

RIXEN

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Overview of the features and benefits of the RIXEN cableway control 2022



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Advantages of the RIXEN Control 2022

Particularly simple and intuitive operation

The RIXEN control system makes cableway operation very simple and easy to learn. The control system was specially developed to provide the user with a particularly intuitive operation that is appropriate for his or her tasks. The clearly arranged control panel consists of only three tactile elements including a joystick, which enables the operator to control the cableway "blind" within a very short time. User-friendliness is thus raised to the highest possible level and the operator can better concentrate on customer service. In addition, the technical inhibition threshold for operation is reduced due to the improved intuitiveness. The training of new staff and the associated familiarisation time is thus significantly reduced.

Highest comfort

Once again, RIXEN sets standards and thus a new standard for the industry, because the RIXEN control 2022 is the quietest control ever built. The control frequency is optimally adapted to the components used, e.g. the economical 8-pole three-phase motor. The differential was custom-made for RIXEN and is the only one available on the market.

The elevator-motor is not located in the operating stand, but on the roller girder. As a result, the V-belt is completely eliminated and there are fewer moving parts. This not only allows safer working, but also more space and a cleaner appearance of the operator's platform.

For daily operation, all individual cableway settings are made via the operating unit in the lower control panel at the operator stand. Further settings can be made via the user interface in the laptop supplied. In addition to the speed preselection setting, the elevator can, for example, be switched on and off automatically according to adjusted times to further reduce wear.

Maximum reliability

There is an upper control cabinet on the motor mast and a lower control cabinet on the operator stand. Due to the shortest distance between the frequency converter in the upper control

cabinet and the main motor, the susceptibility to errors in signal transmission is avoided, which contributes to the lowest downtimes. The bus system also guarantees reliable signal transport according to industrial standards. You don't need a cable extension and you don't have a tangle of cables because the control cabinet is not located anywhere, but where it belongs - directly on the motor mast.

In order to precisely define the positions of the riders, incremental encoders were deliberately avoided due to many years of experience, as they are very susceptible to faults. Instead, sensors were used that clearly count the spokes.

All components are installed via plug and play. This means that the operator can easily replace any component without the risk of a wiring error. All components have been specially manufactured for outdoor use in all weather conditions, including humidity and temperature fluctuations.

The overall concept has already been extensively tested in the RIXEN two-master series. It was proven that there is no increased risk of lightning strikes.

Increased security

The RIXEN control system was developed taking into account our sophisticated, well thought-out safety concept including a complete risk analysis as well as the SISTEMA calculation and offers the user an extremely high level of safety. The risk analysis presents various possible risk scenarios related to the control system, as well as their consequences for all stakeholders and the appropriate countermeasures. All details have been considered so that risks are identified and minimised in advance. In the event of an emergency, the operator is thus prepared for its further course of action.

In addition, various features have been built into the operation, which provide more safety. A selection of these features is listed here.

- The joystick on the control panel contains the master button that operates the catching fork and the magazine simultaneously. The risk of double loading and two riders being pulled in at the same time is significantly reduced.
- After the cableway had to be stopped in an emergency situation, the slow starting speed in the first 5 seconds brings more safety during the start-up. The torque limitation of the main motor during this start-up time additionally ensures that a prohibited water start cannot be carried out, as the system would detect the rider's resistance.
- The lift motor torque limit allows the lift to stop immediately if the operator gets stuck in it, as the system detects the resistance. All torque limit settings are easily accessible via the laptop in a password-protected area and can be individually adjusted.
- Shortly before the rider arrives at the motor mast, the fork can no longer be operated and extended due to the optimised catch fork function. The tow-rope also cannot be hooked in if the rider is too close. This significantly reduces mechanical damage due to incorrect operation.
- It is possible to set many functions to automatic mode to relieve the operator of work. Nevertheless, the operator can always intervene manually in emergency situations and thus retains full control.
- Maintenance work should take place quickly, smoothly, but safely. The well thought-out positioning of the upper control cabinet enables safe maintenance work, as the operator cannot operate the switch-on button when he is sitting on the working platform and has his legs between the running cables. To reach the control unit in the control cabinet, the operator has to stand up.

Better control

In everyday work, it is not uncommon for each operator works differently. Depending on the situation, the speed is sometimes turned up or down. The lap limit is sometimes exceeded or simply not observed. With the RIXEN control system, the operator retains more control over his personnel and achieves a uniform operating standard with clear regulations. There are now two pre-selection speeds that can be set - e.g. one for beginner group and others for normal operation. Maximum flexibility is provided by the infinitely variable speed setting via a potentiometer in the lower control cabinet. The technically trained operator retains all options, but a temporary operator thus has fewer possibilities to change something at will and all customers are treated equally.

Furthermore, there are two pre-selections for limiting the number of laps. Once the lap limit is reached, the fork is automatically extended, saving the operator from counting laps. Not only can the operator effectively push through, but his focus can be on the next customer.

Main components

The cableway is operated via four interfaces. For daily operation, there are two units in the operator stand: the control panel and the lower control cabinet. Standard operation is ensured via the control panel. The lower control cabinet is equipped with controls for starting and shutting down the system and for quick adjustments. On the motor mast, is the upper control cabinet with control-units that are mainly required for the functions of maintenance and installation. The fourth interface is the user interface, which is accessed via the laptop. Here, individual pre-settings can be made, error messages displayed and operating states read off.

Control panel

The control panel consists of an elevator- button, an emergency stop and the joystick. The joystick contains the pneumatic unit: finish loading (top), preloading (bottom), catch fork (against the direction of travel) and master (in the direction of travel). The diagram corresponds to the control panel of a cableway installation with right-hand start.



By activating the ready-loading function, the ball rope in the magazine is pushed forward from the pre-loading position. The line is loaded ready and the next carrier takes the tow-rope with it.

In most cases, preloading is done fully automatically after the finishing process. After the carrier with the tow-rope has passed the sensors, the next ball-cable in the magazine is automatically preloaded after a preset time. This time is set in the user interface on the laptop.

The so-called master button (joystick in the direction of travel) is the combination of the finish loading and catch-fork functions. This simplifies operation and provides additional safety by preventing double loading.

The blue elevator button can be used to manually switch the elevator on and off. When the button is pressed, the elevator accelerates to speed 2. Elevator speeds 1 and 2 can easily be adjusted in the menu under elevator settings.

Lower control cabinet

Experience shows that the six functions on the control panel are the most frequently used. Other functions, which may be operated once a day, are integrated in the lower control cabinet:

- Main switch
- Control voltage on/off (flashes in the event of a fault)
- Running cable on/off
- Speed control
- Lap automatic
- Elevator timer on/off
- Lap-automatic on/off



Upper control cabinet

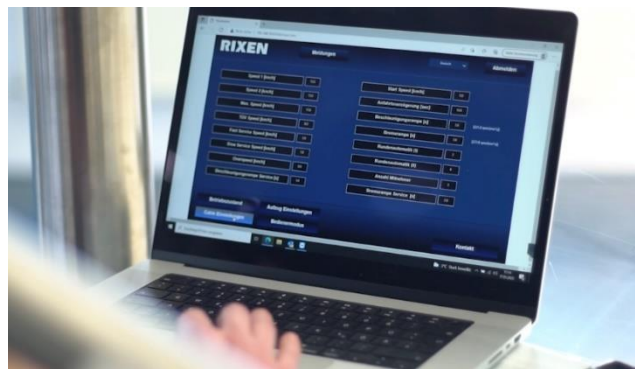
Another operating unit is located on the upper control cabinet. This is mainly where functions for maintenance and installation are located.

- Operation-access up/down/off
- Control voltage
- Maintenance speed 1 / 2
- Elevator on/off
- Pre-load
- Forward / Backward
- Running cable on/off
- Next carrier
- Catch fork
- Loading ready



Laptop

In addition to the options for setting and troubleshooting, the user interface of the laptop also enables the display of operating parameters such as the temperature of the frequency inverters, the current running cable length, the kilometre reading (mileage), the operating mode and the current speed. The position of the first rider can also be tracked at any time.



If, for example, the control voltage LED flashes, there is a fault. A description of this fault can be called up in the user interface and the fault can now be rectified and acknowledged. All faults are recorded in the history and can be viewed later.

More details about the laptop can be found under the topic Setting and Evaluation Options.

Setting and evaluation options

Settings

The screenshot displays the RIXEN settings interface. At the top, there is a navigation bar with the RIXEN logo, buttons for 'Messages', 'User', a language dropdown set to 'Englisch', and a 'log off' button. The main area contains two columns of settings, each with a label and a value field. A 'Einstellungen sichern' (Save settings) button is located at the bottom of the settings area. Below the settings, there is a grid of navigation buttons for 'Operating status', 'Elevator settings', 'I/O Control', 'RIXEN Settings', 'Cable settings', 'Operator mode', 'Log book', and 'Contact'.

Parameter	Value	Unit / Note
Speed 1 [km/h]	23.0	
Speed 2 [km/h]	30.0	
Max. Speed [km/h]	30.0	
TÜV Speed [km/h]	8.0	
Fast Service Speed [km/h]	15.0	
Slow Service Speed [km/h]	5.0	
Overspeed [km/h]	60.0	
Acceleration ramp service [s]	20.0	
Max. starting torque main motor [%]	100	
Start Speed [km/h]	8.0	
Start-up delay [sec]	8.0	
Acceleration ramp [s]	12.0	[193.2 rpm/(min*s)]
Brake ramp [s]	10.0	[231.8 rpm/(min*s)]
Lap automatic (I)	1	
Lap automatic (II)	6	
Number of carriers	9	
Brake ramp service [s]	20.0	

The laptop included in the scope of delivery allows access to the user interface and thus simple and quick adjustment of all relevant cableway settings. Among others, the following functions can be adjusted:

- Cableway preselection speeds during normal operation and maintenance
- Elevator speeds and running time with automatic switch-on and switch-off
- Speed when automatically driving ahead of the next carrier
- Acceleration ramps
- Locking points for attaching and detaching the towrope
- Number of laps limit
- Torque limits

The laptop interface provides a clear overview of all cableway settings and offers the highest flexibility for different operating volumes.

Evaluations

The RIXEN control system offers the possibility to evaluate essential operating data, which can be valuable for operational evaluation, data analysis as well as for personnel planning. In addition to the operating hours, e.g. the starts per day or the current running cable length can be determined. If required, new system updates are carried out and further options are added.

The control system has a pre-programmed interface for connection to the proven WakeSys software. The additional information provided by the software allows the full potential of the cableway to be exploited.

Troubleshooting

RIXEN cableways have always been designed for maximum reliability. Despite a well thought-out selection of components, materials and the highest quality standards, faults can occasionally occur in the system during daily operation. To facilitate troubleshooting, the RIXEN cableway control system offers special functions:

Input/output control of the PLC

All inputs and outputs of the control system are displayed in the user interface of the laptop. In the event of a malfunction, signals would light up actively and thus indicate various sources of error, for example a defective button or similar. This would identify the fault and allow it to be rectified without the help of a specialist.

Thus, even without knowledge of reading circuit diagrams, an initial troubleshooting could be carried out in the case described. And since the buttons are supplied with 24V safety extra-low voltage, a button can be replaced quickly.

An activated emergency stop is also displayed and it can be quickly checked whether it is active.

Sensor technology

For decades, RIXEN has relied on the use of inductive sensors for speed monitoring and rider detection. The installed sensors are highly reliable and durable.

It is true that there is also high-resolution technology on the automation market, such as incremental encoders, which are sometimes used by other manufacturers. However, RIXEN has deliberately decided against the use of incremental encoders at this point, as they are many times more susceptible than the sensor technology used by RIXEN.

If, despite its reliability, a sensor still does not deliver the desired signals, an error message is displayed.

Error messages

Many possible errors, such as the defect of individual components, can be detected by the control system. These are then displayed via the interface on the laptop in easy-to-understand language. The problem-solving process is thus greatly accelerated. In addition, the error messages are stored in a history. When the data is analysed, a pattern can possibly be detected and countermeasures taken, which in turn can increase the reliability of the system enormously.

The screenshot displays the RIXEN control interface. At the top left is the RIXEN logo. A 'Messages' button is centered at the top. On the right, there is a language dropdown set to 'Englisch' and a 'log off' button.

The main content area is divided into two sections:

- Error messages:** A table with columns 'Pos.', 'Date', 'Disruption', and 'umber of disruption'. It contains four rows, all with '0' in the 'Pos.' and 'umber of disruption' columns.
- History error messages:** A similar table with the same columns and four rows, all containing '0'.

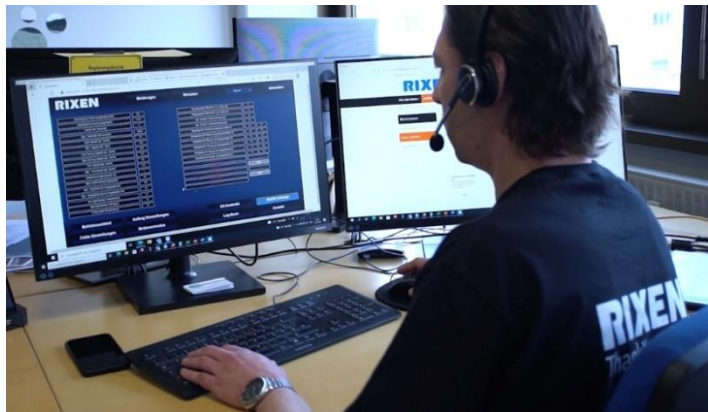
To the right of these tables is an 'Acknowledgement' button. Further right is an 'Activation' panel with the following text: 'There are 3 activation codes in total. The first two unlock 300 hours of operation each. The last code finally unlocks the system.' Below this text are two input fields; the second one contains 'No code'. At the bottom of this panel is a 'Default setting' button.

At the bottom of the interface, there are four navigation buttons: 'Operating status', 'Elevator settings', 'Cable settings', and 'Contact'.

Optimal support

Remote maintenance

If, despite all the functions listed above, it is not possible to quickly solve a problem independently, there is the option of remote maintenance. RIXEN employees can log into the control system via the Internet and thus start a detailed analysis. In many cases, this saves the service costs on site and facilitates a quick restoration of the operability.



Service Hotline & Spare Parts Guarantee

The RIXEN control system is based on proven and recognised industry standards. Only high-quality control components of the SEW brand are used, which guarantee a high level of operational reliability. With its worldwide service network, RIXEN offers a 24/7 service hotline and worldwide availability of spare parts. Should the remote maintenance not be able to remedy the present error or should there be higher damage, the local country support can intervene at any time.

Summary

The most important advantages and special features of the RIXEN control 2022 are summarised here.

The particularly simple condition, the better intuitiveness with the clear control panel and joystick allow more attention for customer care, as well as shorter training time for new personnel.

Due to the shortest distance from the frequency converter in the upper control cabinet to the main motor, less downtime is ensured as the susceptibility to errors in signal transmission is avoided. The components are specially contoured for outdoor use in all weather conditions and are connected via Plug & Play. This eliminates the risk of connection errors. The system has been tested for years in the RIXEN two-mast systems and has proven to be fail-safe and low-maintenance. Thanks to the remote maintenance function, a RIXEN employee can quickly intervene and provide assistance via the Internet if necessary.

For your safety and that of your employees, RIXEN has developed a holistic safety concept that includes a SISTEMA calculation and complete risk analysis. Preventive measures have been taken to reduce risks and to prepare you well in case of an emergency situation. New equipment features additionally ensure maximum operational safety.

The RIXEN control 2022 is the quietest and most energy-efficient control available on the market. The compression of many technical elements allows better use of space in the operator stand and contributes to a very neat appearance.

Settings that are made once a day, if necessary, can be found in the operating unit in the lower control cabinet. Further individual settings can be made via the user interface in the laptop supplied.

With the RIXEN control you have better control over your system and gain a uniform operating standard. In addition, it is possible to set a variety of functions automatically.

Scope of delivery

- Upper control cabinet
- Lower control cabinet (WakeSys interface integrated)
- Intuitive control panel
- Main engine 22kW / 8-pole
- Elevator motor
- Complete cabling and line protection ducts for mast and cantilever
- Laptop

Contact

The RIXEN control 2022 is compatible with existing full-size cables from all manufacturers. We will be happy to prepare an individual offer for your cable car installation.

Call us at: Tel. +49 8131-33569-7213.

Or send a message to: s.fahrenholz@rixencableway.com

You can find more details in our product video: [RIXEN New Electronic Control - YouTube](#)