

LIFT™

User Manual

**Reduced**

## RF transmitter/receiver properties

Some LINAK products emit RF-power by intention for communication purposes.

Frequency band of transmission: 2402 MHz - 2480 MHz

Type: BLUETOOTH® Low Energy BLE 4.2

Modulation: GFSK

## FCC and IC Statements

For RF-emitting products (e.g. Bluetooth®, Wi-Fi) intended to be used on the North American continent, the following applies:

### FCC statement

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.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

### IC statement

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) L' appareil ne doit pas produire de brouillage;
- (2) L' appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d' en compromettre le fonctionnement.



## General environmental conditions

Operating, storage and transport	
Operating temperature	+5 °C to +40 °C
Relative humidity	20% to 80% - non-condensing
Atmospheric pressure	700 to 1060 hPa (Rated to be operated at an altitude $\leq$ 3000 m)
Storage temperature	-10 °C to +50 °C
Relative humidity	20% to 80% - non-condensing
Atmospheric pressure	700 to 1060 hPa (Rated to be stored at an altitude $\leq$ 3000 m)
Transport temperature	-10 °C to +50 °C
Relative humidity	20% to 80% - non-condensing
Atmospheric pressure	700 to 1060 hPa (Rated to be transported at an altitude $\leq$ 3000 m)
<p>If the actuator is assembled in the application and is exposed to push or pull during transportation, the actuator can be damaged.</p> <p>Do not drop a LINAK component or otherwise damage the housing during disassembly or transportation.</p> <p>We do not recommend to use a LINAK component that has been damaged.</p>	



## Information on start-up, deinstallation and operation

### Before installation, deinstallation or troubleshooting

- Stop the actuator/lifting column.
- Switch off the power supply or pull out the mains plug and pull out the plug to the actuator/lifting column.
- Relieve the actuator/lifting column of any loads, which may be released during the work.

### Before start-up

- Make sure that the system has been installed as instructed in the relevant product manual.
- The individual parts (actuator/lifting column/hand controls etc.) must be connected before the control box is connected to the mains.
- Make sure that the mains voltage to be connected to the product or the system is the one stated on the label.
- The equipment can be moved freely over the whole working area of the actuator/lifting column.
- Check correct function after mounting.
- The actuator/lifting column must not be loaded in excess of the values indicated in the specifications on the product label.
- The duty cycle noted on the product label must always be observed. Otherwise there is a risk of product damage. Exceeding the duty cycle will result in a dramatic reduction of the system lifetime.
- Unless specified otherwise on the product label, the duty cycle is max. 10%, max. 2 minutes in use followed by 18 minutes not in use.
- The actuator/lifting column system may only be used in an environment corresponding to the IP rating of the system. LINAK products are marked with the actual IP rating on the label.
- If any individual parts are suspected to be damaged, do not install the parts, but return them for inspection/service.

### During operation

- Check for unusual sounds and irregular movement. Stop the actuator/lifting column immediately if anything unusual is observed.
- If the control box makes unusual noises or smells, switch off the mains voltage immediately and the external battery, if any.
- Take care that the cables are not damaged.
- Unplug the mains cable on mobile equipment before it is moved.



## Troubleshooting

Symptom	Possible cause	Action
No motor sound or movement of piston rod	<ul style="list-style-type: none"> <li>- The actuator is not connected to the control box</li> <li>- Blown fuse in the control box</li> <li>- Cable damaged</li> </ul>	<ul style="list-style-type: none"> <li>- Connect the actuator to the control box</li> <li>- Fuse must be changed</li> <li>- Send actuator for repair</li> </ul>
Excessive electricity consumption		<ul style="list-style-type: none"> <li>- Send actuator for repair</li> </ul>
Motor runs but spindle does not move	<ul style="list-style-type: none"> <li>- Gear wheel or spindle damaged</li> </ul>	<ul style="list-style-type: none"> <li>- Send actuator for repair</li> </ul>
Actuator cannot lift full load	<ul style="list-style-type: none"> <li>- Clutch is worn</li> <li>- Motor is damaged</li> </ul>	<ul style="list-style-type: none"> <li>- Send actuator for repair</li> </ul>
Motor sound but no movement of piston rod		<ul style="list-style-type: none"> <li>- Send actuator for repair</li> </ul>
No signal from Reed or Hall switch		<ul style="list-style-type: none"> <li>- Send actuator for repair</li> </ul>
Motor runs and quick release does not function or is noisy	<ul style="list-style-type: none"> <li>- Declutching arm turns less than approx. 75 °C</li> </ul>	<ul style="list-style-type: none"> <li>- Adjust cable</li> </ul>
Piston rod will only move inwards and not outwards	<ul style="list-style-type: none"> <li>- Safety nut has operated</li> </ul>	<ul style="list-style-type: none"> <li>- Send actuator for repair</li> </ul>
	<ul style="list-style-type: none"> <li>- Not connected to mains</li> </ul>	<ul style="list-style-type: none"> <li>- Connect to mains</li> </ul>
Power indicator does not light up	<ul style="list-style-type: none"> <li>- The fuse has blown</li> </ul>	<ul style="list-style-type: none"> <li>- Replace fuse, if the system is prepared for external fuse replacement, or send the system for repair</li> </ul>
	<ul style="list-style-type: none"> <li>- Defective power cable</li> </ul>	<ul style="list-style-type: none"> <li>- On control boxes with exchangeable power cable, change the cable.</li> <li>- On control boxes with fixed cable, send it for repair</li> </ul>
	<ul style="list-style-type: none"> <li>- Control box defective</li> </ul>	<ul style="list-style-type: none"> <li>- Send control box for repair</li> </ul>
	<ul style="list-style-type: none"> <li>- Actuator plug not pushed into control box properly</li> </ul>	<ul style="list-style-type: none"> <li>- Push actuator plug properly into control box</li> </ul>
Power indicator lights up, but actuator does not run	<ul style="list-style-type: none"> <li>- Actuator defective</li> </ul>	<ul style="list-style-type: none"> <li>- Replace actuator</li> <li>- Defective control box</li> <li>- Replace the control box</li> </ul>
Control box relays are clicking	<ul style="list-style-type: none"> <li>- Control box defective</li> </ul>	<ul style="list-style-type: none"> <li>- Send control box for repair</li> </ul>
Power indicator lights up, but actuator does not run	<ul style="list-style-type: none"> <li>- Hand control defective</li> </ul>	<ul style="list-style-type: none"> <li>- Send hand control for repair</li> </ul>
No relay noise is heard from control box Not valid for CB20/CB6S OBF/CB16 OBF	<ul style="list-style-type: none"> <li>- Battery completely flat</li> </ul>	<ul style="list-style-type: none"> <li>- Charge battery</li> </ul>
Control box completely dead on battery and no relay clicking	<ul style="list-style-type: none"> <li>- Battery defective</li> </ul>	<ul style="list-style-type: none"> <li>- Replace battery</li> </ul>
	<ul style="list-style-type: none"> <li>- Actuator plug not properly pushed into control box</li> </ul>	<ul style="list-style-type: none"> <li>- Push actuator plug properly into control box</li> </ul>
Actuator does not run on battery, but relay clicking can be heard	<ul style="list-style-type: none"> <li>- Actuator defective</li> </ul>	<ul style="list-style-type: none"> <li>- Replace actuator</li> </ul>
	<ul style="list-style-type: none"> <li>- Control box defective</li> </ul>	<ul style="list-style-type: none"> <li>- Replace control box</li> </ul>
	<ul style="list-style-type: none"> <li>- Hand control defective</li> </ul>	<ul style="list-style-type: none"> <li>- Send hand control for repair</li> </ul>
	<ul style="list-style-type: none"> <li>- Control box defective</li> </ul>	<ul style="list-style-type: none"> <li>- Send control box for repair</li> </ul>
Control box okay apart from one direction on one channel		



## COL50



The control box COL50 is a part of the LIFT50 product series specially developed for patient lifts.

LIFT50 is a complete system consisting of the control box COL50, a battery BAL50 and an external charger CHL50 in a flexible solution. Combined with one or more actuators and a hand control, you have a complete system for modern patient lifts.

## Usage

With internal charger:	Nominal current draw max. 350 mA (depending on input voltage) Power consumption (standby) max. 0.5 W power (depending on input voltage) Input voltage range: 120-240 VAC (50/60 Hz) Power consumption (charging) max. 30 W (depending on input voltage)
Duty cycle:	Max. 10% or 2 min. continuous use followed by 18 min. without use
Operating temperature:	+5 °C to +40 °C
Storage temperature:	-10 °C to +50 °C
Relative humidity:	20% to 80% - non-condensing
Atmospheric pressure:	700 to 1060 hPa
Meters above sea level:	Max. 3000 meters
Approvals:	EN IEC 60601-1 ANSI/AAMI ES60601-1 CAN/CSA-C22.2 NO. 60601-1 EN IEC 60601-1-2 RED (EU) FCC ID (US) IC ID (Canada) Telec (Japan)

## Instructions for use

- Default functionality – when charging, the COL50 will not be able to operate any actuators.
- It is not possible to use other battery types than BAL50 with the COL50.
- Use only original LINAK mains cables to ensure proper connection to internal charger.

## General functionality – LIFT50

### Battery on/off

LIFT50 has a new and ergonomic battery design.

### Remove battery

- 1) Use thumb and index/middle finger to push buttons on battery sides
- 2) Pull battery out

### Mounting battery

- 3) and 4) Grab battery on sides and steer battery base over steering pin, push in place



Please follow the mounting instructions of the control box COL50.

Do not mount the battery upside down.

## Emergency stop instructions

### Emergency stop activation/deactivation

The emergency stop is mounted on top of the BAL50 battery. It is readily available as the norm describes.

Operation to activate emergency stop

- 1) Push button on top of battery

### To release emergency stop

Take of battery

- 2) Use thumb and index/middle finger to push buttons on battery sides
- 3) Pull battery out

### To replace the battery again

- 4) Grab battery on sides and steer battery base over steering pin.
- 5) Push in place

This will release the emergency stop.





## Cable mounting and cable cover

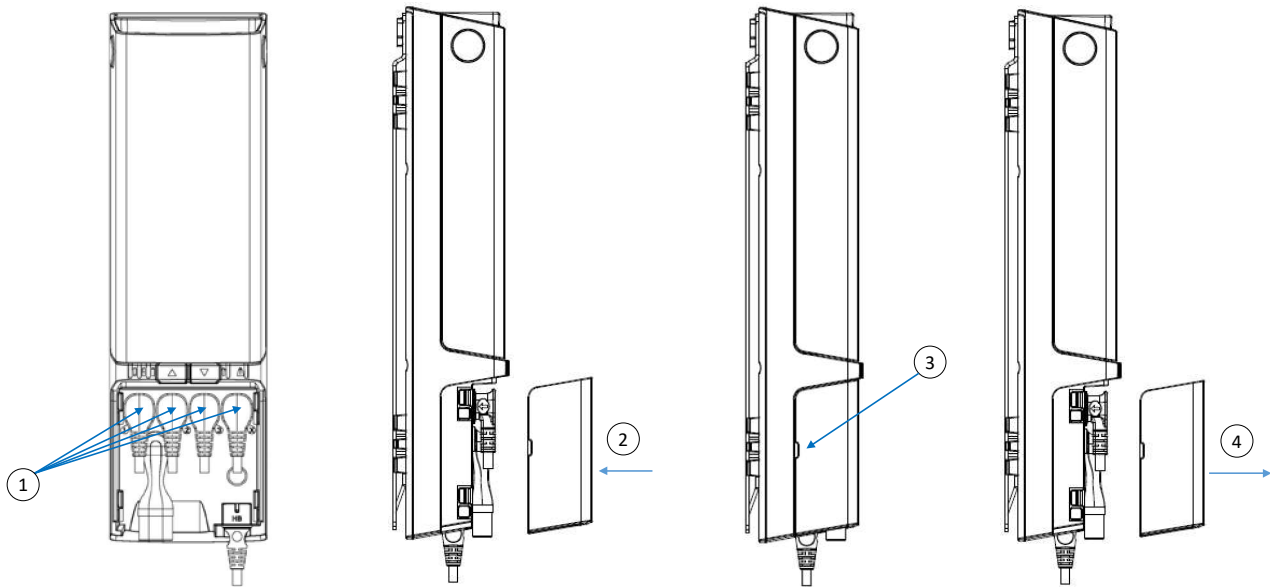
COL50 has a uniquely designed cable cover which also works as an integrated cable cover when closed.

### To close cable cover

- 1) Mount cable plugs in control box (1)
- 2) Push cable cover directly over designated snaps (2)

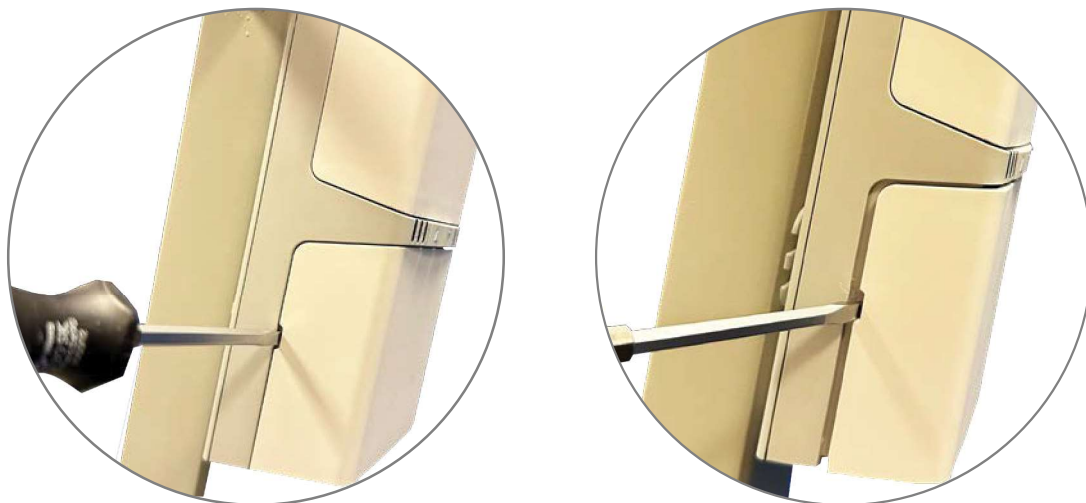
### To open cable cover

- 3) Insert flat head screwdriver in groove (3).  
Move screwdriver handle carefully towards the back of COL50. Cable cover is released
- 4) Pull cable cover straight out (4)



### How to open cable cover with screwdriver

Refer to the description above.







## Cable routing and management

Cable management is possible on the COL50 backside. The wire grooves can be used for many different purposes, for instance:

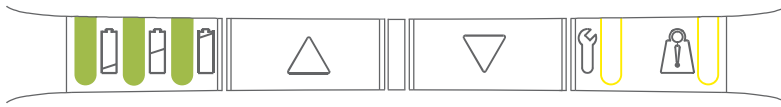
1. Guide cable for sling adjustment actuator upwards
2. Guide hand control cable up and out in low or high position to right or left side of patient lift





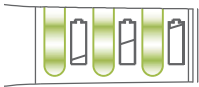



## LED indicators

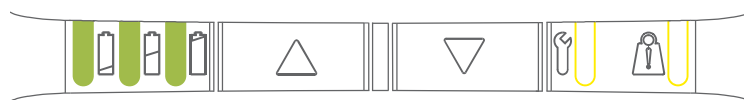
LED1 - LED2 - LED3	LED state (Not listed = off)	States in normal use
	LED 1-3 constantly on	75-100% SOC
	LED 1+2 constantly on	50-75% SOC
	LED 1 constantly on	<50% SOC
	LED 1 left side, switches from green to yellow and flashes slowly	Buzzer activates when 200 mAh is left in the battery. The customer needs to test own application to check if this is sufficient to fulfil the minimum requirement of one lift and lowering (1 cycle). Software can be adjusted if buzzer level needs to be increased.













LED1 - LED2 - LED3	LED state (Not listed = off)	States while charging
	LED 1-3 constantly on	90-100%
	LED 1+2 constantly on LED 3 flashes slowly	65-90%
	LED 1 constantly on LED 2 flashes slowly	40-65%
	LED 1 flashes slowly	0-40%
	LED 1+2+3 flash slowly	Charging stopped due to low battery temperature, high battery temperature or other error conditions
	No light in LEDs	Charging stopped due to lost communication to battery





PRIORITY	LED4 + LED5	LED state (Not listed = off)	States in normal use	Comments	Reset
0		LED 4 flashing according to BLE pairing state*	Pairing BLE	Not ready to drive	Wait until ready
1		LED 4+5 constantly on	Emergency stop activated	Not ready to drive	Reactivate emergency stop
2		LED 4+5 flashing fast (synchronous)	FATAL ERROR Cannot drive, has to be reset	No movement possible	Reset fatal error routine
3		LED 4+5 flashing slowly (asynchronous toggling)	Not learned/ configured correctly	Not ready to drive	Learn device, configure correct
4		LED 5 flashing slowly	OVERLOAD on CH1	Momentary not ready to LIFT	Reduce load ready to LIFT
5		LED 4 flashing slowly	Duty cycle guard	Momentary not ready to LIFT	Wait until ready
6		LED 5 constantly on	Position not to be trusted	Drive is possible	Drive into EOS
7		LED 4 constantly on	Service needed	Drive is possible	SDT, App, HB

## How to use Direct Pairing

1. Enter pairing mode
2. When in pairing mode, the control box buzzer will begin to beep and the LED starts to blink
3. Move the hand control closer to the control box with which you want to pair
4. Pair the hand control with the control box
5. The control unit LED will begin to blink with the same frequency as the nearest control box



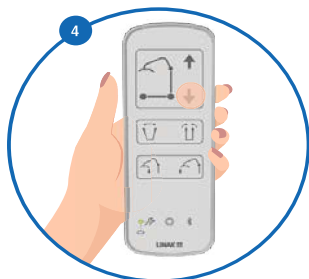
Move within two meters of the patient lift.



Enter Direct Pairing Mode by activating key 1 and magnet in 3 seconds.



Release key and magnet and move closer to the LIFT50 until buzzer frequency change from slow to fast.



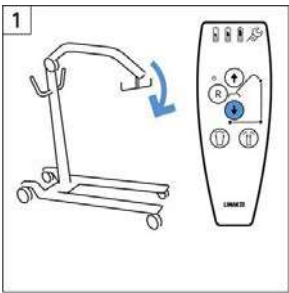
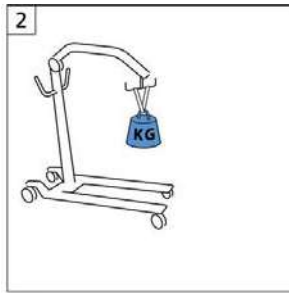
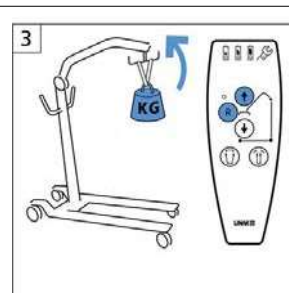
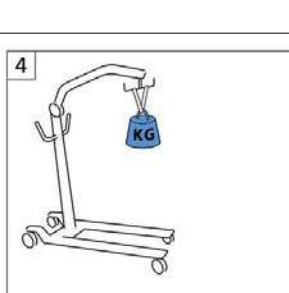
Confirm pairing by pushing key 1

## How to pair a LINAK® Wireless LIFT50



## How to use the Learn Mode function

With the COL50 it is possible to configure software for the use of standard or advanced Learn Mode function or even both if needed. When preparing the control box software, it is possible to make preparations for the use of standard Learn Mode hand control or the use of customised hand control.

	Standard Learn Mode	Advanced Learn Mode
<b>Basic condition</b>	<p>To ensure that a new current limit setting is stored in the control box, the Learn Mode function must be active for at least 2 seconds and the actuator current consumption must be at least 2 Amp during the use of the Learn Mode function.</p>	<p>To ensure that a new current limit setting is stored correctly in the control box, the physical actuator stroke length shall fit the specified stroke length in the SW.</p>
	<p>Drive the lifting arm down and connect the special Learn Mode hand control.</p>	<p>Drive the lifting arm down and connect the special Learn Mode hand control.</p>
	<p>Add load to the lift corresponding to SWL for the lift type.</p>	<p>Add load to the lift corresponding to SWL for the lift type.</p>
	<p>Press the 'R' and 'UP' buttons simultaneously and move the lifting arm up. If using the standard Learn Mode, then it is possible to use the standard Learn Mode function without moving the actuator a full stroke, but it must be ensured that the lifting is carried out in the area where the lift has the biggest load.</p>	<p>Press the 'R' and 'UP' buttons simultaneously and move the lifting arm up. For use of advanced Learn Mode, it is required and important to run a full stroke while registering the new current limit settings. This will cover different load requirements over the stroke length.</p>
	<p>When the actuator stops running, the largest current value is registered and stored in the control box SW.</p> <p>When the current cut-off value is stored, the control box will provide an audio signal and flashing LED, depending on the SW configuration.</p>	<p>When the actuator stops running, a data set of new current limits has been registered and stored in the control box SW.</p> <p>The data set contains pairs of values for current consumption in different stroke length sections.</p> <p>When the current cut-off data set is stored, the control box will provide an audio signal and flashing LED depending on the SW configuration.</p>