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RoIMotion/D+ M Roller Shutter Drive

1 Operating and assembly instructions

Follow these instructions for safe and proper use. Observe all assembly instructions. Incorrect assembly can lead to serious injuries. Please keep this operating manual for future reference to ensure that it can be accessed throughout the entire service life of the product!

The German operating manual is the original version.

All documents in other languages are translations of the original version.

All rights reserved in the case of patent, utility model or design registrations.

2 General information on these instructions

The content structure is based on the life cycles of the electric motor drive (hereinafter referred to as "the product").

The manufacturer reserves the right to make changes to the technical data in these operating instructions. In some cases, this technical data may differ from those of the respective product version; however, the functional information will not undergo significant changes or become invalid. The current version of the technical specifications may be requested from the manufacturer at any time. No claims may be asserted against the manufacturer as a result of this provision. Deviations from textual or visual statements may occur depending on the product's technical development, features and accessories. Deviating information for special versions will be provided by the manufacturer in the sales documentation. Other information shall remain unaffected by these provisions.

2.1 Standards and guidelines

During construction, the fundamental health and safety requirements were applied and provision was made for the appropriate legislation, standards, directives and guidelines. The safety of the product is confirmed by the declaration of conformity (see EC Declaration of Conformity). All information relating to safety in these operating instructions refers to the laws and regulations that are currently valid in Germany. All information in these operating instructions must be complied with at all times and without limitation. In addition to the safety notes in these operating instructions, the regulations on accident prevention, environmental protection and occupational health and safety applicable at the location of use must be observed and adhered to. The regulations and standards for safety assessment can be found in the EC Declaration of Conformity.

2.2 Intended use

The product is intended for use in facade constructions as a drive for electrically powered roller shutters and blinds.

The **elero** calculation program
www.elero.com/en/downloads-service/
 is vital for defining the drive

Other applications must be agreed upon in advance with the manufacturer, **elero** GmbH Antriebstechnik (see "Address").

The plant operator shall be solely responsible for any damages arising from the improper use of this product. The manufacturer cannot be held liable for personal or material damages caused by misuse or procedural errors, nor by improper operation or commissioning.

The product may only be operated by instructed and authorised specialist personnel while observing all safety notes.

The safe and error-free use and operational reliability of the product are only guaranteed when it is used properly according to the specifications contained in these operating and assembly instructions.

Use according to its intended purpose includes the observation and compliance of all safety instructions contained in these operating instructions as well as all valid trade Accident Insurance regulations and valid laws on environmental protection. Use according to its intended purpose also includes the compliance with all prescribed operating regulations in these operating and assembly instructions.

2.3 Foreseeable misuse

Any use that deviates from the intended use as stated by the manufacturer, **elero** GmbH Antriebstechnik (see "Address") is deemed as foreseeable misuse.

2.4 Warranty and liability

The General Terms and Conditions of the manufacturer, **elero** GmbH Antriebstechnik, apply at all times (see "Address"). The conditions of sale and delivery are included in the sales documents and shall be presented to the plant operator upon delivery. Any liability claims for personal or material damages are excluded when they can be attributed to one or more of the following causes:

- Opening the product by the customer
- Improper use of the product
- Improper installation, commissioning or operation of the product
- Structural modifications to the product without the written consent of the manufacturer
- Operation of the product with improperly installed connections, defective safety devices or improperly installed safeguards
- Failure to observe the safety regulations and information presented in these operating instructions
- Failure to observe the specified technical data

2.5 Customer service provided by the manufacturer

In the event of a fault, the product may only be repaired by the manufacturer. The address for sending the product to Customer Service can be found in the Section "Address". If you did not purchase the product directly from **elero**, please contact the supplier of the product.

3 Safety

3.1 General safety instructions

General safety instructions for use of tubular drives can be found in the "Safety instructions" leaflet supplied with each drive (leaflet article number 138200001). These operating and assembly instructions contain all the safety information that must be observed in order to avoid and prevent danger when working with the product in the individual life cycles. When all specified safety instructions are complied with, safe operation of the device is guaranteed.

3.2 Layout of safety instructions

The safety instructions in this document are marked using hazard and safety symbols and are designed according to the SAFE principle. They contain information on the type and source of the danger, possible consequences and on avoiding danger.

The following table defines the representation and description of hazard levels with possible physical damage as used in these operating instructions.




Symbol	Signal word	Meaning
	DANGER	Warns about an accident that will occur if the instructions are not followed, which can lead to fatal, irreversible injuries or death.
	WARNING	Warns about an accident that may occur if the instructions are not followed, which can lead to serious, possibly fatal, irreversible injuries or death.
	CAUTION	Warns about an accident that can occur if the instructions are not followed, which can lead to slight, reversible injuries.

Fig. 1 Notation for personal injuries

The table below describes the pictograms used in these operating instructions to illustrate the hazard situation in relation with the symbol for the hazard level.




Symbol	Meaning
	Danger caused by electrical voltage, electric shock: This symbol indicates dangers due to electric current.

Fig. 2 Notation for specific danger

The table below defines the representation and description of situations used in these operating instructions for situations in which damage can occur to the product or indicates important facts, conditions, tips and information.

Symbol	Signal word	Meaning
	ATTENTION	This symbol warns against possible damage to property or equipment.
	IMPORTANT	This symbol indicates important facts and states as well as referring to further information in these operating and assembly instructions. It also refers to certain additional instructions, which provide additional information or help you to carry out a procedure more simply.


Symbol	Signal word	Meaning
		Symbol indicating successful grounding with protection class I (Protective conductor system)

Fig. 3 Notation for damage to property and additional information

The following example illustrates the basic structure of a safety note:

SIGNAL WORD

Type and source of danger

Explanation of type and source of danger

► Measures to avoid the danger

4 Product description

The RolMotion/D+ M is an electronic tubular drive for roller shutters. During operation it executes radial movements.

- ☐ Commissioning of the RolMotion/D+ M with **elero** assembly cable.
- ☐ Reduced torque in the upper and lower end position.
- ☐ Silent hysteresis brake.
- ☐ Obstacle and blocking detection.
- ☐ Blind protection with free travel (torque limiting).
- ☐ For the automatic detection and programming of the end positions as well as for the reference runs (plug & play), fixed stop points or angle brackets and rigid shaft connectors are required at the top and bottom.
- ☐ The height of the blind must be adapted so that the push-up protection (burglary protection) functions reliably.
- ☐ Observe the relevant specifications of the roller shutter manufacturer.
- ☐ Cyclical reference runs compensate for changes in the winding behaviour of the roller blind slats.
- ☐ In addition to the usual travel profile (standard mode travel profile), the RolMotion/D+ M drive also has a reduced-speed travel profile (quiet mode travel profile).
- ☐ Slow travel when placing the roller blind slats.

4.1 Product contents

Drive with safety instructions and operating instructions and any additional components and accessories according to the order confirmation or delivery note.

4.2 Accessories

Connection and assembly cable, adapter sets, rigid shaft connector, motor bearing, ProLine control units, radio receivers, radio sensors.

5 Assembly

WARNING

Important safety instructions

Observe all assembly instructions. Incorrect assembly can lead to serious injuries.

- Commissioning of the RolMotion/D+ M with **elero** assembly cable for setting various functions.
- Before installation, all cables and components that are not required and all facilities that are not needed for operation with a power drive are to be disabled.
- The required components are: drive, connection and assembly cable, motor bearing, adapter sets, if necessary rigid shaft connectors, sensors, control devices, receivers.
- If components are not delivered with the drive, these can be identified via our catalogue "Drives and control units for intelligent building technology" in the relevant valid version. Further details can be found on our website under "Contact - dealer search" and "Contact - contact persons for specialist companies".
- The rated torque and rated operating time must be suitable for the properties of the driven part (the blind).
- The coupling of the drive with the powered part is described in the section "Mechanical fastening".

CAUTION

Risk of injuries due to hot surfaces.

The drive will heat up during operation, the drive casing can become hot. Skin burns are possible.

- Wear personal protection equipment (protective gloves).
- Triggered by a possible material fault, knocks or impact injuries may arise due to a gear fracture, burring fracture or a coupling defect.
- Suitable materials have been used for the engineering design and random sample testing by means of a double load test has been performed in accordance with DIN EN 60335-2-97.

Risk of injury due to knocks or impact triggered by motor bearings that are incorrectly mounted or engaged. Hazard due to insufficient stability or steadiness and accumulated energy (gravity).

- Selection of motor bearing by torque specifications.
- The drive must be protected with all the enclosed safety devices.
- Check for correct engagement on motor bearing and the correct screw tightening torques.

WARNING

Risk of injury due to electric current.



Risk of electric shock.

- Always have electrical work carried out by an authorised electrician.

Risk of injury due to electric current.



Possible danger due to parts that are faulty becoming energised.

- The drive falls under protection class I (protective conductor system). All housing parts of the drive capable of conducting electricity are connected with the protective conductor system of the fixed electrical installation, which is located at potential earth. The protective conductor connection is designed so that, the first time the plug is inserted, it is connected first and, in case of any damage, it is disconnected last. The connecting cable is fitted with mechanical strain-relief when inserted in the drive. If the cable is torn out, the protective conductor will be torn off last. If, in case of a fault, a live cable comes into contact with the housing, which is connected with the protective conductor, a short circuit will generally arise so that the fuse itself is triggered and de-energizes the electric circuit. No electricity will be conducted to human beings in case of a fault. 4-core connecting cables (4 x 0.75 mm² cross-section with black CONINVERS plug) are used for the electrical connection with an earthing contact that is conducted to the exterior.



CAUTION

Risk of injury due to malfunctions as a result of incorrect assembly.

Drive is overwound and may destroy parts of the application.

- For safe operation, the end positions need to be set/taught.
- Manufacturer training is available for specialist companies.

ATTENTION



Power failures, breaking of machine parts and other malfunctions.

- For safe operation, assembly must be correct and the end position adjustments will have to be carried out upon commissioning.



Damage to RolMotion due to ingress of moisture.

- On devices with protection class IP 44, the ends of all cables or plugs will need to be protected from ingress of moisture. This measure needs to be implemented after removing the RolMotion/D+ M from the original packaging.
- The drive must be installed so that it cannot get wet.

Important



In its delivery condition (factory setting), the RolMotion/D+ M will be in commissioning mode.

- The end positions will need to be set (see section 5.6).

5.1 Mechanical fastening

Important preliminary consideration:

The working area around the installed drive is usually very small. For this reason, obtain an overview of how the electrical connection has been implemented prior to the mechanical installation (see section 5.2) and make the necessary changes beforehand.

ATTENTION



Crushing or tension will damage the electrical cables.

- Install all electrical cabling so that it is not subject to any crushing or tensile load
- Observe the bending radii of cables (at minimum 50 mm).
- Route connecting cables in a downward loop to prevent water running into the drive.



Damage to the drive due to the effect of impact forces.

- Slide the drive into the shaft. Never knock the drive in or use force!
- Take care not to drop the drive!



Damage or destruction to the drive by drilling.

- Never drill the drive!

Important



Only fasten the RolMotion/D+ M to the designated fastening elements.

Fixed installed control devices need to be attached so they are visible.

- The blind must be attached to the winding shaft.
- The profile tube must have sufficient clearance from the motor tube.
- Make sure there is sufficient axial play (1 - 2 mm)

Installation in profile tubes

- Ⓐ Push drive with relevant adapter and crown into the profile tube.

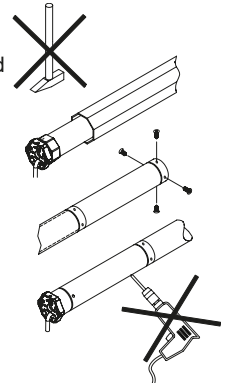
Install the motor cable so it is protected to prevent damage from the driven part.

- Ⓑ Secure the counterpart support to prevent axial movement, e.g. screw or rivet on the idler.

Secure the drive axially in the support!

- Ⓒ Attach the blind to the shaft.

Only operate the drive horizontally, as intended, with the connection cable leading out from the side and out of the blind winding area.



5.2 Electrical connection



WARNING

Faulty electrical connections constitute a fatal hazard.



Risk of electric shock.

- Prior to initial commissioning, check the PE wire is correctly connected.

ATTENTION



Damage to the RolMotion/D+ M due to incorrect electrical connection.

- Prior to initial commissioning, check the PE wire is correctly connected.



Ingress of moisture will damage or even destroy the RolMotion/D+ M.

- For devices with protection class IP 44, the customer-side connection of the cable ends or plugs (cable feed-through) can also be implemented according to protection class IP 44.



Damage or destruction of the RolMotion/D+ M for variants with 230 V ~ due to incorrect activation.

- Switches with an OFF presetting (dead-man's switches) for drives are to be attached within visible range of the RolMotion/D+ M but away from spontaneously moving parts and at a height of more than 1.5 m.

Connect only in de-energised state. To do this, switch the drive cable so it is de-energised.

- 1 Press locking mechanism on the motor cable plug towards the cable using a suitable screwdriver.

2 Pull out the plug.

3 Insert the motor cable plug until the lock engages.

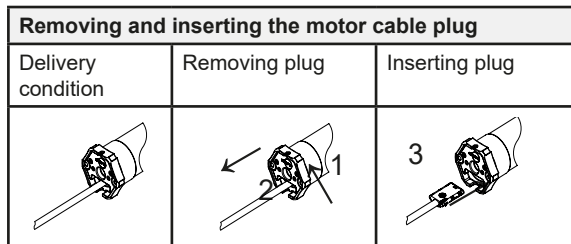


Fig. 4 Removing and inserting the motor cable plug

5.3 Connection example for RolMotion/D+ M 230 V / 50 Hz

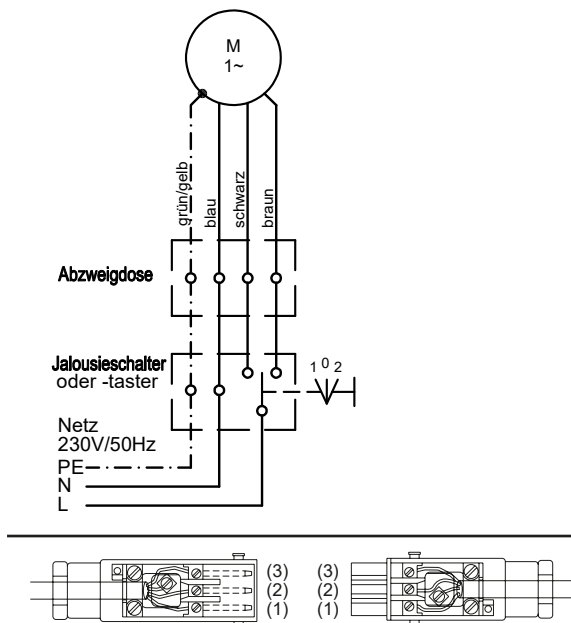


Fig. 5 Connection diagram RolMotion/D+ M 230 V / 50 Hz and cable assignment when using Hirschmann plug connection STAS-3

Important

- The motor controls in the Open and Down/Closed travel directions must be locked against each other.
- A switching time of at least 0.5 seconds must be observed.

5.4 Parallel circuit

Important

- You can connect up to 3 (maximum) RolMotion/D+ M in parallel. Please note the maximum switching capacity of the control unit.
- However, the behaviour of the devices is not synchronous.
- Do not connect the RolMotion/D+ M drive in parallel with other drives (e.g. elero RolTop M).

5.5 Commissioning

Important

- The drive is in commissioning mode when delivered.
- The end positions may need to be adjusted using the **elero** assembly cable (see Fig. 6).
- The assembly cable may only be connected to commission the drive and for adjustment operations

5.5.1 Connection for assembly cable

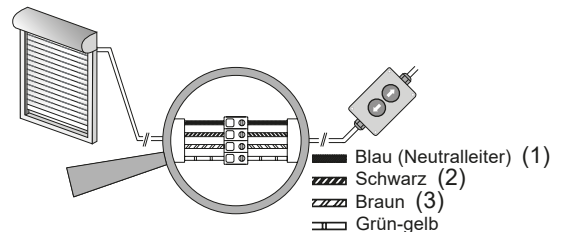


Fig. 6 Connection for assembly cable

- Switch on mains.
- You can now set the end positions with the **elero** assembly cable.

5.5.2 Automatic configuration of end positions

Important

- To use travel profiles, the upper and lower end positions must first be set. During the "Setting the end positions" process, the blind moves in the "Standard mode" travel profile.

Automatic programming of end positions

1	Connect the electric power in accordance with section 5.2.
2	Check for functioning: If necessary, change or swap the assignment of the direction buttons for the operating switch/push button.

The drive switches off automatically when the upper or lower limit stop is reached.

The teaching process is completed due to subsequent travel of the shutter.

5.5.3 Changing/deleting the end positions

It is not possible to change or delete individual end positions. This is always done in pairs (upper and lower end position simultaneously).

Changing/deleting the end positions

1	Switch on mains
2	Use the assembly cable to bring the blind to a central position.
3	Press both direction keys [UP ▲]+[DOWN/CLOSE ▼] simultaneously.

The drive travels up and down briefly after approx. 5 seconds.

The end position settings have been deleted.
The end positions are configured again automatically as described in chapter 5.5.2.

Important

- After deleting the end position, the travel profile default mode is active. See also chapter 6.

6 Travel profiles

The RolMotion/D+ M drive has two travel profiles, standard mode and quiet mode.

6.1 Standard mode

When travelling at high speed, only the roller blind slats are lowered slowly.

This travel is triggered by simply turning on the wall switch/button.

6.2 Quiet mode

Travel at slow speed along the entire travel path.

This travel is actuated by "double-tapping" at power up (On - Off - On) or during travel by switching off and on again in the same direction of travel. The duration of the switched-off state must be more than one second.

To change to the standard mode travel profile, the drive must be switched off for one second.

The quiet mode travel profile is not available during the "Setting the end positions" operation.

6.3 Changing the travel profile

The user can decide whether the default mode or the whisper mode is to be used for a simple keystroke or an automatic run command (e.g. from a timer). If the key is pressed twice, the other travel profile is activated.

Requirements:

- Endpositions are learned
- Changing the travel profile is only possible on upper or lower limit stop.
- Direction switch ([button UP ▲] or [button DOWN/CLOSE ▼]) must be de-energised for at least 2 seconds.
- The other - currently not active - travel profile is activated by pressing one of the two following button sequences:
 - On upper end position
[UP ▲] 1 s, [UP ▲] 1 s, [UP ▲] 1 s,
[DOWN/CLOSE ▼] 1 s,
[DOWN/CLOSE ▼] 1 s,
[DOWN/CLOSE ▼] 3 s.
 - On lower end position
[DOWN/CLOSE ▼] 1 s,
[DOWN/CLOSE ▼] 1 s,
[DOWN/CLOSE ▼] 1 s,
[UP ▲] 1 s, [UP ▲] 1 s, [UP ▲] 1 s.

the pauses between the individual keystrokes must not be longer than 1 s.

Important

For wired control units the run command [button UP ▲] or [button DOWN/CLOSE ▼] must be aborted manually as follows:

- On upper end position
[UP ▲] 1 s, [STOP ■],
[UP ▲] 1 s, [STOP ■],
[UP ▲] 1 s, [STOP ■],
[DOWN/CLOSE ▼] 1 s, [STOP ■],
[DOWN/CLOSE ▼] 1 s, [STOP ■],
[DOWN/CLOSE ▼] 3 s.
- On lower end position
[DOWN/CLOSE ▼] 1 s, [STOP ■],
[DOWN/CLOSE ▼] 1 s, [STOP ■],
[DOWN/CLOSE ▼] 1 s, [STOP ■],
[UP ▲] 1 s, [STOP ■],
[UP ▲] 1 s, [STOP ■],
[UP ▲] 3 s.

7 Troubleshooting

Problem / Error	Possible cause	Remedial action
• The drive does not start up	<ul style="list-style-type: none"> • No power supply • Drive over-heated 	<ul style="list-style-type: none"> • Check connection and electrical voltage • Allow drive to cool down

Problem / Error	Possible cause	Remedial action
• Drive runs only in one direction	<ul style="list-style-type: none"> • Faulty connection • Error when programming the end positions 	<ul style="list-style-type: none"> • Check connection • Re-program the end positions
• Drive stops during travel	<ul style="list-style-type: none"> • End positions incorrectly programmed • Travel to intermediate position 	<ul style="list-style-type: none"> • Re-program the end positions
• Drive stops during travel and then goes in the opposite direction	<ul style="list-style-type: none"> • Blind only moves with difficulty • Obstacle in drive path 	<ul style="list-style-type: none"> • Check the smooth running of the blind • Re-program the end positions
• Drive only moves in standard mode	<ul style="list-style-type: none"> • End positions are not yet programmed 	<ul style="list-style-type: none"> • Perform at least two complete movements in the up and down direction without interruption

Fig. 7 Troubleshooting the RolMotion/D+ M

8 Servicing

The RolMotion/D+ M is maintenance-free.

9 Service/manufacturer's address

If malfunctions occur or the device is damaged despite correct handling, contact your contractor.

elero GmbH Antriebstechnik Maybachstr. 30 73278 Schlierbach Deutschland / Germany	Fon: +49 7021 9539-0 Fax: +49 7021 9539-212 info@elero.de www.elero.com
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Please visit our website if you require a contact partner outside Germany.

10 Repairs

Please contact your specialist if you have any questions. Please always provide the following information:

- Item number and designation on the type plate
- Type of fault
- Accompanying conditions
- Your own theories regarding the cause of the problem

11 Disassembly and disposal

After unpacking, dispose of the packaging in accordance with the valid regulations.

Dispose of the product in accordance with the relevant regulations when you no longer need it. Disposal is partially subject to applicable legal regulations. Bring the product to be disposed of to authorised collection points only.

Environmental information

No superfluous packaging materials have been used. The packaging can be easily separated into three material types: cardboard (box), polystyrene (padding) and polyethylene (bag, protective foam).

The device is made of materials that can be reused if dismantled by a specialist company. Please note the local regulations on disposal of packaging materials and old appliances.

On disassembly, additional dangers must be reckoned with, which do not occur during operation.

Before disassembling the drive the system is to be mechanically secured. The drive must not be forcibly disconnected from the system.



WARNING

Risk of injury due to electric current.

Risk of electric shock.

- Separate power supply cables physically and discharge any energy accumulators still charged. After switching off the device, wait at least 5 minutes so that the motor can cool down and the voltage can be discharged from the capacitors.
- During disassembly work above head height, use suitable, inspected and structurally stable climbing aids.
- Work on the electrics may only be performed by personnel described in the section "Safety notes on electrical installation".

Removal for scrap

The international, national and regional laws and regulations prevailing at the time of scrapping the product must be observed.



Ensure that materials and components are recycled, dismantled and separated properly in addition to observing the environmental and health hazards relating to recycling and disposal.



CAUTION

Environmental damage in case of incorrect disposal

- Electrical scrap and electronic components must be handled as special waste and may only be disposed of by approved specialist companies.
- Groups of materials such as various types of plastics and metals must be separated before recycling/disposal.

Disposal of electrical and electronic components

The disposal and recycling of electrical and electronic components must be carried out in accordance with the relevant laws and national regulations.

13 Technical data and dimensions




The technical data specified is subject to tolerance factors (according to applicable standards) and refer to an ambient temperature of 20 °C.

12 Comments on EU Declaration of Conformity

elero GmbH hereby declares that the RolMotion/D+ M tubular drive is in compliance with all applicable regulations of Machinery Directive 2006/42/EC and the Directive 2014/53/EU. The full text of the EU Declaration of Conformity is available at the following Internet address:
www.elero.com/downloads-service/

Technical data and dimensions

13.1 RoIMotion/D+ M

Size / Type	RoIMotion/ D+ M6	RoIMotion/ D+ M10	RoIMotion/ D+ M20	RoIMotion/ D+ M25
Rated torque [Nm]	6	10	20	25
Rated speed [rpm]	14	14	14	14
Speed in motion travel profile [rpm]	5	5	5	5
Rated voltage [V]	1 ~ 230	1 ~ 230	1 ~ 230	1 ~ 230
Rated frequency [Hz]	50	50	50	50
Noiseless soft brake	■	■	■	■
Rated current [A]	0.4	0.5	0.8	1.1
Rated power consumption [W]	92	115	184	253
Shaft diameter [mm]	50	50	50	50
Degree of protection (IP-Code)	44	44	44	44
Limit switch range (revolutions)	70	70	70	70
Operating time (min. S2)	10	10	10	5
Length C [mm]	466	466	527	556
Length D [mm]	449	449	510	539
Length E [mm] (elero, round head, star head)	14 12 19	14 12 19	14 12 19	14 12 19
Weight [kg]	1.7	1.7	2.1	2.5
Ambient operating temperature [°C]	-20 to 60	-20 to 60	-20 to 60	-20 to 60
Protection class I 	■	■	■	■
Conformity  	- . -	- . -	- . -	- . -
Plug-in connection cable [m]	2.0	2.0	2.0	2.0
Item number (elero head RH round head SH star head)	440130001 480130001 490130001	440230001 480230001 490230001	440330001 480330001 490330001	440430001 480430001 490430001

