Lumo-868
868 / 915 MHz

CE 0682

EN **Operating instructions**
Please take care of the operating instructions!

181005106_EN_1113

(EN) **The German operating instructions are the original version.**
All other documents in different languages are translations of the original version.

Table of contents

1 General

1.1 Notes on operating instructions

The content structure is oriented in the life stages of Lumo-868 (hereinafter referred to as "device" or "product") .
The manufacturer reserves the right to change the specifications referred to in this manual.
They may differ in detail from the relevant version of the product, without fundamentally altering any factual information and ceasing to have validity. The current state of the technical data can be obtained at any time from the manufacturer. No claims can be asserted on account of the foregoing. Deviations from text and image statements are possible and depend on the technical development, equipment and accessories of the product. The manufacturer shall notify on different information to special versions with sales documents. Any other information shall remain unaffected thereby.

1.2 Standards and guidelines

In the versions all basic safety and health requirements of applicable laws, standards and guidelines have been applied. Safety is confirmed by the declaration of conformity (see Chapter 5, EC-Declaration of Conformity). All safety information in this manual refer to the currently applicable laws and regulations in Germany. All information in the manual must be followed at any time without restriction. In addition to the safety instructions in this manual, the regulations on accident prevention, environmental protection and occupational health and safety applicable at the operating site should be observed and adhered to. Regulations and standards for safety assessment can be found in the EC declaration of conformity.

1.3 Intended use

The product is intended for use in the field of home installation technology for controlling motorized roller shutters and blinds. It is a single-channel radio sensor. Further application possibilities must be previously agreed upon with the manufacturer, **elero** GmbH Antriebstechnik (see address in Chapter 8).

The operator shall be solely liable for damages arising from the improper use of the product. The manufacturer assumes no responsibility for injuries or damages caused by misuse or procedural errors, improper operation and commissioning.

Safe and proper use and operation safety of the product is ensured only when used according to the specifications of this manual.

1.4 Foreseeable misuse

Foreseeable misuse is considered the use contrary to the purpose approved by the manufacturer, **elero** Antriebstechnik GmbH (address see in Chapter 8, Address).

1.5 Warranty and liability

Basically, the general terms and conditions of the manufacturer, **elero** Antriebstechnik (address see in Chapter 8, Address) apply. The terms of sales and delivery are part of the sales records and should be passed on to the operator

upon delivery. Liability claims for personal injury and property damage are excluded if caused by one or more of the following:

- Improper use of the product
- Improper installation, commissioning and operation of the product
- Structural modifications to the product without the written permission of the manufacturer
- Operating the product with improperly installed connectors, defective safety devices or improperly mounted safety and protective equipment

- Failure to follow the safety rules and instructions in this manual
- Exceeding the given technical specifications

1.6 Customer service of the manufacturer

In case of failure, the product must be repaired only by the manufacturer. The address for sending to customer service can be found in Chapter 8, "Address".
If you have not obtained the product directly from **elero**, please contact the product supplier. You must have the serial number available, should the customer service request it. This is located on the label on the product.

2 Safety

2.1 General safety information

This user manual contains all safety instructions that must be observed to prevent and eliminate hazards when handling the product in conjunction with the controlled drives in the individual life cycles. Compliance with all safety instructions listed guarantees the safe use of the product.

2.2 Safety principles

The product is built according to the state of the art and recognised safety standards and is safe to operate. In the versions of the product, all basic safety and health requirements of applicable laws, standards and guidelines have been applied. The safety of the product is confirmed by the declaration of incorporation.

All safety information are related to the currently applicable regulations of the European Union. In other countries, the operator must ensure that the applicable laws and state regulations are met.
In addition to the safety instructions in this manual, the generally applicable regulations on accident prevention and environmental protection should be respected and adhered to.

The product may only be used for its intended purpose and if it is in perfect working order, and it must be used with regard to safety and dangers as stated in the operating manual. The product is designed for use as described in Chapter "Intended use". Improper use can cause danger to

life and limb of the user or others, or damage of the product and other property.. Accidents or near misses when using the product that have resulted or could have resulted in personal injury and/or damage in the workplace must be directly and immediately reported to the manufacturer.

All safety information listed in the manual and on the product must be observed. In addition to these safety instructions, the operator must ensure that all national and international regulations and other binding regulations relating to occupational safety, accident prevention and environmental protection applicable in each country are met. All work on the product must be carried out by trained, safety-trained and authorised personnel.

2.3 General operator obligations

- ❑ The operator is required to use the product only in perfect and safe condition. He must ensure that in addition to the safety instructions in the user manual, the general safety and accident prevention regulations, the requirements of DIN VDE 0100 and the regulations for the protection of the environment of each country of operation are observed and adhered to.
- ❑ The operator is responsible for ensuring that all work with the product is carried out by trained, safety-trained and authorized personnel.
- ❑ The ultimately responsible person for accident-free operation is the operator of the product or the personnel authorized by him.

2.4 Personnel Requirements

- ❑ Any person who is charged with working with the product must have completely read and understood the user manual before executing the corresponding operations. This applies even if the person has already worked with such product or has been trained thereto.
- ❑ All work with the product may only be performed by trained, safety-trained and authorized personnel. Before starting any work, the personnel must have become familiar with the hazards associated with the product.
- ❑ All persons should only carry out work according to their qualifications. The responsibilities of each personnel should be clearly indicated.
- ❑ Any personnel, charged with working with the product, may not have any physical limitations that temporarily or permanently restrict attention and judgement (e.g. due to fatigue).
- ❑ Handling of the product and all assembly, disassembly and cleaning work is not permitted by minors or persons who are under alcohol, drugs or medication influence.

2.5 Safety instructions about technical condition

- ❑ The operator is required to operate the product only in perfect and safe condition. Technical condition must comply at all times with the legal requirements.
- ❑ Should any hazards to persons or changes in the operating performance be identified, the product must be immediately shut down and reported to the operator of the unit.
- ❑ No changes, additions or modifications should be carried out on the product without approval of the manufacturer.

2.6 Safety instructions about operation

- ❑ The operator of the product is required, before the first commissioning, to verify the safe and proper condition of the product.
- ❑ This is also necessary during operation of the product in regular intervals to be determined by the operator.

3 Product description

3.1 General

The product is a sensor for light, twilight and glass breakage as well as a radio transmitter and is used to control roller shutters and roller blind systems.
It is mounted on the inside of a window retractable by an electric sun protection system.

It can be either used for a unidirectional (backwards compatible with the **elero** ProLine-868 product program) or for a bidirectional data communication (compatible with the **elero** ProLine 2 product program from a certain production date and software version).

3.2 Device explanation

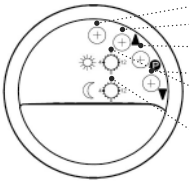
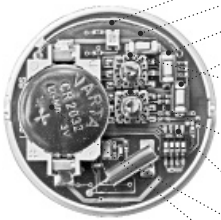
Top side of the device outside and inside view (board)	
	1. Indicator light (LED) 2. UP button 3. STOP/P button 4. DOWN button 5. Sun threshold controller 6. Twilight threshold controller
	7. Indicator light (LED) 8. UP button : 9. STOP/P button 10. DOWN button 11. Sun threshold controller 12. Twilight threshold controller 13. Code switch (DIP switch) 14. Glass breakage sensor 15. Battery compartment / holder (for CR 2032 battery type)

Fig. 1 Top side of the device (figure of external view and board)

3.3 Product features

- ❑ Light, twilight, glass breakage sensor and 1-channel radio transmitter for unidirectional or bidirectional communication between transmitter and receiver(-s) to be attached to the inner surface of the window
- ❑ UP, STOP / P, DOWN buttons for manual operation
- ❑ Control of the programmed blind in accordance to set thresholds for sun and /or twilight
- ❑ Information on commandments executed by the status display of the indicator light (in bidirectional mode)
- ❑ Integrated (detachable) glass breakage sensor

3.4 Product versions

The product is available as a 868-MHz version, or as a 915-MHz version. The exact product specifications can be found in the order confirmation.

3.5 Scope of supply

Lumo-868 (Battery included in the device), bracket via an integrated suction cup, small screwdriver for adjusting the two threshold controllers.

3.6 Specifications

Summary of specifications

Lumo-868 specifications	
Rated voltage	3 V DC
Battery type	1 x CR 2032
Protection class	IP 20

Lumo-868 specifications	
Permissible ambient temperature [° C]	0 to 55
Radio frequency [MHz]	868 or 915
Weight (incl. battery) [g]	22

Fig. 2 Technical data for Lumo-868

4 Explanation of functions

In this chapter, you will find basic information on using the product.

4.1 Functions of the Lumo-868

The product allows you to automatically protect your plants and your office furniture and equipment against strong sunlight.

- Sun function:
  If the sun threshold value is exceeded, the roller shutter is automatically lowered until the product is shaded, then it is stopped and the light sensor is open again.
- Twilight function:
  Twilight function causes the blinds to lower either from the beginning of twilight or only at night. Also here, intermediate levels may be set or the function can be switched off.
- Glass breakage function:
  A built-in sensor detects glass breakage, upon request, in case the device vibrates, and then brings the blind all the way down.

4.2 Bidirectional radio system

A bidirectional radio system transmits radio signals to a radio receiver and enables feedback from the radio receiver to the transmitter. The radio signal can be sent directly to the target receiver. If this is not possible then the radio signal is routed via other bidirectional participants until it reaches the target receiver. The target receiver carries out the command and sends -when programming and deleting- a confirmation back to the transmitter.
Radio transmitting and radio reception capability of all components involved is therefore required for two-way wireless operation. Otherwise, the system works only unidirectionally.

4.3 Unidirectional radio system

A unidirectional radio system transmits radio signals to radio receivers. However -unlike in a bidirectional radio system- the radio receiver cannot send any message back to the transmitter. The transmission of radio signals from a radio receiver to another radio receiver is also not possible.

4.4 Group control unit

A group is understood to mean the control of several receivers at the same time. The selected group is controlled by a travel command.
You can program any number of receivers in the transmitter.

4.5 Commissioning

- Prerequisite for commissioning the device is a functional inserted battery (as when delivered). Replace a discharged battery as described in Chapter 4.10 by a same model type.
- Attach to a suitable window position (see following text).
- Activate the radio transmitter by pressing any button; the indicator light goes on.

Important:
Do not press the P button until the receiver or receivers are in programming mode. The channel for a radio system is decided during the programming. If the receivers are not in programming mode, the transmitter channel changes to unidirectional mode. To return to the original mode, keep the 3 control buttons **UP, STOP / P** and **DOWN** pressed simultaneously for 6 seconds until the status display of the indicator light goes briefly red.

4.5.1 Status display of the indicator light (LED)

A radio signal is indicated when the indicator light (LED) [see (1) and (7) in Fig. 1] goes on.
The various colours of the indicator light mean:

Status display	Meaning
Flashing orange	Transmitter (channel) not programmed in any receiver
Flashing fast orange	Transmitter (channel) in the bidirectional programming mode. Operation of already programmed receivers is not possible.
Orange	Transmitter (channel) works bidirectionally: Transmit signal is being sent

Status display	Meaning
Green	Transmitter (channel) works unidirectionally: Transmit signal is being sent

Fig. 3 Status displays of the indicator light (LED) and their meaning

The maximum sending range within a building is up to 10 metres. By decreasing battery power, the transmitting power and the transmission range is reduced.
If the performance of the battery is reduced, the indicator lamp slowly loses its illuminative capacity.
If the indicator light (LED) does no longer go on when pressing any button, the battery must be replaced (see Capital 4.10).

4.5.2 Opening Lumo-868

- Rotate the housing cover (approx. 2 mm) clockwise and lift the upper housing half.

4.5.3 Closing Lumo-868

- When closing the cover, ensure the correct position of the inner latch hook and recess provided for this purpose.
- Place housing cover on the lower shell and twist about 2 mm counter-clockwise.

4.5.4 Mounting of the window bracket

The window bracket consists of the lower housing shell and the suction cup.

- Before installing the unit in the required position, check that the transmitter and receiver are functioning perfectly.
- Attach the complete device (with suction cup) on an appropriate inner glass surface (retractable by blinds). If necessary, slightly wet the spot.

4.6 Programming the transmitter / channel

Condition:
The receiver is installed.

- For bidirectional use, the device version of the installed receiver is crucial:
  Combio from version 75, RevoLine from version 21 or receiver from manufacturing date May 2012.

Check whether the channel is deleted or in the correct mode according to the status display of the indicator light (LED).
Stand in front of the blind to be programmed while the programming.

1. With electrical, previously installed receivers, turn the safety fuse of the drive off and after a few seconds on again. The receiver is now in programming mode for about 5 minutes.
2. Press the **STOP/P** button for more than 2 seconds. The indicator light goes on briefly. The blind moves briefly up and down automatically again after approx. 2 minutes to show that the receiver is in programming mode.
3. To define the key assignment for rising and lowering the blind, press immediately after the beginning of a rising (1 second), the **ON** button of the product. The indicator light goes on briefly. The blind stops briefly and then moves upward.

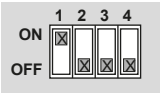
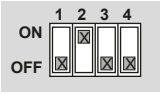
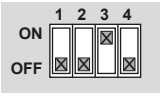
4. Immediately after the start of the down travel press the **DOWN** button on the product. The indicator light goes on briefly. The blind stops.

Lumo-868 is now programmed.

Important note:
Programming will have to be repeated if the curtain does not stop.
A bidirectional programming process in Lumo-868 can be cancelled by pressing the STOP button for 6 seconds.

4.7 Setting the code switch

When delivered (factory setting) all 4 code switches are in "Off" position.

General settings of the 4 code switches	
 **Code switch 1: ON**	Setting mode of threshold value "Sun" Upper position (**ON**): Setting mode Sun on Lower position (**OFF**): Setting mode Sun off
 **Code switch 2: ON**	Setting mode of threshold value "Twilight" Upper position (**ON**): Setting mode Twilight on Lower position (**OFF**): Setting mode Twilight off
 **Code switch 3: ON**	Setting function "Glass breakage" Upper position (**ON**): Glass breakage function on Lower position (**OFF**): Glass breakage function off

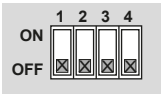
General settings of the 4 code switches	
 **Code switch 4: OFF**	No function Upper position (**ON**): no function Lower position (**OFF**): no function

Fig. 4 General code switch settings

4.8 Function of sun and twilight sensor

With the sensor function on or off, the automatic travel commands (for example sun protection function, twilight function) can be turned off.

4.8.1 Display and selection of mode

- Simultaneously pressing the **UP** and **DOWN** buttons:
  The operating mode is requested. The LED lights up
  Green: Sensor on
  Red: Sensor off
- Simultaneously pressing the **UP** and **DOWN** buttons for 2 seconds:
  The mode is switched to the other operating mode [with activated sensor (green LED), or with a disabled sensor (red LED)].

4.8.2 Indicator light

A travel command will be signalised through the lighting of the indicator light (LED).

- **Green:** Unidirectional radio operation
- **Yellow:** Bidirectional radio operation
- **Red:** Glass breakage is detected

4.9 Setting the operating modes

In setting mode, you can customize the sun threshold value and the twilight threshold value by adjustment of the appropriate threshold value controller [see (5), (6), (11) and (12) of Fig. 1] and response through the indicator light (LED) lighting.

Important note:
Please note that the values are approximate values. The setting is slightly influenced by the brightness value in the room and by the device cover.

Adjust the code switch as follows:

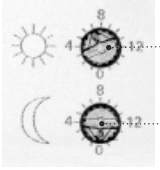
Overview of the adjustment options of the sun and twilight threshold value controller	
	1. Sun threshold controller 2. Twilight threshold controller

Fig. 5 Adjustment options of the sun and twilight threshold value controller

4.9.1 Sun protection function (code switch 1)

Important note:
When setting the sun protection function, code switch **1** must be in "**ON**" position and the other code switches in "**OFF**".

The sun threshold value controller [see (5) or (11) of Fig. 1] may not be in position 0, otherwise the sun protection function is disabled.

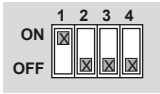
Code switch setting of the sun protection function	
	Upper position (**ON**): Setting mode Sun on Lower position (**OFF**): Setting mode Sun off
Code switch 1: ON	Switches 2 to 4 **OFF**

Fig. 6 Sun protection setting mode

The sun threshold value controller [see (5) and (11) from Fig.1] is ex works set to position 7. It can be set with the enclosed screwdriver from "cloudy" (position 1) to "direct sunlight" (position 15).
Position 0 disables the sun protection function.

Setting sun threshold values	
Level 0	The light function is switched off
Level 1	Lowering at low light
Level 7	Factory setting
Level 1-15	Intermediate levels
Level 15	Lowering at much light

Fig. 7 Sun protection function
Setting the sun threshold value controller

The threshold values in sun setting mode will be indicated through the following indicator light (LED).

Indicator light	Sun protection function
Green	activated (threshold value exceeded)
Red	deactivated (threshold value too low)
Yellow	Threshold value corresponds to actual value

Fig. 8 Sun protection function:
Meaning of indicator lights display

- Sun threshold value exceeded
  for longer than 3 minutes:
  → The roller shutter goes down
- Sun threshold value too low
  for longer than 15 minutes:
  → The roller shutter goes up

4.9.2 Twilight function (code switch 2)

Important note:
When setting the twilight function, code switch **2** must be in "**ON**" position and the other
code switches in "**OFF**".
The twilight threshold value controller [see (6) or (12) of Fig. 2] may not be in position 0, otherwise the twilight function is disabled.

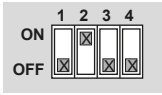
Code switch setting of the twilight function	
	Upper position (**ON**): Setting mode Twilight on Lower position (**OFF**): Setting mode Twilight off
Code switch 2: ON	Switches 1, 3 and 4: **OFF**

Fig. 9 Twilight function setting mode

The twilight threshold value controller [see (6) and (12) from Fig.1] is ex works set to position 0.
It can be set with the enclosed screwdriver from "darkness" (position 1) to "early twilight" (position 15).
Position 0 disables the twilight function.

Setting the twilight threshold values	
Level 0	The twilight function is switched off Factory setting
Level 1	Lowering at darkness
Level 1-15	Intermediate levels
Level 15	Lowering at the start of twilight

Fig. 10 Twilight function
Setting the twilight threshold value controller

The threshold values in twilight setting mode will be indicated through the following indicator light (LED).

Indicator lamp	Twilight function
Green	activated threshold value too low

Indicator lamp	Twilight function
Red	deactivated threshold value exceeded
Yellow	Threshold value corresponds to actual value

Fig. 11 Twilight function:
Meaning of indicator lights display

- Twilight threshold value too low for longer than 10 minutes:
  → The blind moves fully to the bottom end position

The blind will not automatically -through Lumo-868- go back in the UP position.
The blind must be manually risen through the **UP** button at Lumo-868, a timer or another programmed transmitter.

4.9.3 Glass breakage function (code switch 3)

Important note:
The glass breakage function on the code switch 3 was turned off at the factory.

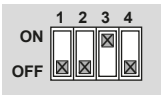
Code switch setting of the glass breakage function	
	Upper position (**ON**): Glass breakage setting mode on Lower position (**OFF**): Glass breakage function setting mode off
Code switch 3: ON	Switches 1, 2 and 4: **OFF**

Fig. 12 Glass breakage function setting mode

Through the vertical alignment of Lumo-868, you can adjust the sensitivity of the glass breakage sensor.

Sensitivity level of glass breakage function depending in the alignment	
High	Low
	

Fig. 13 Setting the sensitivity level of the glass breakage function

In order to achieve a high sensitivity of the glass breakage sensor, mount the sensor in such a way as to position the logo horizontally (parallel to the window sill).
Low sensitivity is achieved by installing twisted by 180 ° (logo upside down).

When the glass breakage sensor vibrates (e.g. due to broken glass of a window), the glass breakage sensor is activated and causes the blind to descent into the lower end position.
In this case, all automatic switching commands of the controller or a timer are blocked.
Manual operation is possible at any time.
The blockade of automatic movement commands will be cancelled by a manually induced movement command on another wall-mounted or hand-held transmitter.

4.9.4 No function (code switch 4)

Code switch 4 is without any function, position can be set as desired.

4.9.5 Test mode

In "test mode", the settings of the device can be checked

Important note:
In test mode, the times of both the sun protection function and the twilight function may be reduced from minutes to seconds.

- Press the **ON** button for at least 6 seconds. Now the test mode is active for a period of 5 minutes, and then it is automatically terminated.

4.10 Power supply / battery replacement

The product is powered by a CR-2032 coin battery (3 V nominal voltage). If the battery is empty, the device switches off automatically. Low battery level is indicated by a weakly lighting indicator light (LED).

Important note:
Replace battery only with batteries of the identical type.

1. Open the housing as described in Chapter 4.2.1 and release the cover.
2. Remove the battery.
3. Insert the new battery (CR2032 type) in the correct position (mind the polarity).
4. Close the housing as described in Chapter 4.2.2.

4.11 Cleaning and maintenance of the product

- Clean the surface of the device with a soft, clean, dry cloth.
- Do not use any cleaning agents and solvents.
- Keep the product at a dry place.
- Do not use or keep the product in dusty or dirty environments.
- Do not keep the product at high temperatures.
- Do not keep the product at low temperatures.
- Do not attempt to open the product otherwise than as described in the manual.
- Unauthorised modifications may damage the product and may violate regulations governing radio devices.
- Do not drop the product, protect it from impact or strikes and do not shake it.
  Rough handling can damage electronic circuits and mechanical parts inside the product.

- Keep the product away from magnets or magnetic fields.

5 EC Declaration of conformity

EC-DECLARATION OF CONFORMITY

We hereby declare that the following mentioned product/s meet/s the standards of the European Community.

Product designation: **ProLine 2**

- Lumo-868 all versions
- Lumero-868 / -915 all versions
- Aero-868 / -915, Aero-868 / -915 Plus, Aero-868 / -915 AC all versions
- Sensero-868 / -915 AC, Sensero-868 / -915 AC Plus all versions

Description: Sun, dusk, wind and rain sensors with bidirectional and unidirectional radio-based sensor system.
Can be used in conjunction with controllers for opening and closing roller shutter and other shading systems as well as other actuators.

The conformity of the above mentioned products with the relevant health and safety requirements is taken into account by the following directives and standards:

- EMC Directive 2004/108/EC
  EN 61000-6-2:2005, EN 61000-6-3:2001
  EN 60730-1:2000, EN 60730-2-7:1991
- Low Voltage Directive 2006/95/EC
  EN 60335-1:2002
- R&TTE Directives 1999/5/EC
  ETSI EN 301 489-3 V1.4.1
  ETSI EN 300 220-2 V2.1.2
- RoHS Directive 2002/95/EC

Beuren, 05.07.2012

Ralph Trost
-CE Manager-, -Representative documentation -

Fig. 1 Lumo-868 EC Declaration of conformity

6 Troubleshooting

Fault	Cause	Remedy
Drive does not run, indicator light does not light up	The battery is empty The battery is incorrectly installed	Install a new battery Insert battery correctly
Drive does not run, indicator light lights up	1. The receiver is outside the sending range 2. The receiver is not programmed to respond to the Lumo-868	1. Reduce distance to the receiver 2. Program the Lumo-868
The indicator lamp constantly flashes	Code switch of "Sun" and/or "Twilight" setting mode activated	Check code switch settings

Fault	Cause	Remedy
The roller shutter doesn't function in response to sunlit sensor.	1. The Lumo-868 is in manual mode (sensor off) 2. The threshold for sunshine has not been exceeded. 3. Sun threshold value controller to pos. 0 4. Automatic in the receiver is "off" 5. Sensor is not activated by manual operation	1. Simultaneously pressing the **UP** and **DOWN** buttons until the indicator light turns green 2. Regulate the threshold for sunshine 3. Set a position between 1 and 15 4. Shift receiver via a programmed transmitter in automatic mode 5. Use the **UP** button to trigger a manual rising.
Roller shutter is not driven up to Lumo-868 when the sun protection function is activated	Intermediate position is programmed	Deleting the intermediate position in the receiver

Fig. 14 Troubleshooting at Lumo-868

7 Repair

Please contact your dealer if you have any questions.

Please always provide the following information:

- Item number and name on the type plate
- Type of fault
- Previously occurring and unusual events
- Accompanying conditions
- Own suspicion

8 Address

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Antriebstechnik
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72660 Beuren

Germany
Telephone: +49 7025 13-01
Fax: +49 7025 13-212
info@elero.de
www.elero.com

Please visit our website if you require a contact outside Germany.

9 Disposal

When disposing the product, please observe the then current international, national and regional-specific laws and regulations.

Ensure that material recyclability, dismantling capability and separability of materials and components are also considered as well as environmental and health hazards associated with recycling and disposal.

Material groups, such as plastics and metals of different types, are sorted in order to be lead to the recycling and disposal process.

Disposal of electrical and electronic components:
The disposal and recycling of electrical and electronic components must take place in accordance with the respective laws and state regulations.