

# tactonom<sup>®</sup> reader



## Tactonom<sup>™</sup> Reader Instruction manual

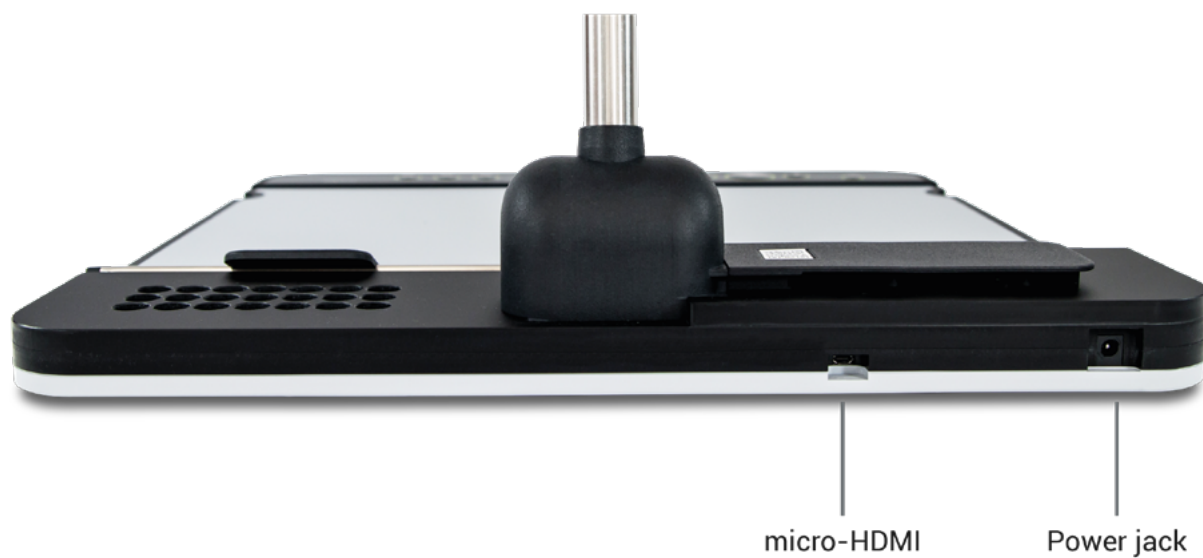
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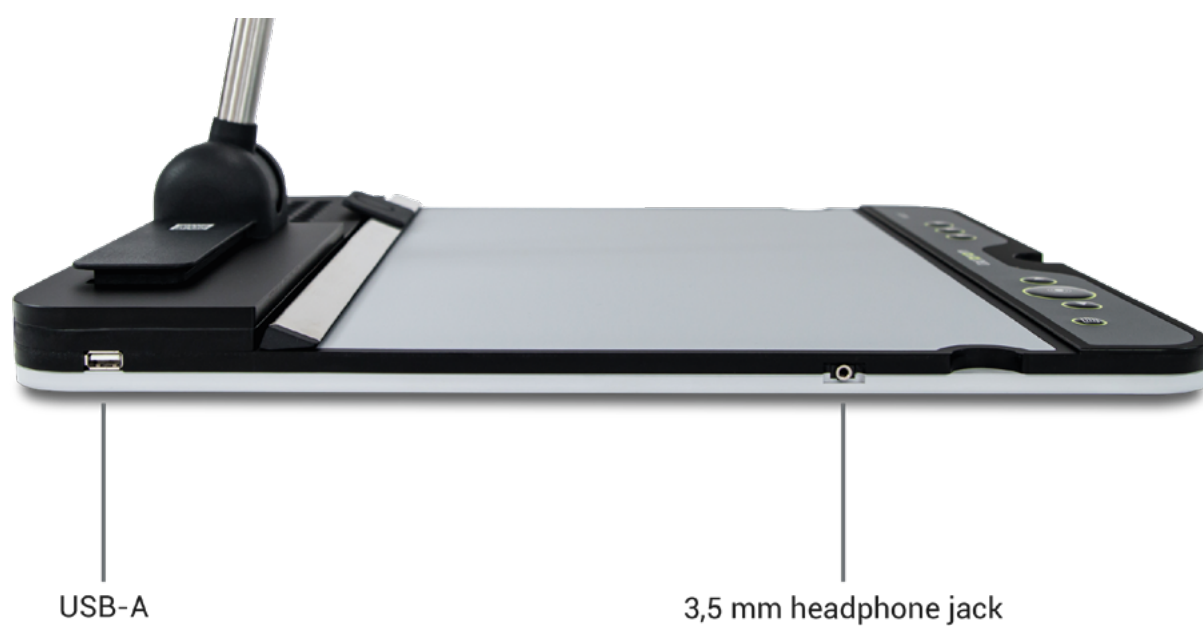
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## Connections of the Tactonom™ Reader

- Backside



- Left side



## Preliminary note

Congratulations on your new Tactonom™ Reader. The Inventivio team developed the Tactonom™ Reader with the goal of providing blind people with easier access to the world of graphics. The focus is on independent access, intuitive use and playful interaction. We welcome your suggestions and feedback.

## Before the start

Read the instruction manual carefully before using the Tactonom™ Reader for the first time.

The current user manual for the Tactonom™ Reader is always accessible in an accessible format via the QR code depicted below. This QR code is also located to the left of the camera arm's base.



## Caution!

1. When lowering the camera arm gently, carefully release the locking mechanism.  
Note: For models that have a button at the back of the camera base, be sure to press it before lowering, and use the other hand to lower the camera arm gently.
2. The camera arm must be lowered after each use and before each user change.
3. When using the Tactonom™ Reader, make sure that the user does not make any strong upper body movements, otherwise there is a risk of bumping the camera head.
4. Before sitting down in front of the Tactonom™ Reader, make sure that the camera arm is lowered.
5. The front of the Tactonom™ Reader should be placed at least 10 centimeters from the edge of the table where the user is seated.
6. The Tactonom™ Reader must not be placed near windows. Ensure that no external light sources cast shadows on the surface of the Tactonom™ Reader.
7. The Tactonom™ Reader should not be used in environments with strong red coloration of the light, as this could have an effect on finger recognition.
8. The Tactonom™ Reader is intended for indoor use only.
9. The Tactonom™ Reader must be placed with all feet on a level, stable, dry, and non-slip surface.
10. The Tactonom™ Reader is a stand-alone device. It is only transported with the camera arm folded in.
11. Never carry, lift or transport the Tactonom™ Reader by the camera arm.
12. When transporting the Tactonom™ Reader, always carry it with both hands.
13. The Tactonom™ Reader may only be cleaned with dry cloths.
14. The camera lens of the Tactonom™ Reader should be cleaned carefully with a dry microfiber cloth at regular intervals.
15. The Tactonom™ Reader may only be operated with the supplied power supply unit.  
In case of loss, only use a power supply explicitly approved by the manufacturer.  
Please contact the customer service for this.
16. When loading a new graphic, keep your hands and all possible objects away from the touch surface, otherwise the graphic cannot be load in correctly..
17. The Tactonom™ Reader must not come into contact with fire or open light.
18. Liquids of any kind must be kept away from the Tactonom™ Reader. If moisture enters the interior of the Tactonom™ Reader, disconnect it from the power source immediately.  
The device must not be reconnected to a power source or used thereafter under any circumstances. Please contact customer service.
19. The system volume must not be artificially amplified.

# 1. Introduction

The Tactonom™ Reader enables blind people to understand graphic information in a simple and playful way. This is achieved by explaining tactile structures with audio information.

These explanations refer to the element that the user feels with the fingertip. Technically, information is read out with pinpoint accuracy by means of camera-based finger recognition. If there is information under the finger, it is read out. This opens up a wide range of possible uses:

- **Education:** In early education, school and studies, in lessons, for homework and to deepen knowledge independently
- **Mobility:** Surrounding plans, floor plans and network plans
- **Participation:** Access to a wide range of graphical information
- **Rehab:** Support for the transition to the tactile world
- **Games:** Interactive games of all kinds

The Tactonom™ Reader combines tactile content with precise explanations. For this purpose, tactile documents are placed on the tactile surface of the Tactonom™ Reader. Additional content is loaded via the QR code attached to the documents.

The prerequisite for working with the Tactonom™ Reader is the existence of the documents created for the Tactonom™ Reader.

These documents can be:

- **Swell paper**
- **Braille-Printing**
- **3D-Printing**
- **Thermoform**

For the printout of these underlay types, the respective output technology is required.

- Laser printer and swell copier for swell paper
- Braille printer for braille printing
- 3D-printer for 3D models
- Thermoforming press for thermal foils

Alternatively, tactile materials can be obtained at [www.tactonom.com/en/tactonom-shop](http://www.tactonom.com/en/tactonom-shop) or from service providers.

A WLAN connection or LAN connection is required to automatically read in the graphics. (The LAN adapter is available separately from our online store.) The tactile documents are created using standard computers with an Internet connection.

## 2 First steps

### 2.1 Requirements for the installation place

Please place the Tactonom Reader with all feet on a level, stable, dry, horizontal and non-slip surface.

Please always make sure that the camera arm of the Tactonom™ Reader is lowered before sitting in front of the device.

To avoid interfering with finger recognition, the Tactonom™ Reader should not be placed near windows. Also, make sure that no external light sources cast shadows on the surface of the device. In addition, environments where a red tint to the light occurs should be avoided.

The front of the Tactonom™ Reader should be placed at least 10 centimeters from the edge of the table where the user is seated. The device is intended for indoor use only.



## 2.2 Raising and lowering the camera arm

Before starting to use the Tactonom™ Reader, the camera arm must be raised so that the camera can capture the entire tactile surface.

During this process, the Tactonom™ Reader should remain turned off.

To raise the camera arm, gently lift it upwards until it clicks into place. This will occur at an angle of approximately 70 degrees. You will hear a distinct clicking sound when it locks into place. The camera arm is now fixed at a specific angle to the camera base.

To lower the camera arm, unlock it by gently pulling it downward. As you lower the arm, cushion its descent on the surface using your hand. You'll hear a clicking sound when the camera arm reaches its lowered position. The camera arm must be lowered after each use and before changing users to prevent anyone from accidentally bumping into it.

While using the Tactonom™ Reader, avoid making exaggerated or strong rocking movements with your upper body, as this could potentially cause the camera head to make contact or become dislodged from its fixation.

Note: If there is a round green button located on the back of the base, make sure to press it with one hand before lowering the camera arm. Then, guide the camera arm upwards or downwards with your other hand.

### **Important:**

The position of the camera is of decisive importance for the proper functioning of the Tactonom™ Reader. Therefore, handle the camera arm with care when folding and unfolding it.

During usage, please refrain from moving the camera arm and ensure that it securely locks into the upper position. Never transport or lift the Tactonom™ Reader by the camera arm.

## 2.3 Connecting to a power source

To operate the Tactonom™ Reader, it must be connected to a power source. The power jack for the Tactonom™ Reader is located on the rear left side in the recess of the housing. The device may only be operated with the supplied power supply unit. This can be reordered at [www.tactonom.com/en/tactonom-shop](http://www.tactonom.com/en/tactonom-shop). In case of loss, only use a power supply explicitly approved by the manufacturer. Please contact the customer service for this. Please make sure that the cable is not under tension and that nobody can trip over the cable.

Before disconnecting the power source, the device must always be switched off, otherwise the electronics may be damaged. The Tactonom™ Reader is switched off via the „Shutdown“ menu. Please wait at least 2 minutes after shutting down the device before disconnecting the power supply from the mains. You can recognize the successful shutdown by the quiet click sound.

## 2.4 Start

To start using the Tactonom™ Reader for the first time, please set up the camera arm and place an audio-tactile graphic suitable for the Tactonom™ Reader on the base surface. To do this, gently press down on the clamping bar at the back of the device provided for this purpose on the right and slide the graphic under the clamping bar. Then align the graphic on the front side and make sure that it does not protrude on any side.

After alignment, press the large round key on the left side of the keyboard (Enter). Please remove your hands and all objects from the key surface while the Tactonom Reader is starting. The camera requires an unobstructed view of the QR code (back right) and the four marks located at the four corners of the graphic.

If the marks and/or the QR code are not recognized, the device will provide information about this. In this case, please realign the graphic and re-load it via the „New page“ menu. For more information, see section 7.

As soon as the Tactonom™ Reader indicates the title and description of the graphic, the system is ready for operation. If there is no graphic on the screen, the system will report this.

## 2.5 Connecting to the Internet

### 2.5.1 Connecting to a WiFi network

To load new graphics, a WiFi connection is required, as the Tactonom™ Reader combines tactile information with digital content that is initially located in the cloud. To access the internet, the device requires the name of the WiFi network and the associated password. This can be set up as follows:

- Create a new text file on your computer with UTF-8 encoding and name it „wifi.txt“. To do this, it is best to use the „Editor“ program on Windows or „TextEdit“ on the Mac. The encoding is set to UTF-8 by default and can be changed in the „Save As“ dialog on older Windows versions. On the Mac, the text must still be converted to plain text under the „Format“ menu.
- Write the name of the Wi-Fi network that the Tactonom™ Reader should connect to in the first line of the file. Please double-check to ensure that the name is spelled correctly and pay attention to uppercase and lowercase letters.
- Write the password of the WLAN network in the second line. Please make sure that the password is exactly the same here as well.
- Save this file in the root directory of a USB stick.
- Insert the USB stick into the USB socket of the Tactonom™ Reader. This is located on the rear left side of the device.
- Now go to the main menu and navigate to the settings. Under the „System“ setting, you can load the WiFi configuration from the USB stick in the menu item of the same name.
- Shut down the Tactonom Reader via the main menu. After shutting down, you can remove the USB stick.
- The next time the device is switched on, the system is connected to the specified WiFi network.

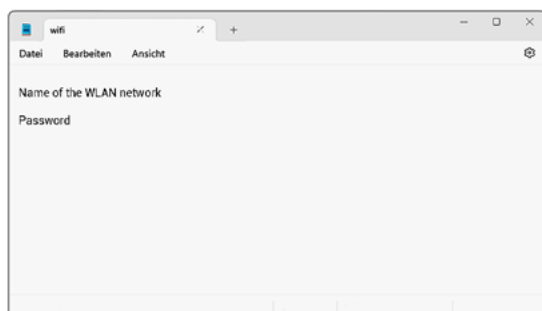
## 2.5.2 Connecting via the LAN network

To connect the Tactonom™ Reader to the internet via a LAN connection, the original LAN adapter is required. This can be ordered at [www.tactonom.com/en/tactonom-shop](http://www.tactonom.com/en/tactonom-shop)

- Plug the LAN adapter into the USB socket located on the left side at the back of the housing.
- Connect the adapter with the LAN cable.
- Make sure that the other end of the LAN cable is plugged into an active LAN socket.
- Your Tactonom™ Reader is now connected to the Internet via the LAN.

The LAN connection is strongly recommended for networks with extensible authentication protocol (EAP). This includes Eduroam networks. This also includes Eduroam networks

The text file should look like this:



**Note:** If your WLAN network uses an Extensible Authentication Protocol (EAP), setup by your system administrator is mandatory.

For this type of network, we recommend using the LAN adapter certified for the Tactonom™ Reader.

This will allow you to start working with the Tactonom™ Reader immediately.

This LAN adapter can be purchased from the manufacturer.

For more information, please visit:

[www.tactonom.com/en/support-wlan](http://www.tactonom.com/en/support-wlan)

## 2.6 Importing graphics via USB

Alternatively, graphics can be imported via the USB port. To do this, you can click on the desired graphic in the „Share“ database on the Internet at: [www.share.problind.org](http://www.share.problind.org) and download it via the „Download as archive“ button.

The downloaded archive must be stored in the root directory of a USB stick.

To import the graphics, insert the USB stick into the socket on the rear left side of the Tactonom™ Reader. Then go to the menu under Settings followed by General and select „Load graphic files from USB“. After confirmation, the device transfers all graphic files on the USB stick to the device's internal memory. Once that is done you can start to work with the printed graphic.

## 2.7 Audio output

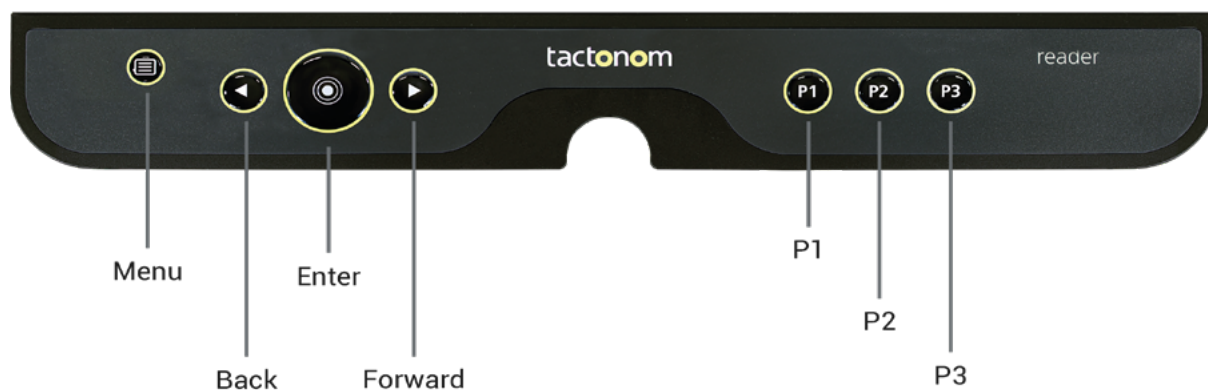
By default, audio information is output via the built-in speaker. The volume of the loudspeaker can be adjusted in the „Settings“ menu or via the „P3“ key. For more information, see section 3.7.

On the left side of the Tactonom™ Reader there is a 3.5 mm jack socket for headphones. By plugging in a pair of headphones (not included), the audio information is output exclusively through the headphones. This disables the speaker. Removing the plug from the jack socket reactivates the speaker. The volume of the headphones can be changed via the „P3“ key, as described above. The system volume must not be artificially amplified by e.g. external amplifiers.

## 2.8 Further notes

- The tactile surface of the Tactonom™ Reader is made of a foiled metal.
- Only the intended documents may be placed on the surface of the Tactonom™ Reader. Other objects such as pens, cups or other items will impair image recognition.
- The Tactonom™ Reader must be protected from liquids of all kinds.
- Do not open or disassemble the Tactonom™ Reader. Opening the device will void the warranty. In case the Tactonom™ Reader does not work as usual, please check all instructions listed under „Sources of error“. If the device still does not work properly, please contact the customer service.
- Short Key Press: Pressing the „Enter“ key briefly confirms the input, just as usual.
- Emergency Stop: Pressing and holding the „Enter“ key for 5 seconds or more immediately turns off the device. This function should be used exclusively in emergency situations. Proper shutdown must otherwise always be performed using the „Shutdown“ option in the menu.
- In version 2.4 or higher, which can be identified by the absence of the button at the back of the camera base, the Tactonom™ Reader will be properly shut down by pressing and holding the „Enter“ key for an extended period.

## 3 The keyboard layout of the Tactonom™ Reader



### 3.1 Menu key

This key is used to call up the main menu and to navigate back to the parent menu in the submenus.

### 3.2 Back key

Key for backward navigation in the currently selected menu.

### 3.3 Enter key

Key for selecting a command in the menu. By default, it starts the „Detect finger“ function.

### 3.4 Forward key

Key for forward navigation in the currently selected menu.

### 3.5 P1 key

This button can be used to pause and restart audio playback.

### 3.6 P2 key

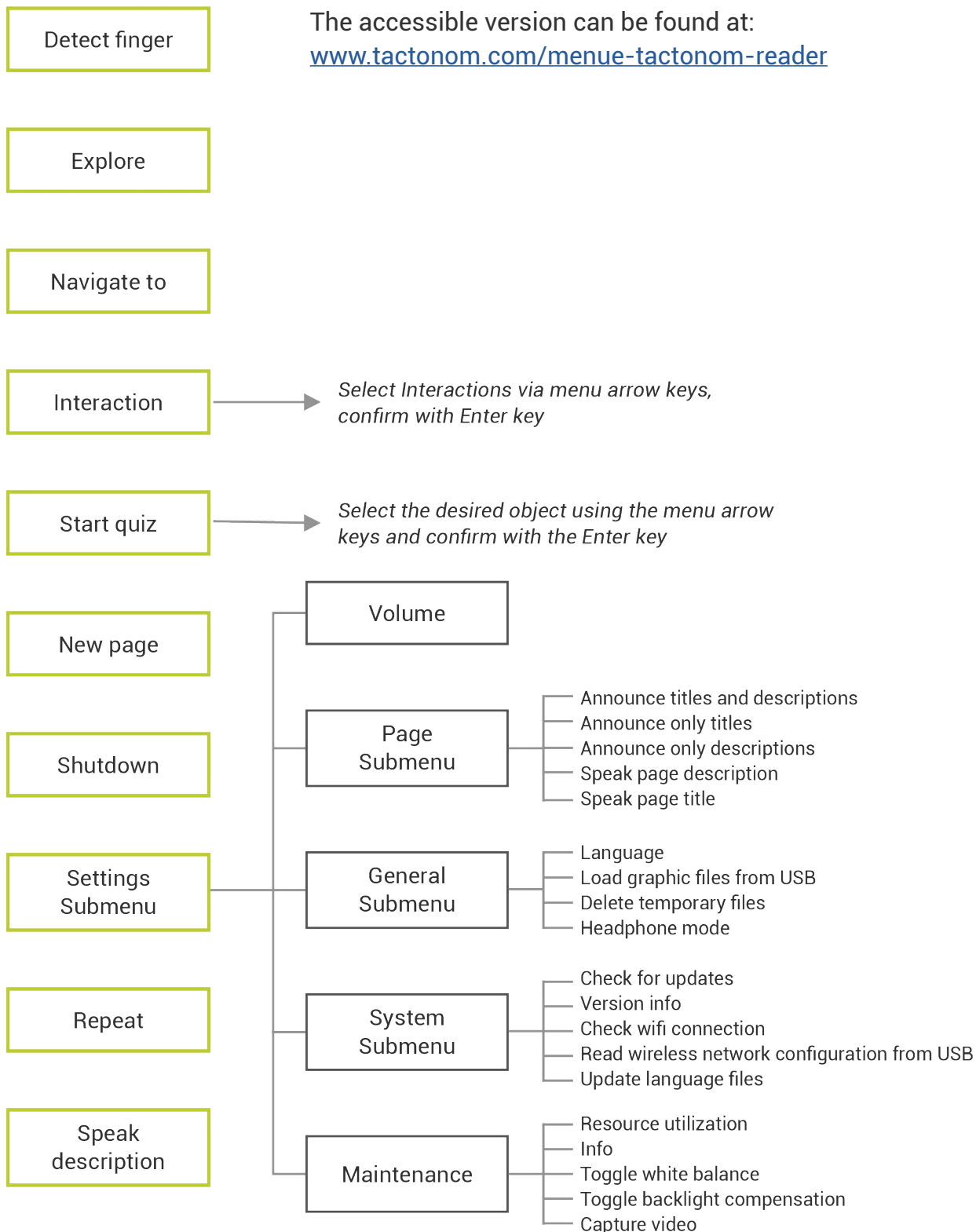
This button can be used to switch between the „Play titles only“ and „Play titles and descriptions“ functions.

### 3.7 P3 key

This key leads directly to the „Volume“ menu. The volume can then be adjusted here using the „Forward“ and „Back“ navigation keys. The set volume is saved by confirming with the Enter key.

## 4 Tactonom™ Reader menu structure

Below is the menu structure as a diagram. This explains how the level hierarchy of the menu is structured.





## 5 Operation

### 5.1 Prepare

Place a graphic on the touch surface.

Clamp the graphic with the clamping device, which is located at the rear edge of the touch surface and covers the entire width. Make sure that the graphic does not protrude laterally and is aligned with the front edge.

Graphics that protrude above the touch surface are not suitable for the Tactonom™ Reader, as they cannot be detected by the camera. Documents that are smaller than the scanning surface should be centered.

Ensure that the camera has a clear view of the documents. To do this, remove your hands completely from the surface.

Make sure that the Tactonom™ Reader is connected via WiFi or LAN and that this ensures access to the Internet. Alternatively, you can load the graphics via an USB stick as described in 2.6.

Also make sure that the Tactonom™ Reader is connected to a power source. You turn on the device by clicking the large round button on the left side of the keyboard (Enter).

The camera light ring will turn on and the Tactonom™ Reader will power up with a beep tone. This may take approximately one minute.

Now the camera will search for the QR code and the four marks placed on the graphic. This can take a few seconds. Once the QR code and marks are identified, the Tactonom™ Reader will read the title of the graphic.

If the Tactonom™ Reader gives an error message, it may be due to the following reasons:

- wrong positioning of the graphic
- unsuitable lighting conditions
- hidden marks
- missing or unknown QR code
- incorrect positioning of the camera arm
- Network error

In this case please refer to error messages (section 7).

## 5.2 Finger recognition

Finger recognition is ensured only when the user is seated in front of the device and places their hands onto the tactile surface from the front. Fingers are not reliably recognized if the user reaches from the sides or the back of the tactile surface.

The camera detects the position of the finger that protrudes the furthest into the tactile surface from the front (keyboard side). Therefore, the index finger should be extended and placed on the object that needs an explanation. The other fingers should be retracted. The recognized point is located centrally at the outermost end of the finger.

When exploring a graphic with all fingers and when retrieving an explanation, proceed as outlined above by gently touching the tactile surface and placing your index finger as instructed.

## 5.3 Features of the Tactonom™ Reader

### 5.3.1 Automatic graphics detection

The Tactonom™ Reader recognizes graphics by their QR code. Since the language is also stored in the QR code, the device automatically switches to the stored language.

#### **Important:**

The Tactonom™ Reader can also recognize graphics that are rotated 180 degrees. This can be especially helpful with floor plans.

### 5.3.2 Finger detection

This function is active by default.

It allows the user to display the information stored in a graphic.

To do this, simply place your index finger on the point of interest and use your other hand to press the large, round button (Enter).

### 5.3.3 Explore

By selecting the menu item „Explore“, the stored contents are output as soon as the index finger is located over a zone with stored information. Pressing the Enter key is not necessary in this mode.

### 5.3.4 Navigate

By selecting the „Navigate“ menu option, the Tactonom™ Reader can guide the user to a chosen object. This is done by announcing the direction of movement following the clockwise principle and using auditory signals.

First, use the Previous and Next buttons to select the desired object. Each individually named object within the graphic can be selected. Once the desired object has been announced in the list, start the navigation by pressing the Enter button. Follow the specified clockwise direction either vertically or horizontally until a new direction is announced. The tones will become faster as the finger approaches the target object, similar to a game of „Hot and Cold.“

A confirmation sound will play when the object is found. Press the „Enter“ button to hear the description.

### 5.3.5 Interactions

The „Interactions“ function allows the user to deal with the system in an interactive and playful way. This makes it ideal for homework, knowledge reinforcement and touch games. Predefined tasks are set by the Tactonom™ Reader, which the user completes by entering the correct solutions.

There are 4 types of interaction:

- **Find objects:** Question - Answer
- **Find pairs:** Assignment, multiple choice, cloze texts
- **Find groups:** Identify elements with the same descriptors
- **Find path:** Ranking, sequences, sorting

The interaction tasks can be very easily and quickly individually created via the database at [www.problind.org](http://www.problind.org). You can find more information online on our product page: [www.tactonom.com/en/reader-info](http://www.tactonom.com/en/reader-info)

#### **Application:**

If an interaction is stored in a graphic, this function can be selected via the menu keys and activated by pressing the „Enter“ key. If several contents are deposited, these can be selected by the „forward“ and „back“ key and confirmed with the „Enter“ key. Then the tasks are set. These are of different nature depending on the interaction type.

The interactions can be cancelled by pressing the „menu“ key.

Once an interaction has been initiated, you can repeat the posed question by pressing the „forward“ or „back“ button and confirming with the „Enter“ button to proceed with „Repeat.“

Note: The interactions are available from version 2.4.17 upwards.  
To update, see the section 5.4

### 5.3.6 Quiz

By selecting the „Quiz“ menu item, the user can test himself.  
The device asks for an object to be found. If the correct object is pointed to and confirmed with the Enter key, this is confirmed with the output „correct“.  
Otherwise, an acoustic signal sounds.

### 5.3.7 Setting the depth of information

The P2 key can be used to set the depth of information and switch between the „Play titles only“ and „Play titles and descriptions“ functions.

### 5.3.8 Repeat

This command repeats the last spoken information of the „Finger detection“ function.

### 5.3.9 New page

By selecting this function, the graphic is reloaded based on the QR code.  
Once it's loaded, the system will read out the title and description. If the graphic was printed using a Braille printer, this printout must be associated with the corresponding file in the „Share“ database. To do this, first place the markers and the linking QR code ([www.tactonom.com/en/tactonom-shop](http://www.tactonom.com/en/tactonom-shop)) at the designated locations. The markers should be placed within the four circular shapes in the corners, and the linking QR code in the square shape at the upper right corner.

When reloading this graphic, the Tactonom Reader starts looking for a link. It searches the database (internet connection required) for graphics that have been downloaded for Braille printing within the last 60 minutes. You can navigate between the found graphics using the Next and Previous buttons and confirm your selection with the Enter button. From that moment on, this QR code will work on all systems.

An overview of the available graphics can be found at: [share.problind.org](http://share.problind.org)

## 5.4 Software update

The software can be updated via the „Settings“ followed by „System“ followed by „Check for updates“ menu.

It is recommended to check for updates at regular intervals.

## 5.5 Power off

Switch off the device after use. To do this, select the „Shutdown“ option from the menu. Caution: Always turn off the Tactonom™ Reader before disconnecting it from the power source. This may take two minutes. Successful shutdown is indicated by a quiet clicking sound.

Note: Starting from version 2.4.0, the Tactonom™ Reader can be properly shut down by pressing and holding the „Enter“ key for an extended period.

## 5.6 Settings menu

The settings menu consists of 5 sublevels. These are:

- „Volume“
- „Page Submenu“                      Setting of audio playback
- „General Submenu“                Language, reading, and deleting graphics
- „System Submenu“                Software updates and WLAN connection
- „Maintenance Submenu“        Advanced settings

For further details, please refer to section 4.

## 5.7 Use of 3D models

The Tactonom™ Reader also detects fingers in space, allowing the use of 3D models. A clearly defined marker on the graphic is necessary for positioning the 3D model.

Please ensure that this position is centered under the camera. The height of the 3D model should not exceed 12cm. Please be aware that taller elements can obstruct areas behind them for the camera's view.

Individual 3D models can be ordered at: [www.tactonom.com/en/tactonom-shop](http://www.tactonom.com/en/tactonom-shop)

## 6 Other notes

### 6.1 Care instructions

The Tactonom™ Reader should only be cleaned with a dry cloth.

The camera lens of the device should be cleaned carefully with a dry microfiber cloth at regular intervals.

When changing the user, the Tactonom™ Reader should be cleaned with a slightly damp disinfectant wipe. For this purpose, the compatibility of the disinfection wipe used must be checked in advance on the underside of the device for material compatibility. Immediately after wiping the Tactonom™ Reader, wipe it with a soft, dry, lint-free cloth.

### 6.2 Transport instructions

The Tactonom™ Reader is a stand-alone device. The device must only be transported with the camera arm folded in.

The device must never be carried, lifted or transported by the camera arm.

When transporting the Tactonom™ Reader, always carry it with both hands.

## 7 Sources of error

### 7.1 The Tactonom™ Reader does not recognize the fingers and only plays the „No content“ sound or an inappropriate information

Please place the Tactonom™ Reader with all feet on a level, stable, dry, level, and non-slip surface.

Please always make sure that the camera arm of the Tactonom™ Reader is lowered before sitting in front of the device.

To avoid interfering with finger recognition, the Tactonom™ Reader should not be placed near windows. It is also important to ensure that no external light sources cast shadows on the surface of the device. In addition, environments where a red tint to the light occurs should be avoided.

The front of the Tactonom™ Reader should be positioned at a minimum distance of 10 centimeters from the edge of the table where the user is sitting.

The device is intended for indoor use only.

Possible causes:

- There is no audio information stored.
- The index finger should be held at a right angle to the front of the device if possible, as the fingertip that protrudes furthest into the touch surface is used as the reference point.
- External light sources interfere with finger recognition.  
**Solution:** Change the location of the Tactonom™ Reader.
- The fingers are not placed on the touch surface from the front.  
**Solution:** Please only touch the touch surface while sitting in front of the Tactonom™ Reader. If you touch the Tactonom™ Reader from the side, the system cannot reliably detect the fingers.
- Not the index finger is detected, but another finger.  
**Solution:** retract the other fingers.

## 7.2 QR code is not being recognized

Possible causes:

- No QR code available on the graphic.  
**Solution:** Place a graphic with QR code.
- QR code is covered by objects or the hand.  
**Solution:** Remove all objects and the hands from the graphic.
- The QR code was not found in the database.  
**Cause 1:** You have placed a private graphic that is not stored in the database.  
**Solution:** Upload the graphic to the database.  
**Cause 2:** There is no internet connection of your router.  
**Solution:** Connect your router to the Internet.
- The Tactonom™ Reader is not connected to a WiFi network.  
**Solution:** Please connect the Tactonom™ Reader to a WiFi network.
- The graphic is not placed correctly.  
**Solution:** Check the alignment of the graphic (QR code at the top right).
- The camera lens is dirty.  
**Solution:** Carefully wipe the camera lens with a dry cloth.
- The camera arm is misaligned.  
**Solution:** Re-align the camera arm until it audibly clicks into place.



## 7.3 The marks are not recognized

Possible causes:

- The marks are covered by objects or the hand  
**Solution:** Remove all objects and the hands from the graphic.
- The graphic is not positioned correctly .  
**Solution:** Reclamp graphic.
- The camera lens is dirty.  
**Solution:** Carefully wipe the camera lens with a dry cloth.
- The camera arm is misaligned.  
**Solution:** Re-align the camera arm until it audibly clicks into place.
- The graphic is not suitable for the Tactonom™ Reader because it does not have marks.

## 8 Recycling and environmental protection

For the information please refer to the supplementary sheet.

## 9 Warranty

Please refer to your contract documents for any warranty claims.

## 10 Services

For the information please refer to the supplementary sheet.

## 11 Technical specifications

Interfaces	USB-A micro-HDMI 3,5 mm headphone jack Power jack
Wireless communication	WLAN 5 (802.11ac)
Storage capacity	32 GB
Volume	60 dB
Power supply/power unit	Input: 100-240 V, 50/60 Hz, 1,0 A Output: 5 V, 5 A, 25 W
Power consumption in W	Operation: 10 W Standby: 0,3 W Maximum: 25 W
<b>Dimensions WxHxD in cm</b> Device with folded out camera arm Device with folded camera arm Packaging	43 cm x 44 cm x 47 cm 43 cm x 13 cm x 47 cm 52 cm x 15 cm x 46 cm
<b>Weight in kg</b> Device Power unit Device with packaging	5,7 kg 0,188 kg 7,05 kg
<b>Operating conditions</b> Operating temperature Storage temperature Relative humidity	10 °C – 35 °C 10 °C – 35 °C 5 % - 95 %, non condensing
Housing	Acrylic glass

Safety signs: **CE**