



# **TOOLCRAFT**

Ⓒ Operating Instructions  
**Laser Rangefinder**  
Item No. 1600019 (LDM X100)  
Item No. 1613600 (LDM X80)

**CE**

# Table of contents



	Page
1. Introduction.....	4
2. Explanation of symbols .....	4
3. Intended use.....	5
4. Package contents.....	6
5. Features and functions.....	6
6. Safety instructions .....	7
a) General information.....	7
b) Laser .....	8
c) Batteries .....	10
7. Product overview .....	11
8. Display.....	12
a) Measuring .....	12
b) Measurement reading .....	13
9. Inserting (rechargeable) batteries .....	13
10. Charging the batteries .....	15
11. Switch device/laser on/off.....	16
12. Touchscreen operation .....	16
13. Settings .....	17
14. Distance measurement .....	19
15. Continuous measurement .....	19
16. Area measurement.....	20
17. Volume measurement .....	20
18. Indirect measurement.....	21
a) With two reference points.....	21
b) With three reference points - Variant A.....	22
c) With three reference points - Variant B .....	23
19. Automatic level calculation .....	23
20. Automatic height calculation.....	24
21. Distance between two points (P2P) .....	24

22. Adding/subtracting.....	25
23. Camera (only LDM X100).....	26
24. Data export (only LDM X100).....	27
25. Tips and useful information .....	28
26. Troubleshooting.....	28
27. Care and cleaning .....	29
28. Declaration of Conformity (DOC).....	30
29. Disposal.....	30
a) Product.....	30
b) Batteries .....	31
30. Technical Data.....	31

# 1. Introduction

---

Dear customer,

Thank you for purchasing this product.

This product complies with statutory national and European regulations.

To ensure that the product remains in this state and to guarantee safe operation, always follow the instructions in this manual.



These operating instructions are part of this product. They contain important information on setting up and using the product. Do not give this product to a third party without the operating instructions. Therefore, retain these operating instructions for reference!

For technical queries, please contact:

International: [www.conrad.com/contact](http://www.conrad.com/contact)

United Kingdom: [www.conrad-electronic.co.uk/contact](http://www.conrad-electronic.co.uk/contact)

## 2. Explanation of symbols

---



The symbol with the lightning in a triangle indicates that there is a risk to your health, e.g. due to an electric shock.



The symbol with an exclamation mark in a triangle is used to highlight important information in these operating instructions. Always read this information carefully.



The arrow symbol alerts the user to the presence of important tips and notes on using the device.



This symbol indicates the built-in laser.

### 3. Intended use

---

The product is used for the measurement of distances, surfaces and volumes. Allows addition and subtraction of readings. Calculates height based on the Pythagorean Theorem.

The product can be connected via Bluetooth with a smartphone app. The app allows you to edit and evaluate the measured data. This product can also be controlled via the app.

For safety and approval purposes, you must not rebuild and/or modify this product. Using the product for purposes other than those described above may damage the components. In addition, improper use can cause hazards such as a short circuit, fire or electric shock. Read the instructions carefully and store them in a safe place. Only make this product available to third parties together with its operating instructions.

All company and product names are trademarks of their respective owners. All rights reserved.

## 4. Package contents

---

- Laser rangefinder
- USB charging cable
- Storage pouch
- Hand strap
- 3x rechargeable battery (NiMH, 900 mAh)
- Operating instructions

→ The manual for the app is available for download as a separate document. Refer to the following paragraph.

### Up-to-date operating instructions

To download the latest operating instructions, visit [www.conrad.com/downloads](http://www.conrad.com/downloads) or scan the QR code on this page. Follow the instructions on the website.



## 5. Features and functions

---

- Dust-proof and protected against water jets (IP65)
- Housing with impact protection (max. drop height 2 m)
- Area calculation
- Volume calculation
- Indirect measurement (Pythagoras)
- Continuous measurement with display of minimum/maximum distance
- Addition/subtraction function
- Automatic level and height calculation
- Tripod socket 6.35 mm (1/4")
- 3 measurement references (front face, tripod socket, back face)
- Measured value memory

- Automatic shut-off after 3 minutes
- Digital water level
- Touchscreen
- Bluetooth function for connection to a smartphone app
- Camera for targeting (only LDM X100)

## 6. Safety instructions

---



**Read the operating instructions and safety information carefully. If you do not follow the safety information and information on proper handling in these operating instruction, we will assume no liability for any resulting personal injury or damage to property. Such cases will invalidate the warranty/guarantee.**

### **a) General information**

- The device is not a toy. Keep it out of the reach of children and pets.
- Do not leave packaging material lying around carelessly. It may become a dangerous toy for children.
- Protect the product from extreme temperatures, impacts, flammable gases, vapours and solvents.
- The product is only protected against water jets if the charging connection and the battery compartment are securely locked.
- Do not place the product under any mechanical stress.



- If it is no longer possible to operate the product safely, stop using it and prevent unauthorised use. Safe operation can no longer be guaranteed if the product:
  - is visibly damaged,
  - is no longer working properly,
  - has been stored for extended periods in poor ambient conditions or
  - has been subjected to any serious transport-related stress.
- Always observe the safety and operating instructions of any other devices which are connected to the product.
- Consult a technician if you are not sure how to use or connect the product.
- Maintenance, modifications and repairs must be done by a technician or a specialist repair centre.
- If you have questions which remain unanswered by these operating instructions, contact our technical support service or other technical personnel.

## **b) Laser**

- When operating the laser equipment, always make sure that the laser beam is directed so that no one is in the projection area and that unintentionally reflected beams (e.g. from reflective objects) cannot be directed into areas where people are present.
- Laser radiation can be dangerous, if the laser beam or its reflection enters unprotected eyes. Before using the thermometer, familiarise yourself with the statutory regulations and instructions for operating such a laser device.





- Never look into the laser beam and never point it at people or animals. Laser radiation can seriously damage your eyes.
- If laser radiation enters your eyes, close your eyes immediately and move your head away from the beam.
- If your eyes have been irritated by laser radiation, do not continue to carry out tasks with safety implications, such as working with machines, working from great heights or close to high voltage. Do not drive any vehicles until the irritation has completely subsided.
- Do not point the laser beam at mirrors or other reflective surfaces. The uncontrolled, reflected beam may strike people or animals.
- Never open the device. Configuration or maintenance tasks must only be completed by a trained specialist who is familiar with the potential hazards. Improperly executed adjustments might result in dangerous laser radiation.
- The product is equipped with a class 2 laser. Laser signs in different languages are included in the package. If the sign on the laser is not in your local language, attach the appropriate sign to the laser.

**ATTENTION**

**LASER RADIATION**  
**DO NOT STARE INTO THE BEAM**  
**CLASS 2 LASER PRODUCT**  
Max Output: < 1 mW  
Wavelength: 630 - 670 nm  
EN 60825-1:2014

- Caution: Using equipment or procedures other than those described in these instructions could lead to exposure to dangerous radiation.

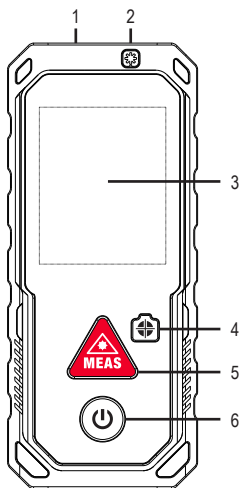


### c) Batteries

- Ensure that you insert the batteries in the correct polarity.
- To prevent battery leakage, remove the batteries when you do not plan to use the product for an extended period. Leaking or damaged batteries may cause acid burns if they come into contact with your skin. Always use suitable protective gloves when handling damaged batteries.
- Batteries must be kept out of the reach of children. Do not leave batteries lying around, as there is a risk that children or pets may swallow them.
- All batteries must be replaced at the same time. Mixing old and new rechargeable batteries can cause the batteries to leak and damage the product.
- Batteries must not be dismantled, short-circuited or thrown into flames. Never recharge non-rechargeable batteries. Danger of explosion!

## 7. Product overview

---



1 Measuring sensor

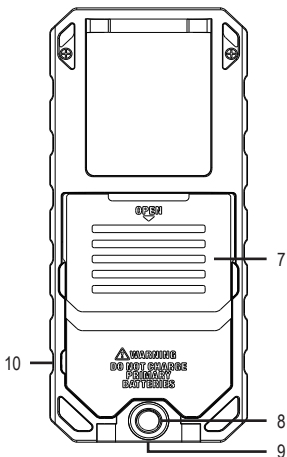
2 Laser aperture

3 Display

4 Camera button  
(only LDM X100)

5 **MEAS** button

6 On/off switch

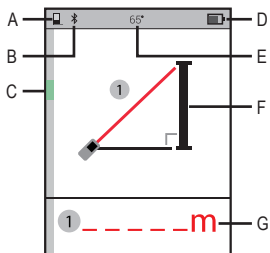


- |   |                           |    |                       |
|---|---------------------------|----|-----------------------|
| 7 | Battery compartment cover | 9  | Charging port cover   |
| 8 | Tripod thread             | 10 | Eyelet for hand strap |

## 8. Display

---

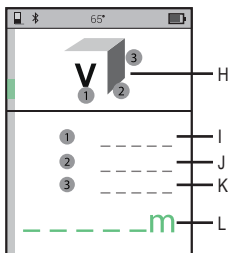
### a) Measuring



→ Example: indirect measurement with two reference points

- A Measurement reference
- B Bluetooth
- C Digital water level
- D Battery condition
- E Angle
- F Measurement mode
- G Measurement reading

## b) Measurement reading



→ Example: Volume measurement

- H Measurement mode
- I First line segment
- J Second line segment
- K Third line segment
- L Volume

## 9. Inserting (rechargeable) batteries

---

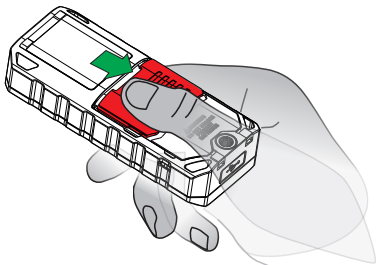
→ Delivery includes 3 rechargeable batteries. The product can also be operated with conventional batteries.



Never use rechargeable batteries and conventional batteries simultaneously.

Only use NiMH rechargeable batteries or alkaline batteries.

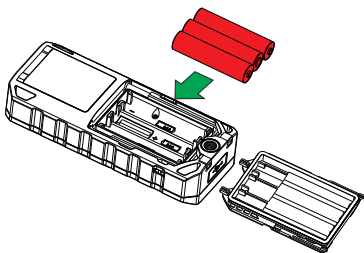
- Slide the battery compartment cover down.



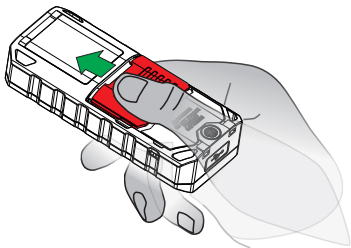
- Remove the battery compartment cover.

→ If you have difficulty removing the battery compartment cover, use a tool to help (e.g. slotted screwdriver).

- Insert 3 AAA batteries or rechargeable batteries with correct polarity. Pay attention to the polarity markings inside the battery compartment.



- Make sure that the sealing ring on the inside of the battery compartment cover is correctly installed.
- Replace the battery compartment cover.
- Slide the battery compartment cover upwards.



- Replace batteries or recharge the rechargeable batteries as soon as the battery status display shows an empty battery.

## 10. Charging the batteries

---



Never attempt to recharge disposable batteries. Danger of explosion!

Please fully charge the rechargeable batteries before initial operation.

- The USB power supply must be able to supply a current of 500 mA.

- Turn the cover that covers the charging port 180° to the side.
- Connect the product via the included cable with a USB power supply or a computer.

The display shows a short reminder that conventional batteries cannot be recharged. Then the charging process starts.

- The rechargeable batteries are charged when the battery state indicator is lit green.
- **Only LDM X100:** If you charge the product via a computer, safely eject the product via the operating system.

- Disconnect the cable from the product and from the power source as soon as the rechargeable batteries are charged.

## 11. Switch device/laser on/off

---

- Press and hold the on/off button approx. 1 second to turn on the product.
- Briefly press the **MEAS** button to activate the laser.
- Briefly press the on/off button to deactivate the laser.
- Press and hold the on/off button for approx. 1 second to turn the device off.

→ The product switches off automatically after 3 minutes of inactivity.

## 12. Touchscreen operation

---

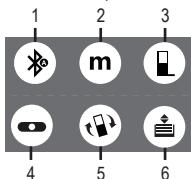
- Swipe right to show the overview of the different measuring modes.  
Then swipe up or down and tap the desired measurement mode.
- Swipe left to add/subtract measurements.  
This is possible with simple distance measurement as well as when measuring surface area and volume.
- Swipe down to access the setup menu.  
Swipe up to close the setup menu again.
- Briefly press the on/off button to return to the main screen.



## 13. Settings

---

Swipe down to access the setup menu.



- |                         |                       |
|-------------------------|-----------------------|
| 1 Bluetooth             | 4 Digital water level |
| 2 Unit                  | 5 Image rotation      |
| 3 Measurement reference | 6 Memory              |

### Bluetooth

- To connect the device with the app, Bluetooth must be enabled.
- Tap the icon to activate/deactivate Bluetooth.
- If the letter A appears next to the icon, the measured data is automatically sent to the app.
- If the letter M appears next to the icon, the measured data can manually be sent to the app.

In any measurement mode, swipe to the left and tap the Bluetooth symbol to send the current measurement data to the app.

- If the icon is highlighted in grey, Bluetooth is disabled.

→ The manual for the app is available for download as a separate document. Refer to the information in chapter 4.

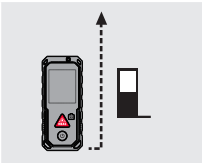
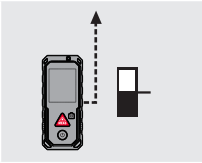

## Unit

The following units are available:

- m = meters
- in = inch
- ft = foot
- ---'---" = feet/inches

## Measurement reference

The following measurement references are available:

	<p>Starting point: Back</p> <p>The length of the device is included in the measured value.</p>
	<p>Starting point: Tripod thread</p>
	<p>Starting point: Front</p>

## Digital water level

The water level helps you to precisely align the product.

## Image rotation

- If the symbol is displayed on a white background, rotate the display by turning the product.
- If the icon is displayed on a grey background, image rotation is disabled.

## Memory

- Press the **MEAS** button or swipe left/right to display the stored measured values.
- **Only LDM X100:** To delete the displayed measured value, press the camera button.

→ The last measurement results will be stored automatically.

## 14. Distance measurement

---

- Press the **MEAS** button to activate the laser.
- Point the laser point at the target at a right angle and try to hold the device as calm as possible
- Press the **MEAS** button. After a short time, a beep signal sounds and the measured value is displayed on the display.

## 15. Continuous measurement

---

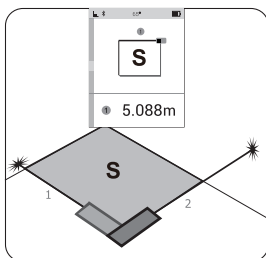
- Press and hold the **MEAS** button for approx. one second to switch to continuous measurement mode.
- The laser is activated. The distance is now measured continuously.

- The display shows the maximum, minimum and the last registered measured value of the measurement process.
- To exit continuous measurement mode, press the **MEAS** or the on/off button.
- After 5 minutes of inactivity, this feature is automatically deactivated.

## 16. Area measurement

---

- Swipe right and select the following function:

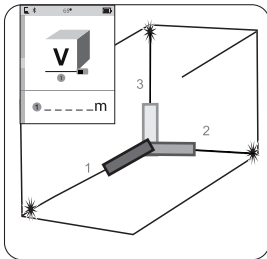


- Measure the two sides of the area.
- The device automatically multiplies the measured values.

## 17. Volume measurement

---

- Swipe right and select the following function:



- Measure the two sides and the height of the room.
- The device automatically multiplies the measured values.

## 18. Indirect measurement

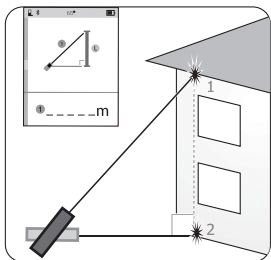
---

→ The Pythagorean theorem ( $a^2+b^2=c^2$ ) can be used to indirectly determine the height of an object.

Make sure that the starting point for the individual measurements is exactly the same position.

### a) With two reference points

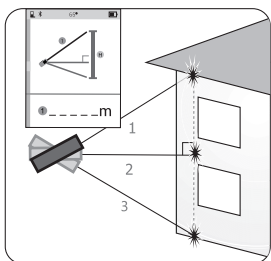
- Swipe right and select the following function:



- Now measure the two required line segments. Please see the previous figure for the right order.
- The height is calculated automatically and will appear in the bottom row.

## b) With three reference points - Variant A

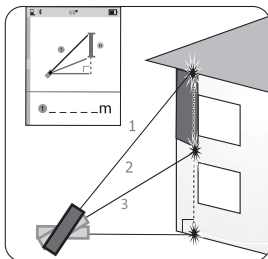
- Swipe right and select the following function:



- Now measure the three required line segments. Please see the previous figure for the right order.
- The height is calculated automatically and will appear in the bottom row.

### c) With three reference points - Variant B

- Swipe right and select the following function:

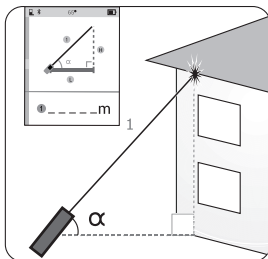


- Now measure the three required line segments. Please see the previous figure for the right order.
- The partial height between points 1 + 2 is automatically calculated and displayed in the bottom line.

## 19. Automatic level calculation

---

- Swipe right and select the following function:

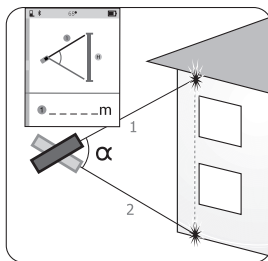


- Now measure the necessary line segment (see the previous figure).
- The result is calculated automatically.

## 20. Automatic height calculation

---

- Swipe right and select the following function:



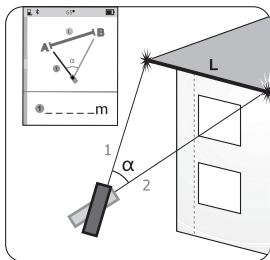
- Now measure the two required line segments. Please see the previous figure for the right order.
- The height is calculated automatically and will appear in the bottom row.

## 21. Distance between two points (P2P)

---

- Swipe right and select the following function:



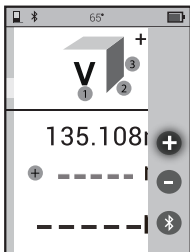


- A warning message appears on the display. The device calibrates. Do not move the device during this time. Wait until the warning message disappears.
- If self-calibration fails, the list of all measurement modes is shown again. Repeat the procedure in this case.
- Now measure the two required line segments. Please see the previous figure for the right order.
  - The distance is calculated automatically and will appear in the bottom line.

## 22. Adding/subtracting

---

- Measure the first segment.
- Swipe to the left.

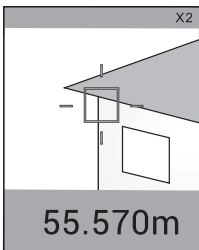


- Tap + to add or – to subtract.
  - Measure the next line segment.
  - The sum or difference will be shown in the bottom row.
- This process can be repeated as often as desired.  
You can also add/subtract areas or volumes.

## 23. Camera (only LDM X100)

---

- Instead of the target laser, you can use the built-in camera to target the measuring point.
- Press the camera button if desired before a measurement.  
The camera image and a crosshair appear on the display.



- Press the camera button again to switch between two- and four-time magnification.

The magnification factor is shown in the top right of the display.

- Once you have targeted the measuring point, make your measurements as usual.

→ Any ongoing measurement (e.g. volume measurement) is not affected. Previously registered values are retained in the buffer.

## 24. Data export (only LDM X100)

---



As soon as the product is connected to a computer, the charging process starts.

If you operate the product with conventional, non-rechargeable batteries, remove them before connecting the product to a computer.

- Connect the product with the included cable to your computer.

The product is shown as a drive with the name "Laser-Meter".

- On the drive, there is a file named "DISTANCE.CSV". Copy the file in your desired directory.
- Safely eject the product via the operating system before you disconnect the cable.

## 25. Tips and useful information

---

- Measuring errors may occur when operating the product outdoors due to light refraction or sunlight. Perform measurements in suitable light conditions.
- Due to their physical properties, the following surfaces may falsify the measurements:
  - Transparent surfaces (e.g. glass, water)
  - Reflective surfaces (e.g. glass, shiny metal)
  - Porous surfaces (e.g. insulating materials)
  - Structured surfaces (e.g. roughcast, natural stone)
- Use a tripod (not included) in order to achieve consistent results.

## 26. Troubleshooting

---

Code	Cause	Solution
204	Calculation error	Repeat the process.
208	Overcurrent	Contact your retailer.
220	Weak batteries/ rechargeable batteries	Replace or recharge the batteries.
252	Temperature too high	Observe the operat- ing temperature range.
253	Temperature too low	
255	Reflected signal too weak or measurement takes too long.	Select a different measurement surface.
256	Reflected signal too strong	

Code	Cause	Solution
261	Outside of the measurement range	Observe the measuring range.
500	Hardware error	Turn the device off and then on again. If after several attempts the error message still appears, contact your retailer.

## 27. Care and cleaning

---



Never use aggressive detergents, rubbing alcohol or other chemical solutions, as these may damage the casing or cause the product to malfunction.

Do not immerse the product in water or other liquids.

- The product is maintenance-free. Only clean the exterior with a soft, dry cloth or a brush.  
In case of stronger soiling, you can use a damp cloth.
- Use a small brush or a cotton bud to clean the measuring sensor.
- Store and transport the measuring device only in the included pouch.

## 28. Declaration of Conformity (DOC)

---

Conrad Electronic SE, Klaus-Conrad-Straße 1, D-92240 Hirschau, hereby declares that this product conforms to Directive 2014/53/EU.

→ Click on the following link to read the full text of the EU Declaration of Conformity: [www.conrad.com/downloads](http://www.conrad.com/downloads)

Select a language by clicking on the corresponding flag symbol and then enter the product order number in the search box. The EU Declaration of Conformity is available for download in PDF format.

## 29. Disposal

---

### a) Product



Electronic devices are recyclable waste and must not be disposed of in the household waste. Always dispose of the product according to the relevant statutory regulations.

Remove any inserted batteries and dispose of them separately from the product.

## b) Batteries



You are required by law (Battery Directive) to return all used batteries. Batteries must not be placed in household waste.

Batteries containing hazardous substances are labelled with this symbol to indicate that disposal in household waste is forbidden. The abbreviations for heavy metals in batteries are: Cd = Cadmium, Hg = Mercury, Pb = Lead (indicated on the battery, e.g. below the trash icon on the left).

Used batteries can be returned to local collection points, our stores or battery retailers.

You thus fulfil your statutory obligations and contribute to the protection of the environment.

## 30. Technical Data

---

Power supply .....	3 x AAA battery/ rechargeable battery
Measuring range* .....	0.2 – 100.00 m (LDM X100) 0.2 – 80.00 m (LDM X80)
Basic accuracy** .....	$\pm(2.0 + 5 \times 10^{-5} D)$ mm
Accuracy (indirect measurement)...	$\pm 2$ cm
Accuracy (P2P).....	$\pm 4$ cm
Laser class .....	2
Laser wavelength .....	630 – 670 nm
Laser output power.....	<1 mW
Response time.....	<0.5 s
Charging time .....	4 – 4.5 h
Protection type.....	IP65
Tripod socket .....	6.35 mm (1/4")
Wireless frequency .....	2.4 GHz
Transmission power.....	1 mW

Memory.....	100 (LDM X100)
	30 (LDM X80)
Operating conditions.....	-10 to +40 °C
Storage conditions.....	-20 to +60 °C
Dimensions (L x W x H).....	115 x 49 x 26 mm
Weight .....	154 g (LDM X100)
	141 g (LDM X80)

\*Measurement range and accuracy depend on how well the laser light is reflected from the surface of the object and the brightness of the laser point compared to the ambient brightness.

\*\*In favourable conditions, the accuracy of measurements <10 m is approximately  $\pm 2$  mm. In case of measurements >10 m, an influence of  $\pm 0.1$  mm/m can be expected

Under unfavourable conditions (e.g. strong sunlight or poorly reflective surface) the range is reduced and the result can deviate from the correct result by up to 10 mm.





This is a publication by Conrad Electronic SE, Klaus-Conrad-Str. 1, D-92240 Hirschau ([www.conrad.com](http://www.conrad.com)).

All rights including translation reserved. Reproduction by any method, e.g. photocopy, microfilming, or the capture in electronic data processing systems require the prior written approval by the editor. Reprinting, also in part, is prohibited. This publication represent the technical status at the time of printing.

Copyright 2018 by Conrad Electronic SE.