

USER MANUAL

VISULEX Maki

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This user manual applies to the VISULEX Maki document reading camera.

Manufacturer: F.H. Papenmeier GmbH & Co. KG
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D-58239 Schwerte / Germany
www.papenmeier-rehatechnik.de

All technical data, information and properties of the product described in this work have been compiled to the best of our knowledge and correspond to the status at the time of publication.

Changes and improvements to the product due to new technical development are possible.

This manual or the product may be changed at any time without prior notice. No damages are assumed that are directly or indirectly caused by errors in the manual or contradictory statements in the manual.

General notes

Copyright

© Copyright 2023 - Copyright notice

All contents of these operating instructions, in particular texts, photographs and graphics, are protected by copyright. The copyright is owned by the company F.H. Papenmeier GmbH & Co. KG, unless expressly indicated otherwise. Please contact us if you wish to use the contents of this work.

Other authors/sources

VISULEX is a registered trademark of the company F.H. Papenmeier GmbH & Co KG.

Microsoft, Windows 8, Windows 10, Microsoft Outlook, Microsoft Office, Microsoft Word, and Windows Server are registered trademarks of Microsoft Corporation in the United States and/or other countries.

Abbreviations

"F.H. Papenmeier GmbH & Co. KG" will be abbreviated as "Papenmeier" in the following.

Purpose

According to EU Regulation 2017/745 (MDR), the present product is a Class I active medical device.

This medical device is used to compensate for the disability of severely visually impaired or blind people.

The Medical Device Law Implementation Act (MPDG) applies to this medical device from 26.05.2021.

The Medical Devices Operator Ordinance (MPBetreibV) must be observed.

This product may only be used in residential and commercial areas.

In medical facilities, this product may only be used in offices.

The expected lifetime of the medical device is 7 years.

In order to achieve the expected service life of the product, complete professional cleaning by Papenmeier Technical Service is recommended at intervals of no more than 2 years. This service is subject to a charge.

Safety instructions

This user manual must be read carefully before the medical device is put into operation.

The medical device may only be put into operation by the operator if

- this medical device has been subjected to a functional test by Papenmeier or an authorized person at the place of operation, and
- the user has been instructed by Papenmeier or an authorized person on the basis of the operating instructions and safety-related information.

The product may only be commissioned by instructed persons.

Proof of instruction must be provided by the operator.

The device may only be put into operation if no damage to the device or the supply lines is visible and no malfunctions are to be expected.

The medical device may only be used with the original parts intended for this purpose and the combination products intended for this purpose by Papenmeier. If a combination with products from other manufacturers is required, these must comply with the valid legal regulations.

WARNING

- Only operate this device in a dry environment. The device must never get wet, otherwise there is a risk of health hazards due to electric shocks.
- Do not open the device (high voltage).

CAUTION

- Never expose the device to direct sunlight or moisture (rain).
- Keep the device away from heat sources, such as electric heaters.
- Protect the device from dust.

- The ambient temperature should be between +10°C and +40°C and the humidity between 20% and 80%.
- Avoid locations where rapid or extreme changes in temperature or humidity may occur.
- Do not use the device near liquids or corrosive chemicals.
- Do not place heavy objects on the device. Do not subject the device to strong pressure and do not drop any objects onto the device. This could damage the device or cause it to no longer function properly.
- Do not place the device near objects that generate strong magnetic or electromagnetic fields (e.g. speakers of a stereo system).

General precautions

The device may only be operated by trained personnel. The operator must provide proof of instruction. The device may only be put into operation if no damage to the device or the supply lines is visible and no malfunctions are to be expected (see "Safety instructions").

The design of our products ensures optimum safety, reduces health hazards due to overexertion. Nevertheless, by observing a few precautionary measures, you can help to avoid adverse health effects or damage to the product.

Do not subject the device to strong pressure and do not drop any objects onto the device. This could damage the device or cause it to no longer function properly.

To prevent overuse symptoms on your hands and wrists due to prolonged use of the controls, longer breaks and relaxation exercises are recommended. You can also find literature on the ergonomic setup of a workstation and on posture in specialist shops, which can be used to reduce overexertion. The design of our products ensures optimum safety and reduces the health impact of overexertion. Nevertheless, by observing a few precautionary measures, you can help to avoid health impairments or damage to the product.

Cleaning

Avoid getting dirt on your hands and fingers.

The surface of the product can be cleaned with a soft, slightly damp cloth.

Never use harsh cleaners or soap.

Packing and transport

To avoid damage, remove all cables from the product before transporting it. Use the device bag to transport mobile devices.

The original packaging must be used to ship the product.

Introduction

Congratulations on the purchase of your VISULEX Maki.

The VISULEX Maki offers a razor-sharp and smooth image. This is achieved by the Full HD resolution with 60 frames per second. Smallest fonts can be easily displayed legibly with the optical 30x zoom. You get optimal illumination with minimal reflection thanks to modern LED technology and the use of polarizing filters.

The VISULEX Maki offers a high degree of flexibility, thanks to its compact size and low weight. An optional table clamp creates additional space at the workstation.



Structure of the VISULEX Maki

Structure of the device

Place the stand on a flat surface at your workstation. Loosen the knurled screw. Place the camera arm in the stand so that the camera head is above the stand. Secure the camera arm with the knurled screw.

Connections on the camera arm

Place the control unit so that you can reach it easily. Connect the plug of the PS/2 cable of the operating unit to the PS/2 socket on the camera arm.

Note: Only the supplied control unit may be connected to the camera arm! Other connected devices may cause irreparable damage!

Connect the monitor and the camera arm with a DVI cable (DVI socket on the camera arm).

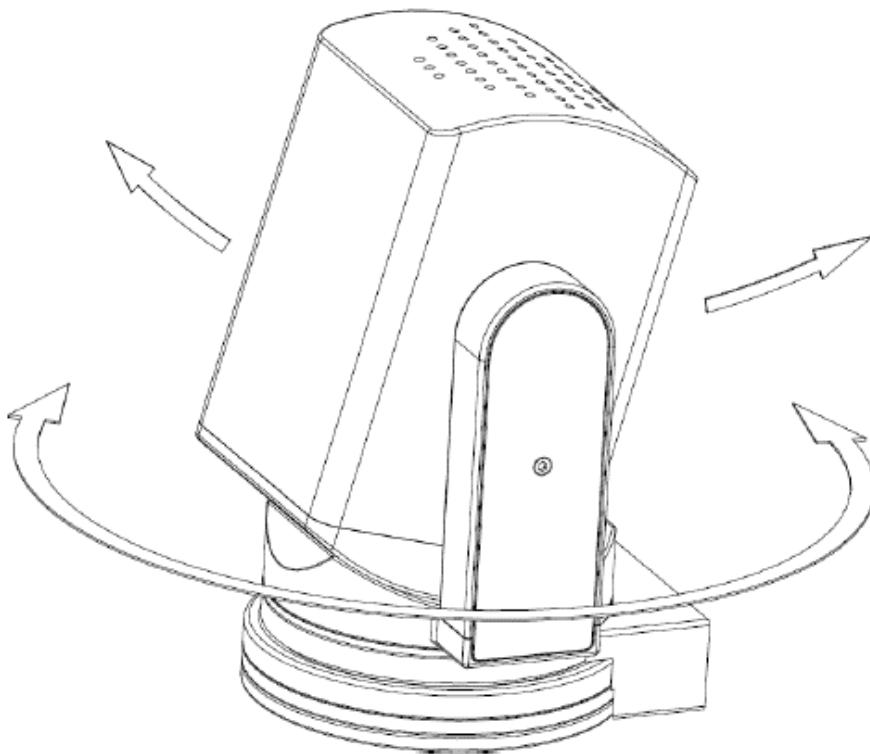
Finally, connect the power supply to a power outlet and insert the hollow plug of the power supply into the socket on the camera arm.

Now your VISULEX Maki is ready for use and can be switched on.

Camera movement

The camera arm is fixed to the stand and cannot be rotated.

The camera head can be rotated 110 degrees to the right, left, front and back. Each direction has a stop.



To view objects further away (e.g.: blackboard), pan the camera head forward, towards the blackboard.

If you tilt the camera head towards you, the display is upside down. Activate the mirror function to rotate the image.

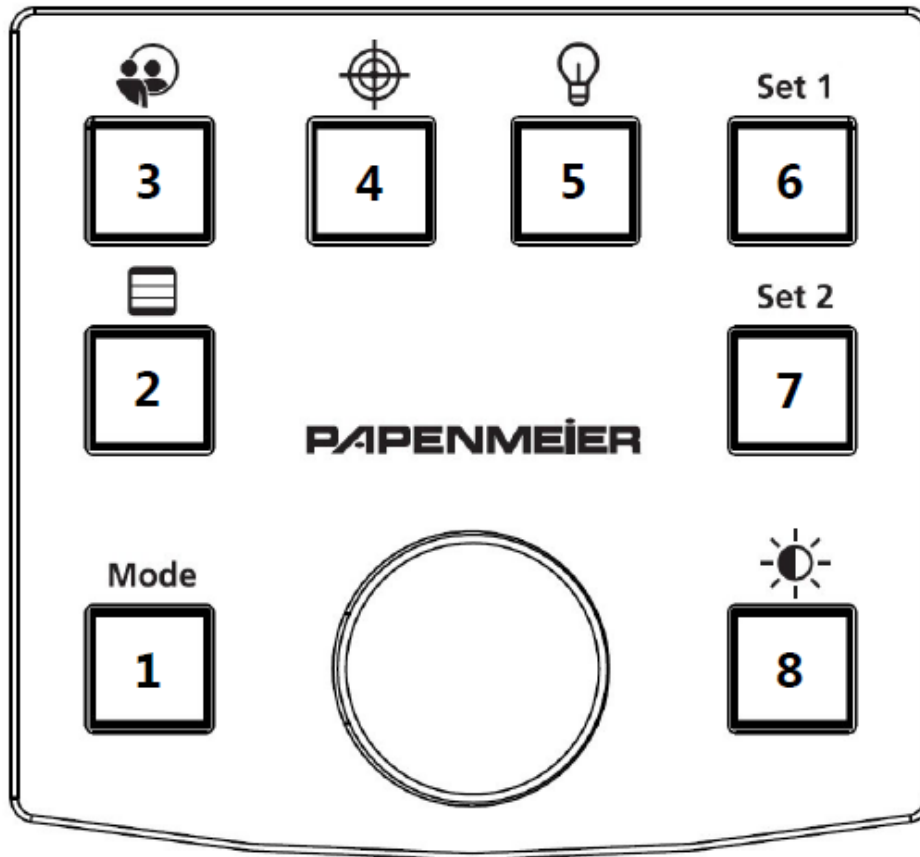
To do this, press the key:



Operation

Operating unit

The operating unit consists of a rotary control with pushbutton and eight keys. The keys are described clockwise in this manual.



Operating concept

Pressing a key briefly performs a direct function.

Long pressing of a key enables in most cases the setting of a value with the help of the rotary control. The value to be changed is displayed on the monitor in the upper left corner.

By turning the rotary control, the value can now be changed as follows:

- To increase a value, turn the knob to the right.
- To decrease a value, turn the knob to the left.

The changes will be visible immediately.

Hint: The changed values must be confirmed by pressing the rotary control.

The process is aborted if no further change or confirmation is made within 15 seconds. Furthermore, the process is canceled by pressing any key. This restores the old values.

Optional signal tones can be heard. However, these are deactivated by default.

Zoom

In the basic function, you can control the zoom (magnification) with the rotary control.

- To get a higher zoom level, turn the knob to the right.
- To obtain a lower zoom level, turn the control knob to the left.

Key 1 - Color modes

Press the 1 key to switch between color modes. The following color modes are available:

- True colors
- Grayscale
- False colors
- False colors inverse

After false colors are inverted, the process starts again with true colors.

True colors:

If true colors are selected and you long press the 1 key, the color saturation can be adjusted. You can use the rotary control to set the optimum color saturation to suit your needs. Press the rotary control to confirm the changed value.

False colors / false colors inverse:

If false colors are selected and you press the 1 key for a long time, the false color combination can be selected. You can use the rotary control to set the optimum false color combination to suit your needs. Press the rotary control to confirm the selected combination.

Key 2 - Lines and curtains



Press key 2 briefly and activate or deactivate the set lines or curtains.

When the lines or curtains are activated and you long press the 2 key, the lines and curtains can be adjusted in four steps.

Step one:

First you can select the line or curtain type. To do this, turn the rotary control to the right or to the left. The following line and curtain types are available for selection:

- Horizontal lines
- Horizontal curtains
- Vertical lines
- Vertical curtains

Pressing the control knob confirms the line or curtain type and takes you to the next step.

Step two:

In this step, the first line or curtain is positioned using the rotary control, depending on the selected line or curtain type.

If the line is too close to the other line, the other line will be moved accordingly. The same applies to the curtains.

Pressing the rotary control confirms the position and takes you to the next step.

Step three:

In this step, the other line or curtain is positioned analogously to step two using the rotary control.

Pressing the rotary control confirms the position and takes you to the next step.

Step four:

In the final step, the color of the lines or curtains can be selected. To do this, turn the knob to the right or to the left.

Press the control knob to confirm the selected color of the lines or curtains and finish the setting procedure. The parameters for the lines and curtains are only applied after the setting process has been completed.

If you press another key during the setting process, all settings are discarded and you exit the setting process.

The selected color is also the color of the crosshairs of the overview function.

Key 3 - Mirror



Press the 3 key briefly to flip the image horizontally. This is necessary in the panel camera mode when you tilt the camera head away from the arm, i.e. towards you.

If the image is mirrored horizontally and you press the 3 key for a long time, the image is also mirrored vertically. In this way, you achieve the representation of a mirror.

Key 4 - Overview / Focus

Overview



Press the 4 key briefly to activate the overview function. This proves useful if you have lost your orientation on the document at high magnifications.

The following settings are activated for the overview function:

- Minimum zoom (1x)
- True colors
- Lines and curtains are disabled
- Insertion of a crosshair

At minimum zoom, the crosshairs point to the area that was last magnified.

This will make it easier for you to find your way around the document. You have two options for this:

1. Realign your document using the crosshairs. Press the 4 key again or optionally the control knob. Color effects, lines or curtains as well as the zoom are set back to the original values.
2. While the overview function is active, you can adjust the zoom to find the area you want to enlarge more easily. Press key 4 again or optionally press the rotary control. Color effects and lines or curtains are set to their original values. The zoom remains at the size you selected.

The selected color of the lines and curtains determines the color of the crosshairs.

Focus

If you press the 4 key for a long time, the focus can be readjusted manually using the rotary control.

Press the control dial to confirm the changed focus value.

Autofocus becomes active again as soon as you change the zoom.

Key 5 - LED illumination



Press the 5 key briefly to switch the LED illumination in the camera arm on or off.

If you press the 5 key for a long time, you can use the rotary control to set the illumination brightness optimally according to your needs. Press the rotary control to confirm the changed value.

Key 6 - Set 1

Press the 6 key briefly to load the saved settings of set 1.

If you press the 6 key for a long time, the current settings are saved in Set 1.

Key 7 - Set 2

Press the 7 key briefly to load the saved settings of set 2.

If you press the 7 key for a long time, the current settings are saved in Set 2.

Key 8 - Image parameters



If you press the 8 key for a long time, various image parameters can be changed depending on the selected color display.

True colors

When true colors are activated, the image brightness can be controlled. You can use the rotary control to set the optimum brightness to suit your needs. Press the rotary control to confirm the changed value.

False colors

When false colors are activated, the threshold value of the false colors can be controlled. You can use the rotary control to set the optimum threshold value to suit your needs. Press the rotary control to confirm the changed value.

Key 8 - Toggle (optional)

Press the 8 key briefly to switch between two image sources using the optional toggle switch.

Standby modes

The VISULEX Maki has two different standby modes.

The first standby mode reacts to movement in the image. You can set the time in the on-screen menu or switch off the standby mode completely (see [Standby](#)). If no image change is detected within the set time, the LED turns off and the image turns black. You can exit this standby mode by making a gesture under the camera, by pressing a key or by turning the control dial.

Please note that even small changes in brightness, vibrations or shadows represent an image change.

The second standby mode is independent of the first and can also not be configured. If there is no operation on the device for 30 minutes, this standby mode becomes active. You can exit this standby mode by pressing a key or turning the rotary control.

Start parameter

The VISULEX Maki loads the parameters stored in Set 1 at startup, but not all parameters are activated.

The system always starts with:

- True colors the set image brightness is loaded.
 - Color selection and false color thresholds are loaded and displayed when activated.
- Disabled lines and curtains
 - Position and color of lines or curtains are loaded and displayed when they are activated.
- Single zoom (1x magnification)
- No reflection
- LED brightness as stored in Set1.

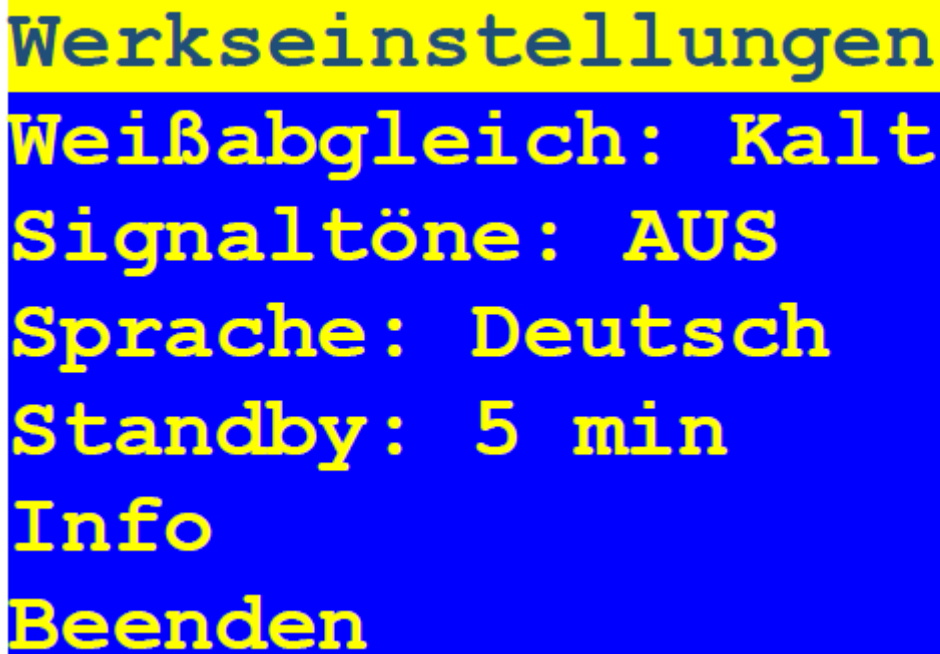
This behavior is used to get the best possible overview at the beginning of use.

The on-screen menu

You can set system parameters using the on-screen menu.

To activate the on-screen menu, press keys 3, 4, 5 and 6 simultaneously for three seconds.

The following menu appears:



The image shows a screenshot of a device's on-screen menu. The menu is displayed on a blue background with yellow text. The title 'Werkseinstellungen' is at the top. Below it are several settings: 'Weißabgleich: Kalt', 'Signalton: AUS', 'Sprache: Deutsch', and 'Standby: 5 min'. At the bottom, there are two options: 'Info' and 'Beenden'.

```
Werkseinstellungen
Weißabgleich: Kalt
Signalton: AUS
Sprache: Deutsch
Standby: 5 min
Info
Beenden
```

The color of the menu depends on the selected false color combination.

You move up and down in the menu as follows, using the rotary control:

- To move to the next menu item, turn the rotary control one notch to the right.
- To go to the previous menu item, turn the rotary control one notch to the left.

Press the rotary control to open the selected menu item.

Factory settings

The following line can be seen on the on-screen menu:



Werkseinstellungen: <NEIN>

Use the rotary control to select <YES> and confirm by pressing the rotary control. All values are reset to factory settings.

Note: The saved sets will also be lost.

You will return to the previous menu.

If you want to cancel the process, use the rotary control to select <NO> again and confirm by pressing the rotary control.

You will be taken to the previous menu.

White balance

The following line can be seen on the on-screen menu:



Weißabgleich: <Kalt>

Using the rotary control, you can choose between the following settings:

- Cold: Optimal for texts and tables
- Warm: Optimal for images and graphics
- Auto: Optimal for frequently changing documents

Confirm your selection by pressing the rotary control. You will return to the previous menu.

Signal tones

The following line can be seen on the on-screen menu:

The image shows a yellow rectangular background with the text "Signaltonne: <AUS>" in a blue, sans-serif font. The text is centered and occupies most of the width of the rectangle.

You can use the rotary control to switch the signal tones on or off. If you have deactivated the signal tones, you will no longer receive any acoustic feedback.

Confirm your selection by pressing the rotary control. You will return to the previous menu.

Language

The following line can be seen on the on-screen menu:

The image shows a yellow rectangular background with the text "Sprache: <Deutsch>" in a blue, sans-serif font. The text is centered and occupies most of the width of the rectangle.

You can select the desired language using the rotary control. The display is updated automatically.

Confirm your selection by pressing the rotary control. You will return to the previous menu.

Standby

In standby mode, the LED is disabled and the image turns black. To exit standby mode, simply swipe under the camera.

The following line can be seen on the on-screen menu:

The image shows a yellow rectangular background with the text "Standby: <5 min>" in a blue, sans-serif font. The text is centered and occupies most of the width of the rectangle.

You can use the rotary control to set the time after which the standby mode becomes active. To deactivate the standby function, turn the rotary control to the left until <OFF> is read.

Confirm your selection by pressing the rotary control. You will return to the previous menu.

Info

This menu provides you with information about your VISULEX Maki. Among other things, you will find the version number, which you should have ready in case of a service case.

PC Software

Installation

Install the program on your Windows system following the instructions of the installation wizard.

Connect the mini-USB port on the camera arm of the VISULEX Maki to your computer. Use a free USB interface and start the program.

Please note: To use the PC software, the control unit must be connected to the camera arm!

Operation

On the left side of the window there is a toolbar with which you can perform the displayed actions. The functions are identical to the functions of the operating unit.

You can operate all toolbar functions with the mouse or keyboard.

The frequently used functions have global hotkeys that you can customize for yourself as needed.

Zoom



With the zoom buttons you can adjust the magnification. Short clicks on the button change the zoom in small steps. Keep the button pressed to change the zoom continuously. As the duration increases, the steps also increase.



Likewise, you can also use the spacebar for control when the button has focus.

Alternatively, you can also control the zoom using the hotkeys.

If you right-click on one of the zoom buttons, a context menu opens where you can directly select predefined zoom levels.

Color modes



Press the button to switch between the color modes. The function is identical to button 1 on the control unit.

The following color modes are available:

- True colors
- Grayscale
- False colors
- False colors inverse

After false colors are inverted, the process starts again with true colors.

Alternatively, you can control the color modes using the hotkeys.

If you right-click on the button, a context menu opens in which you can explicitly select a color mode. For "False colors" and "False colors inverse" you also have the option of selecting the desired color combination.

Lines and curtains



Press the button and activate or deactivate the set lines or curtains. To configure the lines and the curtains, please use button 2 on the control panel.

Alternatively, you can control the lines and curtains using the hotkeys.

Overview



Press the button and activate or deactivate the overview function. To configure the focus, please use button 4 on the control unit.

Alternatively, you can also control the overview using the hotkeys.

LED lighting



Press the button to turn the LED illumination on the camera arm on or off.

If you right-click on the button, a context menu opens in which you can select a predefined brightness. Should you wish to fine-tune the brightness, please use button

5 on the control unit.

Alternatively, you can also control the LED lighting via the hotkeys.

Mirror



Press the button to flip the image horizontally. This is necessary in panel camera mode when you pan the camera head away from the arm, i.e. towards you.

Alternatively, you can also control mirroring using the hotkeys.

Set 1 and Set 2



Press one of the buttons to load the saved settings of the respective set.



To save new settings, please use the corresponding keys on the control unit.

Hotkeys

The PC program has global hotkeys, i.e. you can use these key combinations to execute the functions. It does not matter which program is currently in the foreground as long as the VISULEX Maki program is started.

The following hotkeys are available by default:

Function	Key combination
Zoom Plus	Ctrl + Alt + Num Plus
Zoom minus	Ctrl + Alt + Num Minus
Color mode	Ctrl + Alt + Num 1
Lines & Curtains	Ctrl + Alt + Num 4
Mirror	Ctrl + Alt + Num 7
Overview	Ctrl + Alt + Num
LED on / off	Ctrl + Alt + Num 5

If conflicts with hotkeys of other programs occur, you will receive an error message when starting the software, indicating which hotkey is involved. This way you can easily resolve this conflict in the Hotkey Manager. In Hotkey Management, the status of the hotkey provides information about its state. There are the following states:

- **Default:** The default combination for the hotkey has been successfully activated.
- **Custom:** A user-defined combination has been successfully activated.

- **Error:** The combination could not be activated, regardless of whether it is a custom combination or the default combination.

You can change the combinations of hotkeys at any time to suit your needs. Select the corresponding hotkey from the list and simply assign a new key to it or change the combination of the Shift, Ctrl, Alt or Windows keys. Then click on "Apply". The status of the hotkey will change to "Custom" if the hotkey was successfully changed.

Appendix

Scope of delivery

- Camera arm RS#0174.004.00
- Stand, base plate RS#1426.001.00
- Operating device RS#1701.006.00
- Netzgerät (90-264VAC/12VDC/40W) R#1706.000003
- Connecting cable, black R3403.039.00
- Cable, HDMI male to DVI male, 2m R#3490.000064
- 2x Housing foot, self-adhesive, H=5,1mm R#1422.000025
- 2x Housing foot, self-adhesive, H=7,6mm R#1422.000029
- User manual, german, blackletter R#0090.583.00
- User manual-short guide, german, 1 sheet R0090.200001
- Adapter, HDMI jack to DVI plug R#0042.000001
- Optional accessories: Angle plug 12V, 90°. R#7320.000001
- Optional accessories: Table clamp (round) RS#2707.001.00
- Optional accessories: Foot switch R#6400.000001
- Optional accessories: Video switcher RS#8998.001.00
- Optional accessories: Cross table for camera R0001840
- Optional accessories: Cross table A3 R0007423
- Optional accessories: 4x housing base, self-adhesive, H=5.8mm R#1422.000028

Technical data

The maximum ambient temperature during operation must not exceed 40°C.

Supply voltage

Primary: 90-240VAC/40W (Secondary: 12VDC/max. 2.5A)

Dimensions

32 x 35 x 52 (width x depth x height in cm)

Weight

approx. 4.8kg (incl. control unit, power supply unit and connection cables)

Errors and faults

You should report any faults with the product to our service department by telephone:

F.H. Papenmeier GmbH & Co KG

Tel.: +49 2304 205 250

hotline@papenmeier.de

If you can, provide a brief description of the malfunction that occurred.

Warranty

Unless otherwise agreed, the product is subject to the statutory warranty from the date of receipt. Any warranty shall become void in the event of improper use or improper handling.

Warranty (only valid within Germany)

Papenmeier warrants for a period of 36 months from the date of receipt that all components will operate substantially as described in the accompanying user manual.

This warranty is valid only if annual maintenance has been performed.

Disposal

At the end of its service life, the device should not be disposed of with household waste, but should be taken to the appropriate collection point for the recycling of electrical and electronic equipment.

Only for European Union and EEA (Norway, Iceland and Liechtenstein):



These symbols (waste bins) indicate that this product must not be disposed of with other household waste in accordance with the WEEE Directive (2012/19/EU; Directive on Waste Electrical and Electronic Equipment), Battery Directive (2006/66/EC) and national laws implementing these Directives.

WEEE Rg. No.: DE 60886380

The deletion of personal data on the old devices to be disposed of must be carried out by the end user on his own responsibility.

This product must be returned to a designated collection point. This can be done, for example, by returning it when purchasing a new similar product or by handing it in at an authorized collection point for the recycling of waste electrical and electronic equipment as well as batteries and accumulators. Improper handling of waste equipment can have negative effects on the environment and human health due to potentially hazardous substances generally associated with waste electrical and electronic equipment. By ensuring proper disposal of this product, you will actively contribute to the effective use of natural resources. For more information on how to recycle this product, contact your local city office, public waste management authority, authorized WEEE disposal center or your local waste management company.

Under the registration number DE60886380 the company F.H. Papenmeier GmbH & Co. KG is registered at the Stiftung Elektro-Altgeräte Register, Benno-Strauß-Str. 1, 90763 Fürth as a manufacturer of electrical and/or electronic equipment.

Repair and maintenance

Repairs and maintenance may only be carried out by F.H. Papenmeier GmbH & Co. KG or by authorized companies.

KONFORMITÄTSERKLÄRUNG

(nach der Europäischen Verordnung für Medizinprodukte 2017/745/EU Anhang IX)

DECLARATION OF CONFORMITY

(according to the Medical Device Regulation 2017/745/EU Annex IX)

Wir, We **F.H. Papenmeier GmbH & Co. KG**
 Talweg 2
 D-58239 Schwerte
 Germany
 SRN = DE-MF-000006963

erklären in alleiniger Verantwortung, dass das aktive Medizinprodukt der Klasse I (nach Anhang VIII, Regel 13)

declare under our sole responsibility that the active medical device of class I (according to annex VIII rule 13)

VISULEX Maki

Basic UDI-DI = PP11781RS1883.020.00ZZZ67

PN : 1883.020.00, 1883.021.00

allen Anforderungen der EU-Verordnung 2017/745/EU entspricht, die anwendbar sind.
meet all provisions of the Medical Device Regulation 2017/745/EU which apply to it.

Angewandte Normen, nationale Normen oder andere normative Dokumente:
Applied standards, national standards or other normative documents:

EN 12182	DIN EN ISO 14971
DIN EN 62368-1	DIN EN 60601-1-2

Schwerte, 21.06.2021

(Ort, Datum der Ausstellung)



(Herr Karsten Sauer, VP-MDR,
i.A. von F.H. Papenmeier GmbH & Co. KG)