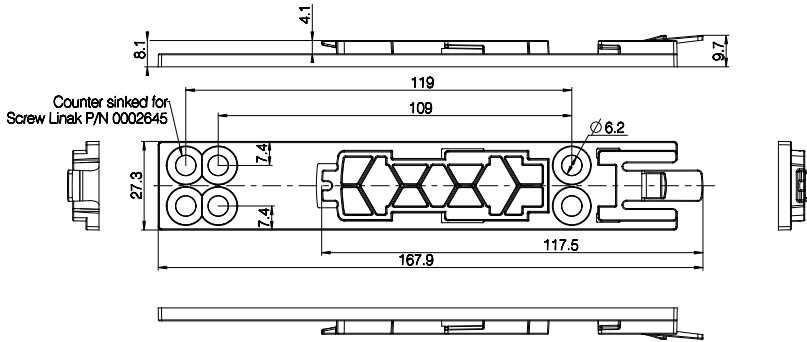


## Multi-flexible mounting bracket for MJB5 Plus - article no. 1015W1010-A



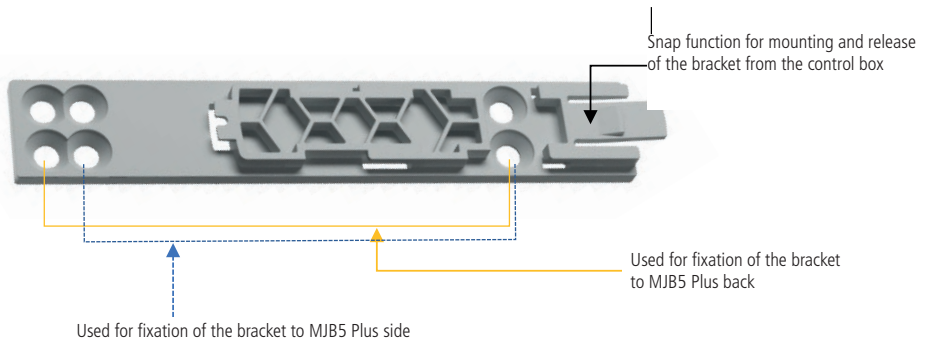
Drawing no.: 0835012

Mount the bracket on the side or the back of the MJB5 Plus.

If it is necessary to dismount the MJB5 Plus from the application, we recommend to use the bracket for mounting.

Use special screws type WN1423 K60x16, ordering no. 0002645.

The screws must be mounted with a torque of maximum 1,0 Nm. The screw head will then be flush with the bracket.



The bracket is very flexible for mounting but we recommend one of the following fixations.

Bracket fixation to the MJB5 Plus back:

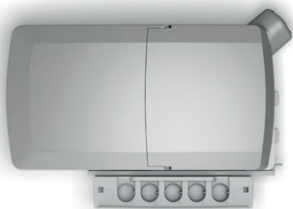


Bracket fixation to the MJB5 Plus side:



The MJB5 Plus bracket is for mounting on the CO and CB OpenBus control boxes.

Mounting examples



MJB5 Plus with bracket mounted on the side.  
MJB5 Plus mounted on the side of the control box.



MJB5 Plus with bracket mounted on the back.  
MJB5 Plus mounted on the side of the control box.



### Recommendations:

- The MJB must be mounted on an even surface
- The locking surface must be free of other material
- Always use locking mechanism and O-ring
- Sockets not used must be fitted with blind plugs to ensure the IP degree
- HOT PLUGGING

Removing or adding any OpenBus cables are not allowed when the control box is powered by mains supply!

If needed anyway follow the below procedure:

1. Remove mains and wait 5 sec.
2. Mount or dismount the required cables

If this procedure is NOT followed it may result in a damaged OpenBus driver circuit.

The risk of a damaged circuit increases if the accessory has a high start current (in rush current).

- When using USB cable (0834000) or modular plug cable (0964399) with open end, it is up to the customer to maintain the IP degree.
- Do not use 2 MJB5 Plus variants with same device ID on the OpenBus™. This will cause conflicts and the SDT is not able to identify the different products attached.
- Before the final functional test in the production, is it important that the system is re-powered. This is to make sure that all items have been detected on the OpenBus.
- We recommend that the end user makes a regular test procedure, in order to prevent failures and hazardous situations on the system, e.g. squeezed cables. The MJB5 Plus is not able to detect defective 3rd party products.
- LINAK only takes responsibility for LINAK products, not 3rd party products. Please pay attention to the "Patient Environment" Clause 3.79 - IEC60601-1.
- There can be a risk of conflict with other OpenBus accessories, such as HB, etc. it is therefore recommended to make a system/bit overview.
- When connecting 3rd party products to LINAK systems, the customer must take necessary precautions against Electrostatic Discharge (ESD). Exposure to harmful ESD must be avoided.
- 3<sup>rd</sup> party products must be designed with the following isolation:  
Minimum 1 MOPP (creepage distance/clearance according to IEC 60601-1).



### MJB5 Plus SMPS Special Recommendations:

- The USB cable 0834000 is not medically approved.
- The MJB5 Plus with SMPS is as standard defined as a 150 mA (4W ver.) type. This means that when the SMPS is delivering max. power on port 2, the remaining power on the V permanent 40V, is maximum 50 mA. This can have influence when other accessories are connected to the system.
- When the SMPS is being used on a system with battery, the output power will follow the power-down mode of the control box, see table

OpenBus control box power mode		SMPS 4W output power
On mains		4W
On battery	Power down	No power
	"Wake up"	2W



**LINAK**  
 Designed in Denmark  
 DK - 6430 Nordborg  
 Item : MJB5041010-1023 / DN: 150  
 Date : 2020.09.14 IPX6  
 SW. : 01010002 V1.1 / Cfg: 010-0  
 NOT TO BE OPENED BY UNAUTHORIZED PERSONNEL  
 MADE IN DENMARK  
 W/O# 01234567-0001



The modular junction box MJB5 Plus is designed for use together with OpenBus™ control boxes.

The MJB5 Plus makes it possible to connect multiple hand controls and attendant controls. It can even be used for charging or to connect the Under Bed Light and 3<sup>rd</sup> party products.

**MJB5 Plus with Gateway**  
**MJB5 Plus versions 504-010 & 504-020:**

The MJB5 Plus is a simple gateway interface which can connect switch input notifications from the hospital or nursing home infrastructure such as service/nurse call systems.

Please note that notifications are only to be used as service information and not for emergency issues.

1 OPENBUS™

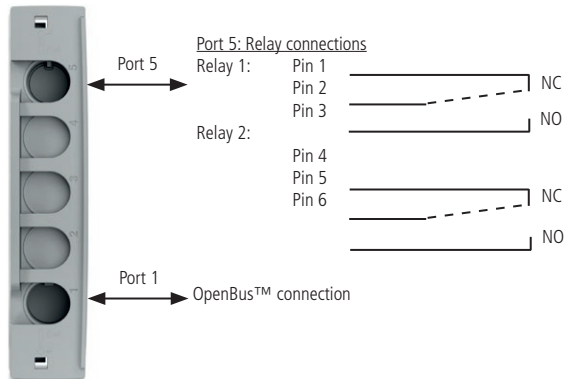
5 GATEWAY CONNECTION

**Usage:**

Compatibility:	All OpenBus products
Operation 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
Operational meters above sea level:	Max. 3000 meters
Latex free:	Yes
Approvals:	IEC60601-1, ANSI/AAMI ES60601-1, CAN/CSA-22.2 No 60601-1,

**MJB Gateway usage:**

Contact rating:	Maximum continuous current: 1A
Maximum switching voltage:	48VDC
Maximum switching capacity:	24VA
Contact resistance:	<100 mΩ
Current consumption:	V bus 8V: 9 mA
	V permanent 40V: 14 mA



**Standard functionality:**

The MJB5 Plus Gateway consists of two relays, which are connected through port 5 on the MJB5 Plus. This can be done with the special cable 0964140 (modular plug - open end)

There are as standard 2 configurations, 504-010 and 504-020, see description on the next pages.

- Relay 1: NC (normally closed) = Pin 2 + Pin 1/NO (normally open) = Pin 2 + Pin 3
- Relay 2: NC (normally closed) = Pin 5 + Pin 4/NO (normally open) = Pin 5 + Pin 6

## Relay 1

Relay 1 is NO when connected to mains and NC when no mains, this means the relay is "active", when connected to mains (closed loop). The closed loop principal is to ensure that a notification is sent if power is missing on the bed. When mains is disconnected (power is missing), the relay will go from NO to NC which will automatically result in a notification (status indicator) on the OpenBus.

Relay 1 can be activated via the patient control (Key1/Key4) or the attendant control (Key2 / Key3). When a key is activated, the relay will switch state from NO to NC for 2 seconds. After 2 seconds the relay will automatically change state from NC to NO.

The status of the relay is indicated on the OpenBus and can be used for switching on an LED.

Relay 1		
OpenBus control box power mode	Notification level	Relay state
Mains unplugged, the control box is in power-down or the OpenBus is not running (Clock/data is missing)	Notification	NC\*
On mains or battery at "wake up"	Bed notification\**	NC
	No notification	NO

## Relay 2

Relay 2 is as default NC, with or without mains, (open loop).

Relay 2 can be activated via the patient control (Key 1) or the attendant control (Key 2 / Key 3).

When the relay is activated, it will switch from NC to NO for 2 seconds. After 2 seconds the relay will automatically change state from NO to NC.

The status of the relay is indicated on the OpenBus™ and can be used for switching on an LED.

By using the variant 504-020 will relay 2 be controlled by the MJB5 Plus variant 505/506 with switch input.

Notification 1 = Switch input S2 / notification 2 = Switch input S1

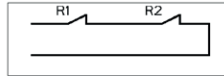
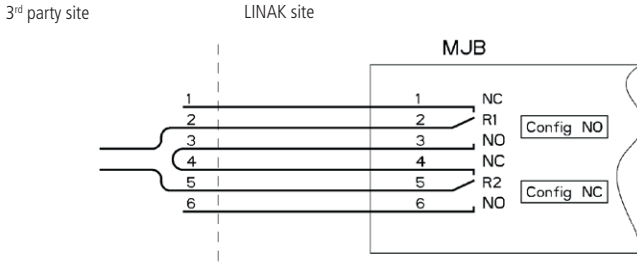
When using this combination, is it important to have the MJB5 Plus 505/506 connected to the system all the time. If it is not connected, the Gateway MJB5 Plus will see it as a notification and the relay will be activated. The Gateway MJB5 Plus is "scanning" the OpenBus system. every minute for a notification.

Relay 2		
CB or OpenBus control box power mode	Notification level	Relay state
Mains unplugged or the control box is in power-down	No notification	NC
On mains or battery at "wake up"	Bed notification\**	NO
	No notification	NC

\\* When mains is unplugged or CB or the OpenBus control box is in power-down, the relay will shift to NC state and generate a notification.

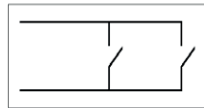
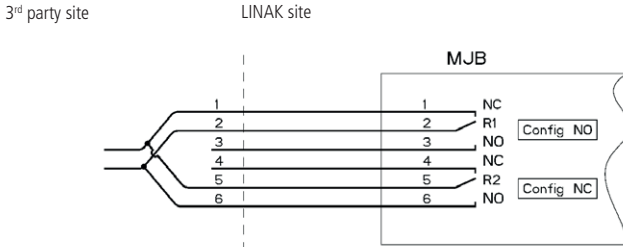
\\*\* Notification generated by nurse call or bed notifications.

**Example of closed loop:**



In this state no notification

**Example of open loop:**



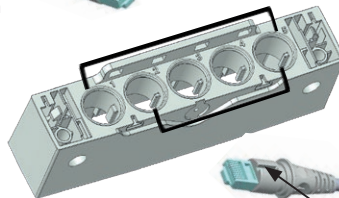
In this state no notification

**Modular plug cable, narrow/wide alignment grooves:**

**Modular plug with wide alignment groove.**

To be used with LINAK products.

Can be connected to all ports in the MJB5 Plus, both ports with narrow and wide alignment grooves.



**Modular plug with narrow alignment groove.**

To be used with 3<sup>rd</sup> party products.

Can only be connected to ports in the MJB5 Plus with narrow slit. This is to prevent 3<sup>rd</sup> party products to interfere with the OpenBus™ connections.

## Unlocking of cable locking mechanism

If a cable needs to be replaced or added, we recommend to open the cable locking mechanism as described below and demonstrated in our video on LINAK.com - MJB5 Plus section brochures and manuals.



Video guide available on [www.linak.com](http://www.linak.com)



1. Insert a pin or screwdriver with a diameter of 3.5 to 4 mm.



2. Pull downwards until a click sound is heard. Repeat this for the other locking hole.



3. The cable mechanism is now unlocked.

## Locking of cable mechanism



Video guide available on [www.linak.com](http://www.linak.com)



1. Align the locking mechanism with the MJB5 Plus.



2. Press the cable locking mechanism down until you hear a click sound.

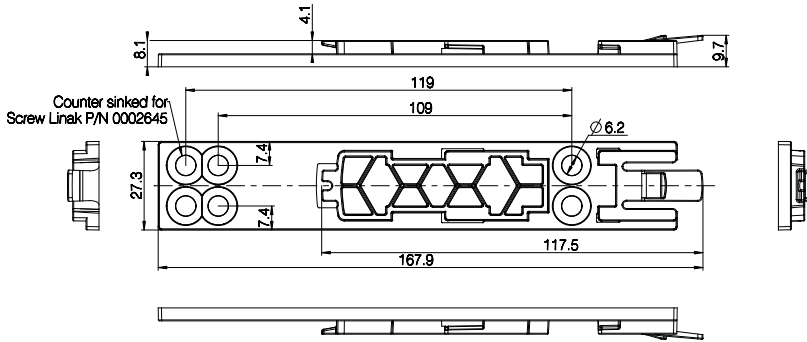


3. Slide the mechanism forward until you hear another click sound.



4. MJB5 Plus with a locked cable mechanism.

Multi-flexible mounting bracket for MJB5 Plus - article no. 1015W1010-A



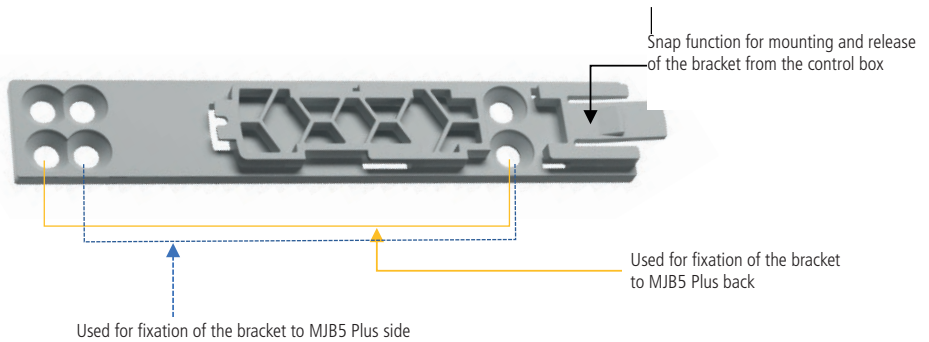
Drawing no.: 0835012

Mount the bracket on the side or the back of the MJB5 Plus.

If it is necessary to dismount the MJB5 Plus from the application, we recommend to use the bracket for mounting.

Use special screws type WN1423 K60x16, ordering no. 0002645.

The screws must be mounted with a torque of maximum 1,0 Nm. The screw head will then be flush with the bracket.



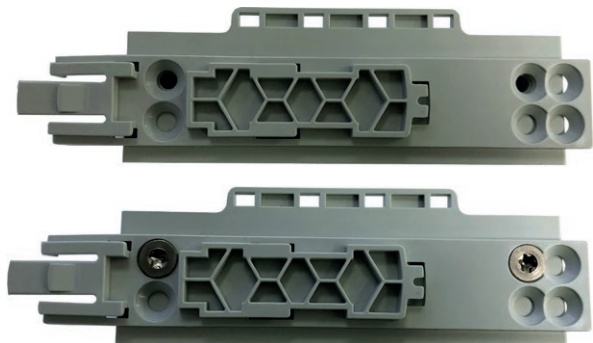


The bracket is very flexible for mounting but we recommend one of the following fixations.

Bracket fixation to the MJB5 Plus back:



Bracket fixation to the MJB5 Plus side:



The MJB5 Plus bracket is for mounting on the CO and CB OpenBus control boxes.

Mounting examples



MJB5 Plus with bracket mounted on the side.  
MJB5 Plus mounted on the side of the control box.



MJB5 Plus with bracket mounted on the back.  
MJB5 Plus mounted on the side of the control box.



## Recommendations:

- The MJB must be mounted on an even surface
- The locking surface must be free of other material
- Always use locking mechanism and O-ring
- Sockets not used must be fitted with blind plugs to ensure the IP degree
- HOT PLUGGING

Removing or adding any OpenBus cables are not allowed when the control box is powered by mains supply!

If needed anyway follow the below procedure:

1. Remove mains and wait 5 sec.
2. Mount or dismount the required cables

If this procedure is NOT followed it may result in a damaged OpenBus driver circuit.

The risk of a damaged circuit increases if the accessory has a high start current (in rush current).

- When using USB cable (0834000) or modular plug cable (0964399) with open end, it is up to the customer to maintain the IP degree.
- Do not use 2 MJB5 Plus variants with same device ID on the OpenBus™.
- This will cause conflicts and the SDT is not able to identify the different products attached.
- Before the final functional test in the production, is it important that the system is re-powered. This is to make sure that all items have been detected on the OpenBus.
- We recommend that the end user makes a regular test procedure, in order to prevent failures and hazardous situations on the system, e.g. squeezed cables. The MJB5 Plus is not able to detect defective 3rd party products.
- LINAK only takes responsibility for LINAK products, not 3rd party products.
- Please pay attention to the "Patient Environment" Clause 3.79 - IEC60601-1.
- There can be a risk of conflict with other OpenBus accessories, such as HB, etc. it is therefore recommended to make a system/bit overview.
- When connecting 3rd party products to LINAK systems, the customer must take necessary precautions against Electrostatic Discharge (ESD). Exposure to harmful ESD must be avoided.
- 3<sup>rd</sup> party products must be designed with the following isolation:  
Minimum 1 MOPP (creepage distance/clearance according to IEC 60601-1).



## MJB5 Plus Gateway Special Recommendations:

- If the MJB5 Plus Gateway is used as open loop, there is a risk of not sending a notification, when no mains is connected. The MJB5 Plus Gateway will only send a notification if mains is missing, when using a closed loop (see functionality description.)
- When the Gateway is being used on a system with battery, the gateway functionality will follow the power-down mode of the control box, see table:

OpenBus control box power mode		Gateway
On mains		function ok
On battery	Power down	No function
	"Wake up"	Function ok

- The MJB5 Plus Gateway is not to be used as safety, it is only to be used as a guided system.
- It is important to test the specified notification is working in the correct way, before sending the system to the end user.



The modular junction box MJB5 Plus is designed for use together with OpenBus™ control boxes.

The MJB5 Plus makes it possible to connect multiple hand controls and attendant controls. It can even be used for charging or to connect the Under Bed Light and 3<sup>rd</sup> party products.

**MJB5 Plus with Under Bed Light (int.) and Switch Input (S1/S2)  
MJB5 Plus versions 505-010 and 505-020:**

The MJB5 Plus is a modular junction box with 3 different options, Under Bed Light (UBL) and 2 different switch inputs, S1 and S2, which can be used for an external switch.

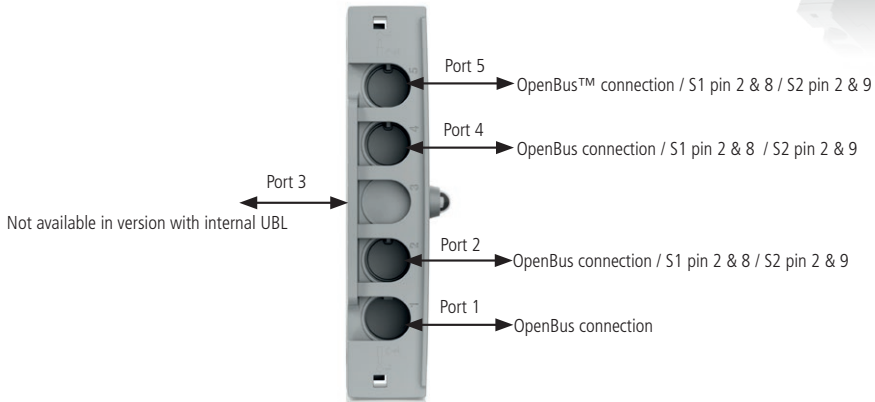
**UBL:** The MJB5 Plus with UBL gives a guiding light when the patient leaves the bed and makes it easy to find the way back to bed at night without disturbing other patients. The MJB5 Plus has an LED integrated in the MJB5 Plus housing which makes it easy to use.

**External Switch (S1/S2):** It is possible for the customer to connect a switch directly to the MJB5 Plus. This can be used with a customised switch or control.



**Usage:**

Compatibility:	All OpenBus products
Operation 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
Operational meters above sea level:	Max. 3000 meters
Latex free:	Yes
Approvals:	IEC60601-1, ANSI/AAMI ES60601-1, CAN/CSA-22.2 No 60601-1,



**Standard functionality:**

**UBL:** The UBL LED can be switched on and off via the patient control (Key 1) or the attendant control (Key 2).

**External Switch (S1/S2):** The external switch is connected to S1: Pin 2 & 8/S2: Pin 2 and 9 on Port 2, Port 4 or Port 5. The Switch input functionality can be enabled/disabled via the attendant control. The enable/disable status (switch status) is indicated on the OpenBus. The switch input functionality is as standard to be used with a NO switch. When the switch is activated (NC), a notification is sent on the OpenBus (switch notification).

## Unlocking of cable locking mechanism

If a cable needs to be replaced or added, we recommend to open the cable locking mechanism as described below and demonstrated in our video on LINAK.com - MJB5 Plus section brochures and manuals.



Video guide available on [www.linak.com](http://www.linak.com)



1. Insert a pin or screwdriver with a diameter of 3.5 to 4 mm.



2. Pull downwards until a click sound is heard. Repeat this for the other locking hole.



3. The cable mechanism is now unlocked.

## Locking of cable mechanism



Video guide available on [www.linak.com](http://www.linak.com)



1. Align the locking mechanism with the MJB5 Plus.



2. Press the cable locking mechanism down until you hear a click sound.



3. Slide the mechanism forward until you hear another click sound.



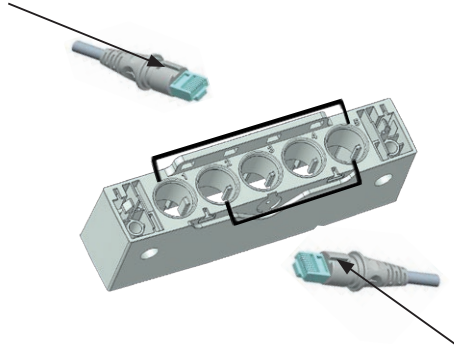
4. MJB5 Plus with a locked cable mechanism.

**Modular plug cable, narrow/wide alignment grooves:**

**Modular plug with wide alignment groove.**

To be used with LINAK products.

Can be connected to all ports in the MJB5 Plus, both ports with narrow and wide alignment grooves.



**Modular plug with narrow alignment groove.**

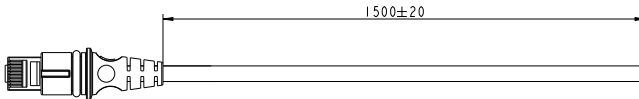
To be used with 3<sup>rd</sup> party products.

Can only be connected to ports in the MJB5 Plus with narrow slit. This is to prevent 3<sup>rd</sup> party products to interfere with the OpenBus™ connections.

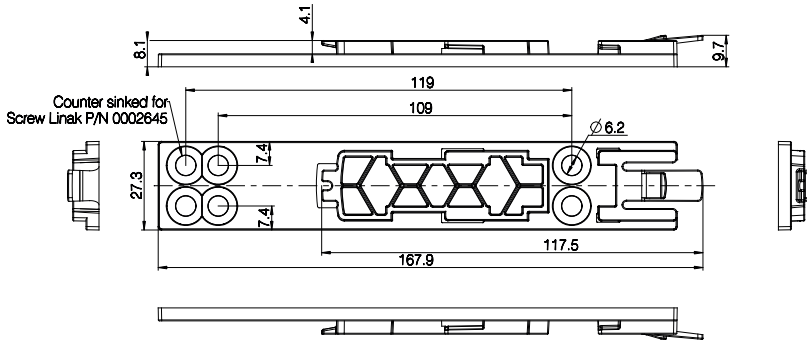
**Open-end cable:**

0964399: Open end cable for Under Bed Light internal and external and switch input.

Length 1500 mm.



Multi-flexible mounting bracket for MJB5 Plus - article no. 1015W1010-A



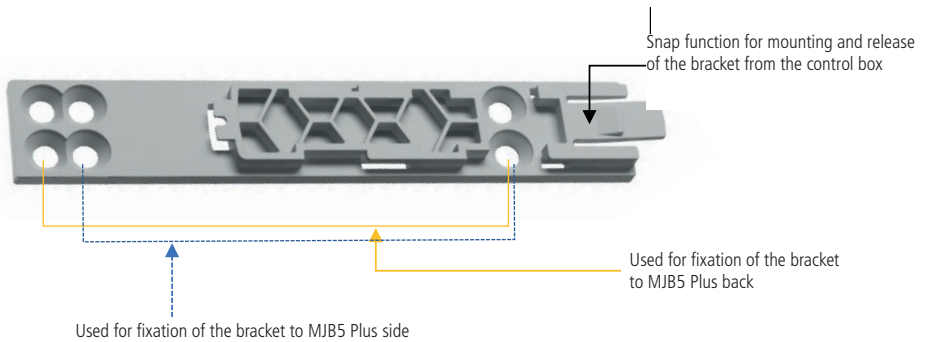
Drawing no.: 0835012

Mount the bracket on the side or the back of the MJB5 Plus.

If it is necessary to dismount the MJB5 Plus from the application, we recommend to use the bracket for mounting.

Use special screws type WN1423 K60x16, ordering no. 0002645.

The screws must be mounted with a torque of maximum 1,0 Nm. The screw head will then be flush with the bracket.



The bracket is very flexible for mounting but we recommend one of the following fixations.

Bracket fixation to the MJB5 Plus back:



Bracket fixation to the MJB5 Plus side:



The MJB5 Plus bracket is for mounting on the CO and CB OpenBus control boxes.

Mounting examples



MJB5 Plus with bracket mounted on the side.  
MJB5 Plus mounted on the side of the control box.



MJB5 Plus with bracket mounted on the back.  
MJB5 Plus mounted on the side of the control box.



## Recommendations:

- The MJB must be mounted on an even surface
- The locking surface must be free of other material
- Always use locking mechanism and O-ring
- Sockets not used must be fitted with blind plugs to ensure the IP degree
- HOT PLUGGING

Removing or adding any OpenBus cables are not allowed when the control box is powered by mains supply!

If needed anyway follow the below procedure:

1. Remove mains and wait 5 sec.
2. Mount or dismount the required cables

If this procedure is NOT followed it may result in a damaged OpenBus driver circuit.

The risk of a damaged circuit increases if the accessory has a high start current (in rush current).

- When using USB cable (0834000) or modular plug cable (0964399) with open end, it is up to the customer to maintain the IP degree.
- Do not use 2 MJB5 Plus variants with same device ID on the OpenBus™.
- This will cause conflicts and the SDT is not able to identify the different products attached.
- Before the final functional test in the production, is it important that the system is re-powered. This is to make sure that all items have been detected on the OpenBus.
- We recommend that the end user makes a regular test procedure, in order to prevent failures and hazardous situations on the system, e.g. squeezed cables. The MJB5 Plus is not able to detect defective 3rd party products.
- LINAK only takes responsibility for LINAK products, not 3rd party products.
- Please pay attention to the "Patient Environment" Clause 3.79 - IEC60601-1.
- There can be a risk of conflict with other OpenBus accessories, such as HB, etc. it is therefore recommended to make a system/bit overview.
- When connecting 3rd party products to LINAK systems, the customer must take necessary precautions against Electrostatic Discharge (ESD). Exposure to harmful ESD must be avoided.
- 3<sup>rd</sup> party products must be designed with the following isolation:  
Minimum 1 MOPP (creepage distance/clearance according to IEC 60601-1).



## MJB5 Plus with UBL (int.) Special Recommendations:

- When the MJB5 Plus with UBL, and switch input is being used on a system with battery, the functionality will follow the power-down mode of the control box, see table:

OpenBus control box power mode		MJB5 Plus with UBL and switch
On mains		Function ok
On battery	Power down	No function
	"Wake up"	Function ok



**LINAK**  
 Designed in Denmark  
 DK - 6430 Nordborg  
 Item : MJB5064020-1023 / DN: 141  
 Date : 2020.09.14 IPX6  
 SW. : 01010001 V1.0 / Cfg: 020-1  
 NOT TO BE OPENED BY UNAUTHORIZED PERSONNEL  
 Made in China 01  
 W/D# 01234567-0001



The modular junction box MJB5 Plus is designed for use together with OpenBus™ control boxes.

The MJB5 Plus makes it possible to connect multiple hand controls and attendant controls. It can even be used for charging or to connect the Under Bed Light and 3<sup>rd</sup> party products.

**MJB5 Plus with Under Bed Light (ext.) and Switch Input**  
**MJB5 Plus versions 506-010 and 506-020:**

The MJB5 Plus is a modular junction box with 3 different options, Under Bed Light (UBL) and two switch inputs, S1 and S2, which can be used for an external switch.

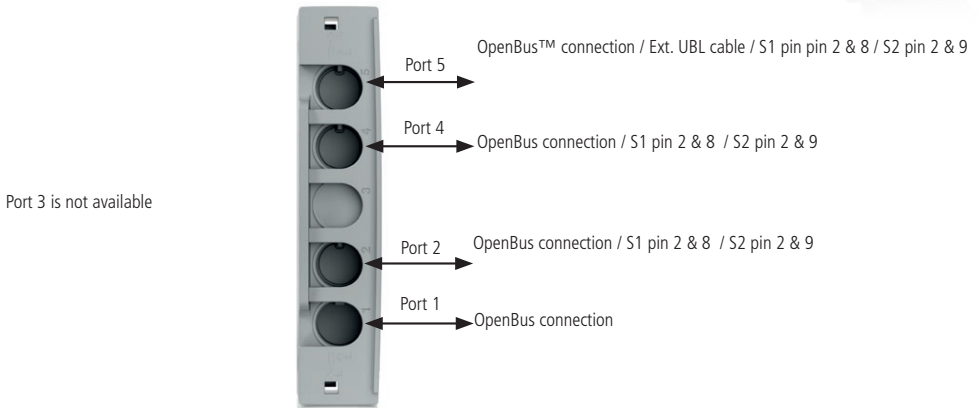
**UBL:** The MJB5 Plus with UBL is a simple solution to prevent fall accidents and make the patient feel safe. The UBL makes it easy to find the way back to the bed at night without disturbing other patients.

The MJB5 Plus has an external LED cable (0964135) which is connected to Port 5. The external LED cable makes it more flexible to use the UBL. It can be moved from side to side of the bed or can be placed at the foot of the bed.

**External Switch (S1/S2):** It is possible for the customer to connect a switch directly to the MJB5 Plus. It can be used with a customised switch or control.

**Usage:**

Compatibility:	All OpenBus products
Operation 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
Operational meters above sea level:	Max. 3000 meters
Latex free:	Yes
Approvals:	IEC60601-1, ANSI/AAMI ES60601-1, CAN/CSA-22.2 No 60601-1,



**Standard functionality:**

**UBL:** The UBL LED can be switched on and off via the patient control (Key1) or the attendant control (Key2).

**External Switch (S1/S2):** The external switch is connected to S1: Pin 2 & 8/S2: Pin 2 and 9 on Port 2, Port 4 or Port 5.

The switch input functionality can be enabled/disabled via the attendant control. The enable/disable status (switch status) is indicated on the OpenBus. The switch input functionality is as standard to be used with a NO switch. When the switch is activated (NC), a notification is sent on the OpenBus (switch notification).

## Unlocking of cable locking mechanism

If a cable needs to be replaced or added, we recommend to open the cable locking mechanism as described below and demonstrated in our video on LINAK.com - MJB5 Plus section brochures and manuals.



Video guide available on  
[www.linak.com](http://www.linak.com)



1. Insert a pin or screwdriver with a diameter of 3.5 to 4 mm.



2. Pull downwards until a click sound is heard. Repeat this for the other locking hole.



3. The cable mechanism is now unlocked.

## Locking of cable mechanism



Video guide available on  
[www.linak.com](http://www.linak.com)



1. Align the locking mechanism with the MJB5 Plus.



2. Press the cable locking mechanism down until you hear a click sound.



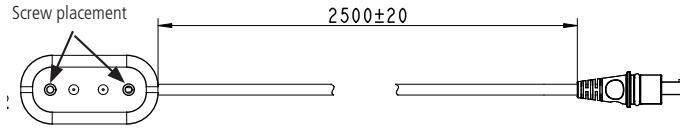
3. Slide the mechanism forward until you hear another click sound.



4. MJB5 Plus with a locked cable mechanism.

**Under Bed Light cable:**

0964135: Under Bed Light cable, Length 2500 mm. Please use metal screws for mounting.

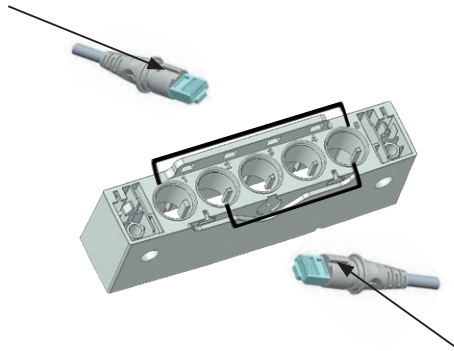


**Modular plug cable, narrow/wide alignment grooves:**

**Modular plug with wide alignment groove.**

To be used with LINAK products.

Can be connected to all ports in the MJB5 Plus, both ports with narrow and wide alignment grooves.



**Modular plug with narrow alignment groove.**

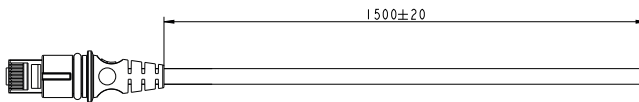
To be used with 3<sup>rd</sup> party products.

Can only be connected to ports in the MJB5 Plus with narrow slit. This is to prevent 3<sup>rd</sup> party products to interfere with the OpenBus™ connections.

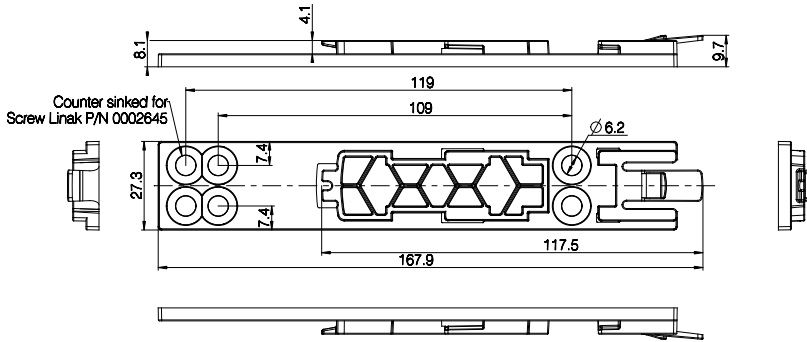
**Open-end cable:**

0964399: Open end cable for Under Bed Light internal and external and switch input.

Length 1500 mm.



Multi-flexible mounting bracket for MJB5 Plus - article no. 1015W1010-A



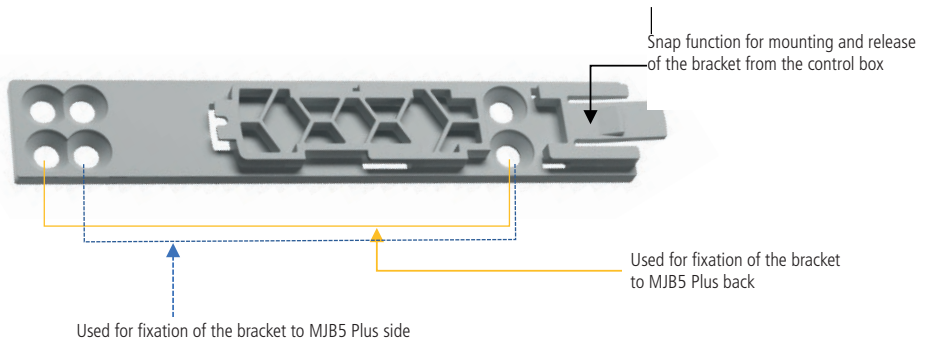
Drawing no.: 0835012

Mount the bracket on the side or the back of the MJB5 Plus.

If it is necessary to dismount the MJB5 Plus from the application, we recommend to use the bracket for mounting.

Use special screws type WN1423 K60x16, ordering no. 0002645.

The screws must be mounted with a torque of maximum 1,0 Nm. The screw head will then be flush with the bracket.



The bracket is very flexible for mounting but we recommend one of the following fixations.

Bracket fixation to the MJB5 Plus back:



Bracket fixation to the MJB5 Plus side:



The MJB5 Plus bracket is for mounting on the CO and CB OpenBus control boxes.

Mounting examples



MJB5 Plus with bracket mounted on the side.  
MJB5 Plus mounted on the side of the control box.



MJB5 Plus with bracket mounted on the back.  
MJB5 Plus mounted on the side of the control box.



## Recommendations:

- The MJB must be mounted on an even surface
- The locking surface must be free of other material
- Always use locking mechanism and O-ring
- Sockets not used must be fitted with blind plugs to ensure the IP degree
- HOT PLUGGING

Removing or adding any OpenBus cables are not allowed when the control box is powered by mains supply!

If needed anyway follow the below procedure:

1. Remove mains and wait 5 sec.
2. Mount or dismount the required cables

If this procedure is NOT followed it may result in a damaged OpenBus driver circuit.

The risk of a damaged circuit increases if the accessory has a high start current (in rush current).

- When using USB cable (0834000) or modular plug cable (0964399) with open end, it is up to the customer to maintain the IP degree.
- Do not use 2 MJB5 Plus variants with same device ID on the OpenBus™.
- This will cause conflicts and the SDT is not able to identify the different products attached.
- Before the final functional test in the production, is it important that the system is re-powered. This is to make sure that all items have been detected on the OpenBus.
- We recommend that the end user makes a regular test procedure, in order to prevent failures and hazardous situations on the system, e.g. squeezed cables. The MJB5 Plus is not able to detect defective 3rd party products.
- LINAK only takes responsibility for LINAK products, not 3rd party products.
- Please pay attention to the "Patient Environment" Clause 3.79 - IEC60601-1.
- There can be a risk of conflict with other OpenBus accessories, such as HB, etc. it is therefore recommended to make a system/bit overview.
- When connecting 3rd party products to LINAK systems, the customer must take necessary precautions against Electrostatic Discharge (ESD). Exposure to harmful ESD must be avoided.
- 3<sup>rd</sup> party products must be designed with the following isolation:  
Minimum 1 MOPP (creepage distance/clearance according to IEC 60601-1).



## MJB5 Plus with UBL (ext.) Special Recommendations:

- The LED end of the UBL cable (0964135) must be mounted on the bed with metal screws, in order to maintain ESD protection.
- When the MJB5 Plus with UBL, switch input is being used on a system with battery, the functionality will follow the power-down mode of the control box, see table:

OpenBus control box power mode		MJB5 Plus with UBL and switch
On mains		Function ok
On battery	Power down	No function
	"Wake up"	Function ok



The MJB8 modular junction box is a central unit in the “Intelligent Care Bed”, connecting various intelligent accessories, such as the Out Of Bed and WET detection, and sending notifications via a range of optional gateways to the user (i.e. caregiver)



### Recommendations

- Always use locking mechanism and O-ring.
- Sockets that are not used must be fitted with blind plugs (Item P/N.: 0821008) to ensure IP-degree.
- When using the modular plug cable with an open end, the customer is responsible for maintaining the IP degree.
- When mounting, ensure that a screw torque limit of 1 Nm is not exceeded.
- 3<sup>rd</sup> party products must correspond to all requirements stated in the MJB8 Interface description for 3<sup>rd</sup> party products in order to avoid damage/malfunction.
- The Under Bed Light (Item P/N.: 0964135) must be mounted on the bed with metal screws in order to maintain ESD protection.
- HOT PLUGGING

Removing or adding any OpenBus™ cables are not allowed when the control box is powered by mains supply!

Follow the below procedure:

1. Remove mains and wait 5 seconds
2. Mount or dismount the required cables

If this procedure is NOT followed it may result in a damaged OpenBus™ driver circuit.

The risk of a damaged circuit increases if the accessory has a high start current.

- Before the final functional production test, it is important that the system is repowered. This is to ensure, that all items have been detected on the OpenBus™.
- It is important to test the specified notifications in order to ensure that they work correctly before sending the system to the end user.
- The MJB8 is intended for mains operation only. The user must be informed that all MJB8 sensor notifications are disabled when the system is in battery mode.



### Warnings

- LINAK only takes responsibility for LINAK products, not 3<sup>rd</sup> party products. Please pay attention to the “Patient Environment” Clause 3.79 – EN60601-1 3<sup>rd</sup> edition. It must be subject to the Risk Analysis. It is important to inform the customer about this.
- The MJB8 is not able to detect defective 3<sup>rd</sup> party products. We recommend the end user to make a regular test procedure in order to prevent hazardous situations for the user and failures to the system.
- The MJB8 and the attached accessories (i.e. Out Of Bed or WET detection) are not intended as life-supporting or emergency equipment. They are only intended to support notifications for communication and comfort purposes of people in need of care.

**LINAK®**  
 Designed in Denmark  
 DK - 6430 Nordborg  
 Item : SIMBOX20B-01 IPX0  
 Date : 2019.08.29  
 W/O # - 00001  
 S.W. P/N.SW02021022V1-1



**!** NOT TO BE OPENED BY UNAUTHORIZED PERSONNEL  
 NE PAS OUVRIR PAR DU PERSONNEL NON AUTORISÉ

The Simulator Tool is a software that can be used to simulate hand control functions on OpenBus™ and analogue actuator systems. With the Simulator Tool, sequences of actuator movements can be programmed and repeated in order to test actuator systems.

**USB to OpenBus™ gateway:**

The gateway acts as an interface between the Simulator Tool Software and the OpenBus control box.

Together with the Simulator Tool Software, it can be used for test and demo purposes only.

It is not allowed to use the product as a control in any commercial application.

It has a USB B-input connection from the computer/laptop.


As output connection it has an RJ45 jack plug for connection to the control box.

The gateway is powered through the OpenBus connection to the control box.

The housing has 3 LEDs on the front.



OpenBus : This LED indicator shows if connected to OpenBus system. (power indicator)

 : This LED indicates that USB is connected (Requires power from the OpenBus connection to work).

PRQ : This LED indicates that active power request is active.

**Limitations:**

Note that an OpenBus system that has powered down (8 V missing) cannot be woken up by the USB to Openbus gateway! Although the USB to Openbus gateway sets a keep power bit, it might be neglected by some control boxes that will power down after a period of time. (Typically 2 minutes)

For cycle testing of such systems (typically battery equipped), that powers down during the cycle, a special control box software that has been stripped for the power down feature is needed.

**! Warnings:**

- The LINAK Simulator Tool is to be used as a test tool or demo tool only. It is not allowed to use the software and accessories as a control in any commercial application.
- Potentially dangerous situations resulting from automated movement generated by the Simulator Tool Software must be considered and assessed before starting any action.
- Please note that over time the actual movement of an actuator within a fixed activation time may vary due to changed friction inside the actuator or especially when a battery-driven system loses power. Close inspection and required adjustment is necessary to obtain the wanted movement over time and to avoid potentially dangerous situations.
- The generated test report itself is not a legal proof that a system has physically moved the actuators the number of times stated and cannot be used as such. The time of activation listed in the report generated is not necessarily the same as the time of actuator movement. It just shows how long the function has been activated (equal to the time you have pressed the button on the hand control). The actuator can be in end-of-stroke position or the function can be locked and therefore the actuator itself doesn't move. It is recommended to use a physical counter or similar to verify the actual actuator movement.

**👉 Recommendations:**

- See to it that sufficient pauses are kept between activations, so that the duty cycle of each actuator type is respected.





There are 2 types of SLS switches, an analogue and an OpenBus™ type.

The analogue SLS can be used as safety feature to cut off the current to the actuator. The SLS is available with 1 or 2 switches (activated by the same button). It can be placed to prevent an unintentional positioning of the various frame segments in relation to each other or simply as an external limit switch to protect the frame against the full thrust of the actuator in end position. The actuator stops immediately when the button is pressed.

The OpenBus SLS is to be used together with the OpenBus control boxes. It is available both as a passive and as an active type. It comes with 1 switch, Normally Open (NO). The standard OpenBus SLS is not to be used for safety (Signal Limit Switch).

Both types can be used as an external signal unit that gives a signal to the control box. This signal can limit or interrupt the functions on for instance a bed or can be used to start an OpenBus function.

**OpenBus SLS functionality:**

The OpenBus SLS is normally an open switch. When the switch is activated, ID1/Hxx is set on the OpenBus. The OpenBus SLS can be ordered as an active or passive type.

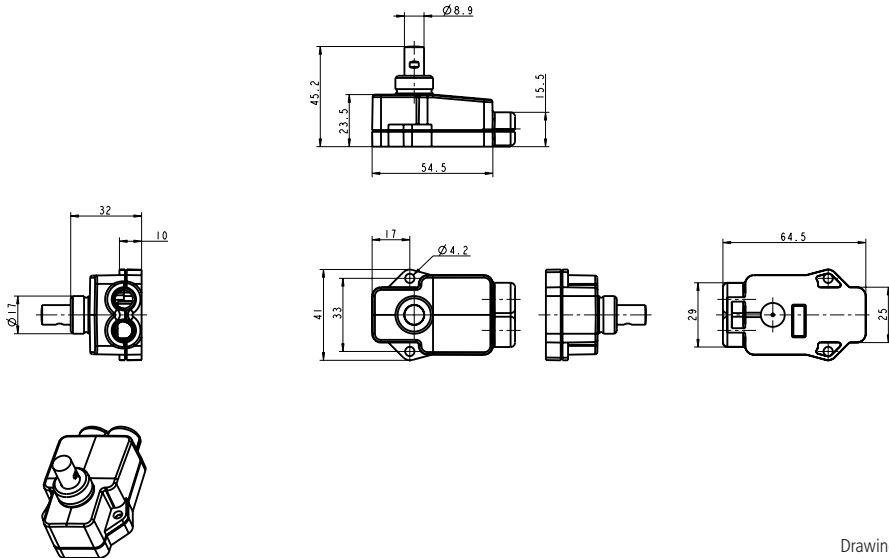
The active type has power request when the switch is activated and can be used for activating a function (actuator movement).

The passive type does not have power request when the switch is activated. The passive SLS can be used as a brake buzzer switch or as part of an activation, for instance in combination with a hand control, for example HB80.

**Usage:**

- Operating temperature: +5 °C to +40 °C
- Storage temperature: -10 °C to +50 °C
- Atmospheric pressure: 700 to 1060 hPa
- Height above sea level: Max. 3000 meters
- Approvals: IEC 60601-1  
ANSI/AAMI ES60601  
CSA CAN/CSA-C22.2 NO. 60601  
IEC 60601-1

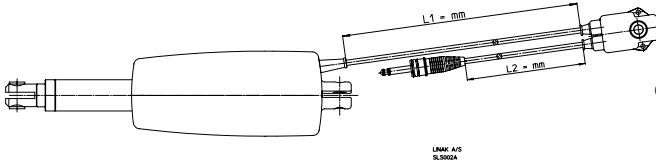
**Dimensions:**



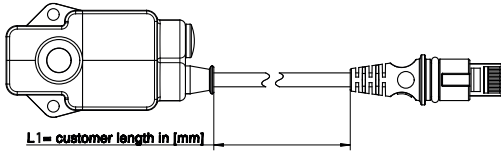
Drawing no.: 0914649



The ultrasonic welded SLS is fully compatible with the SLS fitted with screws.  
All outer dimensions as well as the activation point are unchanged.



Cable length Safety Limit Switch



Cable length Signal Limit Switch

## 18. Under Bed Light (MEDLINE® CARELINE®)

Designed in Denmark  
DK - 6430 Nordborg

Type : UBL

Item : 0964135-C

Date : 2018.06.21 IPX6

NOT TO BE OPENED BY UNAUTHORIZED PERSONNEL  
NE PAS OUVRIR PAR DU PERSONNEL NON AUTORISE

MADE IN CHINA

W/O #1234567-0001

The Under Bed Light (UBL) can be mounted under the bed to provide a discrete guiding light when the patient leaves the bed during night. With an Under Bed Light it is easy to switch the light on and off by means of a handset or controlling it automatically with the Out of Bed functionality of the MJB8.

### Usage:

- Operating temperature: + 5 °C to + 40 °C
- Storage temperature: - 10 °C to + 50 °C
- Atmospheric pressure: 700 to 1060hPa (3000 m)
- Approvals: IEC 60601-1, ANSI/AAMI ES60601-1, CAN/CSA-22.2 No 60601-1
- Connectivity: To be connected to MJB5 and MJB8



### Recommendations

- The Under Bed Light (Item P/N.: 0964135) must be mounted on the bed with metal screws in order to maintain ESD protection.

## 19. Under Bed Light 2 (MEDLINE® CARELINE®)



The Under Bed Light (UBL2) provides a powerful light with a good distribution. The UBL2 is to be used for beds within hospitals, nursing homes and in homecare.

The Under Bed Light makes it easier for patients and other people in need of care to find their way at night in the dark to prevent falling accidents and to make them feel safe.

### Usage:

- 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 (3000 m)
- Height above sea level: Max. 3000 meters
- Approvals: EN62471, IEC60601-1



### Recommendations and Precautions

- If 2 or more UBL2 products with dimming function are connected to the same application, it is recommended to have a factory reset key to be able to synchronize the dimming direction and light intensity if one of the UBL2s is replaced.
- Screw holes in application are needed for mounting. Inform the customer to use M4 Ø12 screws with Ø12 washer, when mounting the UBL2. Max. torque 2.5 Nm.
- Hot-plugging:  
Removing or adding any OpenBus™ cables is not allowed when the CB is powered by mains supply!  
If needed anyway, follow the below procedure:
  1. Remove mains and wait 5 sec.
  2. Mount or dismount the required cablesIf this procedure is NOT followed, it may result in a damaged OpenBus™ driver circuit. The risk of a damaged circuit increases if the accessory has a high start current (in rush current).
- There can be a risk of conflict with other OpenBus™ accessories, like HB, ACP, etc. when using the OpenBus™ UBL2, it is therefore recommended to make a system/bit overview.
- Always use locking mechanism and O-ring
- Sockets not used must be fitted with blind plugs to ensure IP degree
- The UBL2 must be mounted on a plane surface and casing must not be subject to impact or any kind of stress.

## 20. WET Sheet (MEDLINE® CARELINE®)



The WET Sheet is an OpenBus™ product and is a part of the WET Detection solution. The WET Detection solution consists of the WET Sheet, the MJB8 and a WET Sheet cable.



### Recommendations

- The WET Sheet is a wearing part which is not covered by the standard LINAK warranty. The WET Sheet warranty is valid until the product has been put into use
- The WET Sheet is not a stand-alone article and must be included as part of an application e.g. the MJB8
- The WET Detection will not detect liquid without conductivity e.g. demineralised water
- The WET Sheet is not intended for outdoor use
- The WET Sheet is not a life-supporting unit
- Mechanical pressure on the WET Sheet can destroy the thread and connectors
- It is recommended to change the WET Sheet cable after 500 connections
- The sheet and connector must be placed properly to minimise the risk of bedsores
- The WET Sheet connector is not to be exposed to direct moisture etc. urine or sweat. Place the connector away from the user e.g. on the side of the bed
- To ensure the right WET Detection functionality do not use layers on top of the WET Sheet, e.g. a turning sheet
- The recommended temperature for washing is 60 °C. Washing at 85 °C is acceptable, however, this will reduce the lifetime
- Tumble drying at medium heat, however, line drying is recommended
- The typical number of washing cycles is up to 50, but will depend on the washing conditions
- The WET Sheet should be washed before use



The Quad Load Cell Interface 2 (QLC12) for the hospital and care segment is a scale system accessory with weighing capabilities and Out of Bed functionality.

The housing, makes the QLC12 easy to mount by unique slide-on brackets and has an IPX6 Washable DURA™ ingress protection. The QLC12 supports the LINAK OpenBus™ system offering a high level of customisation.

LINAK A/S delivers the OpenBus™ system only and is not responsible for any products (i.e. products from 3<sup>rd</sup> party suppliers) other than LINAK products or the compatibility of such products with the LINAK OpenBus™ system.

## Usage

- Operation 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 (3000 m)
- Height above sea level: Max. 3000 meters
- Approvals  
IEC60601-1  
ANSI/AAMI ES60601-1  
CAN/CSA-22.2 No 60601-1  
EN 45501 / OIML R76  
EU type examination according to 2014/31/U
- Compatibility: All OpenBus control boxes
- Flammability rating: UL V0
- Latex free: Yes

## Approvals

### An OEM application approval according to EN45501

Typically the LINAK Weighing Solution will be classified as a “non-automatic weight” system.

If a LINAK Weighing Solution system is applied to a bed AND classified as such, the system MUST be “first-time” verified and sealed.

The verification and sealing is typically carried out in one of two ways:

### 1. Verification by the Bed manufacturer himself.

It prescribes that the manufacturer is certified to carry out the verification.

The certification can be obtained through a Notified Body that performs auditing and approval of the procedures and the quality system in the manufacturing company.

An example from Denmark:

‘DS Certificering’ is the only Notified Body in Denmark, certified to carry out approvals of quality systems for manufacturing and calibration of ‘non-automatic weight’ systems. Within Europe it is however possible to use any other Notified Body from one of the EU member states.

When certified the Bed manufacturer obtains a type approval certificate to prove they are certified to manufacture and calibrate their own “non-automatic weight” system.

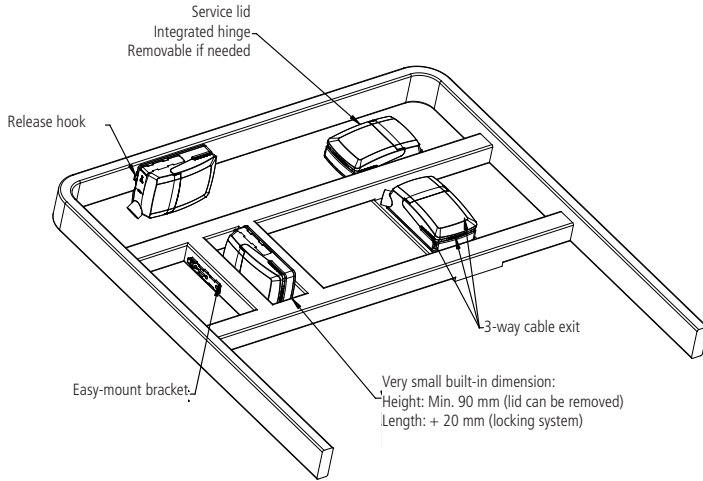
### 2. Verification by “first-time” verification Bodies.

In Denmark there are three Notified Bodies available for the verification and sealing of the application: Force Technology, Dansk Kalibreringsteknik and Trescal. Again any other Notified Body from an EU member state can be used. “First-time” verification can take place at either the manufacturer or at the destination of use.

## Requirements in both situations:

- The Type Approval Certificate number MUST be marked at the label on the weight unit.
- The Type Approval Certificate must be issued according to and including reference to the Directive for “non-automatic weights” 2009/23/EC (new non-modified version of 90/384/EEC).

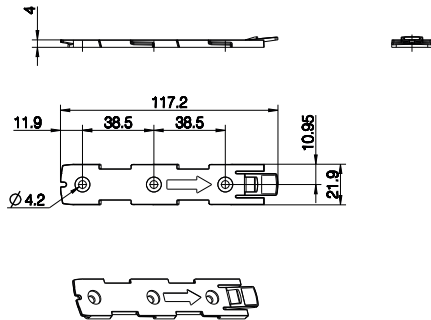
**Mounted on frame:**



Drawing No.: 1013W4008

**Mounting bracket (frame flat) -**

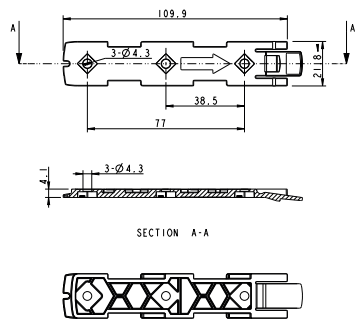
Article No. 1015W1001:



Drawing No.: 1015W4001

**Mounting bracket (frame flat) w/M4 nuts -**

Article No. 1015W9009:



Drawing No.: 1015W1009

It is recommended to mount the QLCI2 in a position that allows water to escape.

Recommended torque: 0.6 Nm +/-0.1

The bracket can be mounted to the bed frame or any other application by means of one of the following mounting procedures:

- 1) M6 nut to be placed in bracket and fixed with M6 bolt from the rear side.
- 2) M5 machine screw with flat washer to be fixed through bracket with nut on the rear side.
- 3) Self-tapping screw to be placed through bracket and onto the frame.

**⚠ Warnings:**

- In general the load cells are not living up to 2 MOPP, which is okay as long as all other parts comply with 2 MOPP and the load cells are electrically connected to the bed frame. This is to make the bed one electrical unit.



## Recommendations

- It is recommended to mount the load cells on the bottom frame to ensure a stable system.
- Shielded load cell cables will be damaged if exposed to sharp bends. Therefore, if bended, cables should have a minimum bending radius of 60 mm.
- It is not allowed to bend load cell cables repeatedly, so mount cables on non-moving parts, like the bed frame.
- Load cell cables should not exceed a length of 2700 mm.
- In Europe weight systems are subject to important legal restrictions. The LINAK Weighing System will be approved in accordance with EN45501. The used load cells must be OIML approved as well (this is not included in the LINAK approval).
- Do not mount the QLC12 directly on actuators.
- Load cell cables are not to be mated more than 40 times.

## Calibration and use

- When calibrating, the application and components should be allowed to acclimate to ensure that they have the same temperature as the surrounding environment.
- For optimal performance the QLC12 should be calibrated with a load similar to the in-use weight. For instance an application for lighter loads would benefit from having the bed calibrated with a lighter calibration load than an application for heavy use.
- The application will be most precise when calibrated with a load slightly above the in-use weight.
- Calibrate the application on a stable base.
- While performing a zero or auto-compensation and the handheld control is not placed on the application, the weight of the attendant control is not a part of the total weight. It leads to an incorrect measurement on the scale display, when the handheld control is placed on the application.
- When using auto-compensation or zeroing, do not touch the application or exert other external impacts on the application as this can result in incorrect measurements.
- Be aware that while the handheld control is not placed on the application and if its cable is pulled, it can lead to incorrect measurement on the scale display.
- When using the scale system, it is recommended to also have the bed in horizontal position.

## Mounting of cables and cable lock:

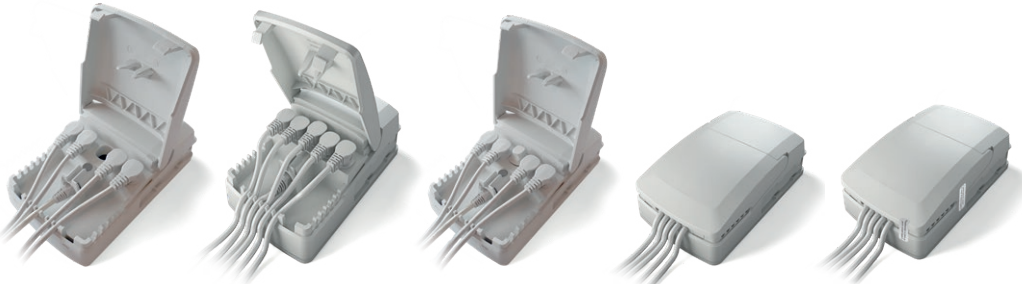
The QLC12 have a uniquely designed cable lid. The lid also works as an integrated cable lock when closed.

1. Mount load cell cable plugs in QLC12
2. Calibrate the system
3. Mount blind plug in calibration port
4. Close lid until lock snaps into place
5. Place calibration void label

To allow free access to the cables, the lid has a rest position when completely opened.

It is possible to remove the lid by lifting it a few degrees and pulling it away from the housing under tight mounting conditions.


- 1 Mount load cell cables
- 2 Calibrate the system
- 3 Mount blind plug
- 4 Close lid until it snaps
- 5 Place void label




Only 1 label is required. The label can be placed anywhere along the opening of the lid on the QLC12 box.

## 9. Information on specific LIFT products

### 1. CAL40 (MEDLINE® CARELINE®)

<b>LINAK</b> Designed in Denmark DK - 6430 Hadsund Type : CAL40A6200001S000000 Item : J80666 Date :2020.11.02 W/O #12345678-0001 MADE IN DENMARK	U In :100-240 V~, 50/60 Hz I In :Max. 280 mA, 17-35 VA IPX6 Int. :10 %, Max. 2 min. / 18 min. S.W. P/N : 999505 Ver. 1.0	
---	--	---

<b>LINAK</b> Designed in Denmark DK - 6430 Hadsund Type : CAL40A6200002S000000 Item : J80667 Date :2020.11.02 W/O #12345678-0001 MADE IN DENMARK	U In :24 V== I In :Max. 500 mA IPX6 Int. :10 %, Max. 2 min. / 18 min. S.W. P/N : 999505 Ver. 1.0	
---	--	---

The control box CAL40 is part of the LIFT40 product series specially developed for patient lifts.

LIFT40 is a complete system consisting of the control box CAL40 or CAL40+, a battery BAL40 and an external charger CHL40 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)  
Standby power of 230 VAC = 0.7 W (depending on input voltage)  
Improved BLE might give lower power consumption  
Input voltage range: 120-240 VAC (50/60 Hz)  
Power consumption (charging): max. 30 W (depending on input voltage)
- Duty cycle: Max. 10%, 2 minutes continuous use followed by 18 minutes 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 (pending):
  - CAL40  
EN IEC 60601-1  
ANSI/AAMI ES60601-1  
CAN/CSA-C22.2 NO. 60601-1  
EN IEC 60601-1-2
  - CAL40+  
IEC 60601-1  
ANSI/AAMI ES60601-1CSA CAN/CSA-C22.2 NO. 60601-1  
RED (EU)  
FCC ID (US)  
IC ID (Canada)  
Telec (Japan)  
Bluetooth® qualification

#### Instructions for use

- Default functionality – when charging, the LIFT40 will not be able to operate any actuators
- It is only possible to use the battery BAL40 with either of the CAL40 control boxes
- Use only original LINAK mains cables to ensure proper connection to internal charger

## General functionality – LIFT40

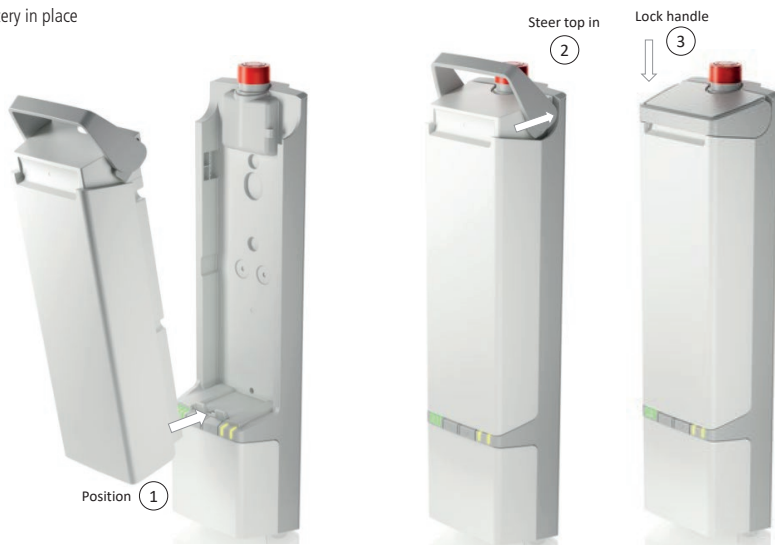
### Remove battery:

- 1) Lift handle upwards to release lock
- 2) Grab handle, pull out and slightly to the right
- 3) Lift off the battery - carry in handle



### Mounting battery:

- 1) With open handle - position battery base over the guide track and lower it in place
- 2) Steer in upper part of battery
- 3) Press down handle to lock battery in place

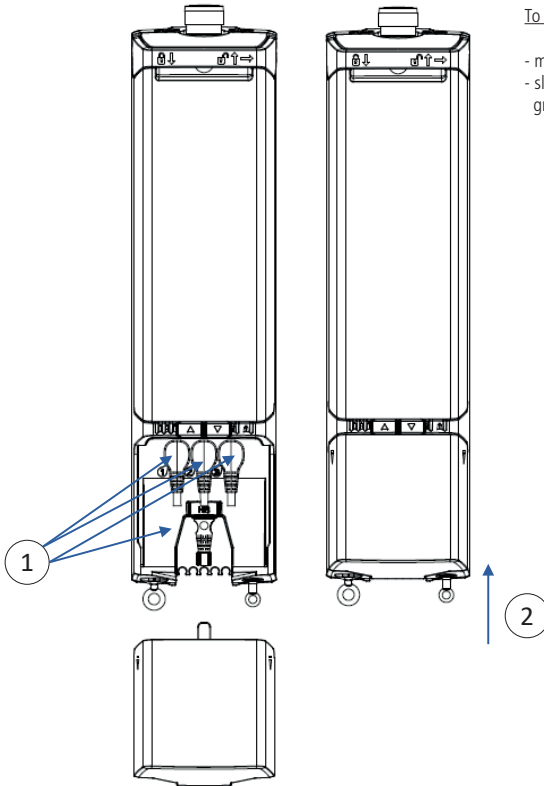




### Cable mounting and cable cover:

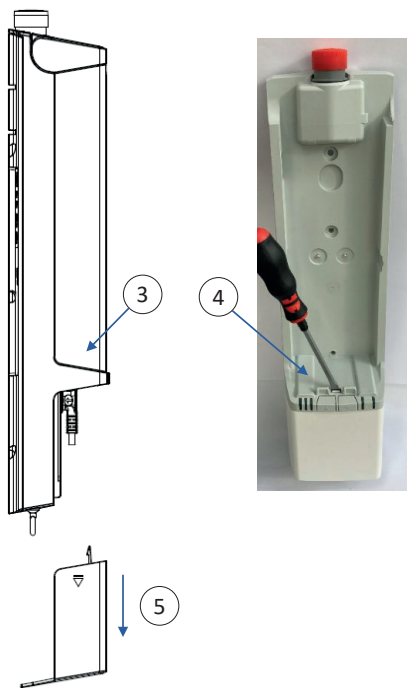
LIFT40 control boxes have a uniquely designed cable cover which also works as an integrated cable cover when closed.

### Mounting of cables and cable cover:



To close cable cover:

- mount cable plugs in control box (1)
- slide cable cover directly into designated groove until locked (2)



To open cable cover:

- below battery (3)
- insert flat head screwdriver in groove.  
Twist carefully and release cable lid lock (4)
- pull cable cover downwards and release from grooves (5)

#### Cable routing and management:

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

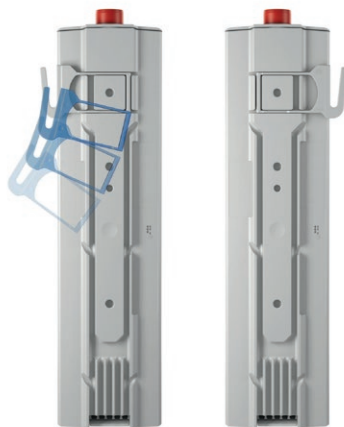
1. Guide cable for sling adjustment actuator upwards
2. Guide hand control cable up and out in low or high position to right or left side of patient lift

#### Cable hanger:

CAL40 comes with a cable hanger for parking mains cable or hand control when not in use.

The cable hanger can be located on either the left or right side of the control box.

Place hanger in designated grooves on the back before mounting the control box on the patient lift. When mounted, the hanger is locked in place.



## LED indicators

Battery indication CAL40+				
LED 1 - LED 2 - LED 3	LED state	Capacity	Buzzer	
	LED 1-3 constantly on	Full	-	
	LED 1-2 constantly on			
	LED 1 constantly on	Low	Single beep on key activation	
	LED 1 flashes slowly	Two cycles left	Buzzing continually when voltage has dropped below threshold limit	


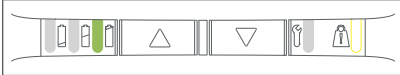
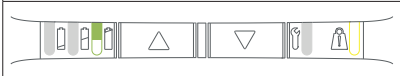
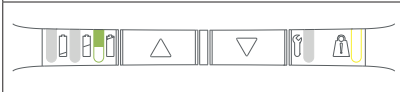
Charging indication CAL40+		LED state
LED 1 - LED 2 - LED 3		
		Charging with internal charger
		Fully charged /ready for use
		On mains without battery mounted
		Turn off mains
		For use with external charger CH01, please see CH01 usage details





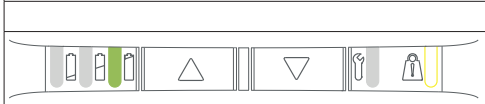


## LED indicators

System status CAL40+						
PRIORITY	LED 4 + LED 5	LED state (Not listed = off)	States in normal use	Comments	Reset	Buzzer
0		LED 4 flashing according to BLE pairing state	Pairing BLE	Not ready to operate	Wait until ready	Buzzer in accordance with BLE pairing state
1		LED 4+5 constantly on (only when key is pressed)	Emergency stop activated	Not ready to operate	Release emergency stop button	-
2		LED 4+5 flashing fast (synchronous)	FATAL ERROR Cannot operate, has to be reset	No movement possible	Reset fatal error routine	Buzzer on key press
3		LED 4+5 flashing slowly (asynchronous toggling)	Not learned/ configured correctly	If adjustment is made with a too low load, settings are not stored. System must be adjusted with higher load.	Learn device, configure correct	-
4		LED 5 flashing fast	SWL active			
5		LED 5 flashing	SWL confirmation			Buzzer in accordance with learn function
6		LED 5 flashing slowly	Overload on CH1	Overload state kept for 10 sec. Momentary not ready to lift.	Reduce load	Beeps twice
7		LED 4 flashing slowly	Duty cycle guard	Momentary not ready to lift	Wait until ready	-
8		LED 5 constantly on	Position not to be trusted	Operation is possible	Lower actuator. End of stroke in.	Buzzer on key press
9		LED 4 constantly on	Service needed	Operation is possible	SDT, App, HB	-

## LED indicators

Battery indication CAL40			
LED 3	States in normal use	LED state (not listed = off)	Buzzer state (not listed = off)
	High	LED constantly on	
	Low (needs charging)	LED slowly flashing	Single beep at start of key activation
	Two cycles left	LED slowly flashing/ synchronous/toggling + buzzer active	Constant


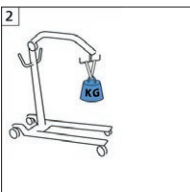
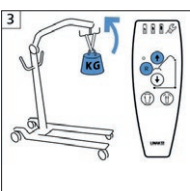
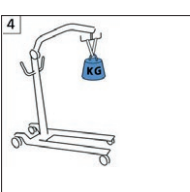
Charging indication CAL40	LED state
LED 3 + 5	
	Charging with internal charger
	Fully charged /ready for use
	On mains without battery mounted
	Turn off mains
	For use with external charger CH01, please see CH01 usage details

## LED indicators

System status CAL40						
PRIORITY	LED 3 + 5	LED state (not listed = off)	States in normal use	Comments	Reset	Buzzer
0		LED 5 constantly on (only when key is pressed)	Emergency stop activated	Not ready to operate	Release emergency button	
1		LED 3+5 slowly flashing (asynchronous/toggling)	SWL confirmation	New current limit stored. Ready to operate		Single beep
2		LED slowly flashing	Overload	Momentarily not ready to lift	Reduce load	Beeps twice
3		LED constantly on	Duty cycle guard	Momentarily not ready to lift	Wait until ready	No buzzer

## How to use the SWL adjustment function

With LIFT40 it is possible to configure software for the use of the standard or advanced SWL function or even both if needed. When preparing the control box software, it is possible to make preparations for the use of a standard SWL hand control or the use of a customised hand control.

Safe Working Load	
	Drive the lifting arm down and connect the special SWL adjustment hand control.
	Add load to the lift corresponding to SWL for the lift type.
	Press the 'R' and 'UP' buttons simultaneously and move the lifting arm up. If using the standard SWL adjustment, then it is possible to use the standard SWL adjustment 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.
	When the actuator stops running, the largest current value is registered and stored in the control box SW. When the current cutoff value is stored, the control box will provide an audio signal and a flashing LED, depending on the SW configuration.



## Recommendations

- Using the Safe Working Load (SWL) adjustment functionality allows easy current limit setting to help the lift comply with the ISO 10535 requirement.
- The SWL adjustment functionality is recommended to use for channel 1 when adjusting the lifting actuator to fit the SWL load rating of the lift.
- Based on settings from using the SWL adjustment function, the lift shall not be able to lift more than 1.5 times the maximum load.  
However, the current limit setting will not stop the actuator at the exact same load as used for the SWL adjustment.  
This is due to the fact that an actuator uses less current when its components have been run in.
- SWL adjustment: When the current limit has been registered, the control box will allow the actuator to draw the registered current plus an addition of 10%.  
This ensures that the lift can lift the set load, however it cannot lift more than 1.5 times of the set load.
- When making new current limit settings, be aware to use a defined set of actuator and control box.  
To ensure that a new current limit setting is stored in the control box, either the SWL adjustment function must be active for at least 2 seconds or the actuator has to run minimum 20 mm. The actuator current consumption must be at least 2 A for minimum 2 seconds during the use of the SWL adjustment function.
- Always use fully charged batteries (as a minimum more than 50% battery capacity) for SWL adjustment procedures.
- CAL40+: A maximum cutoff value of 12 Amp can be registered (stored).
- The ambient temperature must be approx. 20 °C.
- The difference between the highest and lowest load should exceed 10% if using the standard SWL adjustment function.
- To activate the SWL adjustment function, use the special SWL adjustment hand control.
- If an actuator or a control box is replaced, it is necessary to reset the maximum load to ensure the correct cutoff value for the new system.
- The preset current cutoff value of a specific lift can be reset by means of the SWL adjustment function, however, this may not be in accordance with EN10535 if done with different loads than the rated load of the lift.

## Pairing BLE hand control

When pairing a wireless hand control, follow this instruction:



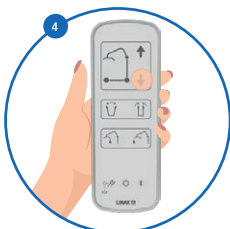
Move within two meters of the patient lift.



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



Release key and magnet and move closer to the LIFT40 until buzzer frequency change from slow to fast.



Confirm pairing by pushing key 1

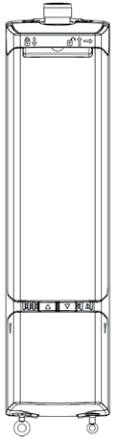
## How to pair a LINAK® Wireless LIFT40



Double confirmation beep - Pairing OK



## LIFT40 mounting



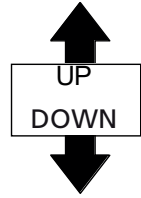
1



2



3



### Recommendations - positioning

LIFT40 only complies with IPX6 when the control box is mounted correctly (see illustration 1 and 2).

- Battery upwards, cable outlets downwards (see illustration 1)
- Control box lying on the right side, seen from the front (see illustration 2)
- Control box placed flat on the back (see illustration 3)

Cables and blind plugs must be inserted correctly in the control box to maintain the IP degree in washing or cleaning situations.

### Mounting information:

LIFT40 is mounted by means of minimum 2 screws (not supplied by LINAK).

Screw type: ISO7380-1 / M5 and L = 20 mm or 25 mm

Washer type:

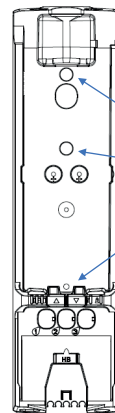
ISO7089 / M5, d1 = 5.3 mm / d2 = 10 mm / s = 1mm

The LIFT40 control box must be mounted with minimum two of the three screws possible.

The mounting screws for the control box and the charger must be tightened with a maximum torque of 1 Nm.

When mounting CAL40 or CAL40+ on a patient lift, please use at least two of the three dedicated mounting holes in the charger body.

Front view



Mounting holes



## Recommendations:

- The control buttons of redundant hand controls for lifting and lowering work as normal hand control buttons.
- Please be aware that loss of power might occur due to the battery deep discharge protection.  
This will only be the case if the battery is continually being used despite a warning.
- The service counter is only active in CAL40+ when a sufficiently charged BAL40 is mounted.
- When using a control box with emergency stop, the stop button must be activated in cleaning situations in order to comply with IPX6.  
The battery pack BAL40 must not be removed in cleaning situations, doing so could result in non-compliance with IPX6.
- If LIFT40 is fitted with a mains power connector, the protection plug must always be inserted to ensure the IP protection, if the port is not used.
- Only use original LINAK mains cables to ensure a proper connection to the internal charger.
- When charging, LIFT40 will not be able to operate any actuators.
- The LIFT40 DC plug is intended for charging of the BAL40 battery.  
Using the DC plug for powering external equipment can lead to battery drainage or discharge.
- Only use correct LINAK charger (CHL40, CH01 or integrated charger in LIFT40).



## Warning

- Never connect the programming box directly to the hand control port.
- To avoid injury, the battery should not be mounted in transport situations. Use LINAK original packaging to store battery during transportation.
- Use blind plug when cleaning/washing down to maintain the IP degree.
- In order to avoid injury, the emergency stop should be activated in all transport and cleaning situations.



The BAL40 lead acid battery pack is part of the LIFT40 product series specially developed for patient lifts.

**Usage:**

- Compatibility: CAL40/CAL40+/CHL40
- Duty cycle: Max. 10% or 2 minutes continuous use followed by 18 minutes without use at a max. discharge current of 10 A
- Charging: Via external wall charger CHL40 and CH01 or via CAL40 or CAL40+ with internal charger.
- Recharging during storage: First battery recharge must be no later than 6 months after the production date stated on the label. Hereafter, the battery must be recharged at least every 6 months.
- Operating temperature: +5 °C to +40 °C
- Charging temperature: +5 °C to +40 °C
- Storage temperature: -15 °C to +40 °C (+10 °C to +25 °C - recommended)  
The batteries must be stored in an applicable storage room without direct sunlight.
- Relative humidity: 20% - 80% – non-condensing
- Atmospheric pressure: 700 to 1060 hPa
- Meters above sea level: Max. 3000 meters
- Approvals: IEC 60601-1  
ANSI/AAMI ES60601-1  
CSA CAN/CSA-C22.2 NO. 60601-1  
IEC 60601-2

**General functionality – LIFT40**

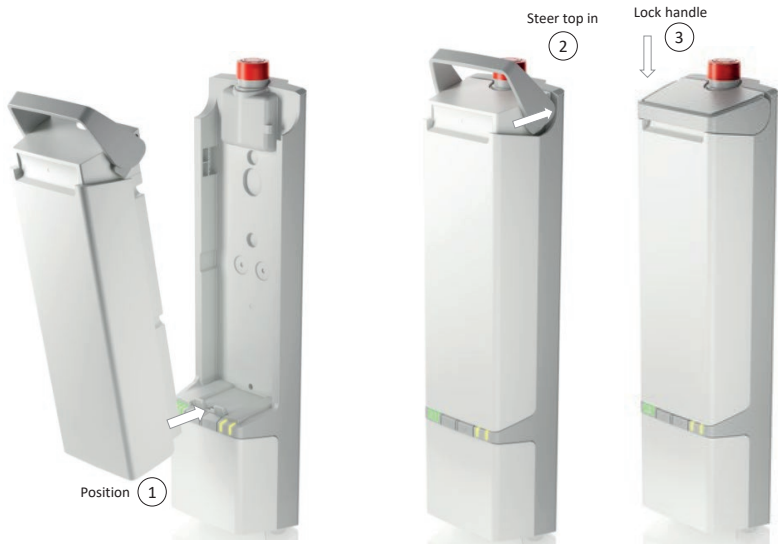
**Taking off battery:**

- 1) Lift handle upwards to release lock
- 2) Grab handle, pull out and slightly to the right
- 3) Lift off the battery - carry in handle



### **Mounting battery:**

- 1) With open handle (1) - position battery base over the guide track and lower it in place
- 2) Steer in upper part of battery
- 3) Press down handle to lock battery in place



### **Recommendations:**

- Do not exceed the storage temperature as it will shorten the product life and performance.
- Allow the battery to settle to room temperature before use or charging.
- Only use correct LINAK charger (CHL40 or integrated charger in the CAL40 or CAL40+ control box).
- Do not exceed the duty cycle as it will shorten the product life, reduce performance and eventually activate excess temperature protection.
- BAL40 is intended for use in indoor applications, however not in indoor pool environments.
- If the battery is completely discharged, then recharge the battery before storage.
- Always use correct LINAK charger.

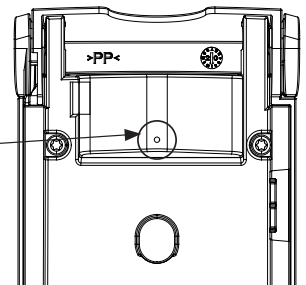
### **Warning**

DO NOT:

- heat, burn or short-circuit the batteries
- expose the batteries to high impact
- drop, crush or puncture the batteries
- use batteries with signs of damage or corrosion
- charge or store the batteries near combustible material
- charge the batteries without supervision
- overcharge or fully discharge the batteries
- exceed IP ratings

Any of the above mentioned can cause fire or injury.

Check at regular intervals that the ventilation hole is undamaged and intact. The construction of the ventilation hole permits battery gasses to get out, but it does not permit penetration of water.



### 3. CHL40 (MEDLINE® CARELINE®)

**LINAK**

Designed in Denmark  
DK - 6430 Nordborg  
Type : CHL40A4000000000000  
Item : 39265  
Date : 2020.10.06  
W/O #12345678-0001  
MADE IN DENMARK

U In : 24 V=  
I In : Max. 500 mA  
IPX4



The CHL40 charger is an important part of the LIFT40 family. It functions as a wall charger when mounted on the wall, but also as a more mobile charger simply placed horizontally on its back on any surface.

#### Usage:

- Usage 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
- Height above sea level: Max. 3000 meters
- Nominal current draw: Max. 500 mA (CH01 spec)
- Power consumption (standby): Max. 2.5 W
- Power consumption (charging): Max. 19 W
- Approvals: (pending) IEC 60601-1  
ANSI/AAMI ES60601-1  
CAN/CSA-22.2 No. 60601-1  
Australian deviation, Canadian deviation

#### LED functionality

The charger indicates whether it is connected to mains (green LED) or whether the battery is being charged (orange LED).

#### Charger mounting/position

The LIFT40 charger CHL40 can be placed for use in two different ways. It is designed for mounting flat on the wall by using minimum 2 of 3 screws in the Ø4 mm holes in the charger body. Screw types and wall plugs may vary depending on wall material.

The charger can also be placed flat on a table or desk. The dedicated rubber studs on the charger back ensure that the charger stays safely at the same position during charging (see drawings).

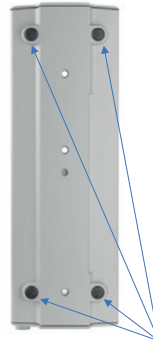
Front View



Mounting holes

When mounting CHL40 on wall, please use minimum two of the 3 dedicated mounting holes placed in body of charger.

Back View



Studs for table placement

When placing CHL40 on table of shelf, 4 rubber studs on the back adds stability and friction to the charger / battery combination.



Studs for table placement

#### Mounting information

CHL40 is mounted by means of minimum 2 screws (not supplied by LINAK).

Screw type: The screw type depends on the wall type and has to be defined by the service technician.

Washer type: ISO7089 / M5, d1 = 5.3 mm / d2 = 10 mm / s = 1mm.

The CHL40 charger must be mounted with minimum two of the three screws possible.

The mounting screws for the control box and the charger must be tightened with a maximum torque of 1 Nm.

To be able to comply with the IPX4 rating, the CHL40 must hang on the wall.

The charger must be disconnected from mains in cleaning situations.



## Recommendations:

- Only use original LINAK components and accessories for full compatibility.
- Only use CHL40 charger for BAL40 battery charging.
- The charger CHL40 is specifically designed to charge the BAL40 battery.
- Special care should be taken when mounting the CHL40.
- If the CHL40 is mounted correctly, the CHL40 complies to IPX4.
- If the CHL40 is mounted incorrectly, water may enter the screw holes resulting in IPX4 non-compliance and cause malfunction and hazardous situations.
- In cleaning situations, the charger must be disconnected from mains.

## 4. COL50 (MEDLINE® CARELINE®)

<b>LINAK</b> Designed in Denmark DK - 6430 Nordborg Type : COL50A63000011200010 Item : J90582 Date : 2020.11.30 W/O #12345678-0001 MADE IN DENMARK	U In : 120-240 V~, 50/60 Hz	FCC ID :XBE-COL50
	I In : Max. 350 mA, 35-55 VA	IC : 12338B-COL50
	IPX6	
	Int. : 10 %, Max. 2 min. / 18 min.	

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.

<b>LINAK</b> Designed in Denmark DK - 6430 Nordborg Type : COL50A63000007200010 Item : J90583 Date : 2020.11.30 W/O #12345678-0001 MADE IN DENMARK	IPX6	FCC ID :XBE-COL50
	Int. : 10 %, Max. 2 min. / 18 min.	IC : 12338B-COL50
		204-B00181

### 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 (pending):
  - 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)
  - Bluetooth® qualification

### 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 off 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

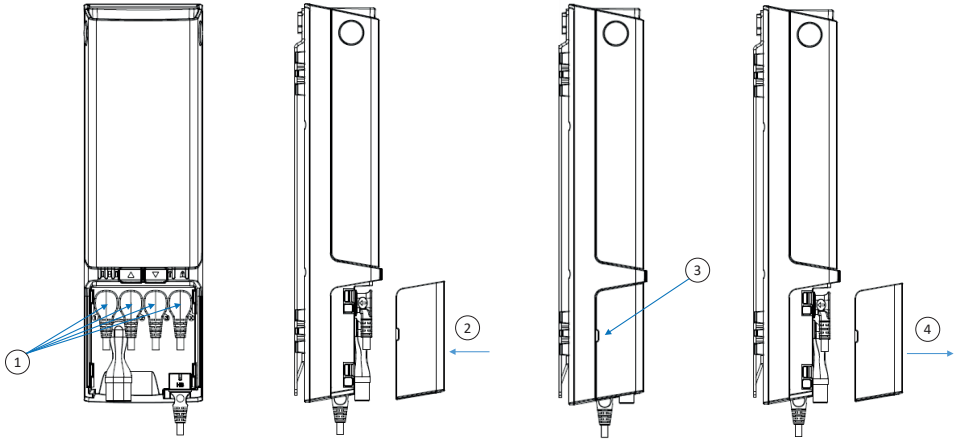
COL50 has a uniquely designed cable cover which also works as an integrated cable cover when closed.

### 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 lid is released
- 4) Pull cable cover straight out (4)



## 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

LED 1 - LED 2 - LED 3	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	Two cycles left, buzzer active

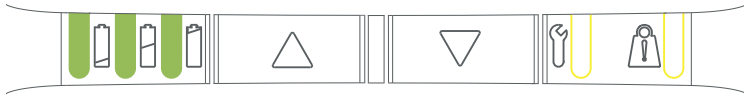


## LED indicators

LED 1 - LED 2 - LED 3	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



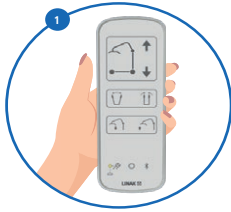
## LED indicators



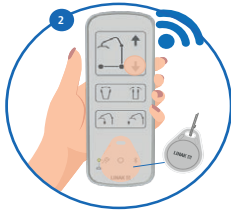
PRIORITY	LED 4 + LED 5	LED state (Not listed = off)	States in normal use	Comments	Reset
0		LED 4 flashing according to BLE pairing state*	Pairing BLE	Not ready to drive	Wait until ready
1		LED 4+5 constantly on	Emergency stop activated	Not ready to drive	Reactivate emergency stop
2		LED 4+5 flashing 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
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.



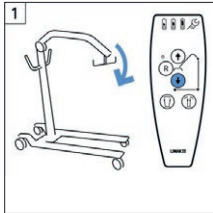
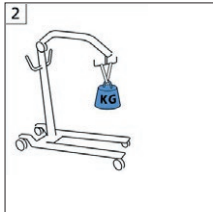
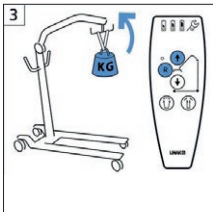
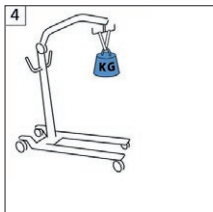
Confirm pairing by pushing key 1

## 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
<p><b>Basic condition</b></p>	<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.</p> <p>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.</p> <p>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. 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>



## Learn Mode - recommendations

- Using the Learn Mode functionality allows easy current limit setting to help the lift comply with the ISO 10535 requirement.
- The Learn Mode functionality is recommended to use for channel 1 when adjusting the lifting actuator to fit the SWL load rating of the lift.
- Based on settings from the Learn Mode function use, the lift shall not be able to lift more than 1.5 times the maximum load. However, the current limit setting will not stop the actuator at the exact same load as used for the Learn Mode function. This is due to the fact that an actuator uses less current when its components have been run in.
- When making new current limit settings, be aware to use a defined set of actuator and control box.
- For Learn Mode, the following conditions must be fulfilled:
  - When using Standard Learn Mode, the actuator current consumption must be at least 2 Amp and the function must either be active for at least 2 seconds or the actuator must run at least 20 mm.
  - When using Advanced Learn Mode, the actuator stroke length must be specified in the software.
  - Run the actuator to full stroke length to set new current limits.
- Always use fully charged batteries (as a minimum more than 50% battery capacity) for Learn Mode procedures.
- A maximum cut-off value of 12 Amp can be registered (stored).
- The ambient temperature must be approx. 20 °C.
- The difference between the highest and lowest load should exceed 10% if using the standard Learn Mode function.
- To activate the learn mode function, use the special Learn Mode hand control.
- If an actuator or control box is exchanged, it is necessary to reset the maximum load to ensure the correct cut-off value for the new system.
- The preset current cut-off value of a specific lift can be reset by means of the Learn Mode function, however, this may not be in accordance with EN10535 if done with different loads than the rated load of the lift.
- There is a risk of false position due to the use of manual lowering/quick release and this may therefore impact the use of advanced learn mode.