	Enables automatic activation of motion detection when the handheld reader is inserted into the OHV-BRACKET.
 M20200_01	Disables motion detection regardless of whether the handheld reader is in the OHV-BRACKET.

Control code	Function
 M20227_03	No scan delay for motion detection.
 M20228_04	Sets the scan delay for motion detection to 500 ms.
 M20244_01	Sets the maximum brightness for motion detection to 100 %—default.
 M20247_01	Sets the maximum brightness for motion detection to 25 %.
 M20246_01	Sets the maximum brightness for motion detection to 50 %.
 M20245_01	Sets the maximum brightness for motion detection to 75 %.

### 5.3 Reading Firmware Version and Serial Number

To read the handheld reader's firmware version and serial number, scan the following code using the handheld reader.

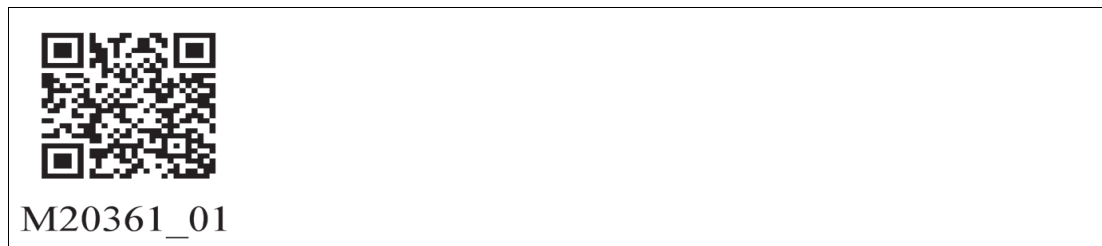


Figure 5.3 Device information

The read result is in the following format:

Xap/ivvvvwwwxxxxsssssssssaoodyyyyhiiiijjjkkkkllll<TAB>z...z

Abbreviation	Description
i	Internal ID
VVVV	Version number of application firmware
WWW	Version number of bootloader firmware
XXXX	Version number of Bluetooth firmware
SSSSSSSS	Serial number of the handheld reader
A	Current execution state A: processor is running B: undefined state C: undefined state
OO	OEM name
D	Display type 0 or N: no display D: standard display
YYYY	Version number of the flash memory
HH	Version number of the hardware revision
IIII	Hardware type designation
JJJJ	Version number of the boot application
KKKK	Version number of the operating system kernel
LLLL	Version number of the root file system
<TAB>	Tab characters
Z...Z	Version number of the OEM decoder

## 6 Maintenance

To get the best possible performance out of your device, clean the optical unit on the device when necessary and always keep it clean.

When cleaning the optical unit you should note the following:

- Do not touch the optical unit with your fingers.
- Do not immerse the device in water. Do not spray the device with water or other liquids.
- Do not use a scouring agent to clean the surface of the device.
- Use a cotton or paper cloth moistened with water or isopropyl alcohol. The cloth must not be soaked!
- Remove any residual alcohol using a cotton or paper cloth moistened with distilled water. The cloth must not be soaked!
- Wipe the device surfaces dry using a lint-free cloth.

## 7 Troubleshooting




### Note

Do not repair, modify, or manipulate the device.

If there is a defect, the device must be repaired by Pepperl+Fuchs.

### Fault Repair

Fault	Possible cause	Remedy
Codes cannot be read.	The optical unit on the handheld reader is dirty.	Clean the optical unit. See chapter 6
	The reading distance is too large or too small.	Move the handheld reader closer to or farther from the code until the height of the blue bars is roughly the same height as the code.
	The code is on a reflective surface.	Enable the option for enhanced display reading.
		Change the reading angle by holding the handheld reader at an angle to the surface.
Reading of the code type is disabled.	Enable the code type using the corresponding control codes; see chapter 4.4.1.	
The read result is not transferred.	The handheld reader is not in keyboard mode.	Activate keyboard mode.
The read result is incorrect.	The handheld reader is using the wrong keyboard layout.	Change the keyboard layout for the current operating mode.
	The code type is incorrectly interpreted as a different code type.	Use the <b>Test statistics</b> area in Vision Configurator to determine the code type assigned to the read code (see chapter 4.3.3) or the corresponding control code (see chapter 4.4.1).
	The read result is altered by a script, input of a code type, a prefix, or a suffix.	Use the <b>Parameter</b> area in Vision Configurator to check the settings for <b>Read result</b> (see chapter 4.3.5) and <b>Script</b> (see chapter 4.3.6).
The connection to Vision Configurator cannot be established.	The handheld reader is not in Vision Configurator mode.	Activate Vision Configurator mode.
Some settings are lost when the device is switched off and on again.	The altered settings have not been saved.	Change the settings again and then read the following code to save the settings manually.   M20335_01

2021-01



### Hardware Reset

As an alternative to reading the control code, you can reset the handheld reader using the trigger button.

1. Disconnect the handheld reader from the PC.
2. Press and hold the trigger button on the handheld reader.
3. Connect the handheld reader to the PC.
4. After a few seconds, a number of beeps will sound at an increasing rate and with a rising pitch. Release the trigger button.
  - ↳ The function indicator on the handheld reader will flash green.
5. Press and hold the trigger button on the handheld reader again.
6. After a few seconds, five beeps will sound. Release the trigger button.
  - ↳ The handheld reader has now been restored to its default settings.

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- Remote I/O Systems
- Electrical Ex Equipment
- Purge and Pressurization
- Industrial HMI
- Mobile Computing and Communications
- HART Interface Solutions
- Surge Protection
- Wireless Solutions
- Level Measurement

## Industrial Sensors

- Proximity Sensors
- Photoelectric Sensors
- Industrial Vision
- Ultrasonic Sensors
- Rotary Encoders
- Positioning Systems
- Inclination and Acceleration Sensors
- Fieldbus Modules
- AS-Interface
- Identification Systems
- Displays and Signal Processing
- Connectivity

### Pepperl+Fuchs Quality

Download our latest policy here:

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