

Electronic Egg



BRÖRING
Technology GmbH

Manual



v1.0.0





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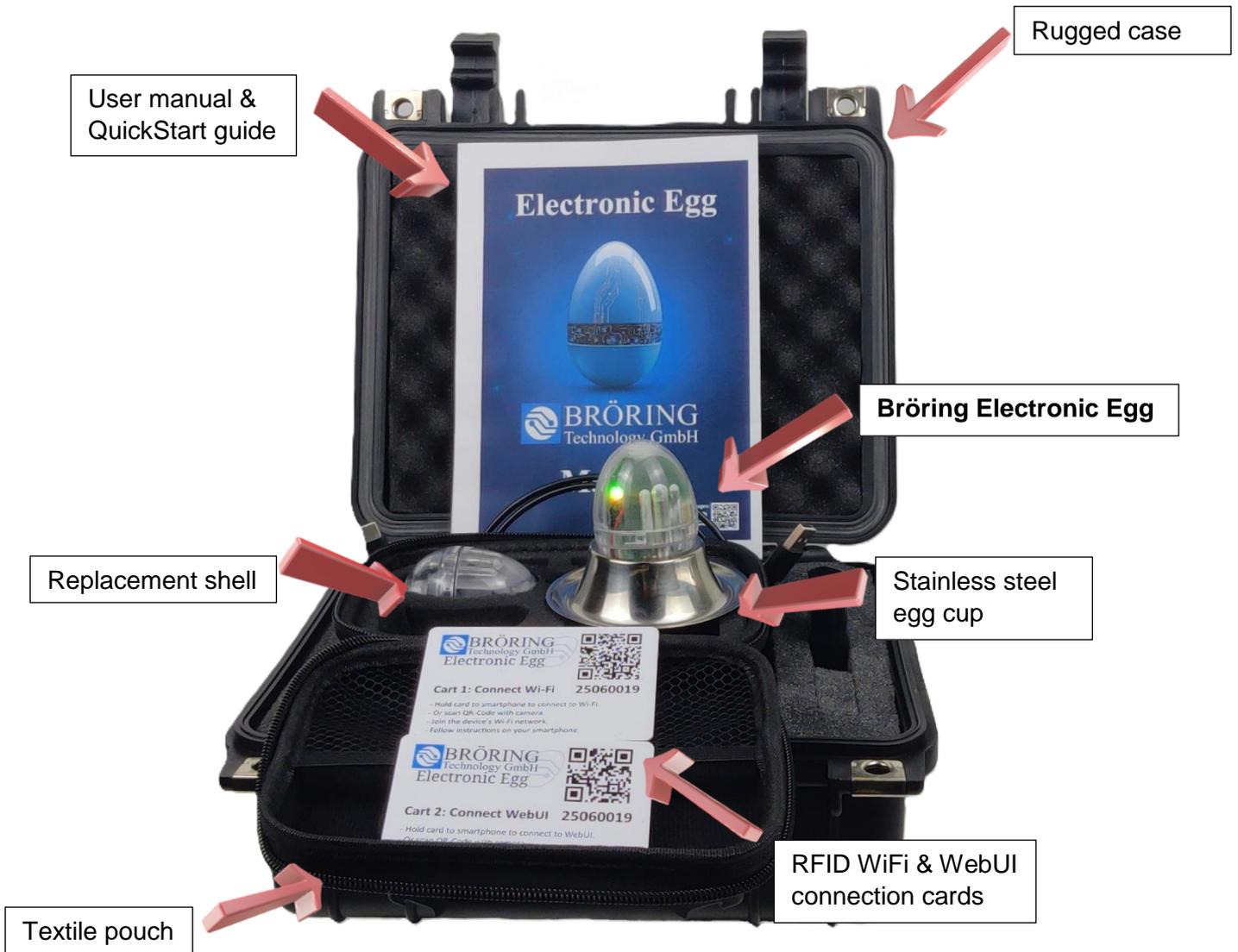


1. Package Contents & Device Specifications

1.1 Included components

- 1x *Bröring Electronic Egg*
- 1x Replacement shell
- 1x RFID WiFi connection card
- 1x RFID WebUI connection card
- 1x 5V USB power supply
- 1x USB-A to USB-C cable
- 1x Stainless steel egg cup
- 1x User manual
- 1x QuickStart guide
- 1x Textile pouch
- 1x Rugged case

1.2 Device overview with illustrations



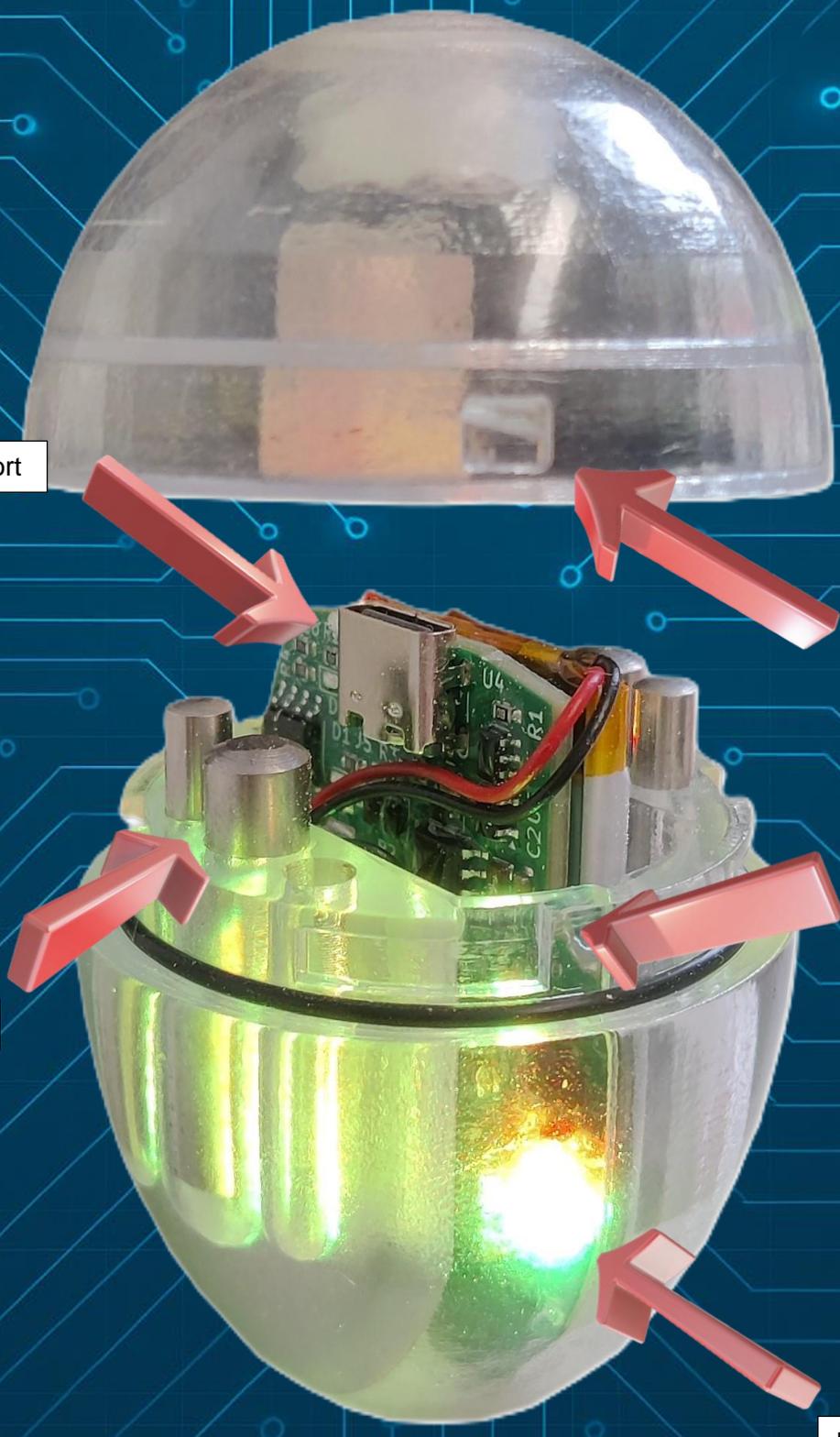
USB-C Port

Bayonet fitting

Bayonet fitting

Weights

LEDs





1.3 Technical specifications

Measurement Range	0 to 25.4 G
Sampling Rate	5376 measurements per second
Storage Rate	10 measurements per second
Storage Capacity	10 hours (at 10 bytes per second)
Operating Time	Up to 4 hours on a full charge
Battery	440 mAh, USB-C port
Wi-Fi Connection	“Electronic Egg (XXXXXXXX)” (2.4 GHz 802.11 b/g/n)
LED Indicators	<ul style="list-style-type: none"> Green (light impact), Yellow (moderate impact), Red (strong impact)
Connection Card	QR codes and NFC tags for easy WiFi connection and WebUI access



2. Introduction

2.1 Purpose of the device

The **Bröring Electronic Egg** is an intuitive measurement device designed to optimize egg transport systems. It helps identify critical stress points in conveyor belts and sorting systems, thereby reducing breakage losses, minimizing rework, and lowering production costs. By employing advanced impact detection and data analysis, the system significantly increases the efficiency and cost-effectiveness of egg handling processes.

2.2 Typical use cases

Placed on the conveyor belt alongside real eggs, the Electronic Egg travels through the entire transport path. Throughout this journey, it continuously records acceleration, jerk (rate of change of acceleration), and both axial and radial forces along the X, Y, and Z axes — at a rate of over 5,000 measurements per second. If predefined thresholds are exceeded, LED indicators signal the intensity of impacts using traffic light colors (green, yellow, red). Simultaneously, the collected data is wirelessly transmitted and stored ten times per second, providing a robust basis for further analysis and process improvement.

In its simplest use case, the **Bröring Electronic Egg** can be placed directly on the conveyor belt before a critical area. The built-in LEDs will immediately indicate whether an impact is critical.

We recommend staying below 20 g, and ideally below 10 g. These are also the default threshold values for the LED indicators.

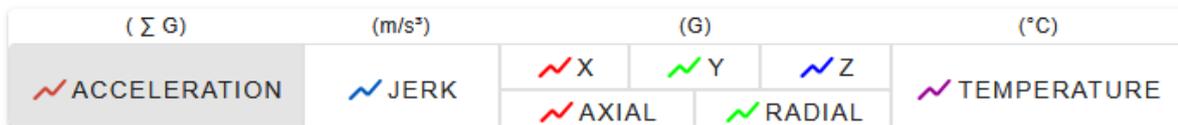
For more advanced use, the egg's built-in Wi-Fi and WebUI can be utilized. This process is described in section **4.1: Accessing the Web Interface**.

It allows you to view live data and real-time statistics on any device of your choice — whether iOS, Android, Windows, macOS, or iPadOS.



2.3 Measurement principle

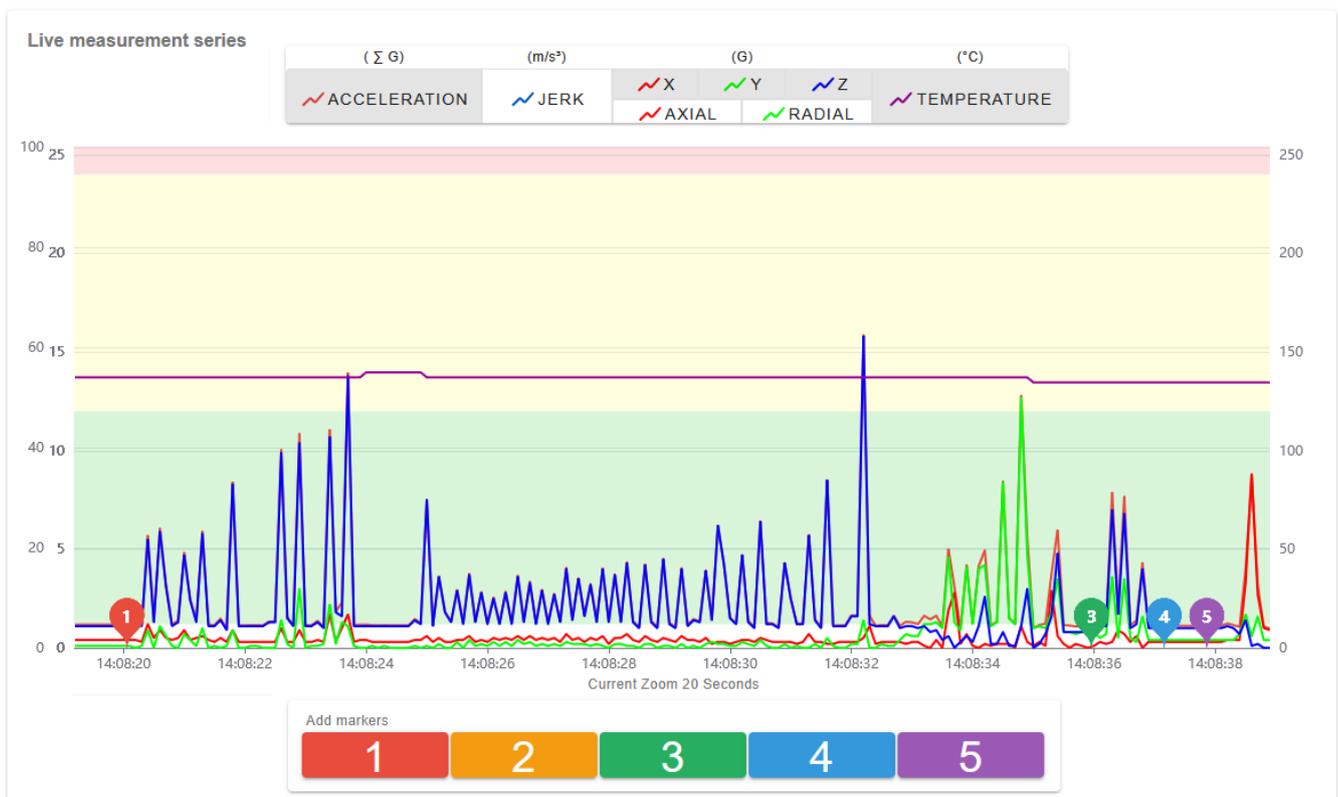
The **Bröring Electronic Egg** captures the precise time of each measurement along with the acceleration in G on the **X**, **Y**, and **Z** axes. The data can be analyzed separately or combined into a total acceleration value.



Additionally, the change in acceleration – known as **jerk** – can also be analyzed. **Jerk** is particularly useful for detecting impacts, i.e., sudden changes in the egg’s acceleration.

If you want to determine whether eggs are more frequently exposed to impacts on the ends or the sides, you can visualize both **axial** and **radial** acceleration.

The filters can be combined in any way to display and record the forces acting on the egg at any time and in any orientation.



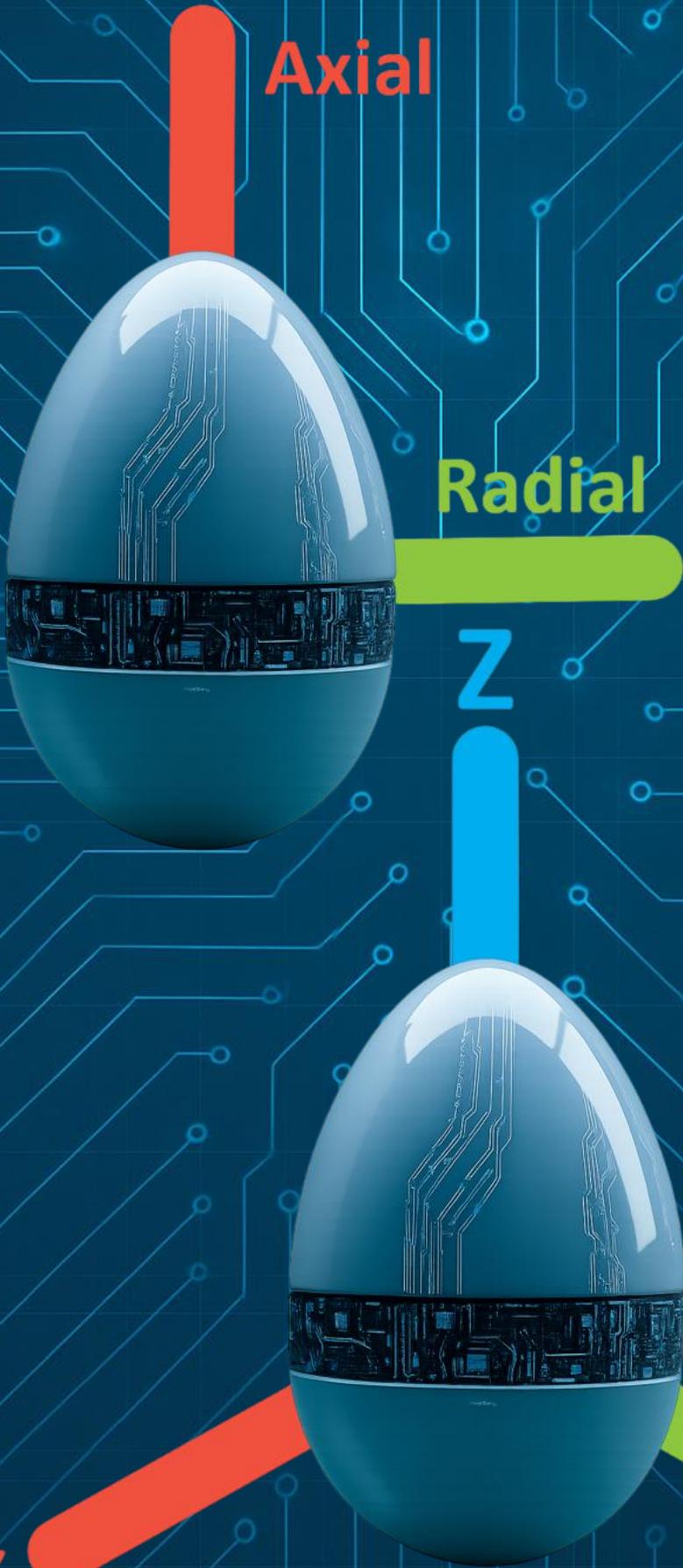
Axial

Radial

Z

X

Y





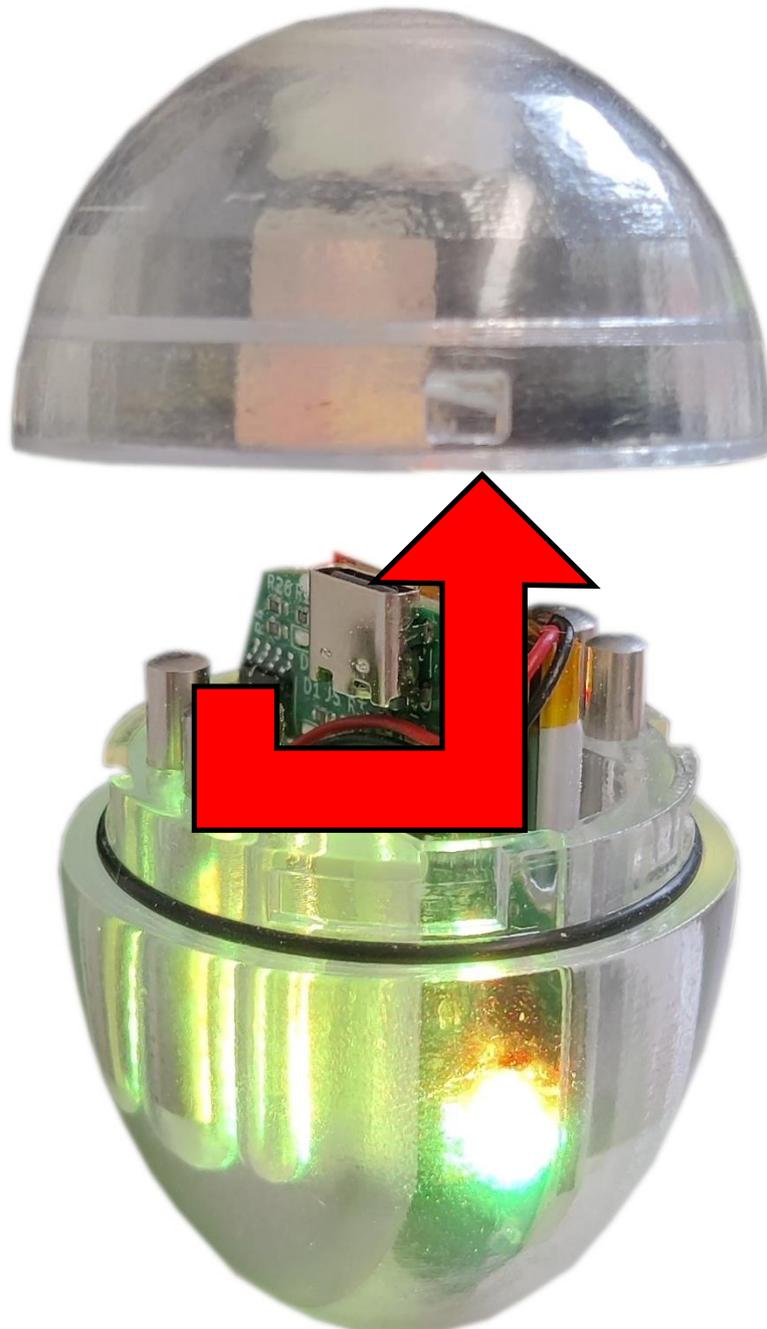
3. Getting Started

3.1 Opening the device and charging the battery

You can open the **Bröring Electronic Egg** using the bayonet fitting. Twist the bottom part of the egg to the right to release the casing. To close it, press down and twist in the opposite direction to lock it securely.

The egg can be charged in under an hour using the included 500 mAh power supply and USB-A to USB-C cable.

The battery will last between 4 and 8 hours, depending on how intensively the device is used.

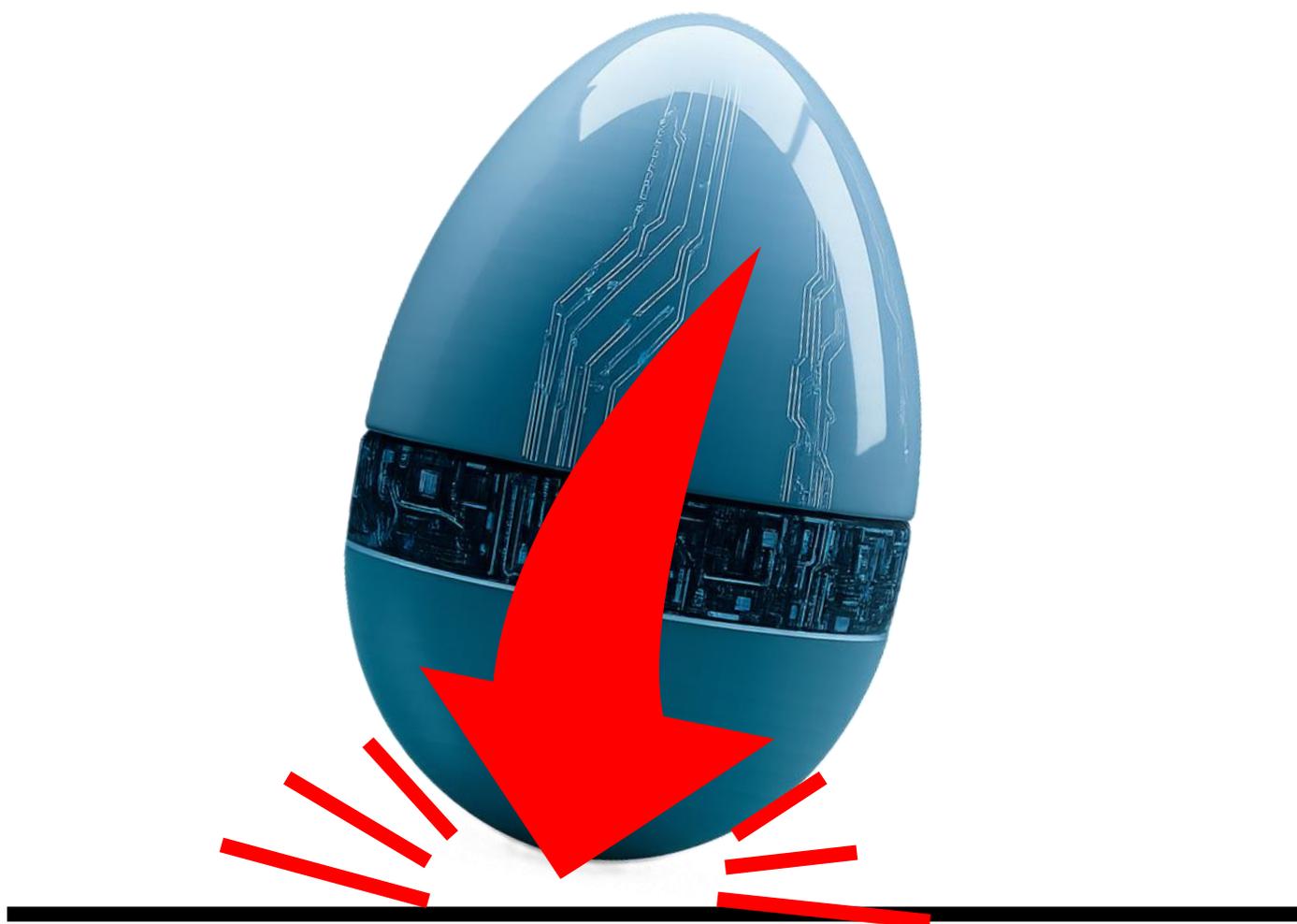




3.2 Powering on and interpreting LED indicators

The **Bröring Electronic Egg** is switched on by tapping it against a hard surface. When activated, the device performs a visible startup sequence using its LEDs, confirming that it has successfully powered on and is ready for use.

This sequence serves as both a visual indicator of activation and a functional self-check of the system.





4. Setup & Configuration

4.1 Accessing the web interface

Connecting to the **Bröring Electronic Egg** is a simple two-step process.

1. Connect to the Wi-Fi network broadcast by the **Bröring Electronic Egg**.
2. Open the WebUI hosted by the **Bröring Electronic Egg**.

If your smartphone supports NFC, you don't need to scan any QR codes. Simply hold the **blue Wi-Fi card** near your phone. A dialog will appear, prompting you to connect to the egg's Wi-Fi network.

Once connected, hold the **green WebUI card** to your phone. This will trigger another dialog, allowing you to choose a browser in which the WebUI of the **Bröring Electronic Egg** will open.

If your smartphone does **not** support NFC, you can use the **printed QR codes** on the cards instead.

**On some devices you have to
disable mobile data!**

Alternatively, you can manually connect to the egg's Wi-Fi network via your device's Wi-Fi settings. Then, open a browser of your choice and enter the following URL in the address bar.

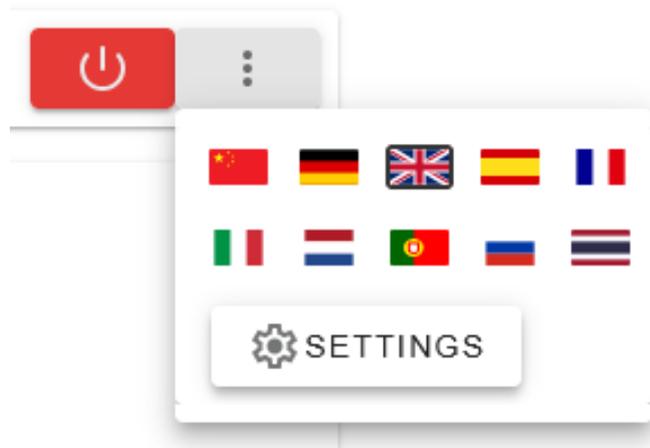
<http://192.168.4.1/>

4.2 Choosing the user interface language

You can choose your preferred language by opening the three-dot menu.

Supported languages:

- Chinese
- German
- English
- Spanish
- French
- Italian
- Dutch
- Portuguese
- Russian
- Thai





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25060012

Card 1: Connect Wi-Fi

- Hold card to smartphone to connect to Wi-Fi.
- Or scan QR-Code with camera.
- Alternatively connect to the Wi-Fi manually.
- On some devices you have to disable mobile data.

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25060012

Card 2: Connect WebUI

- Hold card to smartphone to connect to WebUI.
- Or scan QR-Code with camera.
- Alternatively open '<http://192.168.4.1/>' in your browser.
- Follow instructions on your smartphone.





4.3 Explanation of available settings

You can open the settings by opening the three-dot menu.

The settings are separated by the following options:

LED Level (G)

Here you can set the thresholds of the LEDs and Statistics.

Standby level (G)

The threshold in G under which the egg will turn off. This setting works in combination with the “Standby time”.

Save level (G)

The threshold in G above which the egg will save data. If the impacts are below this level the egg will ignore the impacts and not save to save memory.

Standby time (Seconds)

Time that the impacts have to be below the “Standby Level” before the egg is allowed to turn off.

Operating mode

This setting tells the egg in which level of detail the egg will save data.

Minimal (10 Bytes/s)

If you are not working with jerk, we recommend “Minimal”. This will allow the egg to save for longer amounts of time.

Default (recommended) (50 Bytes/s)

A middle ground between saving the jerk as X, Y, Z and not saving the jerk at all.

Detailed (70 Bytes/s)

If you are working with jerk a lot and need the acceleration as well as jerk as a vector (X, Y, Z).



Settings



LED Level (G)

9.0 19.0



Standby level (G)

3.0



Save level (G)

2.6



Standby time (Seconds)

72



Operating mode

Default

Minimal
G-Scalar, Temperature (10 Byte/s)

Default
G-Vector, J-Scalar, Temperature (50 Byte/s)

Detailed
G-Vector, J-Vector, Temperature (70 Byte/s)



Set time and date

Toggling this switch will allow you to synchronize the eggs time with your browsers time.

After clicking the “Refresh Time” button the field will update.

**Please note that you still have to click
SAVE at the bottom of the settings!**

CSV & HTML

Diverse export settings.

Delimiter

Delimiter for the CSV File. Depending on your Excel or LibreOffice Version you have to change this for correct parsing.

Decimal separator

Your preferred decimal separator.

Time format

Your preferred time format.

Advanced Settings

**Warning! Only modify these settings if
instructed!**

Serial number

If you want to discard
changes.

Firmware Version

WebUI Version

Applying and saving changes
to egg.



Set time and date

Set time

REFRESH TIME

Browser time

4.7.2025, 14:07:35

CSV & HTML

Delimiter

;

Decimal separator

,

Time format

YYYY-MM-DD HH:mm:ss

Advanced Settings

Advanced Settings

SN: Electronic Egg (25060012)

Firmware: 1.2.2

WebUI: 1.1.2

CANCEL

SAVE



5. Measurements

5.1 Live measurement series

The **live measurement series** is the default dashboard view and continuously displays real-time measurement data. Values are transmitted to the web interface 10 times per second. The last 20 seconds are shown. In this view, you can monitor acceleration, jerk, as well as axial and radial forces along the X, Y, and Z axes.

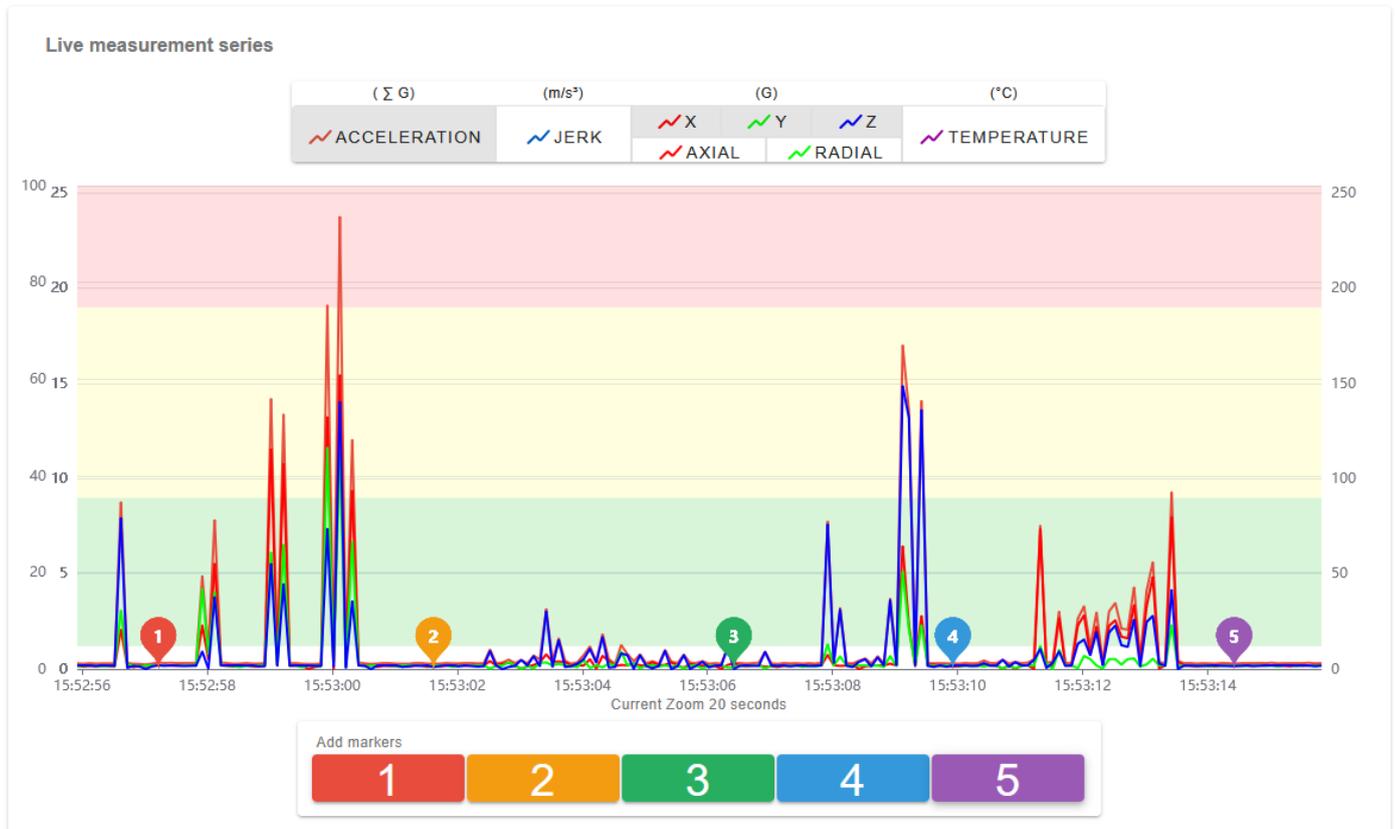
Both live and **recorded measurement series** can be customized using filters, allowing you to focus on the specific information that is most relevant to your analysis.



With the help of markers, you can highlight specific points in the measurement data. Markers are recorded in the live measurement series and appear in both the historical view and the exported HTML report.



They can be set in any combination and order. In the HTML report, you can also add individual descriptions to each marker.



The live view may occasionally **appear to stutter**, depending on your device and connection quality. This is **purely a visual effect** and does **not affect data integrity**. All measurements are continuously recorded **without interruption**. The LEDs, historical data view, statistics, and exported reports reflect the full data stream **without any of these visual delays!**



5.3 Recorded measurement series

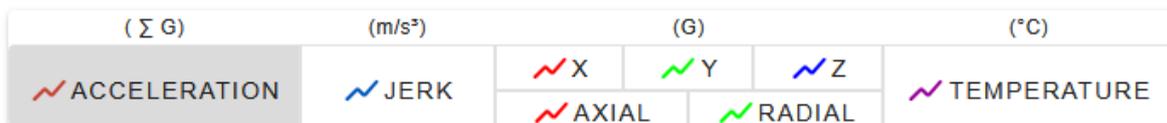
You can switch to the **recorded measurement series** view by clicking the button in the top-left corner of the navigation bar.



While in the **recorded measurement series** view, you can return to the **live measurement series** view at any time by clicking the same button, which now reads **Live measurement series**.



The **recorded measurement series** view offers the same filtering options as the **live measurement series** view.



In addition, it includes export options and statistical analysis tools.

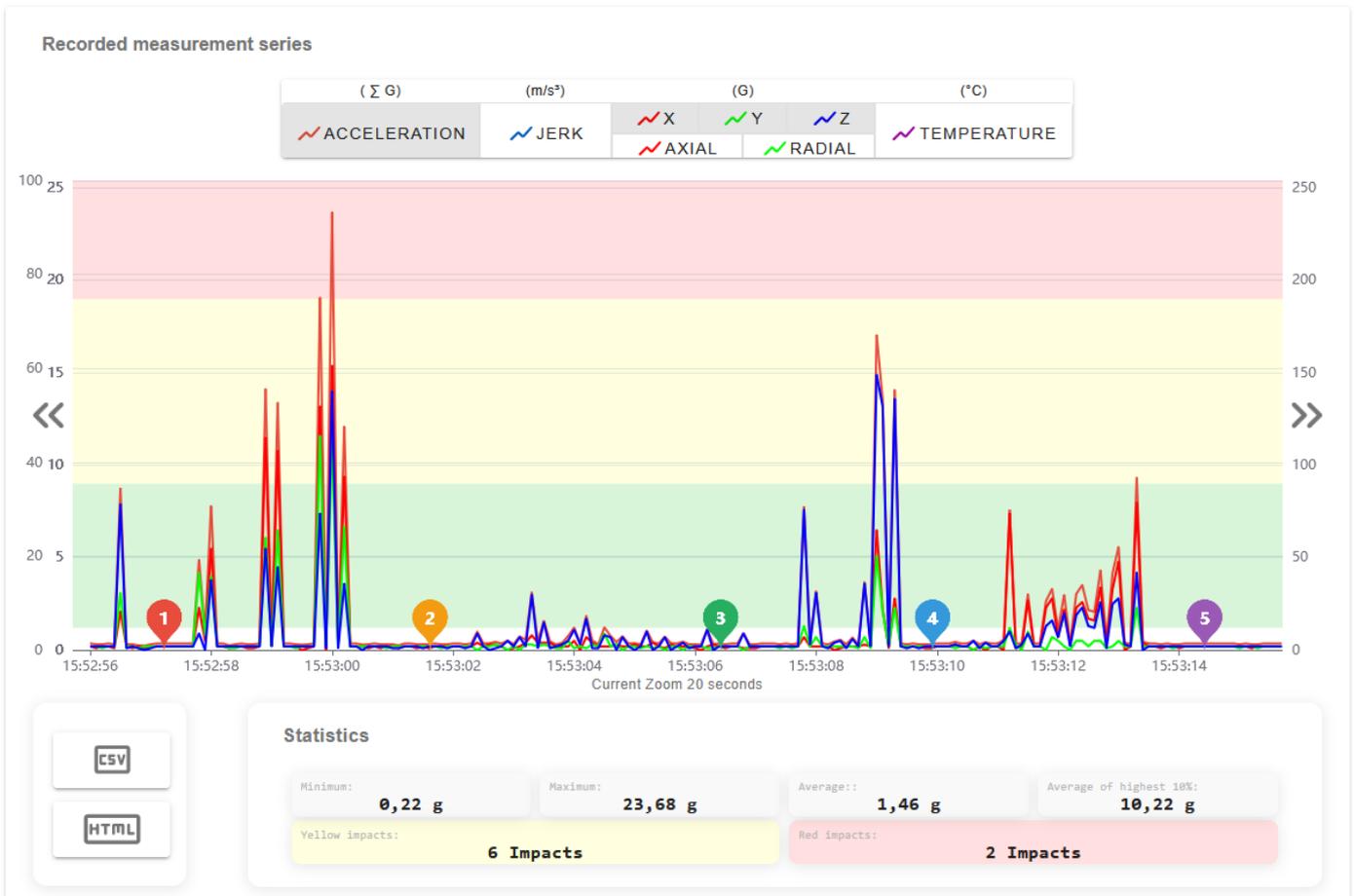


For more details on exporting data, please refer to section **5.4: Export options**.



Navigate through the data by scrolling horizontally and zoom in or out using pinch gestures, **just like you would on a photo!**

The statistics are dynamically recalculated based on the visible section of the dataset!



Displayed statistics:

Minimum	Lowest measured value
Maximum	Highest measured value
Average	Mean value
Top 10% Average	Average of the highest 10% of all values
Yellow Impacts	Number of events that exceeded the yellow threshold
Red Impacts	Number of events that exceeded the red threshold

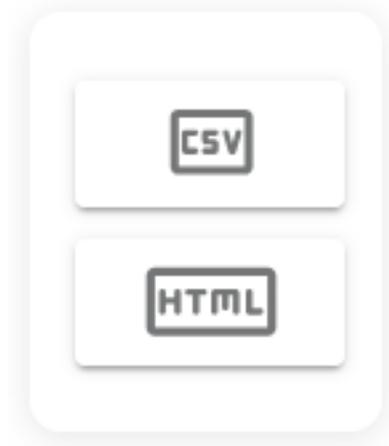


5.4 Export options

The **Bröring Electronic Egg** offers two export formats: **CSV** and **HTML report**.

- The CSV export can be opened in programs such as Microsoft Excel, LibreOffice, or other spreadsheet software.
- If the file appears unreadable or misaligned, please check the delimiter and decimal separator settings in your settings.

For more details on export settings, refer to section 4.3:
Explanation of available settings – CSV & HTML.



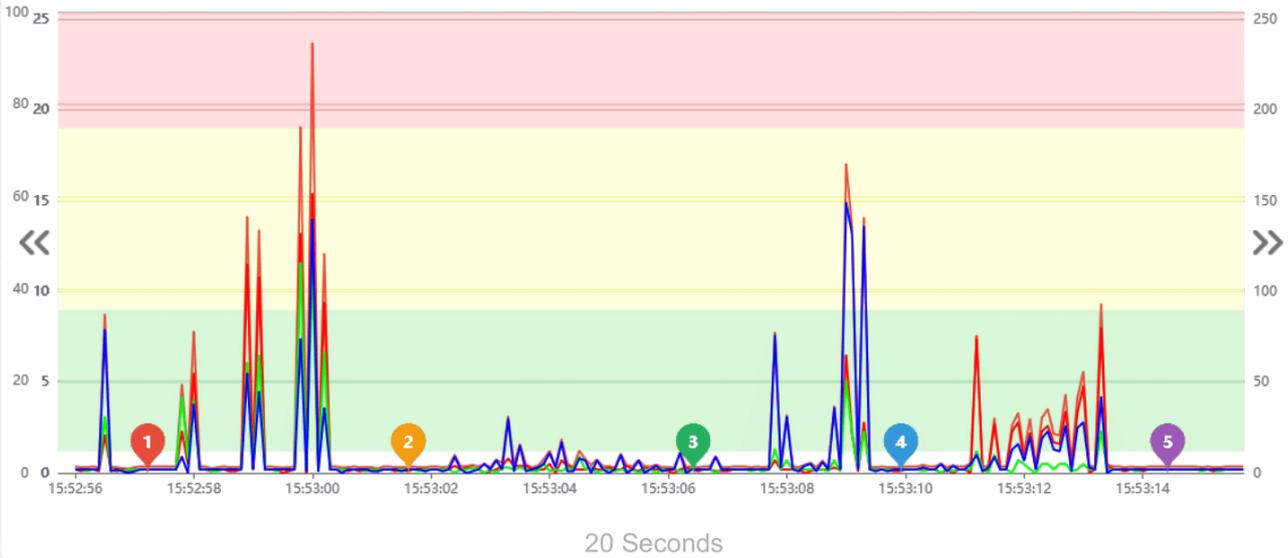
**Data is recorded at 10 measurements per second.
Depending on the selected operating mode, some columns in the CSV file may remain empty.**

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Creation	Temperature	Acceleration	Acceleration	Acceleration	Acceleration	Jerk Scalar	Jerk X	Jerk Y	Jerk Z	Axial	Radial	
2	04.07.2025 15:52	44	0,3	0,2	0,2	0,2	1				0,3	0,2	
3	04.07.2025 15:52	44	0,3	0,1	0,2	0,2	0				0,2	0,2	
4	04.07.2025 15:52	44	0,3	0,2	0,1	0,2	0				0,2	0,2	
5	04.07.2025 15:52	44	0,3	0,2	0,2	0,2	0				0,3	0,2	
6	04.07.2025 15:52	44	0,3	0,1	0,2	0,2	0				0,2	0,2	
7	04.07.2025 15:52	44	8,7	2,1	3,1	7,9	85				3,7	7,9	
8	04.07.2025 15:52	44	0,3	0,2	0,2	0,1	85				0,3	0,1	
9	04.07.2025 15:52	44	0,3	0,1	0,2	0,2	0				0,2	0,2	
10	04.07.2025 15:52	44	0,2	0,2	0,1	0,1	0				0,2	0,1	
11	04.07.2025 15:52	44	0,2	0,1	0,2	0	0				0,2	0	
12	04.07.2025 15:52	44	0,3	0,2	0,2	0,1	7				0,3	0,1	
13	04.07.2025 15:52	44	0,3	0,2	0,2	0,2	0				0,3	0,2	
14	04.07.2025 15:52	44	0,3	0,2	0,2	0,2	0				0,3	0,2	
15	04.07.2025 15:52	44	0,3	0,2	0,2	0,2	0				0,3	0,2	
16	04.07.2025 15:52	44	0,3	0,2	0,2	0,2	0				0,3	0,2	
17	04.07.2025 15:52	44	0,3	0,2	0,2	0,2	0				0,3	0,2	
18	04.07.2025 15:52	44	0,3	0,2	0,2	0,2	0				0,3	0,2	
19	04.07.2025 15:52	44	0,3	0,2	0,2	0,2	0				0,3	0,2	
20	04.07.2025 15:52	44	4,9	2,3	4,2	0,9	46				4,8	0,9	
21	04.07.2025 15:52	44	0,9	0,5	0,8	0	39				0,9	0	
22	04.07.2025 15:52	45	7,8	5,5	4	3,8	64				6,8	3,8	
23	04.07.2025 15:52	45	0,3	0,2	0,2	0,2	75				0,3	0,2	
24	04.07.2025 15:52	45	0,3	0,2	0,2	0,2	0				0,3	0,2	
25	04.07.2025 15:52	45	0,2	0,1	0,1	0,2	0				0,1	0,2	
26	04.07.2025 15:52	45	0,3	0,2	0,1	0,2	0				0,2	0,2	
27	04.07.2025 15:52	45	0,3	0,2	0,2	0,2	0				0,3	0,2	
28	04.07.2025 15:52	45	0,3	0,1	0,2	0,2	0				0,2	0,2	
29	04.07.2025 15:52	45	0,3	0,1	0,2	0,2	0				0,2	0,2	
30	04.07.2025 15:52	45	0,3	0,2	0,2	0,2	0				0,3	0,2	
31	04.07.2025 15:52	45	14,1	11,5	6,1	5,5	139				13	5,5	
32	04.07.2025 15:52	44	0,3	0,2	0,2	0,2	0				0,3	0,2	
33	04.07.2025 15:52	44	13,4	10,8	6,5	4,5	131				12,6	4,5	
34	04.07.2025 15:52	44	0,3	0,2	0,2	0,2	131				0,3	0,2	



Day and time:	2025-07-04 15:51:39
Company:	Bröring Technology GmbH
Location:.	Gewerbering 4, 49393 Lohne
Operator:	Jannes Boos

View



Statistics

Minimum: 0,22 g	Maximum: 23,68 g	Average:. 1,46 g	Average of highest 10%: 10,22 g
Yellow impacts: 6 Impacts		Red impacts: 2 Impacts	

Remarks

Remarks

Marker

1	Start of series
2	Transportation
3	Start of packing
4	End of packing
5	End of series



6. Data Interpretation

6.1 Understanding peaks, thresholds, and markers

When using the **Bröring Electronic Egg**, it's important to know how to read and understand peaks, thresholds, and markers in your data. These elements help you identify how strong movements or impacts were — and when they happened.

Peaks – What are they?

Peaks are the highest points in your graph. They show where the acceleration was strongest during a test.

A small peak might mean a shake or light movement.

A large peak often signals a strong jolt, drop, or impact.

On the chart, these peaks appear as high spikes in the lines for X, Y, Z, or the total acceleration (magnitude).

Thresholds – When is it too much?

Thresholds are pre-set acceleration limits used to detect serious impacts.

The **Bröring Electronic Egg** uses two thresholds:

● Yellow threshold (*moderate impact*)

Movement exceeded the normal range — possibly a mild impact.

● Red threshold (*strong impact*)

Strong impact! May indicate a collision, drop, or rough handling.

● Green values (*light impact*)

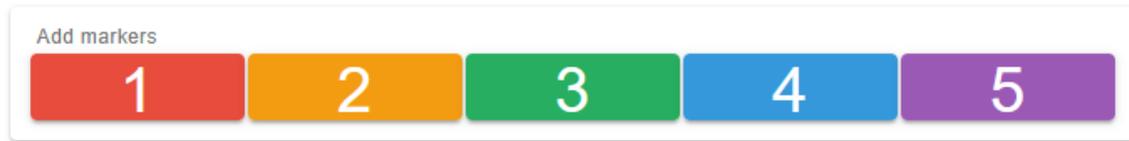
Normal impact. You should see this most of the time!



Markers – How can you flag important events?

Markers are custom symbols you place on the chart to highlight important moments you want to track.

They are not automatic - you decide when and where to add them.



These numbers and colors are arbitrary – they don't mean anything by default.

You can use them however you like — for example:

- 1 = start of test
- 2 = handling event
- 3 = packaging inserted
- ...and so on

You can place markers at any point during recording via the user interface. Markers will then show up on the chart with their color and number, helping you and others quickly recognize key test events.

Tips for using peaks and markers:

- Use zoom to look closely at the area around a marker.
- Toggle the X/Y/Z lines to see which direction caused the peak.
- Use PDF export to save and share charts with visible markers and thresholds.

7. Maintenance & Care

7.1 Charging and battery protection

Charge the **Bröring Electronic Egg** regularly. If unused for a long time, charge it at least once a month.

Avoid extreme temperatures to protect the battery.

7.2 Cleaning and storage guidelines

Clean the **Bröring Electronic Egg** gently with a soft, dry cloth. Avoid harsh cleaners. Store in a cool, dry place away from direct sunlight and moisture.



8. Troubleshooting

8.1 Device won't start?

Make sure the **Bröring Electronic Egg** is fully charged.

To do this, open the device by twisting it and connect it to the included USB-C cable and the supplied 5 V power adapter.

8.2 No Wi-Fi signal from the Egg?

The egg will automatically enter standby mode after a period of inactivity.

To wake it up, simply tap the device gently.

Make sure the device is fully charged before use.

8.3 Web interface not loading?

Check the connection to the **Bröring Electronic Egg** and make sure you are accessing the correct IP address: <http://192.168.4.1/>.

On some devices, establishing the connection may take a bit longer.

If long loading times persist, try restarting both the **Bröring Electronic Egg** and your device.

On some devices, **disabling mobile data** may be necessary to ensure a stable connection to the device's Wi-Fi network.

8.4 No live data?

On some devices, establishing the connection may take a bit longer.

Please also try the steps described in section **8.3: Web Interface not loading**.

On some devices, you may also need to use a **different browser** to properly view the live data.



9. Appendix

9.1 Technical glossary

This glossary helps you understand the most important terms used in the **Bröring Electronic Egg** system, so you can better use it for your measurements and reports.

- **Acceleration**

How quickly something speeds up or slows down. The **Bröring Electronic Egg** measures this on three axes (left/right, forward/backward, up/down). It's used to detect movements, impacts, or drops.

- **Axis (X, Y, Z)**

The three directions in which the Egg measures movement:

X = left ↔ right

Y = forward ↔ backward

Z = up ↔ down

- **Chart**

A visual display of your data, usually a line graph. It shows how the Egg moved over time. You can zoom in, hide certain lines, or set markers.

- **Marker**

A small icon or symbol in the chart that shows something important.

- **Data**

The information recorded by the Egg. A lot of small values that are later used in charts and reports.

- **Download**

After a test, you can download the data from the Egg to your computer or view it in your browser.

- **Impact**

A strong movement or shock - for example when the Egg hits something or is dropped. These are marked in yellow or red depending on how strong they are.



- **Legend Buttons**

These buttons let you turn on or off individual lines in the chart (e.g., only X-axis, or only total strength).

- **Magnitude**

A number that tells you how strong the overall movement was. It combines X, Y, and Z directions into one value.

- **PDF Report**

You can turn your test data into a PDF report - including the chart, summary numbers, and information like the test time and name.

- **CSV Export**

A document that summarizes what the Egg recorded – 10 values a second; raw data.

- **Sampling Rate**

How often the Egg saves data during a test (e.g. 100 times per second). A higher rate means more detail, but also more data.

- **Thresholds**

A limit that defines when an impact is important. The Egg uses two thresholds:

Yellow = moderate impact

Red = strong impact

- **Timestamp**

The exact moment when something happened during a test (e.g., 11:14:10.100). Every recorded value has a timestamp.

- **Wi-Fi**

You can connect to the Eggs own WiFi to access it from your phone, tablet, or PC. This connection is needed to access the Web Interface.

- **Web Interface**

The page you open in your browser to control the Egg. View charts and download reports. No app or installation is needed.



9.2 Contact and support information

Location:

BRÖRING Technology GmbH
Gewerbering 4
D-49393 Lohne/Oldenburg
Germany

Represented by:

Dr.-Ing. Stefan Bröring

Contact:

Phone: +49 (0) 4442 910436
Fax: +49 (0) 4442 910437
Email: info@broeringtech.com

VAT Identification Number (according to §27a VAT Act):

DE 348 856 474

Register:

Local Court of Oldenburg
HRB 217703



9.3 Legal notices

EU Declaration of Conformity

Manufacturer:

BRÖRING Technology GmbH
Gewerbering 4
D-49393 Lohne/Oldenburg
Germany

Product Name: Electronic Egg

Model Number: 8000

Description: Electronic measuring device for recording and analyzing acceleration data (impact analysis) in agricultural environments.

We hereby declare, under our sole responsibility, that the above-mentioned product complies with the essential requirements and other relevant provisions of the following EU directives:

- 2014/30/EU – Electromagnetic Compatibility (EMC)
- 2014/35/EU – Low Voltage Directive
- 2011/65/EU – RoHS Directive (Restriction of Hazardous Substances)
- 2014/53/EU – Radio Equipment Directive
- 2001/95/EC – General Product Safety Directive

Applied harmonized standards:

- EN IEC 61000-6-1: Emission
- EN IEC 61000-6-3: Immunity
- EN 62368-1: Safety of audio/video, information and communication technology equipment
- EN 301 489-1/-17: EMC for radio equipment (for radio module)
- EN 300 328: Radio frequency (for 2.4 GHz WLAN/Bluetooth)

Place and Date: Lohne, July 11, 2025

Name and Position: Stefan Bröring, CEO

Signature:

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