Operating Manual
MyEcc Control

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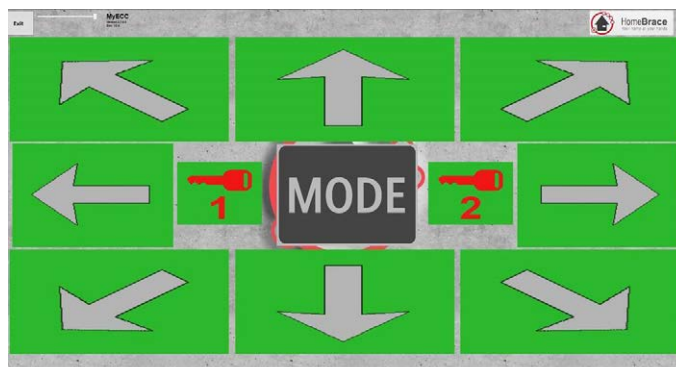
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01 Purpose

The special wheelchair control MyEcc Control is a manufacturer-independent power wheelchair control in combination with an eye gaze control system (like ALEA, Tobii), With this special control it is not only possible to drive the wheelchair (and to stop it by closing the eyes), it is also possible to adjust seat-settings of the wheelchair or to move attachments (robot arms etc.).
Any other use is NOT in accordance with intended use and leads to exclusion of liability and loss of warranty (optional/ mandatory interfaces are described in section 9). The same applies to unauthorized retrofits/modifications. Further warnings and safety instructions are provided in the manual.

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02 Indication and Contraindication

Indication
Indication The product is indicated for anyone unable to perform voluntary muscle movements (such as using a joystick (hand/foot/ chin or other body part) or pressing a button (with a body part)). The eyes / the eye can consciously and safely navigate to a target visually.

Possible medical conditions (this is not a complete list):
Amyotrophic lateral sclerosis (ALS), Multiple sclerosis (MS), Duchenne's muscular dystrophy, Infantile cerebral palsy (ICP), Joint contractures, …

Contraindication
• Complete loss of vision in both eyes
• Insufficient cognitive abilities to be able to control the environment/wheelchair in a targeted and safe manner

03 Warnings

This manual contains warnings to protect you from damage to property and physical injury. Always read and observe these warnings. Follow all the instructions in this operating manual and comply with all the actions marked with a warning symbol and word of warning. Read this manual carefully before starting up your MyEcc Control. Keep this manual. You may need to consult it later. If you give the device to anybody else for their use, share this operating manual as well.

Do not open the device. It does not contain any parts requiring user maintenance. Opening the device may give you an electric shock and damage the components. Avoid exposure to moisture, dust, sunlight and other sources of heat.

> ⚠ **Risk of personal injury**
> Non-observance results in death or serious injury.

04 Product liability

Pursuant to the liability of manufacturers for their products as defined in the Product Liability Act, the instructions provided in this brochure must be observed (product information and intended use, improper use, product performance, product maintenance, information and instruction obligations). Non-observance releases the manufacturer from any liability.

MyEcc Control is only meant to be an interface between power chair and MyEcc Control. Any other use is improper and will result in loss of warranty and liability. The same applies to any alterations and modifications.

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05 Important safety instructions

Only experts authorized by HomeBraceGermany may perform assembly, startup and maintenance. This in particular means the individuals referred to in the following as "installers"; for further details, please consult item 13 of the operating manual. HomeBraceGermany will not be liable for any damage or loss resulting from unauthorized changes to the product. HomeBraceGermany accepts no liability or warranty if MyEcc Control is combined with other brands, in particular any improper use of MyEcc Control with other devices.

Observe the maximum power supply your peripherals can use (USB port 5VDC; 100mA). The use of the mounted module is permitted only by individuals with the appropriate mental capacity and cognitive function. Non-observance of this precaution may endanger the user or other people.
In addition, please observe the information for users in item 16.
HomeBraceGermany accepts no liability or warranty in the event of infringement.

06 Maintenance and cleaning

The product does not require regular maintenance. We recommend regular cleaning and disinfection with a disinfectant and cleaning agent intended for use in hospitals. The cleaning should only be done with a wipe. Wipe all exterior surfaces and allow to dry by itself.
For any repairs, consult an expert. If a malfunction occurs, send in your device to our after-sales service.

07 Mandatory review of the mounted system by the installer

Suitable measures should be taken to check for and protect against crushing, impact, shearing and pinching. The following areas require special review and monitoring:
• Check that the software feature to stop the wheelchair by closing the eyes is working properly (the software must self-deactivate)
• Speed
• Seating options and settings
• ⚠ Environmental hazard check!

08 The following monitoring mechanisms are actively monitored and will stop the wheelchair in the event of malfunction

• Camera contact to the eye
• Running ability of the eye control, monitoring of the Windows operating system
• Connection from the eye control to the MyEcc Control
• Cables and connectors from the eye control to the MyEcc Control

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09 MyEcc Control requires the following interfaces with the wheelchair

- Up to 8 jacks, 3.5 mm module, e.g. switch module
- 9-pin D-sub connector, e.g. Omni Display

10 Wheelchair procedure

The power chair needs to be prepared for switch control by the installer (authorized specialists only!). This step is not included with MyEcc Control; please contact your contractual partner (system installer or manufacturer) for this purpose. There is no need to install software, just copy a folder. Window size and relay activation are easily changed using a file included in the pack. We have taken great pains to maximize safety and reliability.
For the optimal use of the wheelchair with our MyEcc product group we recommend a corresponding driving stability module of the wheelchair manufacturer (ESP / Gyro).

11 Installation on the wheelchair

The eye gaze control system's position on the wheelchair needs to be chosen properly to suit the user's needs. For eye gaze control of seating options such as changing the backrest position, the eye gaze control system needs to be mounted on the back of the wheelchair. Ensure that the wheelchair has a dynamic length adjustment feature. This is essential in order to make sure that the chair can be operated by the eyes in any wheelchair position.

⚠ There is a risk that the user may go out of the eye gaze control system's scan range.

The user needs to have the wheelchair display in sight. The best option is to mount a second display (e.g. Omni) at eye gaze control level, which will allow the user to switch between modes with ease.

If you intend to set the seating positions directly via the eye gaze control system's 4 option buttons, this second display is not strictly necessary.

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12 Startup

When wiring and assembling, please check the wheelchair routes, given the risk that poorly run cables may be torn off. Attach the MyEcc Control control box to the wheelchair in a (waterproof) bag if possible, preferably to the backrest or armrest.

The cords to the eye gaze control system are detachable and should also remain removable after assembly so that carers can disassemble them easily when transferring the eye gaze control system.

> ⚠ You must check the MyEcc Control safety features.

13 Preparing the eye gaze control system

The eye gaze control system has to move the mouse pointer on the Windows interface. The camera driver needs to be addressed directly to ensure safe operation. No third-party software such as Grid may be used for camera control while driving the wheelchair.

> ⚠ You must check the MyEcc Control safety features.

14 Software and interface for wheelchair control compatible with eye gaze control on Windows PCs

14-01 Installation

The application runs on Windows PCs with Windows 7, Windows 8 and Windows 10 and uses a USB connector (USB 2). To install, copy the MyEcc folder from the USB stick supplied with the pack to the tablet PC's program path, e.g. to C:/Program Files. The folder contains the manual and 3 files: usbiodll.dll, matrix32.dll, eccapp.ini and MyEccApp.exe. Depending on requirements, you can copy a link from the MyEccApp.exe executable file to the desktop and/or quick launch bar and to the auto startup folder. Connect the control box to a USB port on the tablet. Power supply is via USB (current consumption at 5V max. 200mA --> power consumption max. 1W when the relays are activated, approx. 0.3W at rest. 8 LEDs on the control box show which relays are switched on.

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14-02 Connecting to the wheelchair

Functions 1 – 5 (drive forward / right / back / left + function 5) are on a 9-pin D-sub connector as indicated in R-Net I/O module SK78814/1. (D-sub pins 1, 2, 3, 4, 6, common: pin 8). Functions 6 / 7 / 8 are available on separate jacks.
1= up arrow
2= right arrow
3= down arrow
4= left arrow
5= center button 1
6= center button 2
7= center button 3
8= center button 4

14-03 Parameter settings

The eccapp.ini file contains parameters to adjust the application's appearance and behavior:

[GENERAL]

SIZEX=600	Initial window size, horizontal (pixels)
SIZEY=600	Initial window size, vertical (pixels)
OFFSETX=700	Initial window position, horizontal (top left corner) on screen (pixels)
OFFSETY=300	Initial window position, horizontal (top left corner) on screen (pixels) on screen (pixels)
OPACITY	Opacity (inversely related to transparency) of screen dialogue. Values 10 - 100
SWITCHOPACITY	Opacity for short-term feedback when switching on a button, values 10 - 100

[BUTTON]

HOLDFOCUSTOACTIVE=400	Time to activate button when focusing (ms)
FOCUSTIMEOUT=600	Time between exiting/defocusing a button or the entire application (mouse downtime) until the active button is deactivated (ms)
DRIVEDELAYGAP=150	Timeout when switching between drive buttons so that drive relays do not switch off briefly when driving the gap between buttons. (ms)

[RELAIS]
PULSELENGTH=25   Pulse length to activate drive and switch relays (ms). This setting should not need to be
                                changed.
PULSEINTERVAL=120   120 Pulse interval to activate drive and switch relays (ms). This setting should not need
                                to be changed.
SWITCHONTIME=500   Mode button 1 – 4 switch on time (ms),
SWITCHWAITTIME=800   Mode button 1 – 4 initial pause time to 1st switch (ms),
SWITCHPAUSETIME=600   Pause between repeated switching to switch 1 through 4 (ms)

[MAPPING]
FUNCTION1=1

....
FUNCTION8=8   Here you can swap mapping of functions to the output relays. Default- mapping is 1:1.
                                To swap function 2 (right) and 4 (left), for instance, enter:
                                FUNCTION1=1 FUNCTION2=4 FUNCTION3=3 FUNCTION4=2

[BUTTON_POSITIONS]   K1_IMAGEFILE=
M_DUP_LEFT_USED=1   K2_USED=1
M_DUP_LEFT_OFFSETX=11   K2_OFFSETX=558
M_DUP_LEFT_OFFSETY=6   K2_OFFSETY=274
M_DUP_LEFT_WIDTH=283   K2_WIDTH=111
M_DUP_LEFT_HEIGHT=222   K2_HEIGHT=135
M_DUP_LEFT_IMAGEFILE=   K2_IMAGEFILE=
M_DUP_USED=1   M_F1_USED=1
M_DUP_OFFSETX=307   M_F1_OFFSETX=359
M_DUP_OFFSETY=6   M_F1_OFFSETY=236
M_DUP_WIDTH=283   M_F1_WIDTH=190
M_DUP_HEIGHT=222   M_F1_HEIGHT=222
M_DUP_IMAGEFILE=   M_F1_IMAGEFILE=
M_DUP_RIGHT_USED=1   M_F2_USED=0
M_DUP_RIGHT_OFFSETX=602   M_F2_OFFSETX=455
M_DUP_RIGHT_OFFSETY=6   M_F2_OFFSETY=236
M_DUP_RIGHT_WIDTH=283   M_F2_WIDTH=89
M_DUP_RIGHT_HEIGHT=222   M_F2_HEIGHT=100
M_DUP_RIGHT_IMAGEFILE=   M_F2_IMAGEFILE=
M_DRIGHT_USED=1   M_F3_USED=0
M_DRIGHT_OFFSETX=676   M_F3_OFFSETX=361
M_DRIGHT_OFFSETY=236   M_F3_OFFSETY=356
M_DRIGHT_WIDTH=208   M_F3_WIDTH=89
M_DRIGHT_HEIGHT=220   M_F3_HEIGHT=100
M_DRIGHT_IMAGEFILE=   M_F3_IMAGEFILE=
K1_USED=1   M_F4_USED=0
K1_OFFSETX=228   M_F4_OFFSETX=455
K1_OFFSETY=274   M_F4_OFFSETY=356
K1_WIDTH=111   M_F4_WIDTH=89
K1_HEIGHT=135   M_F4_HEIGHT=100

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```
M_F4_IMAGEFILE=                    M_DDOWN_RIGHT_USED=1
M_DDOWN_LEFT_USED=1                M_DDOWN_RIGHT_OFFSETX=602
M_DDOWN_LEFT_OFFSETX=11            M_DDOWN_RIGHT_OFFSETY=464
M_DDOWN_LEFT_OFFSETY=464           M_DDOWN_RIGHT_WIDTH=283
M_DDOWN_LEFT_WIDTH=283             M_DDOWN_RIGHT_HEIGHT=222
M_DDOWN_LEFT_HEIGHT=222            M_DDOWN_RIGHT_IMAGEFILE=
M_DDOWN_LEFT_IMAGEFILE=            M_DLEFT_USED=1
M_DDOWN_USED=1                     M_DLEFT_OFFSETX=13
M_DDOWN_OFFSETX=307                M_DLEFT_OFFSETY=236
M_DDOWN_OFFSETY=464                M_DLEFT_WIDTH=208
M_DDOWN_WIDTH=283                  M_DLEFT_HEIGHT=220
M_DDOWN_HEIGHT=222                 M_DLEFT_IMAGEFILE=
M_DDOWN_IMAGEFILE=
```

The values in section „BUTTON_POSITIONS" are the result data of the button editor. See section 18-05. It it is not recommended to change these values in the file eccapp.ini manually.

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15 Important for users

15-01 Operation

Please note all the information in this operating manual before starting operations (especially items 01 to 17)! The application will run only if the control box is connected. Messages will appear if the control box is not recognized at the USB port. You can make the application window larger or smaller but these changes will not be saved in eccapp.ini.

15-02 Activation

Eye focus must first capture Key1 and then Key2. The feedback is all buttons green (=active mode). Eye focus must continue to be inside the ECCApp range, otherwise the buttons will time out after a defined interval (FOCUSTIMEOUT).

15-03 Activating wheelchair operating modes

modes To switch wheelchair operating mode, activate Key1 and Key2, then hold focus on one of the four central switch buttons, which will then automatically switch the switch relay in the set interval (SWITCHPAUSETIME) and set switch-on time (SWITCHONTIME) until the focus leaves the button. Drive commands can now be given directly without re-activating codes.

15-04 Driving

Following activation of Key1 and Key2, the chosen drive buttons can be focused on to give drive commands. When the eye focus leaves the drive buttons, the wheelchair stops.

## 15-05 Customizing the user interface (Version 3.0 and higher)
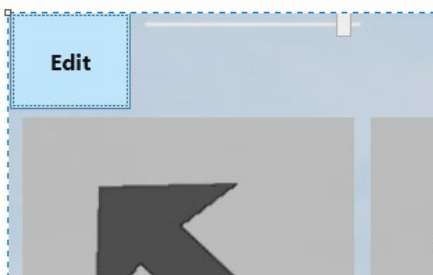
Adjust button size
Press „Shift", „Control" or „Alt" on the keypad to switch to Edit mode (the exit button now shows the word „Edit"). Press the „Edit" button and drag the edges to resize the buttons. To quit Edit mode, press Exit Edit.
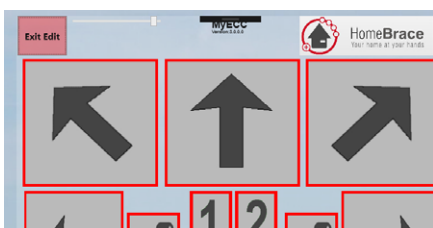
Change image content
Right-click to change button content (default: arrow, key or number).

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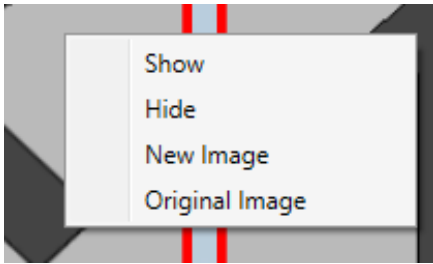
Show/Hide: Show/hide button (hidden: no red frame in Edit mode)
New Image: Load new png or jpg
Original Image: reloads original image (arrow/key/number)

Images are stored in an automatically generated „Pictures" subfolder with the program. All non-default data are stored in eccapp.ini, [BUTTON_PO-SITIONS] section. To reset everything to „original", just delete this entire section from eccapp.ini

15-06 Safety features

If for some reason (eye focus lost or other eye-camera problems, tablet PC overload) the eye-camera software does not transmit any new eye-mouse coordinates for a specific time (FOCUSTIMEOUT), all drive commands will stop.

If for any reason (Windows problems, program crashed, etc.) the application is not transmitting activation pulses to the relays in the control box, all relays will shut down immediately and the wheelchair will stop.

⚠ You must check the MyEcc Control safety features.

15-07 Troubleshooting

A "Joystick in center position" error message can have the following causes:
If you operate the joystick before or immediately after switching on the control system, a "Joystick displaced" message appears in the display. This message can also appear if you give multiple commands simultaneously by moving your eyes rapidly in different directions. To reset the display, switch the control system off and back on again.

⚠ Any claim under the warranty in accordance with our General Terms and Conditions of Business shall lapse if the customer independently remedies the defect, in particular by opening the device.

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16 Technical Data

Connections
- 1 × USB B
- 8 × 3,5-mm-jack
- 1 × 9-pin D-sub connector

Operating/storage environment
- Maximum ambient temperature during operation: 0°C (32°F) to 55°C (131°F)
- Maximum humidity during operation: 0% – 85% relative humidity
- Maximum ambient temperature during storage: –20°C (–4°F) to 75°C (167°F)
- Maximum humidity during storage: 5% – 85% relative humidity
- MyEcc Control is splash-proof (IP 22)

Power requirements
USB to 5VDC connector (100mA)

Contents of the pack
- MyEcc Control
- MyEcc software supplied as an executable app, no installation required, contained on a USB memory stick only
- Connecting cable; 3 × jack cables, 9-pin D-sub cable, USB cable
- HomeBrace bag

Weight/dimensions
MyEcc Control
0,325 kg
120 × 95 × 50 mm (Length × Width × Depth)

Service Life
With proper use and because of its components and design, MyEcc Control has a service life of 5 to 8 years.
UDI-DI
4260737430006

MyEcc Control disposal
MyEcc Control consists of recyclable materials that do not belong in household waste and should be recycled. That is why you as a consumer are obliged under the Electrical and Electronic Equipment Act („Gesetz über das Inverkehrbringen, die Rücknahme und die umweltverträgliche Entsorgung von Elektro- und Elektronikgeräten") in force in Germany to ensure that electrical and electronic equipment is disposed of properly and separately from household waste. Please help protect the climate and environment by returning the MyEcc Control to your recycling center or an appropriate collection point.
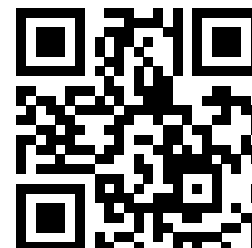
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