

eMAX user manual



elebia.®
smart lifting solutions

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Safety recommendations

This is the user manual of the eMax, remote control unit for the elebia autohooks. Before using the elebia autohooks, user must read and understand the user manual of the autohooks.

As the manufacturer has no direct control over the operation of the elebia® autohook, the safe handling of the equipment is therefore the responsibility of the user and of the operating personnel. This list of WHAT MUST and WHAT MUST NOT BE DONE is based on the ISO and ANSI standards. Ask your supervisor for a copy.

Under no circumstance does the manufacturer either accept any liability for the use of these recommendations, which are voluntary, or guarantee them. The recommendations do not take precedence over standards and regulations.

In the event of breakdown or malfunction, withdraw the mechanism and consult the technical service.

Quick Start



If you purchased the eMax with your elebia autohook, the setup has been made in the factory and your unit is ready to start working.

Status bar icons



Radio Signal: Indicates when eMax is emitting

USER

Profile: Shows the user logged in

12:42

Hour: time now



Battery: Battery level of the eMax

Hook state icons



Hook open



Hook open and ring in the magnet



Hook closed and ring in the magnet



Hook closed and ring into the hook

Hook position number (only if multiple hooks are paired with the eMax). If this number is in red color, means there is no loadcell or it is disconnected.

1. If hook is grey, means the eMax is unable to communicate with it.
2. only units with sensor in the magnet can display the ring position.
3. in those hooks without encoder, the info open/closed is managed via software.



Battery



Radio signal quality

5°C

Hook temperature



Low temperature alarm



High temperature alarm

18.725

Weight (only units with load cell)

Kg

Units (only units with load cell)

NET

Net net weight (only units with load cell)



If you already had your elebia autohook and later purchased an eMax, or you purchased this eMax to replace an existing one, you will have to set it up. Please read first the 'Set up' section.



Menu bar icons



Info Center

Settings

Profile

Buttons



ON/OFF Button

When you are not using eMax, press the On/Off button to turn it off. This will put the eMax to sleep, saves the battery, and prevents anything from happening if you touch the buttons. eMax turns off automatically if you do not touch any button for a minute or so.

To adjust the timing, go to **Settings > Auto-Off**.

To turn eMax on, press the On/Off button:

- eMax will beep and vibrate to indicate it is 'ON'.
- eMax will try to communicate with all the autohooks paired.
- Display will turn on and show the info of each hook detected.
- eMax will be 'on', but won't accept orders until the user unlocks it. To unlock it, use the directional keypad.

PRESS  TO UNLOCK



OPEN Hook

Press this button to open the hook/s. eMax has to be on, unlocked and at least one hook selected. If eMax is off, or locked, or no hook is selected, nothing will happen.



CLOSE Hook

Press this button to close the hook/s. eMax has to be on, unlocked and at least one hook selected. If eMax is off, or locked, or no hook is selected, nothing will happen.



TARE (Gross/Net)

A short press (less than 2 seconds) will alternate between 'NET' and 'GROSS' weight. This can be done with the eMax in locked position and is always applied to all the hooks.

To store the weigh as a Tare:

- unlock the eMax
 - select the hook/s to store the Tare
 - press and hold Tare button (more than 2 seconds)
 - Remote will beep, vibrate and display the message 'Tare stored'
- Tares are stored in the hooks, not in the remote.



DIRECTIONAL Keypad

Use directional keypad to move the yellow frame on the screen. This will allow you to:

- unlock the eMax.
- select the hook/s
- enter and navigate through menus.





Info Center

Visible for: everybody

The info center allows to display info of the hooks and the eMax.

HOOKS INFO:

- **Birth:** Date of manufacturing of the autohook.
- **WLL:** Working Load Limit of the autohook.
- **Total Cycles:** Cycles since unit was manufactured. One cycle=open and close.
- **Partial Cycles:** Cycles since unit had service. After Elebia service makes this value is reseted.
- **Number of overloads:** Indicates how many times this autohook has been overload with weight above the WLL.
- **Max Overload:** Indicates the highest overload value, the time and the user logged when this was produced.
- **Last maintenance:** Time when last maintenace was made.
- **Next maintenance:** Time for advised maintenance.

REMOTE INFO:

- **Firmware:** Version of the installed firmware.
- **Serial:** Serial number of the remote control.
- **Birth:** Date of manufacturing of the remote.



Settings

Visible for: administrator and above

HOOKS:

Here you will find all options to adjust parameters of the hooks.

- **Serial:** Type the serial number of the autohook/s you want to pair with this eMax. Once you type it, eMax will communicate with it and then hook will beep, eMax will beep and a radio signal will be displayed after the serial number.
- **Zero** (If autohook has loadcell): Allows to set the calibration zero on the autohook. Before setting the zero value, it is advised to make sure the autohook is closed, steady and no weight nor slings are suspended.
- **Span** (If autohook has loadcell): Allows to set the calibration span value on the autohook. There are two ways of calibrating the span value:
 - You can type the span value (data delivered by elebia)
 - Calibrate using a load suspended from the autohook:
 - Type the exact weight value of the suspended load.
 - Once the load is steady, press 'Get'. Span value will be captured and displayed.



PARAMETERS:

Here you will find parameters that allow to adjust the settings of the hook. This parameters affect the motor control, radio configuration, sensors, power management. No one without the appropriate training should modify this parameters. Modifying the parameters can result in a cancellation of the warranty.

- **P (Power):** The max current allowed through the motor. The higher the value, higher torque can be delivered by the motor. (Amper).
- **t (time):** Currents above the allowed max value are allowed if duration is less than t. (milliseconds).
- **o (opening time):** Max duration allowed for the opening movement. (seconds).
- **c (closing time):** Max duration allowed for the closing movement. (seconds).
- **A (Autoclose):** The hook will close automatically when sensor in the magnet detects the masterlink. (off/on/on fast).
- **h (halt):** Allows to stop the hook at any position by pressing a button on the remote. (on/off).
- **S (sensitivity):** Sensitivity of the sensor in the magnet.
- **d (brake):** When hook is not moving, motor can be shortcuted to act as a brake. (up/down/on/off).
- **f (frequency):** Allows to select the radio band. (868MHZ, 916MHZ,...).
- **r (reach):** Allows to reduce bandwith to increase reach up to 150m (on/off).
- **e (sleep radio):** Allows to adjust the sleep mode to maximize battery duration.
- **u (re-close):** If opening movement is interrupted before 'u' seconds, hook goes back to closed position. (seconds).
- **y (re-open):** if closing movement is interrupted before 'y' seconds, hook goes back to opened position. (seconds)

REMOTE:

Here you will find all options to adjust parameters of the Remote.

- **Language:** Choose language.
- **Date:** Set day, month and year.
- **Time:** Set time.
- **Auto-off:** eMax turns off automatically if you don't touch any button. Here you can adjust the timing. Set it to 0 to disable Auto-off.
- **Units:** Set units.
- **Load:** (Kg, Ton, ...).
- **Temperature:** (C, F).
- **Frequency:** [Visible for: Service and above] Set radio band for the eMax. eMax will only communicate with autohooks operating in the same band. Do not modify.
- **Refresh rate:** You can adjust how often the eMax sends messages to the hooks to retrieve all the info. This refresh rate has an impact on battery consumption. Three different rates can be set:
 - **Weight:**
 - **Hook state:**
 - **Temperature:**
- **Resolution:** Size of the steps displayed for the weighing scale.
- **Alarms:**
 - **Overload:**
 - Warning 90% WLL
 - Alarm 100% WLL
 - **Unbalance:**
 - Warning xx%
 - **Temperature:**
 - High:
 - Low:
- **Auto-Log:**



MASTER:

Visible for: Service and above

- **Inquire data:**
- **Delete remotes:**
- **Add remote:**
- **Replace remote:**
- **Open/close:**
- **Service:**



Profile

Visible for: everybody

The eMax uses profiles to determine who is able to adjust settings or who will be only operating the hooks. That's why It is very important to assign the right profile to each user.

There are 3 profiles or kind of users:

- **User**
- **Admin**
- **Service**

'User' is the lower level and 'Service' is the higher. The higher the profile, the more options are available in the menus.

All the profiles need a password to login (except User0). When logout, User0 is logged by default.

- **User:** this kind of profile is the one for those who will be operating the autohooks. This profile only allows operation and can't modify the settings, erase the log file or the alarm messages. Up to 4 different users can be created, each of them with its own password to login. So you will be able to track all events in the log file, track overloads, productivity,...
- **Admin:** this profile also allows to adjust the settings, erase the log file, reset alarm messages, pairing, calibration, update eMax firmware... So it is not to be used for daily operation. Is to administrate the eMax.
- **Service:** this profile is for elebia technical service only.

>**Login:** Select a profile and type the password to login.

>**Logout:** Accept and you'll be logged out. User0 is automatically logged in.

>**Change password:** Type your password and the new one.

Admin can use his password to login as any User, and modify its password. Service can use his password to login as Admin, and modify its password.

SETUP (pairing and calibration)

Visible for: Admin and above

If you purchased the eMax with your elebia autohook, the setup has been made in the factory and your unit is ready to start working.

If you already had your elebia autohook and later purchased an eMax, you will have to set it up. (software update of your autohook might be necessary too). If you also upgraded your autohook with load cell, calibration will be needed.

If you purchased this eMax to replace an existing one, you will have to pair it. No need to repeat calibration of weighing scale (calibration values are stored in the autohook).



PAIRING AND CALIBRATION:

Pairing:

1. Log in as Admin or Service. (Profile>Login>).
2. Go to Settings>Hooks.
3. Enter the serial numbers of the autohooks to be controlled. If the autohooks are on, a green radio signal will appear, pairing is done and communication is good.
4. If autohook has load cell and it is calibrated, calibration values are displayed and then setup ends here. If it has loadcell and values are not displayed, calibration is needed.

Calibration:

1. Zero calibration (*refer to settings, page 9*).
2. Span calibration (*refer to settings, page 9*).

Update Firmware

Administrator and above

eMax firmware can be updated via the USB connection.

You need a pc or laptop with Windows XP/ Windows 7/ Windows 8:

1. Log in as Administrator or Service (if not modified, admin password is '0000').
2. Turn off the eMax.
3. Connect it to a computer with the USB port.
4. Press and hold the left direction in the keypad, and turn on the eMax.
5. Replace the old 'firmware.bin' with the new one. (in the computer, file explorer, folder 'elebia_eMax'). Important! file name has to be exactly the same. 'firmware(1).bin' won't work.
6. Disconnect eMax from the USB. It will turn off.
7. Turn on the eMax.

8. A yellow '!' appears on the status bar, indicating updated firmware.
9. In the infocentre>remote you will also see the new firmware.

If everything went right, unit is updated, log back in as user before delivering the emax to the user.

Troubleshooting: If eMax does not awake after updating. This can randomly happen with windows pc, be due to a windows bug problem with usb devices. Then open emax case (4 screws under the bumpers) and disconnect and connect the battery. Then repeat updating process.

in OSX

1. Log in as Administrator or Service.
2. Turn off the eMax.
3. Connect it to a computer with the USB port.
4. Press and hold the left direction in the keypad, and turn on the eMax.
5. Delete the old 'firmware.bin' file in the folder 'elebia_eMax'.
6. Empty the trash bin of the Mac.
7. In the Mac, open a terminal (Applications>Utility>Terminal).
8. in the Terminal:
 - type this:
 - dd if=
 - drag the new file firmware.bin and drop it onto the terminal window. The path should appear after 'dd if='.
 - after the path, write type this:
 - of=/Volumes/ELEBIA_eMAX/firmware.bin conv=notrunc.
 - press enter.
9. Disconnect eMax from the USB. It will turn off.
10. Turn on the eMax.
11. A '!' appears on the status bar, indicating updated firmware.
12. In the infocentre>remote you will also see the new firmware.



Data log

in Windows XP

1. Connect EMAX to one of USB of the PC.
2. Push the On/Off Button on the eMax.
3. The "new hardware assistant" will automatically appear.
4. Select "Install from a list or specific location (Advanced)" and click "Next".
5. Click "Browse" to find the folder where the "usbser.inf" file is located. Once the folder is selected, click "Next".
6. Click "Continue Anyway" to complete the driver installation. Once installed, click "Finish" and the EMAX will be recognized by the PC.

in Windows 7

1. Connect EMAX to one of USB of the PC.
2. Push the On/Off Button on the eMax.
3. Click the right button on Computer -> Properties. Click on 'Device Manager'.
4. Click the right button on 'USBSerial Unknown device' and then on 'Update Driver Software'.
5. Click on 'Browse my computer for driver software'. In the next screen click on 'Browse' and locate the driver "usbser.inf". Once selected the file, click 'Next'.
6. For finish the driver installation, click on 'Install this driver software anyway'.

IMPORTANT: For correct operation, JAVA version 8u60 must be installed on your PC!

- If the operating system is windows XP, VISTA or 7, please follow the file 'Driver Installation Manual' to install the EMAX drivers on you PC.
- If the operating system is MAC os, please follow the file 'MAC OS commands'.
- Copy the folder 'win' or 'MAC', depending on your operating system, to the desired PC folder.
- If EMAX is connected to the PC and turned ON, the serial port will appear in the drop-down menu. If it's not connected, connect and turn it ON and click the refresh button. The EMAX serial port will appear.
- Once the EMAX serial port is selected, click on the check box if you want to remove the EMAX logfile.
- Click on 'Save data' to download and save the logfile from EMAX to PC. Note that the .csv file will be created in the same folder of 'SerialEMAX_v1.4.jar'
- The .csv file can be opened by Excel or similar program.

in MAC OS

IMPORTANT: Before start using SerialEMAX on MAC, please follow the next commands:

1. Open 'Terminal' from Applications->Utilities
2. Enter the commands:
 - `sudo mkdir /var/lock` (hit enter end type your password)
 - `sudo chmod 777 /var/lock` (hit enter again)

Specifications

Available code combinations

Detection of errors in transmission

Frequency selection

Frequencies

Communication

Certification Standards

Radiated power

Antenna

Range

Consumption at rest

Consumption at transmission operation

Working temperature

Regulatory Standards

- Directive on machine safety (D89/37/EEC).
- UNE-EN 1050
- UNE-EN ISO 12100-1
- UNE-EN ISO 12100-2
- UNE-EN 61000-6-4
- UNE-EN 61000-6-2
- UNE-EN 1677
- EN 10204 3.1.B
- Assurance of production quality in accordance with ISO 9001.
- Each mechanism is delivered with the CE stamp and a declaration of CE conformity.
- D89/391/EEC
- D89/654/EEC
- D89/655/EEC
- D89/656/EEC
- D92/58/EEC



65,536 different combinations.

2 CRC Bytes + Forward error correction.

1

868 Mhz / 915 Mhz / 917 Mhz / 924 Mhz) (Custom frequency upon demand).

Bi-directional return of receiver battery status.

EN 300 220 Telecommunications.

EN 301 489 Electromagnetic Compatibility.

EN 60730 Low Voltage.

Under 5 dB.

Printed circuit.

100 metres / 330 Feet.

5uA

20mA

-20 to +85°C / -4 to +185°F.

FCC and IC

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be colocated or operating in conjunction with any other antenna or transmitter, except in accordance with FCC multi-transmitter product procedures. Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: Reorient or relocate the receiving antenna; Increase the separation between the equipment and receiver.

Warranty

The guarantee for elebia® eMax is for 2 years and covers parts and labour for the use envisaged and recommended in the system's manual of use. Battery warranty is 6 months. Maintenance operations, and the materials and labour involved therein, are exempt from guarantee.

Distributor / Service:

Date:

Conformity declaration and manufacturer's certificate

ELEBIA AUTOHOOKS, S.L.U., with registered office at plaça Pere Llauger Prim, naus 10-11, Polígon Industrial Can Misser, 08630 Canet de Mar, Barcelona, Spain, Tax Identification Certificate: B65770265, and ISO 9001 certificate No. 9000041.

DECLARES:

Under its sole responsibility, that the following model eMax remote control for the elebia® automatic hook system, with serial number _____, complies with the EC Machinery Directive 2006/42/EC of the European Parliament and of the Council, of 22 June 1998, on the approximation of the laws of the Member States relating to machinery, and 2004/108/EC, on the approximation of the laws of the Member States relating to electromagnetic compatibility, and has been manufactured in accordance with the following harmonised standards:

EN 300 220 TELECOMUNICATIONS

EN 301 489 ELECTROMAGNETIC COMPABILITY

EN 60730 LOW VOLTAGE

As stipulated by EC Machinery Directive:

- CE symbol fixed to the autohook
- Technical documentation filed in manufacturer's site.

Authorised signatory:

Oscar Fillol Vidal

AUTOHOOKS





elebia®

Plaça Pere Llauger Prim, Naus 10-11
Polígon Industrial Can Misser
08360 Canet de Mar (Barcelona) Spain

www.elebia.com
info@elebia.com

USER MANUAL
eMINI REMOTE CONTROL
(Ref: PN#072055)



elebia.[®]
smart lifting solutions



eMINI Remote Control

- The eMINI is a small and compact remote control.
- With the eMINI remote control, the operator can open and close the elebia automatic hooks and read their battery level.
- The eMINI also displays sensor information and maintenance messages.

Display

| Display information

| OPEN Button

| CLOSE Button



Display information

- 0 to 9: Battery level of the lifting hook
- A: Low battery level of the eMINI remote control
- C: Advised hook inspection (yearly or every 20.000 cycles)
- b: The eMINI remote control does not detect the lifting hook
 - battery is not inserted
 - battery is off
 - battery is discharged

How to link the eMINI remote control with the elebia automatic hook

Before linking the eMINI remote control to the lifting hook, make sure no eMax or eLink or eInst is within range.

- Insert battery into the lifting hook.
- Turn off the battery.
- Press and hold the “rigger” button.
(the button in the lifting hook)
- While pressing the “rigger” button, power on the battery.
(you will hear a fast “beep” from the lifting hook)
- Release the “rigger” button.
(release must take place before hearing a long “beep”)
- On the remote control, press 'open' and 'close' buttons simultaneously.
(if you want to add more remotes, repeat on each remote)
- You will hear a “beep” for each link created.
- Wait until you hear a new “beep”. *(after a few seconds)*
- Test if link has been created.

Technical Specifications

Power Supply	One 3V lithium battery (CR2032)
Available Code Combinations	65,536 different combinations
Detection of Errors in Transmission	2 CRC bytes + Forward Error Correction
Buttons	2
Frequency Selection	1
Frequencies	868MHz / 915MHz
Communication	Bi-directional return of receiver battery status
Radiated Power	Under 5 dBm
Antenna	Printed circuit
Range	100 metres / 330 Feet
Working Temperature	-20 °C to 85 °C / -4 °F to 185 °F
Dimensions	Minitel box (68 x 52 x 17 mm. / 2.68 x 2.05 x 0.67 in.)

Plaça Pere Llauger Prim, Naus 10-11
Polígon Industrial Can Misser
08360 Canet de Mar (Barcelona) Spain
Tel. (+34) 93 543 4706

www.elebia.com
info@elebia.com

elebia®
smart lifting solutions



eINST Remote Control

user manual



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eINST Remote Control

- The eINST controls the hook by using a free channel from the master control of any crane.
- The eINST remote control simply has to be placed in the crane relay cabinet, where only a simple wiring is needed.
- It is compatible with all cranes and other remotes.
- The eINST remote control (like any other radio frequency equipment) must not be installed in metal cabinets/boxes since metal enclosures act as a shield against electromagnetic waves, not allowing their propagation.

Warning

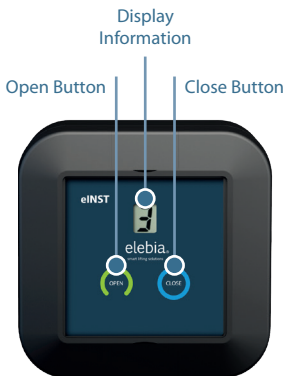
Prior to operation and/or maintenance of elebia products, read and understand the information provided in this user manual.

Failure to review and utilize recommended applications, operation and maintenance instructions may result in serious injury to operator and others.

It is the sole responsibility of the operator to ensure the correct manipulation and handling of any load while using any of the elebia products. Automated processes in any lifting operation, whether attaching and/or releasing load, or other, must always be submitted to visual inspection of the operator.

elebia designs and produces automated lifting solutions which enhance safety and productivity but can never replace the responsible and provident handling of all lifting processes.

Display



Display Information

- 0 to 9** Battery level of the hook.
- C:** Maintenance review of the hook.
- 1b:** "One button" mode.
- 2b:** "Two buttons" mode.
- b:** The eINST does not detect the hook
- Hook battery is not inserted
 - Hook battery is off
 - Hook battery is discharged

Working modes

The eINST remote control can work in 2 different modes:

> 'One button' mode: (1b)

"Open Button check the hook battery"

"Close Button opens and closed the hook". (Toggle function).

> 'Two buttons' mode: (2b)

"Open Button opens the hook"

"Close Button closes the hook"

To switch between modes, press and hold the 'close' button for 10 seconds.

How to link the eINST remote control with the hook

The eINST remote control should not be paired to more than one hook.

eINST in ONE BUTTON MODE (1b)

>First, put the hook in programming mode: Press and hold the “rigger” button on the hook (the button that opens and closes the hook).

>While pressing the “rigger” button on the hook, insert the battery at the same time. (You will hear a fast “beep” from the hook.)

>Release the “rigger” button on the hook. (Be sure to release it before hearing a long “beep.”)

>Click the “open” button on the eINST. You will hear a “beep” on the hook, indicating that the link with eINST has been created.

>Ensure that the hook exits programming mode: Wait for a new “beep” (after a few seconds), or Remove and reinsert the battery without pressing the “rigger” button on the hook.

>Test if the link between eINST and the hook has been correctly created.

Press the eINST Close button and the hook will be toggle his state (Open to closed or closed to open). Press the eINST Closed button and check the hook battery level is displayed in eINST

eINST in TWO BUTTON MODE (2b)

>First, put the hook in programming mode: Press and hold the “rigger” button on the hook (the button that opens and closes the hook).

>While pressing the “rigger” button on the hook, insert the battery at the same time. (You will hear a fast “beep” from the hook.)

>Release the “rigger” button on the eINST. (Be sure to release it before hearing a long “beep.”)

>Press and hold the “open” and “close” buttons on the eINST at the same time (in this order: open and then close) until you hear a “beep.” After this “beep,” the link between the hook and eINST has been created.

>Ensure that the hook exits programming mode: Wait for a new “beep” (after a few seconds), or Remove and reinsert the battery without pressing the “rigger” button on the hook.

>Test if the link between eINST and the hook has been correctly created.

Press the eINST Open Button, and hook will be to open state. Press the eInst Close button, and hook will be to closed state.

Safe lift control

The safe lift control is an additional (and optional) safety feature which, if configured, allows the eINST remote control to enable or disable the lifting of the load depending on the hook's status from an internal relay in the eINST.

> If the hook's status is either open or closed, the eINST relay will be ON, allowing the crane to lift the load.

> If the hook's status is NOT fully open or closed, the eINST relay will be OFF, not allowing the crane to lift the load, but it will allow to lower it.

The eINST relay has two contacts Normally Open and Normally Closed. You must wire the contact that best suits your application.

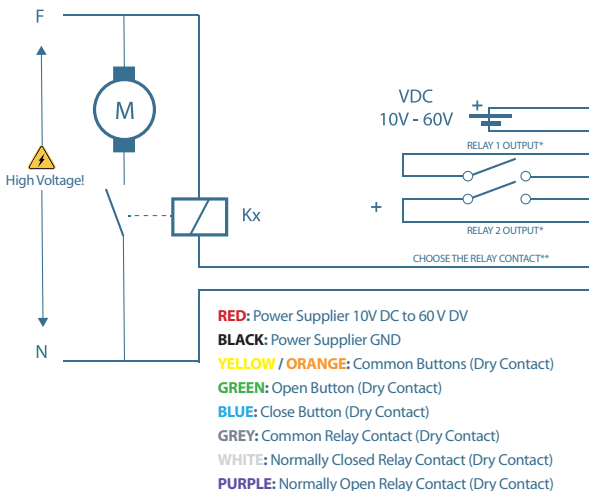
Troubleshooting

Should the hook not work properly or unusually, or present battery failure in an intermediate position (not completely open or closed), the eINST remote control will leave the lifting relay open, not allowing the crane to lift the load and the vertical movement of the crane will be blocked.

To unblock the crane, and enable the vertical movement, follow these instructions:

- > Power off the hook. (If the hook have power On/Off button).
- > Remove the hook battery.
- > Power off the eINST remote control.
- > Power on the eINST remote control.

Connections



Specifications

Power Supply

Current Consumption

Max. Relay Contact Voltage

Max. Relay Contact Current

Available Code Combinations

Detection of Errors in Transmission

Buttons

Frequency Selection

Frequencies

Communication

Radiated Power

Antenna

Range

Working Temperature

Dimensions



*The eINST can accept external buttons - located in the crane or cabin control - through 1 relay (1 button) or 2 relays (2 buttons), located in the connector panel of the eINST (Cables Green & Blue).

**The eINST relay has two contacts Normally Open and Normally Closed.
You must wire the contact that best suits your application.

10V DC to 60V DC

50mA

250V AC / 30V DC

3 A at 30V DC and 250V AC

65,536 different combinations

2 CRC bytes + Forward Error Correction

2

1

868 MHz / 924.1 MHz

Bi-directional return of receiver battery status

under 5 dBm

External SMA Connector

100 metres / 330 feet

-20 °C to 85 °C / -4 °F to 185 °F

100mm. x 100mm. x 40mm. / 3.94in. x 3.94in. x 1.57in.



elebia®

Plaça Pere Llauger Prim, Naus 10-11
Polígon Industrial Can Misser
08360 Canet de Mar (Barcelona) Spain

www.elebia.com
info@elebia.com

eLINK



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SAFETY RECOMMENDATIONS

This is the user manual of the eLink. Before using the eLink, users must read and understand this user manual, as well as the Elebia automatic hook user manual.

Failure to review and utilize recommended applications, operation and maintenance instructions may result in serious injury to the operator and others.

As the manufacturer has no direct control over the operation of the eLink or the elebia® auto hook, the safe handling of the equipment is therefore the responsibility of the user and of the operating personnel.

It is the sole responsibility of the operator to ensure the correct manipulation and handling of any load while using any of the Elebia products. Automated processes in any lifting operation, whether attaching and/or releasing load, or other, must always be submitted to visual inspection of the operator. Elebia designs and produces automated lifting solutions which enhance safety and productivity but can never replace the responsible and provident handling of all lifting processes.

In the event of breakdown or malfunction, withdraw the device and consult the technical service.

Use this QR code to access our helpdesk.
There, you'll find user manuals, Q&A.
You can also open a ticket if you need support.



[click here](#)

INTRUSION PREVENTION

(Cloud version only)

The eLink, in its cloud version, can only be controlled through its incorporated web application. Under no circumstances does it allow an external connection to take remote control. Instructions from the cloud application are accessed by the eLink and are never imposed. Local action will always prevail, especially in terms of cybersecurity and IT security.

External communication is facilitated through a pair of embedded keys and a unique identification token, which are integrated into the eLink during software installation.

These measures are implemented deliberately to ensure that only those actions previously defined by Elebia can be executed on the eLink.

DESCRIPTION

The eLINK is a central data acquisition and control system which allows control of the Elebia lifting hooks, through a web application. The eLINK's in/out capabilities allow crane automation using the hook's sensor data. All in a quick, flexible and simple way. It can be used to increase productivity while enhancing safety.



Monitoring

Monitoring: *hook status can be monitored through the WebApp.*



Data Logger

Data Logger: *the eLink itself generates a Log file with all the events that are carried out while the eLink is operating, saving each event with date and timestamp thanks to the Real Time Clock that the device carries.*



Data Access

Data access: *the log file can be accessed through the WebApp.*



Gateway

Gateway: *eLink allows communication between the hooks, the crane, the remote controls, PLC, computers and other devices.*



Automation

Automation: *logical rules can be defined in order to perform different actions using hook status and sensor values.*



Remote Maintenance

Remote Maintenance: *Elebia service team can perform preventive and remote maintenance and support using eLink data.*



Over the Air Updates

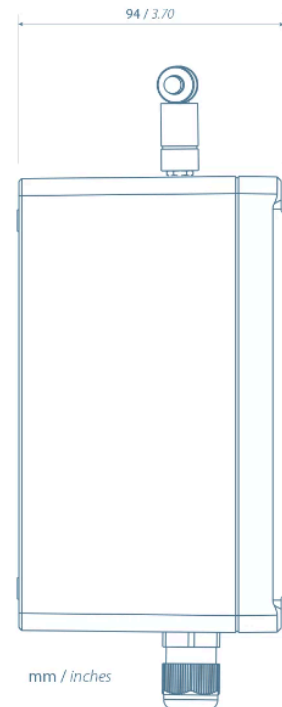
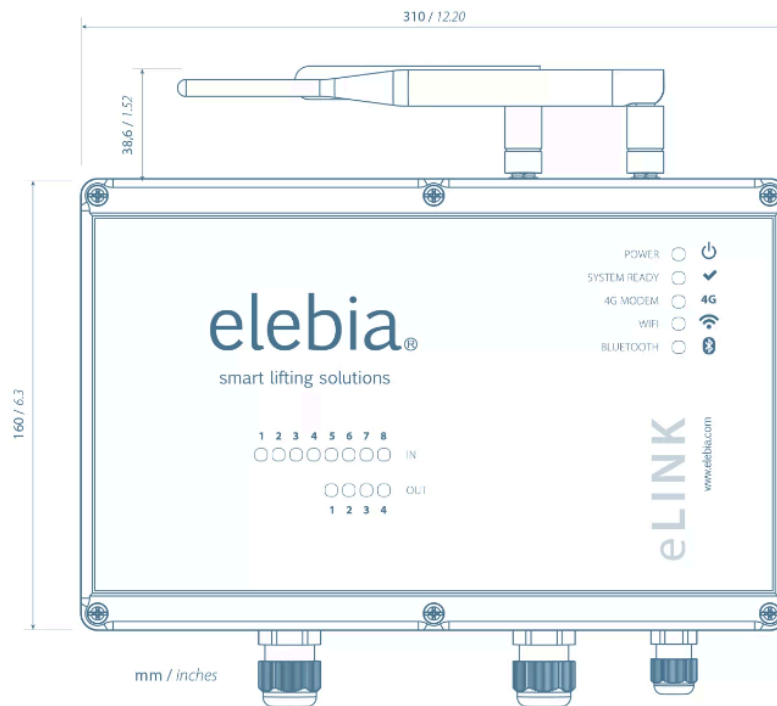
Over the Air Updates: *updates, bug fixes and new features can be delivered by OTA*

The eLINK is connected with:

1. **the user:** eLINK serves a WebApp and users can use smartphone, tablet or PC to connect using Wi-Fi. This allows to:
 - a. Hook control:
 - Open / close hooks, either individually or in groups.
 - Set up hook parameters.
 - Monitor hook status (open/closed, battery level, sensors, weight lifted,...).
 - b. eLink control:
 - Add / remove hooks.
 - Manage users / profiles.
 - Setup wired i / o.
 - Setup radio communication parameters.
 - Define output state using logical functions. Functions can use hook status data as well as other inputs.
2. **the crane:** through 8 dry contact inputs and 4 relay contact for the outputs.
Optional coms: CAN Bus, RS232, RS485 RJ45, Profinet
3. **the lifting hooks:** through radio communication.
4. **others:** PLC's, laser sensors, lights, buzzers, screens,...



SPECIFICATIONS



weight 1,25 Kg

eLINK Specifications

Single-Board Computer	_____	Cortex-A17 Quad-core SoC*
Radio Frequency Communication	_____	868.95 / 904 / 917.5 / 924.1 MHz
CANbus	_____	1 (optional))
Inputs	_____	8 dry contact
Outputs	_____	4 relay contact. Max 1A
4G Module	_____	Optional
Real Time Clock (RTC)	_____	Yes
Internal Storage Memory	_____	32GB
Battery Button for RTC	_____	CR2032
Input Source	_____	110 / 230V AC (optional 48V CC or 24V CC)
Wi-fi	_____	802.11 b/g/n/c double band (2.4 & 5 GHz)
Bluetooth	_____	4.2
IP Code	_____	IP65
Temperature Range	_____	-20°C to 60°C
RF Antenna	_____	862 to 930 MHz / 50 Ohms

Swivel Dipole Antenna Specifications

Frequency	_____	902 to 928 MHz
Nominal Impedance	_____	50 Ohms
VSWR	_____	2.0 Max. in Band
Gain	_____	3.0 dBi
Polarization	_____	Vertical
Power	_____	1W max.

REGULATORY STANDARDS

- Directive on machine safety (D89/37/EEC).
- UNE-EN 1050
- UNE-EN ISO 12100-1
- UNE-EN ISO 12100-2
- UNE-EN 61000-6-4
- UNE-EN 61000-6-2
- UNE-EN 1677
- EN 10204 3.1.B
- Assurance of production quality in accordance with ISO 9001.
- Each mechanism is delivered with the CE stamp and a declaration of CE conformity.
- D89/391/EEC
- D89/654/EEC
- D89/655/EEC
- D89/656/EEC
- D92/58/EEC

FCC and IC

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be colocated or operating in conjunction with any other antenna or transmitter, except in accordance with FCC multi-transmitter product procedures.

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: Reorient or relocate the receiving antenna; Increase the separation between the equipment and receiver.

INSTALLATION

1. Choosing the installation location:

- Radio Range: eLink needs to be within the radio communication range of the hooks to be controlled (<100m).
- Wi-Fi Range: eLink generates its own Wi-Fi network, allowing users to connect and manage its features. Users need to be within the Wi-Fi range.
- Select a spot where the eLink is not obstructed by metal, as this can limit or even disable both radio and Wi-Fi communications. If need to be in a metal box, both antennas must then be mounted out of the metal enclosure (you will need SMA extenders to do so).
- Wiring: It is to be installed near to the crane control box, to establish direct wired connections with the specific crane elements that require control.
- Surface Area: A reserved surface of 350x300mm is needed to mount the eLink.

2. Wall mount:

- eLink must be secured to a flat surface, using 4 screws and the template included in the box.

3. Power supply:

- Plug the eLink into a wall socket (110 / 230V AC).
- Optional 48V CC or 24V CC power supply are available.

4. Connections:

- eLink has 8 dry contact inputs and 4 Relay Contact outputs, as well as serial bus options (CAN BUS , RS232, RJ45,...).
- Depending on your application you should make the desired electrical connections. Read the 'Examples' section for more information.

Example of eLink installed to crane



eLink installation process

WIFI CONNECTION AND LOG IN

eLink Wi-Fi can be configured as a Hotspot or connected to a LAN.

Hotspot connection



IP address: <http://10.42.0.1:3000>

Wifi ID: Elebia_eLink_SNXXXXX

Password: eLinkConXXXXX

For your convenience, there is a sticker with the login instructions located on one side of the eLink.

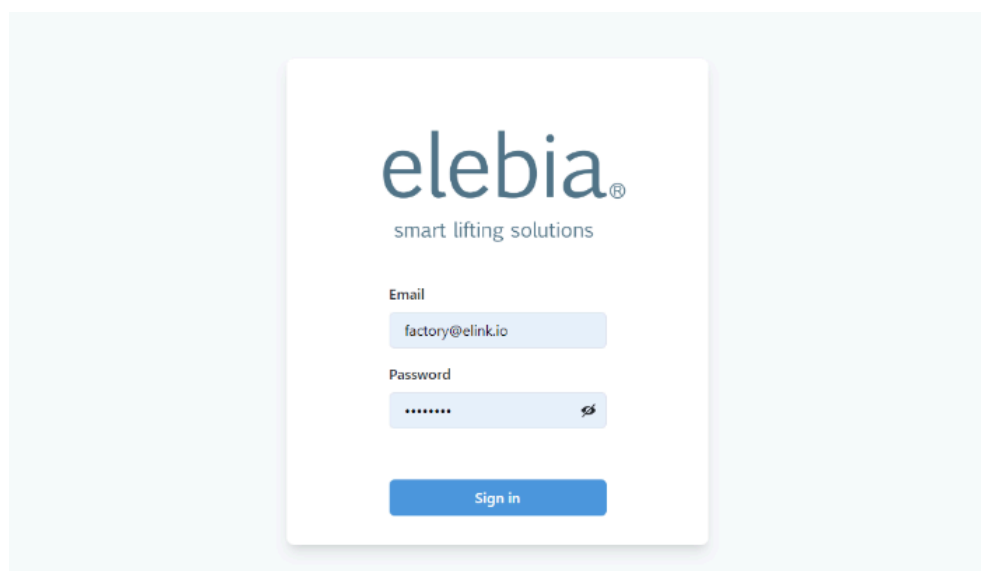
1. Use your smartphone, tablet or PC to connect to '**Elebia_eLink_SNxxxxx**' Wi-Fi and type the Wi-Fi password '**eLinkConXXXXX**' where XXXXX is the serial number of your eLink. *If you don't find the Wi-Fi named '**Elebia_eLink_SNxxxxx**', make sure you are within the eLink Wi-Fi range and eLink is connected to a power source, and the 'Ready' and 'Wi-Fi' led status are 'on'.*
2. Connect to the eLink IP by one of the following options:
 - a. Open a browser on your device and type IP found on the eLink sticker.
 - b. Use this QR code.



[click here](#)

This QR code can also be found in the eLink. A *second copy of the sticker is delivered in the box. We advise you to place it in a spot where users might have easy access to.*

3. Save the IP in your 'favorites' as '**Elebia eLink**'
4. Login with username '**admin@elink.io**' and password '**password**'. For security reasons, change this password once you are logged in (go to *Configuration>Users*).

A screenshot of the elebia login interface. It features the elebia logo at the top, followed by the tagline 'smart lifting solutions'. Below this are two input fields: 'Email' with the text 'factory@elink.io' and 'Password' with a masked password '.....'. A blue 'Sign in' button is positioned at the bottom of the form.

Local area network (LAN) connection.



IP address: <http://YourFacilitiesLinkIPAddress:3000>

Wifi ID: YourFacilitiesWifiName

Password: YourFacilitiesWifiPassword

By default the eLink is set to hotspot, but it can be connected to a LAN using WiFi (*Configuration>connection>hotspot/WiFi*).

Network

WIFI

☒

HOTSPOT

Connection Name:

Elebia_eLink_SN00001

Connection Type:

hotspot

IP

10.42.0.1

Other Networks

SSID

Wifi SSID

Password

Wifi password

Connect

The first time you switch to LAN, you will have to type your facilities LAN SSID and password using the 'Other Networks' section placed at the bottom of the WIFI section, and press the Connect button to go ahead with the change.

If your credentials are valid, eLink will connect to the LAN.

Network

WIFI

☒

HOTSPOT

Connection Name:

Elebia

Connection Type:

wifi

IP

192.168.47.219

Load Available Wifi

SSID

PASSWORD

Other Networks

SSID

Wifi SSID

Password

Wifi password

Connect

Close

Network

Connection Name: **WIFI** ☐ **HOTSPOT** ☐ Elebia

Connection Type: wifi

IP: 192.168.47.219

Load Available Wifi

WIFI NET 1	PASSWORD
WIFI NET 2	Wifi password Connect
WIFI NET 3	Wifi password Connect
WIFI NET 4	Wifi password Connect

Close

When you switch from hotspot to LAN, the eLink will indicate the new IP address you'll have to connect to get access to the App. Save the IP in your 'favorites' as **'Elebia eLink (LAN)'**.

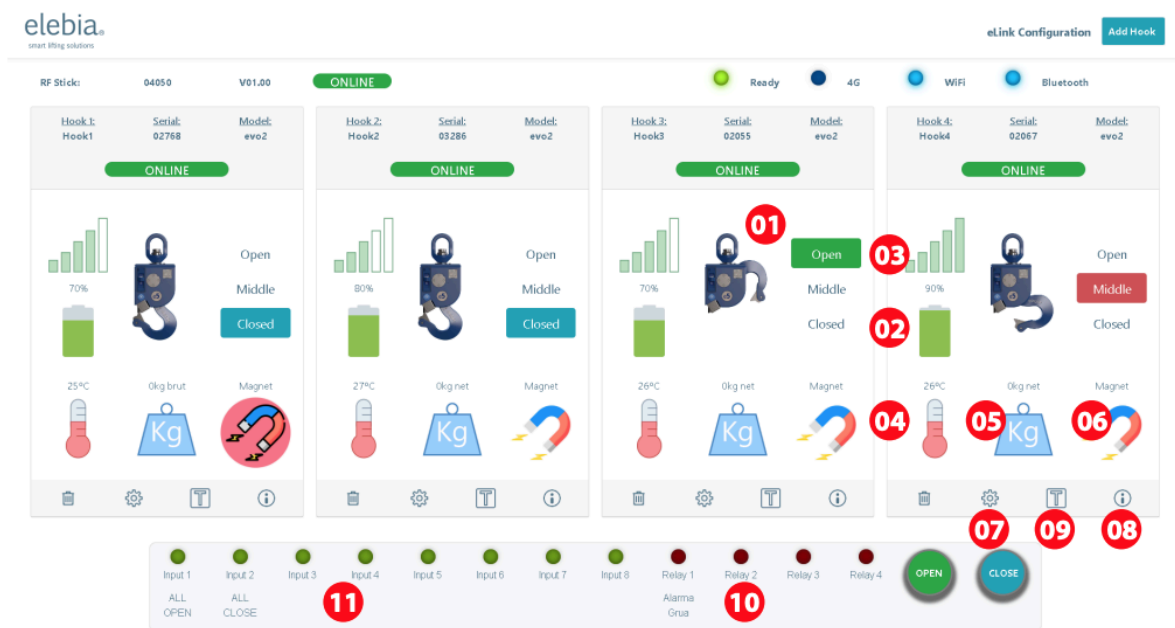
ATTENTION: Please note that you will need to contact your IT department to assign a fixed IP address to the eLink device. Without a fixed IP address, the device will receive a different IP address with each new connection.

In case WiFi LAN connection is lost, or if the eLink is rebooted, it will switch to a hotspot. Then you'll need to connect to the IP saved in your favorites as **'Elebia in hotspot'**

SET UP

Hook setup:

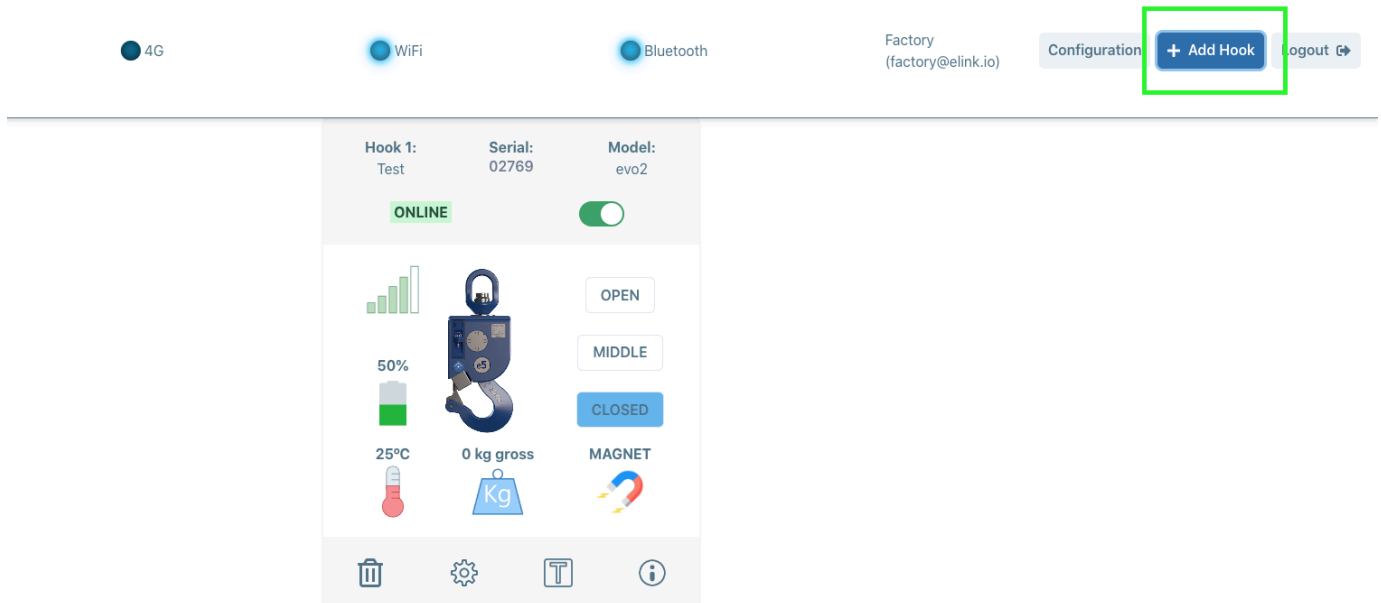
Upon customer request, the eLink will be delivered with the hooks already registered. The main screen will display the following:



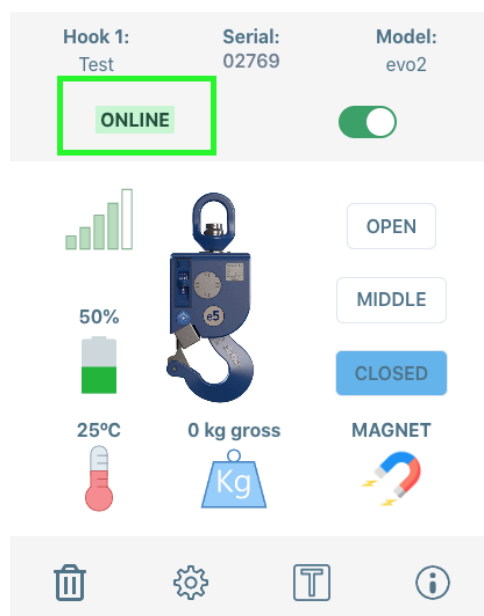
- 01 Hook status
- 02 Battery level
- 03 Radio strength
- 04 Temperature
- 05 Weight
- 06 Magnet sensor
- 07 Hook settings
- 08 Hook info center
- 09 Tare / Gross / Net weight
- 10 Relay Status
- 11 Input Status

Registering new hooks: If you need to register hooks, it is an easy and quick process.

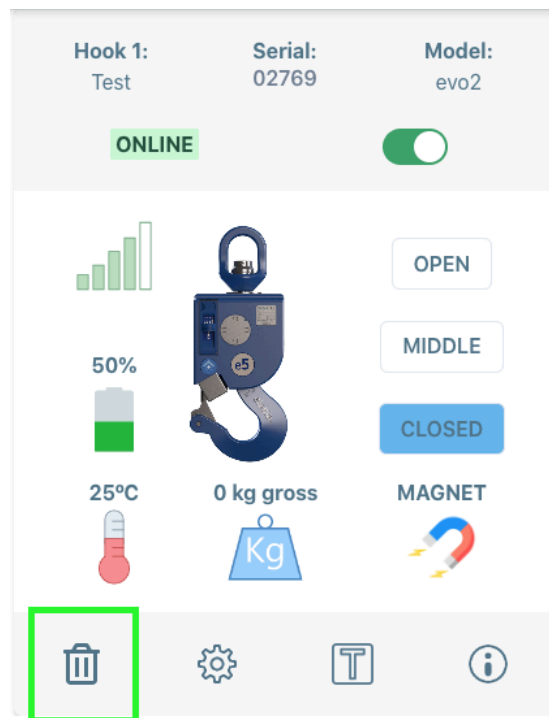
1. Logg In as Admin.
2. Click the button on the top right area, **Add hooks**.
3. Type the serial number and give it a name.



Hook will appear, displaying its status.



To remove a hook: click the bin icon on the bottom area..



- Setup Users:

The eLink uses profiles to determine what features can be accessed. That's why It is very important to assign the right profile to each user.

There are 4 profiles or kind of users:

- **User:** those who will be operating the autohooks. This profile only allows hook operation and can't modify the settings.
- **Admin:** those (within the company) in charge of managing the hooks and the eLink. This profile allows you to adjust the basic settings, add/remove hooks, ... **It is not for daily operation of the hook.**
- **Service:** this profile is for Elebia technical service only.
- **Factory:** this profile is for Elebia personel only.

'User ' is the lower level and 'Factory' is the higher. The higher the profile, the more options are available in the menus.

All the profiles need a password to login. Each user can modify its own password. Admin can create, delete and modify User passwords. (*Configuration>Users*)

		User level			
Features		User	Admin	Service	Factory
App login	Hotspot	x	x	x	x
	LAN	x	x	x	x
	Cloud		*	x	x
hook	info center	x	x	x	x
	fare	x	x	x	x
	net/gross	x	x	x	x
	name		x	x	x
	serial		x	x	x
	disable		x	x	x
	delete		x	x	x
	add		x	x	x
	settings			x	x
	Open		x	x	x
	Close		x	x	x
eLink	Outputs (Relays)			x	x
	Inputs (Wired)			x	x
	Inputs (Radio)			x	x
	Radio			x	x
	Users		x	x	x
	Update environment				x
	Update		x	x	x
	Other settings			x	x
	Network		x	x	x
	Event log		x	x	x

Access the latest version of the table [here](#).

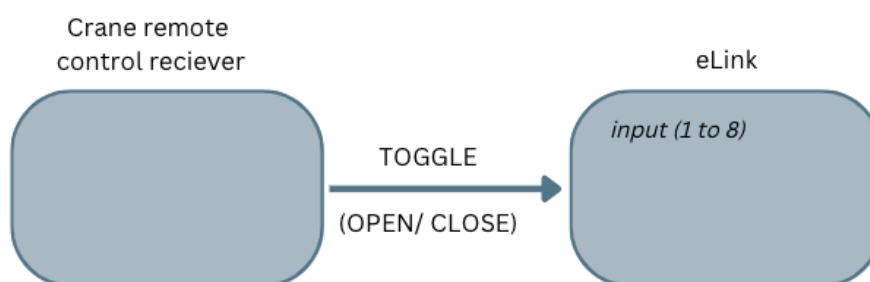
This table has the default values. It can be customized for every eLink.

@bookmark WIRING EXAMPLES

Here we share some wiring examples for different uses of the eLink. If you need support or have any doubts, feel free to contact us (open a ticket in [helpdesk](#)).

Example1: Use the existing crane remote control to open/close the Elebia automatic hooks.

- Customer wants to control one Elebia hook with the existing crane remote control.
- Crane remote control has 1 available button.

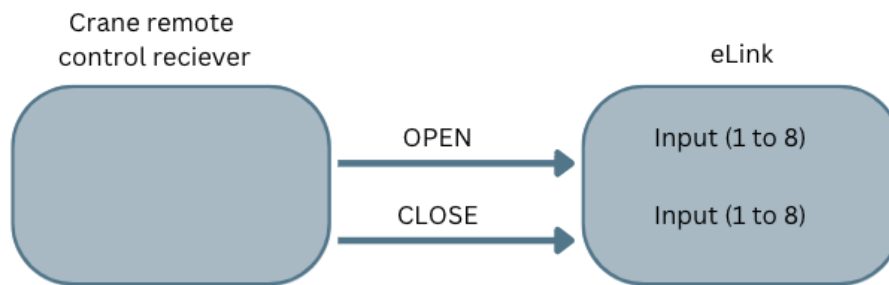


wiring diagram

once wires are connected, proceed with the set up:

1. Open the web app.
2. Log in.
3. Go to eLink configuration .
4. go to the Inputs & outputs section and select INPUTS (Wired).
5. Select the input number where the wires from the crane radio receiver have been connected.
6. Select the hook you want to control.
7. Select 'toggle' from the drop down menu.

If a customer has 2 available buttons and wants 2 separate orders for open and close, it can be done in the same manner, but using 2 wired inputs and instead of 'toggle', select 'open' and 'close' on the drop down menu.



In this manner, up to 8 hooks can be controlled with toggle function, and up to 4 hooks on the open/close function.

Example 2: Interlock. Disable vertical movement of the hoist while the hook is in transition (hook not fully open or fully closed).

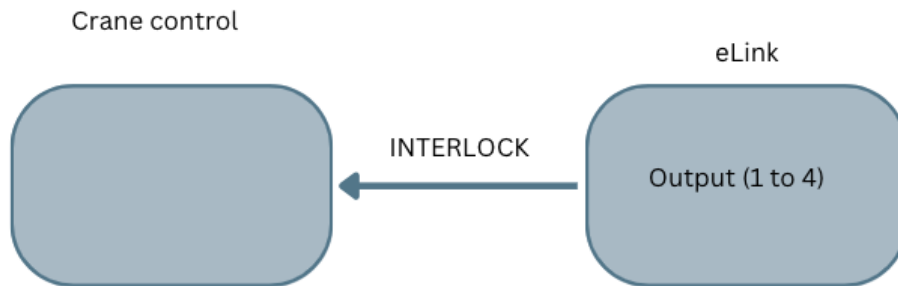
- Crane should never lift until the hook is fully closed or fully opened.
- Customer wants to disable vertical movement of the crane while the hook is in transition (hook not fully open or fully closed).
- By doing so, it will prevent accidents and will increase lifespan of the crane and the hook.

wiring diagram

once wires are connected, proceed with the set up:

1. open the web app.
2. log in.
3. go to eLink Configuration.
4. go to the Inputs & outputs section and select OUTPUTS (Relays).

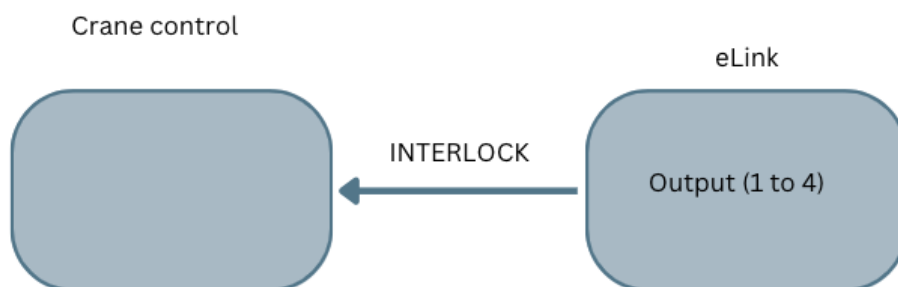
5. select the output number where the wires from the crane control have been connected.
6. type the formula:
`([hook1.state!=open]&&[hook1.state!=closed]&&[hook1.state!=disabled]).`



wiring diagram

Example 3: Multiple Interlock. Disable vertical movement of the hoist/s while hooks are not fully open (both) or fully closed (both).

- In a multi-point lift, a crane should never try to lift a load if some hooks are opened and some are closed or some are in transition.
- Customer wants to disable vertical movement of the crane while hooks are not fully open or fully closed (simultaneously).
- By doing so, it will prevent accidents and will increase lifespan of the crane, the beam, the hook and the goods being lifted.



wiring diagram

once wires are connected, proceed with the set up:

1. open the web app.
2. log in.
3. go to eLink Configuration.
4. go to the Inputs & outputs section and select OUTPUTS (Relays).
5. select the output number where the wires from the crane control have been connected.
6. type the formula:
([hook1.state==open]&&[hook1.state!=disabled]&&[hook2.state==open]&&[hook2.state!=disabled]))||([hook1.state==closed]&&[hook1.state!=disabled]&&[hook2.state==closed]&&[hook2.state!=disabled])
7. Select the output state, which can be Enabled or Disabled. Enabled in this case.

eLink Configuration

Inputs & outputs

RS-232

Outputs (Relays)

Outputs Enable: ☒

OUTPUT 1 OUTPUT 2 OUTPUT 3 OUTPUT 4

Note: Use this words into your formula opening hook#.state: **open / closed / middle / offline / disabled**, hook#.ring: **detected / notdetected**, hook#.weight: **kg**, input#: **active / inactive**

Logical Condition

```
((hook1.state==open)&&[hook1.state!=disabled]&&[hook2.state==open]&&[hook2.state!=disabled]))||([hook1.state==closed]&&[hook1.state!=disabled]&&[hook2.state==closed]&&[hook2.state!=disabled])
```

Resume Relay 1: ((hook1.state==open]&&[hook1.state!=disabled]&&[hook2.state==open]&&[hook2.state!=disabled]))||([hook1.state==closed]&&[hook1.state!=disabled]&&[hook2.state==closed]&&[hook2.state!=disabled])

Output State:

Enable ▼

Output Name:

No middle

Save

Close

WARRANTY

The guarantee for elebia® eLink is for 2 years and covers parts and labor for the use envisaged and recommended in the system's manual of use. Maintenance operations, and the materials and labor involved therein, are exempt from guarantee.

Distributor / Service:

Date:

**CONFORMITY DECLARATION AND
MANUFACTURER'S CERTIFICATE**

ELEBIA AUTOHOOKS, S.L.U., with registered office at Plaça Pere Llauger Prim, Nau 10-11 Polígon Industrial Can Misser, 08360 Canet de Mar, (Barcelona) Spain, Tax Identification Certificate: B65770265, and ISO 9001 certificate No. 9000041.

DECLARES:

Under its sole responsibility, that the following model eLink remote control for the elebia® automatic hook system, with serial number _____, complies with the EC Machinery Directive 2006/42/EC of the European Parliament and of the Council, of 22 June 1998, on the approximation of the laws of the Member States relating to machinery, and 2004/108/EC, on the approximation of the laws of the Member States relating to electromagnetic compatibility, and has been manufactured in accordance with the following harmonized standards:

EN 300 220 TELECOMMUNICATIONS

EN 301 489 ELECTROMAGNETIC COMPATIBILITY EN 60730 LOW VOLTAGE

As stipulated by EC Machinery Directive:

- CE symbol fixed to the eLink
- Technical documentation filed on the manufacturer's site.

Authorized signatory:

Oscar Fillol Vidal
CEO of ELEBIA AUTOHOOKS

Barcelona, June 30th, 2023