



## Control modules for moduhub modules



Figure 1: Control module for one moduhub lifting module



Figure 2: Supply unit for 1 moduhub lifting modul with memory function



Figure 3: Supply unit for 2 moduhub lifting modules with synchronization control with and without memory function

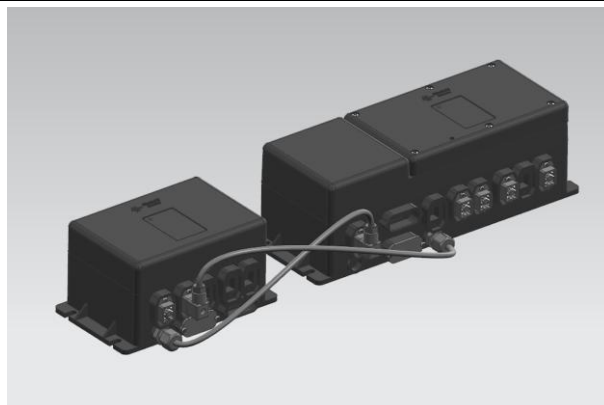


Figure 4: Supply unit for 3 or 4 moduhub lifting modules with synchronization control with and without memory function

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## 1 Description of the product

### 1.1 Control module

This control module is used for power supply and control of one moduhub module and one hand panel or foot switch with 24 VDC.

The control module is equipped with a powerful ring-type transformer with slight magnetic stray fields.

The overload protection is guaranteed by a temperature switch in the transformer.

In addition, there is an electronic current limitation and an excess current release.

All connections are designed as plug-in connections secured by screws.

### 1.2 Control modules for synchronization control:

This control module is used for power supply and control of 2, 3 or 4 lifting modules and one hand panel or foot switch with 24 VDC.

The electronic control is so designed that the modules can be operated with synchronization control.

The control module is equipped with a powerful ring-type transformer with slight magnetic stray fields.

The overload protection is guaranteed by a temperature switch in the transformer.

In addition, there is an electronic current limitation and an excess current release.

All connections are designed as plug-in connections secured by screws.

## 2 Validity of the documentation

This document applies to the following products:

Control modules of the data sheet M8.200. The following types or part numbers are concerned:

### Control module

- 3821 246 for 1 module
- 3821 416 for 2 modules in synchronization control
- 3821 417 for 3 modules in synchronization control
- 3821 418 for 4 modules in synchronization control

### Control module with memory function

- 3821 415M for 1 module
- 3821 416M for 2 modules in synchronization control
- 3821 417M for 3 modules in synchronization control
- 3821 418M for 4 modules in synchronization control

## 3 Target group of this document

- Specialists, fitters and set-up men of machines and installations with expert knowledge in electrical engineering.

### Qualification of the personnel

**Expert knowledge** means that the personnel must

- be in the position to read and completely understand technical specifications such as circuit diagrams and product-specific drawing documents,
- have expert knowledge (electric, hydraulic, pneumatic knowledge, etc.) of function and design of the corresponding components.

An **expert** is somebody who has due to its professional education and experiences sufficient knowledge and is familiar with the relevant regulations so that he

- can judge the entrusted works,
- can recognize the possible dangers,
- can take the required measures to eliminate dangers,
- knows the acknowledged standards, rules and guidelines of the technology.
- has the required knowledge for repair and mounting.

## 4 Symbols and signal words

### **WARNING**

#### Person damage

Stands for a possibly dangerous situation.

If it is not avoided, death or very severe injuries will result.

### **CAUTION**

#### Easy injuries / property damage

Stands for a possibly dangerous situation.

If it is not avoided, minor injuries or material damages will result.



#### Hazardous to the environment

The symbol stands for important information for the proper handling with materials that are hazardous to the environment.

Ignoring these notes can lead to heavy damages to the environment.

### **Note**

This symbol stands for tips for users or especially useful information. This is no signal word for a dangerous or harmful situation.

## 5 For your safety

### 5.1 Basic information

The operating instructions serve for information and avoidance of dangers when installing the products into the machine as well as information and references for transport, storage and maintenance.

Only in strict compliance with these operating instructions, accidents and property damages can be avoided as well as trouble-free operation of the products can be guaranteed.

Furthermore, the consideration of the operating instructions will:

- avoid injuries
- reduce down times and repair costs,
- increase the service life of the products.

## 5.2 Safety instructions

### **WARNING**

#### **Injury / burning due to contact with energized parts!**

- Before working on electric equipment, the energized parts must be de-energized and secured.
- Do not open protection covers at electric parts.
- All electrical works must only be realised by electricians.

#### **Injuries, material damages or malfunctions!**

Modifications can lead to weakening of the components, reduction in strength or malfunctions.

- Do not modify the product!

#### **Injuries due to non-compliance of the operating instructions!**

- The product may only be operated, if the operating instructions - especially the chapter "Safety instructions" have been read and understood.

#### **Injuries due to misuse, incorrect operation or abuse!**

Injuries can occur if the product is not used within the intended use and the technical performance data.

- Before start up, read the operating instructions!

#### **Danger of injury due to a lifting or lowering movement!**

- Switch off the mains before cleaning and maintenance works.

### **CAUTION**

#### **Fixing the connecting cable**

Connection cable can be damaged.

- The cables must be fixed by the user so that no bending and tensile stress will act and the cable cannot be damaged in any way.

#### **Material damage, damage or functional failure**

Aggressive cleaning agents can cause damage, especially to seals.

The product must not be cleaned with:

- corrosive or caustic substances or
- organic, solvents such as halogenated or aromatic hydrocarbons and ketones (cellulose thinner, acetone, etc.).

#### **All work by service personnel only!**

- All works only to be effected by ROEMHELD service staff.

## 5.3 Product-specific safety instructions

### 5.3.1 Safety hazards

- If the product or one of the associated components are visibly impaired in their function or if external damage is visible, the equipment must no longer be operated. In this case, the product should be immediately disconnected from the mains!
- The system must only be operated if the lifting modules and the load are securely fixed!
- Consider the admissible maximum load!
- The housing of the control module must never be opened!
- The plug-type connectors must only be connected and disconnected in idle mode of the control module!
- In the case of opened plug-type connectors, the precautions against electrostatic discharge (ESD) must be taken. Open plug contacts must not be touched.

## 6 Application

### 6.1 Intended use

The products are used for industrial applications to operate lifting modules as per data sheet M4.XXX.

Furthermore the following belongs to possible uses:

- Use only within closed, low-dust rooms
- Use within the capacity indicated in the technical data sheets.
- Use as per operating instructions.
- Qualified and trained personnel for the corresponding activities.
- Mounting of spare parts only with the same specifications as the original part.

### 6.2 Misapplication

#### **WARNING**

#### **Injuries, material damages or malfunctions!**

Modifications can lead to weakening of the components, reduction in strength or malfunctions.

- Do not modify the product!

The use of the products is not authorised:

- For domestic use.
- For use at fairgrounds and amusement parks.
- In food processing or in areas with special hygiene regulations.
- In mines.
- In ATEX areas (in explosive and aggressive environments, e.g. explosive gases and dusts).
- If physical effects (welding currents, vibrations or others) or chemically acting media damage the seals (resistance of the seal material) or components and this can lead to functional failure or premature failure.

**Special solutions are available on request!**

## 7 Installation

### 7.1 Design

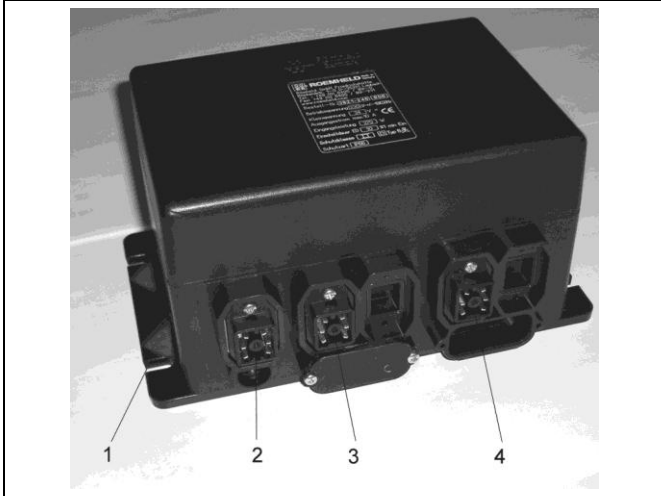


Figure 5: Supply unit for 1 modulog lifting module

1 Fastening plate	3 Plug connection for one lifting module
2 Plug connection for mains cable	4 Plug connection for hand panel or foot switch

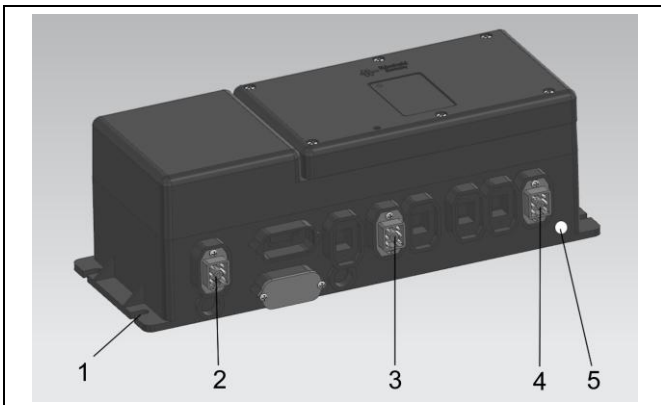


Figure 6: Control module for 1 moduhub lifting modul with memory function

1 Fastening plate	4 Plug connection for hand panel
2 Plug connection for mains cable	5 Luminous diode (trouble)
3 Plug connection for lifting modul	

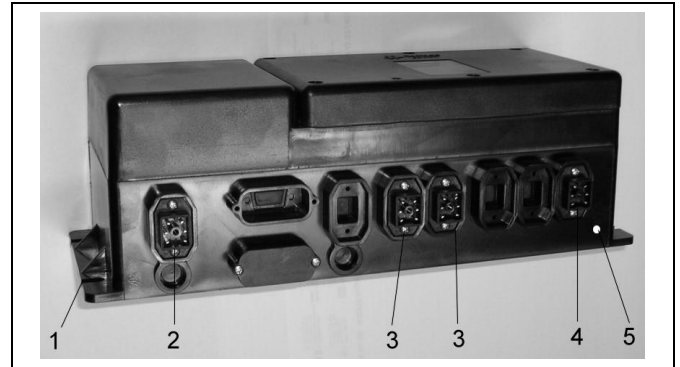


Figure 7: Control module for 2 moduhub lifting modules with synchronization control

1 Fastening plate	4 Plug connection for hand panel or foot switch
2 Plug connection for mains cable	5 Luminous diode (trouble)
3 Plug connections for lifting module	

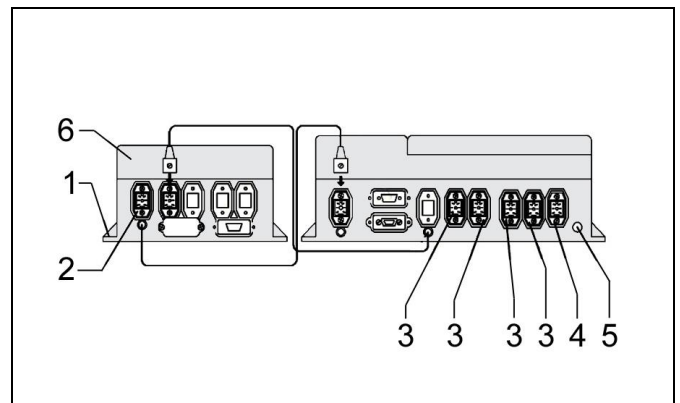


Figure 8: Supply unit with auxiliary power supply for 3 or 4 moduhub lifting modules with synchronization control

1 Fastening plate	4 Plug connection for hand panel or foot switch
2 Plug connection for mains cable	5 Luminous diode (trouble)
3 Plug connections for lifting module	6 Auxiliary power supply

## 7.2 Fixing of the product

### ⚠ CAUTION

#### Fixing the connecting cable

Connection cable can be damaged.

- The cables must be fixed by the user so that no bending and tensile stress will act and the cable cannot be damaged in any way.

The control module has to be fixed - according to the dimensional drawing of the installation sheet - with screws M6, washers above the fastening plates of the housing and a screw safety element, e.g. a tooth lock washer. The tightening torque is 0.9 Nm. It has to be considered that no mechanical loads are transmitted to the housing. Due to different thermal heat expansion of housing and mounted component, e.g. during cleaning, inadmissible forces can act upon the housing of the control module. It must be considered that the fixing screws in the fastening plates of the housing have sufficient space for their longitudinal compensation.

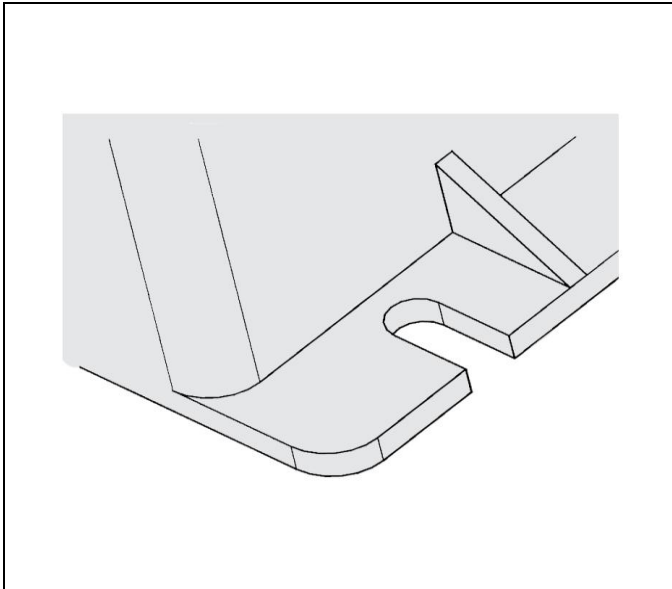


Figure 9: Fastening plate for the control module

## 8 Start up

### ⓘ NOTE

When using lifting modules with synchronization control, the following conditions must be met.

- All lifting units must be arranged parallel to each other and aligned. Especially in case of high loads on the system, considerable friction forces can occur in case of insufficient parallelism due to deformation of the system which can impair their function.
- The load must be located so that a small difference in height of the lifting modules cannot lead to a possible danger of persons or forced conditions between the lifting modules.
- A bearing with longitudinal compensation transverse to the lifting modules (fixed bearing-floating bearing) or an elastic buffer between the lifting modules and the fixtures is recommended.

### ⚠ WARNING

#### Injury / burning due to contact with energized parts!

- Before working on electric equipment, the energized parts must be de-energized and secured.
- Do not open protection covers at electric parts.
- All electrical works must only be realised by electricians.

### ⚠ CAUTION

#### Fixing the connecting cable

Connection cable can be damaged.

- The cables must be fixed by the user so that no bending and tensile stress will act and the cable cannot be damaged in any way.

To operate one or several lifting modules one of the control modules listed in the following, a hand panel or foot switch and a mains cable is required.

### ⓘ NOTE

#### Use only original components

- Only the components which belong to the system must be operated (see list). Components, which do not belong to the system or not permitted devices must under no circumstances be connected.

### ⓘ NOTE

#### Electrical operating elements, lines and connectors

- See data sheet M8.203

- 1 Connection of the lifting module(s) to the control module. The cable bushing of the lifting module must be put into the provided plug connector in the housing of the control module. Then the screw of the cable bushing has to be tightened with a torque of 0.4 Nm.
- 2 Connection of the hand panel or foot switch to the control module. The cable bushing module must be put into the provided plug connector in the housing of the control module. Then the screw of the cable bushing has to be tightened with a torque of 0.4 Nm.
- 3 Connection of mains cable, for power supply the mains cable (accessory M8.203) must be put into the provided plug connector in the housing of the control module and into the power supply (see technical characteristics).
- 4 Carry out setting mode

### ⓘ NOTE

#### Use auxiliary power supply for components

- The control modules for 3 and 4 moduhub modules have an additional auxiliary power supply. This must be connected with the control module. (see figure 5).



## 8.1 Setting mode



Figure 10: Operating panel

a Direction keys up/down	c Memory function
b Connector plug	d Position push-button 1-5

### Setting mode

Control modules with memory function or synchronization control are equipped with a setting mode that enables the control to operate lifting modules with different force levels and stroke lengths. Therefore, the control module with memory function or synchronization control must be adapted to the connected lifting module at the time of initial commissioning. For this purpose, an automatic teaching process is integrated. It must be started by the user.

For the setting mode, all components have to be connected according to the chapter setting mode. The lifting modules should be operated in idle mode. That means that no load should be applied to the lifting modules.

### ⚠ CAUTION

#### Injury or material damage due to moving components!

- The lifting modules move in setting mode. Protect the working area from third parties. Sufficiently fix setups, etc.
- When releasing the operating panel signals Up (↑) and Down (↓), the motion is stopped.
- For setup, the operating panel signals Up (↑) and Down (↓) must be pressed until the setting mode is complete.
  - The movement is stopped by releasing the push-buttons. Then the setting process must be started again.
  - After approx. 5 seconds all lifting modules start to retract non-synchronously until the integrated limit switches are reached. Thus, the zero position of the lifting modules is determined.
  - After another 5 seconds, the lifting modules start to extend. This determines the stroke length.
  - As soon as the lifting modules reach their mechanical end position, the switch-off position is determined and permanently stored.
  - The signals are now deactivated.

### i NOTICE

#### Top position reached and signal sounds

- Once the top position has been reached and the signal sounds, the setting mode is complete. The Up and Down push-buttons must then no longer be pressed.
- Check whether the final positions have been correctly reached by retracting (↓) and extending (↑). If malfunctions occur, the setting mode has to be repeated.
- In the event of faults or deviations in synchronism of the lifting modules during operation, an initialization of the lifting modules can be made in setting mode. For this purpose, the process can be interrupted, once all lifting modules have reached the retracted end position.

### i NOTICE

#### Limited check for faults in setting mode

- Note that only a limited check for faults is carried out in setting mode. Due to the missing synchronization during retraction, there can be considerable variations in position of the lifting modules depending on the fault!

#### Setting mode in the event of potential faults

- In principle, the setting mode is also possible in the event of potential faults. It is not necessary to re-initialize the control in setting mode after a voltage drop. The control is initialized every time the lifting modules move to their lowest position.

## 9 Operation

### 9.1 Lifting and lowering

#### 9.1.1 Electrical hand panel and foot switch for the operation of electrical modules.



Figure 11: Hand panel and foot switch

By operating the direction key up(↑) or down(↓) at the hand panel or foot switch the connected lifting modules are extended or retracted. Due to the touch control the respective direction key must remain operated during lifting and/or lowering. An electronic current limitation in the control module protects the lifting module against overload. If the lifting module works longer than 1 second in the range of the current limitation, for example due to overload, the stroke module is switched off. The function is restored after release of the push-button operation.

#### **NOTE**

##### Electrical current limitation

- See data sheet M8.200

#### 9.1.2 Electrical operating panel for the operation of electrical modules with memory function



Figure 12: Operating panel

a	Direction keys up/down	c	Memory function
b	Connector plug	d	Position push-button 1-5

The operating panel has six push-buttons:

- Two directional keys Up(↑) or Down(↓) to adjust the position of the lifting modules.,
- the memory key - memory function (M) and
- position push-buttons (1), (2), (3), (4) and (5).

By pressing the directional key Up (↑) or Down (↓) the lifting modules are moved to the desired position.

In order to store the position, proceed as follows:

- Press push-button (M) simultaneously with one of the position push-buttons (1), (2), (3), (4) or (5) or
- push-button (M) and then one of the position push-buttons, where the position shall be stored.

Then the stored positions can be approached by pressing the position push-buttons (1), (2), (3), (4) or (5) in push-button mode.

The stored positions are durably kept until they are overwritten by a new storage process.

The electronic current limitation integrated in the control module protects the lifting modules and the power supply against overload.

If the control module works longer than 2 second with current limitation, all actuators will be switched off. The function is restored after release of the push-button operation.

#### **NOTE**

##### Electrical current limitation

- See data sheet M8.200

## 10 Maintenance

### 10.1 Plan for maintenance

Maintenance works	Interval	by...
Visual inspection and cleaning	daily	operator
Check fixing screws, cable fixings and fittings, re-tighten if required.	half-yearly checks	expert
The electrically connected components must be checked by an expert at regular intervals, but at least once a year.	yearly checks	expert
Repair	in case of damages	ROEMHELD service staff

### NOTE

#### Qualification of the personnel

- Pay attention to the qualification of the personnel.

### 10.2 Cleaning

#### CAUTION

#### Material damage, damage or functional failure

Aggressive cleaning agents can cause damage, especially to seals.

The product must not be cleaned with:

- corrosive or caustic substances or
- organic, solvents such as halogenated or aromatic hydrocarbons and ketones (cellulose thinner, acetone, etc.).

The following cleaning works have to be effected daily at the components.

- Clean with cleaning clothes or cleaning rags.

#### 10.2.1 Daily checks

#### WARNING

#### Danger of injury due to a lifting or lowering movement!

- Switch off the mains before cleaning and maintenance works.

- Visual inspection of all parts

#### 10.2.2 Half-yearly checks

#### WARNING

#### Danger of injury due to a lifting or lowering movement!

- Switch off the mains before cleaning and maintenance works.

- Check all fixing screws, retighten if required.

#### 10.2.3 Yearly checks

#### WARNING

#### Danger of injury due to a lifting or lowering movement!

- Switch off the mains before cleaning and maintenance works.

The electrically-connected components must be checked by an expert at regular intervals, but at least once a year.

The check has to include:

- Perfect functioning
- The condition of the components
- Test as per DGUV regulation 3

#### 10.3 Repair

Repair works may only be effected by the ROEMHELD service technicians.

## 11 Trouble shooting

#### WARNING

#### Injury / burning due to contact with energized parts!

- Before working on electric equipment, the energized parts must be de-energized and secured.
- Do not open protection covers at electric parts.
- All electrical works must only be realised by electricians.

#### CAUTION

#### All work by service personnel only!

- All works only to be effected by ROEMHELD service staff.

Trouble	Cause	Remedy
Top plate of the operated lifting module does not lift or lower after the operation of the button	No power supply	Check power supply
Top plate of the operated lifting module does not lift or lower after the operation of the button	Plug connection between two modules is loose	Check all plug connections of the system



### 11.1 Failure handling (only for synchronization controls)

At the control module, there is a luminous diode. This luminous diode signals if the system is ready for work or gives information in case of a fault.

If the control module is ready for work, the luminous diode is constantly lit. If there is a fault, the luminous diode goes out for one second. Then there is a certain number of flashing impulses. The number of impulses is identical with the fault number listed in the following table. After the sequence of impulses there is again a break of 1 second and then again a number of impulses. This procedure is continuously repeated until the remedy of the fault. By counting the impulses, it is easy to determine the fault number.

In case of faults the lifting modules can only be moved in setting mode thereby the trouble is normally reset. Generally faults are reset by switching off and on the control module by means of the mains plug.

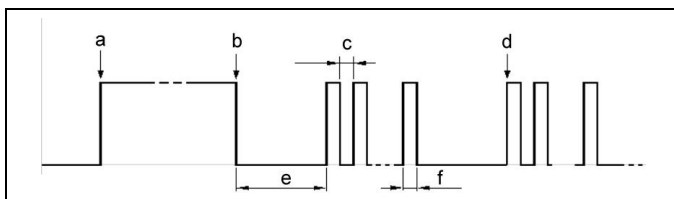


Figure 13: Flow chart of fault signals

a	mains on	d	n impulses
b	fault	e	1.0 sec
c	0.2 sec	f	0.2 sec

Fault number	Fault description
1	Internal fault of the control module. Different faults are summed up below this fault number.
2	Control fault lifting module 1: The motor of the lifting module cannot be controlled. The reason is probably a faulty plug connection to the lifting module. Also a defect motor or a defect control element in the control module could be the reason for this.
3	Control fault lifting module 2: The motor of the lifting module cannot be controlled. The reason is probably a faulty plug connection to the lifting module. Also a defect motor or a defect control element in the control module could be the reason for this.
4	Control fault lifting module 3: The motor of the lifting module cannot be controlled. The reason is probably a faulty plug connection to the lifting module. Also a defect motor or a defect control element in the control module could be the reason for this.
5	Control fault lifting module 4: The motor of the lifting module cannot be controlled. The reason is probably a faulty plug connection to the lifting module. Also a defect motor or a defect control element in the control module could be the reason for this.
6	Missing stroke information of the lifting module 1. If there is no change of the stroke signal within the programmed time, this will be interpreted by the control as fault. A possible reason can be a failure of the measuring system or the lifting module. Also an overload, where the

	actuator is in excess current release, can cause such a fault.
7	Missing stroke information of the lifting module 2. If there is no change of the stroke signal within the programmed time, this will be interpreted by the control as a fault. A possible reason can be a failure of the measuring system or the lifting module. Also an overload, where the actuator is in excess current release, can cause such a fault.
8	Missing stroke information of the lifting module 3. If there is no change of the stroke signal within the programmed time, this will be interpreted by the control as a fault. A possible reason can be a failure of the measuring system or the lifting module. Also an overload, where the actuator is in excess current release, can cause such a fault.
9	Missing stroke information of the lifting module 4. If there is no change of the stroke signal within the programmed time, this will be interpreted by the control as a fault. A possible reason can be a failure of the measuring system or the lifting module. Also an overload, where the actuator is in excess current release, can cause such a fault.
10	Too large deviation of the internal stroke information. This fault can occur, if a limit switch gives a faulty signal. The position of the corresponding lifting module would be replaced, while the remaining lifting modules remain on their position value. This fault occurs typically if the plug-type connector to a lifting module will be disconnected during voltage supply of the control. In principle, interruption of the limit switch signal leads to this fault (The limit switch is a break contact).
11	Excess-current release. One or more actuators are overloaded. Too much mechanical load, internal or external blockade or jamming may be the cause. Perform a reference run and check the system.

### 11.2 Error messages (only for synchronization control)

The synchronization control is equipped with a diagnostic, which executes after connection to the supply power and during operation self-tests of all components which are relevant for the safety and signalizes a recognized fault by a visual and acoustic signal.

Error	Cause	Remedy
Control signals trouble. This is visible by blinking LEDs at the control.	Consider the notes in section fault diagnostic system.	Try first to move the lifting modules in (=⇒) setting mode to the lower final position. If further fault signals follow, there is a defect in the lifting modules or the control. If that is the case, please contact the after-sales service.

## 12 Accessory


### NOTE


#### Accessories


- See data sheet.

## 13 Technical characteristics

For hand panel and foot switch no specifications are required. These are to be operated only in connection with a supply unit.

Supply unit, one lifting module	
Supply voltage	230 V AC
Rated frequency	50Hz
Input power	max. 270 W
Extra-low voltage	24VDC
Control voltage	24VDC
Output current	max. 10 A = (electronically limited)
Duty cycle	15% 1.5 min. ON
Code class	IP 66
Protection class	II 
Operation	Hand panel or foot switch

Supply unit, two lifting modules - synchronism	
Supply voltage	230 V AC
Rated frequency	50Hz
Input power	max. 270 W
Extra-low voltage	24VDC
Control voltage	5VDC
Output current total	max. 11A = (electronically limited)
Duty cycle	15% 1.5 min. ON
Code class	IP 66
Protection class	II 
Operation	Hand panel or foot switch

Supply unit, three and four lifting modules - synchronism	
Supply voltage	230 V AC
Rated frequency	50Hz
Input power	max. 540W
Extra-low voltage	24VDC
Control voltage	5VDC
Output current total	max. 22A = (electronically limited)
Duty cycle	15% 1.5 min. ON
Code class	IP 66
Protection class	II 
Operation	Hand panel or foot switch

## 14 Disposal



### Hazardous to the environment

Due to possible environmental pollution, the individual components must be disposed only by an authorised expert company.

The individual materials have to be disposed as per the existing regulations and directives as well as the environmental conditions.

For the disposal of electrical and electronic components (e.g. stroke measuring systems, proximity switches, etc.) country-specific legal regulations and specifications have to be kept.

## 15 Declaration of conformity



### Manufacturer

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[www.roemheld.com](http://www.roemheld.com)

If the product is modified and not approved by us, this declaration will become invalid.



Ewgeni Schleining  
Development Team Leader MH

**Römheld GmbH**  
**Friedrichshütte**

Laubach, 30.7.2025

### Responsible person for the documentation:

Dipl.-Ing. (FH) Jürgen Niesner, Tel.: +49(0)6405 89-0.

This declaration of conformity applies to the following products:

Control modules of the data sheet M8.200. The following types or part numbers are concerned:

#### Control module

- 3821 246 for 1 module
- 3821 416 for 2 modules in synchronization control
- 3821 417 for 3 modules in synchronization control
- 3821 418 for 4 modules in synchronization control

#### Control module with memory function

- 3821 415M for 1 module
- 3821 416M for 2 modules in synchronization control
- 3821 417M for 3 modules in synchronization control
- 3821 418M for 4 modules in synchronization control

We hereby declare that the machine described in its design and construction as well as in the version we have placed on the market complies with the essential health and safety requirements according to the following EC directives.

The following additional EU directives were applied:

- **2006/42/EC**, Machinery directive [[www.eur-lex.europa.eu](http://www.eur-lex.europa.eu)]

**2014/30/EU** EMC - Electromagnetic compatibility [[www.eur-lex.europa.eu](http://www.eur-lex.europa.eu)]

The following harmonised standards have been applied:

**DIN EN ISO 12100**, 2011-03, Safety of machinery; Basic concepts, General principles for design (replacement for part 1 and 2)

**DIN EN 60204-1**; 2007-06, Safety of machinery - Electrical equipment of machines, Part 1: General requirements

The technical documents according to the specified guidelines were created for the products.

The manufacturer obligates to provide the special documentation of the products to national authorities on demand.