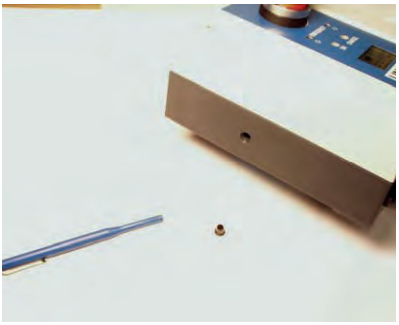
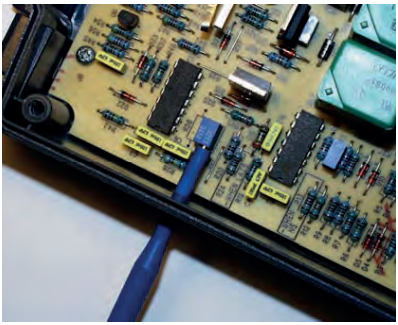
Adjustment instructions for the JUMBO application.

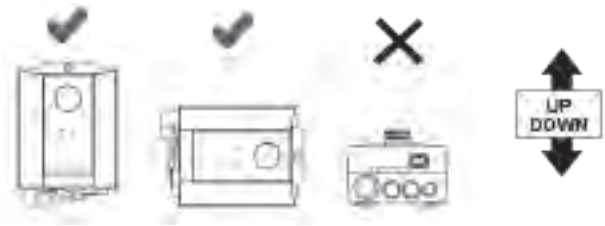
Tool	For the adjustment you must use a trimming screwdriver, which can be purchased from LINAK A/S. It is also possible to use other types of trimming screwdrivers for the adjustment. **Ordinary screwdrivers cannot be used, as they will damage the potentiometer slot.** When you receive the JUMBO from LINAK A/S it is adjusted to min. current cut-off.
1.	Connect the JUMBO control box to the actuator.
2.	Load the actuator with the required load.
3.	Turn the potentiometer completely clockwise.
4.	Run the actuator in the loaded direction at the same time turn the potentiometer anticlockwise until the actuator stops.
5.	Turn the potentiometer 3 times clockwise.
6.	Check JUMBO can lift the loaded actuator.
7.	Insert the plugs article no. 0009020 (Light grey (RAL7035) or 0009019 (Dark grey (RAL7016) to ensure IP protection





Only the end with the lowered notch must be used for adjustment of the potentiometer.

Mounting the CBJ1, CBJ2



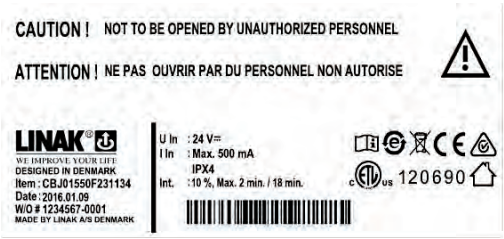
Special care should be taken when mounting the CBJ1, CBJ2.

As long as the CBJ1, CBJ2 is mounted correctly then the CBJ1, CBJ2 complies to IPX5.
If the CBJ1, CBJ2 is mounted incorrectly, then water will gather around the screw holes resulting in non-compliance with IPX5! CBJ1, CBJ2 with variable current cut-off: the protection plugs must always be inserted to ensure IP protection after adjustment.

When using the control box with emergency stop, the stop button must be activated in cleaning situations in order to comply with IPX5.
The battery pack BAJ1 must not be removed in cleaning situations, doing so could result in non-compliance with IPX5.

If the CBJ1, CBJ2 is fitted with option B, D and F (DC power connector), the protection plug ex. 00918174 must always be inserted to ensure IP protection, if the port is not used. IP rating only applies when the battery is connected to the control box.

4. CBJ-Care (MEDLINE® CARELINE®)



The control box CBJ Care is part of the JUMBO system. JUMBO is a modular system combining an actuator, control box (CBJ Care), battery (BAJ1, BAJL), wall charger (CHJ2), control box prepared for external charger by use of wall-plug charger CH01, and a hand control in a flexible solution, specially developed for patient lifts.

The complete system contains a series of features which meet the patient's need for a safe and comfortable lift.

CBJ Care is available in 3 versions, one with LEDs, one with a display and a third without display and LEDs.

It is possible to have control buttons on the front cover to have an easy control option if the hand control is missing. Furthermore it is possible to have 3 channels via a T-cable in channel 1. The 3rd channel for tilt function adds value for the patient and the caregiver.

Usage:

- CBJ Care with internal charger: Nominal current draw max. 400 mA
  Power consumption (standby) max. 2.5 W
  Power consumption (charging) max. 19 W
- Duty cycle: Max. 10 % or 2 min.continuous use then 18 min. without use
- Ambient temperature: +5° to +40°
- Storage temperature: -10° C to +50° C
- Relative humidity: 20% to 80% - non-condensing
- Atmospheric pressure: 700 to 1060 hPa
- Approvals: IEC60601-1, IEC60601-1-6
  ANSI / AAMI ES60601-1,
  CAN/CSA-22.2 No 60601-1

Instructions for uses

- Before start-up we recommend to reset the service counters – days and cycles until next service visit. To reset press the up and down button on the control box or the hand control for 5 seconds. An audio signal will confirm the resetting.
- When charging, the CBJ Care will not be able to operate any actuators.
- It is not possible to use other battery types than BAJ1 or BAJL with the CBJ Care.
- Use only original LINAK mains cables to ensure proper connection to internal charger.
- The green battery indicator (100% to 50% capacity remaining) will light up during charging even though the battery is not fully charged.
  It is necessary to use the "*CHARGE*" LED to indicate whether or not the battery is fully charged (when using internal charger).
  The CHARGE indicator will light up during charging and turn off when the battery is fully charged.
- When resetting the CBJ Care or updating other settings than using learn mode, the CBJ Care must not be disconnected from the battery and the emergency stop must not be activated within a time span of at least 10 seconds. This is to ensure the correct storage of the new values to the memory banks of the CBJ Care.

Recommendations

Hot Plugging:
Removing or adding any OpenBus™ cables is not allowed when the control box is on power via mains supply or battery!
If necessary anyway, follow the below procedure:

1. Remove mains or battery 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).

Emergency lowering/lifting:
By use of BAJ1, the lifting arm can be lowered by pressing e.g. a pen in the hole or use the control buttons, if present.

This is a permitted method of lowering/lifting.

The emergency lowering/lifting "*buttons*" work as normal hand control buttons (you do not get extended functionality by using these when the battery is low).

By use of BAJL, please be aware that loss of power might happen due to the battery deep discharge protection.
This will only happen by continuous use of the battery despite warning.

Warnings
In order to avoid injury, the emergency-stop should be activated in (all) shipping situations.

Functionality – JUMBO Care with display
Below you find information about what to read-out on the display version of JUMBO Care. Basically the functionality for the display version is the same as the diode version, but more information can be read out on the display.

Driving information

As long as a hand control button function is activated driving information will be shown on the display. Either lifting arm up, lifting arm down, legs in or legs out or tilt of sling.

The only exception to this is when the battery is flat (stage 3 and 4 – see below). At that point the battery information will be shown instead.

Battery information
The battery discharging will be shown in four stages:

Battery state 1: The battery is ok, no need for charging (100 - 50 %)

Battery state 2: Battery needs charging. (50 - 25 %)

Battery state 3: Battery needs charging. (Less than 25 %) Buzzer sound is provided when a button is pressed in this battery state.

Battery state 4: (BAJ1 lead acid) The battery needs charging. At this stage some of the functionality of the lift is lost. At this battery stage, it is not possible to drive the lifting arm up or down. Furthermore, an audio signal will sound when a control button is activated (17 V or lower). The symbol will switch between the two pictures for 10 seconds. The battery symbol is shown when the box is active until power down (2 minutes after use).

Battery state 4: (BAJL li-ion) When using CBJ Care with display together with a BAJL battery, the display will not show the *"Battery state 4"* symbol. The BAJL deep discharge protection overrules the *"battery state 4"*. Consequently, the CBJ Care shuts down, and the empty battery symbol is not shown.

- The battery level is measured via voltage level. This means that it is possible to experience e.g. that the battery switches from state 1 to state 2 and back to state 1.

Charging of battery:

When the mains cable is plugged in and a control button is activated the symbol to the left is shown on the display until power down 2 minutes later. The purpose of the symbol is to tell the user that it is not possible to use the lift when it is plugged in to the mains.

Short circuit:

If there is a short circuit the control box will show the short circuit symbol with a recommendation to check the connections. The symbol will be shown until the short circuit has been repaired.

Service:

The control box will show the service symbol when it is time for service. The standard setting is after 12 months / 8000 cycles. After each power down, the first time that the service symbol is shown the control box will provide an audio sound (100 milli seconds) so that the user gets a reminder about checking the display.

The 'SERVICE' text will blink 3 times, then a static service symbol will be shown (10 seconds in total). Even though it is time for service the system will still be functional and work as normal.

Overload Channel 1 only:

When overload occurs (according to the pre- defined current cut off limit) the overload symbol will be shown on the display. The 'MAX' text will blink 3 times and the overload symbol will be shown for 10 seconds in total.

Service information read-out

Basic service information can be read out on the display. To get the service information on the display please press the lifting arm up button (only ½ second press). The information will be shown for ½ minute or until other buttons are activated.

Total cycles done on channel 1
Total work done on channel 1
Total number of overloads (channel 1)
Days since last service/Days between services

If "*No days*" are chosen for service interval then the display will show Days since last service /-.

Recommendations for use of learn mode function:

- The purpose of using learn mode function is to adjust the lift to no more than 1.5 times the max. load. The actuator will not stop exactly at the load it has been adjusted to as the actuator uses less current when its components have been run in. When the max. current value has been registered using the learn mode function, the control box will be able to use max. current +10 %. This ensures that the lift is capable of lifting the set load, however it cannot lift more than 1.5 times of the set load.
- When registering current limits, be aware to use a defined set of actuator and control box
- The ambient temperature must be approx. 20 °C
- The difference between the highest and lowest load must not be more than max. 10 %
- To activate the learn mode function, use the special hand control (HB7x235-00)
- If an actuator or CBJ Care is exchanged, it is necessary to reset the max. load to ensure the correct cut-off value for the new system
- Always use fully charged batteries for learn mode procedures
- A max. cut-off value of 11 Amp can be registered (stored)
- The tolerance for preset current cut-off is: +/- 1 Amp
- The current cut-off value can be reset by means of the learn mode function, however this is not in accordance with EN10535

Mounting of CBJ Care

Special care should be taken when mounting the CBJ Care.

As long as the the CBJ Care is mounted correctly then the CBJ Care complies to IPX4. If the CBJ Care is mounted incorrectly then water will gather around the screw holes resulting in non-compliance with IPX4!

If the control box is equipped with emergency stop, the stop button must be activated in cleaning situations in order to comply with IPX4.

The battery pack BAJ1 or BAJL must NOT be removed in cleaning situations, doing so could result in non-compliance with IPX4.

If the CBJ Care is fitted with external charger option (DC power connector), the protection plug ex. 00918174 must always be inserted to ensure IP protection, if the port is not used.

IP rating only applies when the battery is connected to the control box.

5. CBJ-Home (MEDLINE® CARELINE®)

The CBJ-Home is a specially developed solution for patient lifts. The complete system consists of a control box and a battery enclosed in a single elegant module.
The system is approved according to medical safety standards and contains a series of features ensuring a safe comfortable lift, e.g. the CBJ-Home is equipped with a soft-start function, electrical emergency lowering, emergency stop etc.

Usage:

- CBJ Home with internal charger: Nominal current draw max. 280 mA
  Power consumption (standby) max. 1.3 W
  Power consumption (charging) max. 12 W
- Duty cycle: Max. 10 % or 2 min. continuous use then 18 min. without use
- Ambient 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
- Approvals: IEC60601-1, ANSI/AAMI ES60601

Recommendations

- If emergency stop is pressed whilst charging, the batteries will not be charged.
- When charging, the CBJ Home will not be able to operate any actuators.
- For recharging the batteries, use charger CH01 (charger has to be ordered separately).
- Note: Always mount the CBJ Home with the channel sockets facing downwards.
- The CBJ Home is not intended for use with "*buffer*" type actuators such as LA28.
- The actuator must always be fitted with an exchangeable cable (mini-fit) socket.
- Actuators on channel 1 must always be with spline.
- The mains cables must always be ordered separately when ordering a CBJ with an internal charger.
- Use only original LINAK mains cables to ensure proper connection to internal charger.
- Always use fully charged batteries for learning mode procedures.
- Only an authorised LINAK service centre should change a battery in a CBJ Home. If a CBJ Home is opened and a battery is changed by unauthorised personnel, there may be a risk of malfunction.
- When using the control box with emergency stop button, the stop button must be released before charging batteries or before the application is put into operation.
- It cannot be guaranteed that the actuator will stop exactly at the weight that is stored as the motors in the actuators will use less current when run in. Though it will never reach the 1.5 times max. load as the norm states.
- Tolerance for current cut off is: +/-10 %
- The maximum cut-off value that can be registered (stored) is 8 Amp.
- If an actuator or CBJ Home is exchanged it will be necessary to reset the max. load to ensure the correct cut-off value for the new system as a whole.
- The registration function can only be activated by using a specially produced hand control (HB7X161-00). A standard hand control cannot activate the function.
- To operate the "*Learn mode*" function in External charger versions produced before February 2010 press the "R" button when "*learning*" (the lifting arm actuator will operate automatically). With all other versions (and future versions with external charger) both the "R" button and the "*lifting arm*" button need to be pressed.
- It is possible to use the "*learn mode*" function for channel 2: To operate the learn mode function for channel 2, press the "R" button and the "*leg*". *spread out*" button at the same time. Run actuator with load and full cycle to record maximum current during a cycle.

Warning

- In order to avoid injury, the emergency stop should be activated in (all) transport situations.
- When "*learn mode*" is used, and channel 2 is pressed instead of channel 1, the CBJ Home will learn a new current limit of nearly 0 Amp. This will make it impossible to run the actuator with channel 2 until a new learn mode has been programmed.

Mounting information:
The CBJ-Home is mounted by means of 2 screws:
Type ISO4762-M6x90-8.8 (not supplied by LINAK)

Spares information:

The cable lock kit consists of the following 3 items:

- 2 x screws
- 1 x blind plug for ch. 2 if not in use
- Cable Lock

All the cable lock items are included when ordering the kit, article number: 0898001-B.

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

6. COBO (MEDLINE® CARELINE®)

The COBO is an interface box specially developed for use together with the JUMBO battery pack (BAJ1/BAJ2 and BAJL Li-Ion) and the CU20 control unit. It is also possible to connect other 24V lead acid customer batteries or fixed power supply.

Safety:
The COBO has a monitoring circuit for the FET transistor. If the FET is damaged the CU20 will go into fatal error mode. In this case the COBO is defective and must be replaced.

Usage:

- COBO with internal charger: Nominal current draw max. 400 mA
  Power consumption (standby) max. 2.5 W
  Power consumption (charging) max. 19 W
- Compatibility: LINAK Batteries BAJ1, BAJ2 (24 V, 2.9 AH) or other 26 - 28 V power sources via customer battery connection.
  LINAK Lithium Ion battery (BAJL Li-Ion)
- Duty cycle: 10 % 2 minutes running and 18 minutes rest
- Operating temperature: +5 °C - +40 °C
- Storage temperature: -10 °C - +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: The COBO is EMC designed and approved in accordance with IEC60601-1, ANSI/AAMI ES606011 and CAN/CSA-22.2 No 60601-1

Functionality:
COBO with internal charger has a green and a yellow light.

Diode colour	Functionality
Green is on	COBO is connected to mains
Yellow is on	COBO is charging. The yellow LED is constantly on until batteries are fully charged.

The CU20 will shut down after 2 minutes to save power.

Accessories depending on V-permanent when the system is inactive will not work.

The CU20 controls whether or not activation should be allowed during charging.

Please note that the CU20 SW must ensure that there is no movement during charging when using COBO with internal charger.

Guidelines regarding emergency STOP and battery state re-calibration:

- The emergency stop button is not designed to be used as an on/off button.
- When using the emergency stop button, the system may shortly not be ready for use:
  - In normal situations waiting time for restarting the system is less than 5 seconds
  - In situations of shortly activating and then deactivating the emergency stop, the waiting time for battery state re-calibration can be up to 30 seconds.
- If a handset key is pressed during the re-calibration period, the control box may indicate with an audio signal, that the SW measures the battery condition. The user must wait until the re-calibration is finalized to be able to operate the system again.

Mounting
Special care should be taken when mounting the COBO.
As long as the COBO is mounted correctly then the COBO complies to IPX5 (IPX4 with internal charger).
If the COBO is mounted incorrectly then water will gather around the screw holes resulting in non-compliance with IPX5 (IPX4 with internal charger).

When using the control box with emergency stop, the stop button must be activated in cleaning situations in order to comply with IPX5.

The battery pack BAJ1 or BAJL must not be removed in cleaning situations, doing so could result in non-compliance with IPX5.

If the COBO is fitted with option EC (DC poser connector), the protection plug ex. 00918174 must always be inserted to ensure IP protection, if the port is not used.

IP rating only applies when the battery is connected to the control box.

Recommendations

- Choose CU200XXXXX2XXXX if positioning/memory function is to be used.
- It is recommended that the COBO is serviced according to the relevant national norms for the applications in which it is used, however all electrical parts must be checked at least once a year.
- The COBO should be cleaned regularly, in order to maintain good hygiene. It is not allowed to use chemicals to clean the box.
- Only use COBO together with CU20.
- When specifying special CU20 software, be sure to set "*Operation allowed during charging*" to YES, if customer batteries or fixed power supply is used.

Warnings

- Pay attention to the polarity of the customer battery cable - red is positive voltage.
- In order to avoid injury, the emergency stop should be activated in (all) transport situations.
- If 24V lead acid customer batteries or fixed power supply is used, the supply source must comply with *"Means Of Patient Protection"* and *"Means Of Operator Protection"* in accordance with the Medical Safety Standard.
- If 24V lead acid customer batteries or fixed power supply are used, the customer must ensure that EMC values are kept in accordance with regulations.
- The CU20 power port/channel 7 cannot be used with COBO.
- Max 1 ACT can be connected to the COBO system.
- The COBO is not to be used in agricultural or maritime applications or be connected directly to a vehicle battery.

7. CH01 - 2nd generation (MEDLINE® CARELINE®)

The CH01 Battery Charger gives the possibility to interchange the plug type with a simple slide-on operation.

This gives great versatility and a logistical advantage reducing stocks and costs.

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
- Power consumption: < 0.5 W
- Approvals: IEC 60601-1
  PSE

8. CHJ2 (MEDLINE® CARELINE®)

The charger CHJ2 has been specially designed for use as a wall-charger for the JUMBO system.

The CHJ2 charger is a Switch Mode Power Supply (SMPS) version which makes charging of the batteries more efficient.

BAJ1 and BAJL (standard) battery pack have a reduced charging time.

Mains voltage from 100 V AC - 240 V AC (50/60 Hz) is possible on same charger.

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

Medically approved.

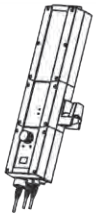
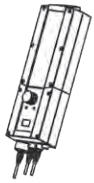
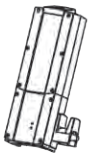
Usage:

- Nominal current draw: Max. 400 mA
- Power consumption (standby): Max. 2.5 W
- Power consumption (charging): Max. 19 W
- Ambient temperatures: + 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
- Approvals: IEC60601-1, ANSI/AAMI ES60601 and CAN / CSA-22.2 No 60601-1

9. MBJ1/2/3 (MEDLINE® CARELINE®)

Depending on of what your JUMBO system consists you need to use one of the following three mounting brackets. IP protection is only valid when the JUMBO system is mounted vertically.

All three brackets include matching screws (IPX1, IPXX and IPX5 are delivered with stainless screws). The mounting screws for the control box, charger must be tightened with a maximum torque of 1 Nm.

		**MBJ1** For use together with CBJ1 or CBJ2 or CBJC, CHJ2 and BAJ1 or BAJ2. I. e. when combining control box, charger and battery pack MBJ1 has to be used.
		**MBJ2** For use together with CBJ1 or CBJ2 or CBJC, and BAJ1 or BAJ2. I. e. when combining control box and battery pack MBJ2 has to be used.
		**MBJ3** For use together with CHJ2 and BAJ1 or BAJ2. I. e. when combining charger and battery pack MBJ3 has to be used.

8. Information on specific accessories

If the actuator is to be equipped with accessories, these must be specified when ordering the actuator from LINAK. There are the following possibilities:

1) TR6/TR7 External transformer
If the TR6 or TR7 fixed cable connection becomes damaged the transformer must be replaced.

1. BA16 Lead acid (MEDLINE® CARELINE®)

The battery box BA16 is developed for use together with the LINAK CA and CO control box series to support power backup.

Usage:

- Compatibility: Battery back-up for COxx and CAxx
- Duty cycle: 10%, 2 minutes continuous use followed by 18 minutes not in use
- Charging: Via integrated charger
- Charging time: Approx. 6 hours
- Recharging during storage:
  Battery recharging no later than 6 months after production date stated on the label
- Operating temperature: +5 °C to +40 °C
- Storage temperature: -10 °C to +50 °C
  The batteries must be stored in an applicable storage room to avoid direct sunlight
- Relative humidity: 20% to 80% - non-condensing
- Atmospheric pressure: 700 to 1060 hPa
- Height above sea level: Max. 3000 meters
- Service: Battery replacement
- Approvals (pending): IEC60601-1, ANSI/AAMI ES60601-1, CAN/CSA-22.2 No. 60601-1
  UL tested in accordance with UL60601-1 (pending)

LED functionality:

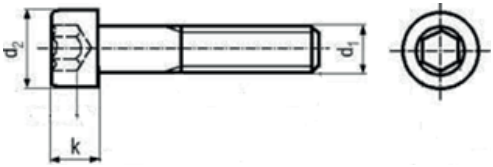
LED	Indication of operation
Solid yellow	Charging (battery not ready)
No LED light	Fully charged (battery ready)
Flashing yellow	Error during charging

Buzzer functionality:
The buzzer will make a warning when a button on the hand control is pressed and the battery capacity is low. The buzzer can also be activated by an intelligent control box to signal other conditions. This must be specified in the control box software.

Mounting instructions:

BA16 must be mounted with M4 screws due to the battery weight.
Make sure the surface touching the BA16 mounting surface is flat and use all 4 screws.

The diameter of the screw cap must be maximum 8mm.

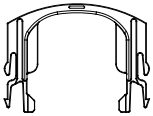


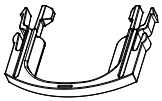
d_1	M4
$d_{2\,max}$	8
k	4

According to ISO 2009

Cable

Cable	Mini-fit (4 pole) with angle to Mini-fit (4 pole) straight For cable details see chapter 4.1.4/see cable configurator
Cable lock	0273044





Recommendations:

- Do not exceed the storage temperature as it will shorten the product life and reduce performance.
- Allow the battery to settle to room temperature before use.
- Do not exceed the duty cycle 2/18 as it will shorten the life, reduce performance, and eventually activate overcurrent protection.
- BA16 is not intended for use in outdoor applications.
- If the battery is completely discharged, then recharge the battery before storage.
- Inspect at regular intervals that the ventilation aperture is positioned correctly and is intact throughout its length.

Safety feature

- BA16 contains overcurrent protection for safety and to protect itself from being damaged due to excessive use.
- When current protection is activated, no power output will be available.

Warnings

- Loss of power might happen due to activation of overcurrent protection. In this event, there may be no warning and the application may not be able to move when expected.
- Defective or damaged batteries may leak acid and adequate precautions must be taken during handling and transportation.
- Do not open the battery case as damage to the cell or circuitry may develop excessive heat.
- It is important for users to read the guidelines in the "*User Manual Linear Actuators and Electronics*".
- Do not short circuit the battery.
- Use the specified internal charger only.
- If disposed to fire, the battery may explode.
- The battery box BA16 itself may not be combined with an external charger.

If product caution is not clearly visible on the final application at low light intensity, the above mentioned warnings must be integrated in the application manufacturer manual.

The application manufacturer must test the application and ensure that neither intended nor unintended use exceeds the battery specification. The application manufacturer must assure other means of movement, e.g. quick release or manual lowering in case of battery failure.

Compatibility:
The BA16 has a built-in charger and is therefore not able to operate with control boxes with charger. Be aware that the BA16 is only compatible with CAxx and COxx.

BA16 safety:
LINAK batteries for medical use are designed and manufactured to be safe throughout the product life. LINAK has performed various battery tests in normal use, abuse, and failure situations to verify design and production methods. These tests have not shown any unacceptable risks.

The batteries are UL-tested to verify the safety of the design and to obtain a safety certificate from an independent organisation. This means that UL regularly inspects the factory to check that standards are complied with.

2. BA18 (MEDLINE® CARELINE®)

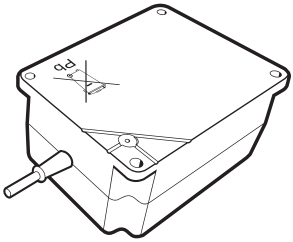
The BA18 is a cost-effective lead acid battery without integrated charger that can be used in combination with CO53 and with the long-established control box range, of which many are now legacy products.

Usage:

- Compatibility: CO53, CB6P2
  Legacy products : CB6,CB7, CB9, CB12, CB14, CB18, CB6S
  NOTE: (only specific versions may be compatible)
- Ambient temperature: +5°to +40°C
- Charging: Via LINAK control box with integrated charging circuit
- Charging time: Approx. 6 hours depending on built-in control box charger
- Recharging during storage: Battery recharging no later than 6 months after production date stated on the label
- 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)
- Meters above sea level: Max. 3000 meters
- Approvals: IEC60601-1, ANSI/AAMI ES60601-1, CAN/CSA-22.2 No. 60601-1

To ensure free passage of gasses when the battery is mounted on a flat surface the back side of the battery has been supplied with venting channels see below figure.

Venting channels and membrane on BA18:



Check with regular intervals that the venting channels are unblocked.

Warnings:

- The battery case is only to be opened by authorised staff as incorrect handling may compromise the IP protection.
- Take care to always keep the venting channels free. Mounting plates must be rigid to prevent blocking of the venting channels.
- Do not use third party chargers.

Recommendations:

- Allow the battery to settle to room temperature before use.
- The batteries must be stored in an applicable storage room to avoid direct sunlight.

3. BA19 Lead acid (MEDLINE® CARELINE®)

The BA19 lead acid backup battery has been developed specifically for use with the new control boxes CA30/CA40 and CO61. It is a compact and cost-efficient battery with built-in charger and cable management.

Usage:

- Compatibility: Battery backup for CA/CO control box platform
- Duty cycle: 10%, 2 minutes continuous use followed by 18 minutes not in use
- Charging: Via integrated charger
- Charging time: Approx. 6 hours
- Recharging during storage: Battery recharging no later than 6 months after production date stated on the label
- Operating temperature: + 5 °C to + 40 °C
- Storage temperature: - 5 °C to + 40 °C
  The batteries must be stored in an applicable storage room to avoid direct sunlight
- Relative humidity: 20% to 80% - non-condensing
- Atmospheric pressure: 700 to 1060 hPa (3000 m)
- Height above sea level: Max. 3000 meters
- Service: Battery cells cannot be replaced as the battery cover cannot be closed properly afterwards
- Approvals (pending): IEC60601-1:2005 3rd edition,
  ANSI/AAMI ES60601-1: 2005, 3rd edition
  CAN/CSA-22.2 No. 60601-1:2008

LED functionality:

What does the LED indicate?

LED	Indication of operation
Solid orange	Charging (battery not ready)
No LED light	Fully charged (battery ready)
Flashing yellow	Error during charging

Buzzer functionality:

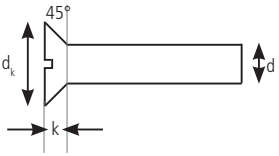
The buzzer will make a warning when a button on the hand control is pressed and the battery capacity is low.

The buzzer can also be activated by the control box to signal other conditions. This must be specified in the control box software.

Mounting instructions:

BA19 must be mounted with attachment screw and mounting bracket (see below) due to the battery weight.

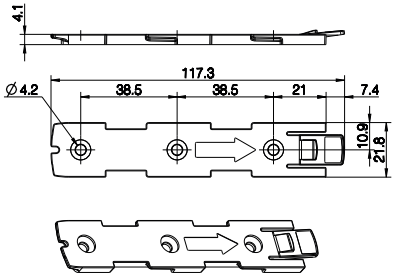
Screw M4 countersunk torque 1.1 Nm +/- 0.1 Nm.



d	M4
d_k	8.4
k	2.7

According to ISO 2009

Mounting bracket (frame flat) - article no. 1015W1001:



Recommendations:

- Do not exceed the storage temperature as it will shorten the product life and reduce performance.
- Allow the battery to settle to room temperature before use.
- Do not exceed the duty cycle 2/18 as it will shorten the life, reduce performance, and eventually activate overcurrent protection.
- BA19 is not intended for use in outdoor applications.
- If the battery is completely discharged, then recharge the battery before storage.

Safety feature

- BA19 contains overcurrent protection for safety and to protect itself from being damaged due to excessive use.
- When current protection is activated no power output will be available.

Warnings

- Loss of power might happen due to activation of overcurrent protection. In this event, there may be no warning and the application may not be able to move when expected.
- Defective or damaged batteries may leak acid and adequate precautions must be taken during handling and transportation.
- Do not open the battery case as damage to the cell or circuitry may develop excessive heat.
- It is important for users to read the guidelines in the "*User Manual Linear Actuators and Electronics*".
- Do not short circuit the battery.
- Use the specified charger only.
- If disposed to fire, the battery may explode.

If product caution is not clearly visible on the final application at low light intensity, the above mentioned warnings must be integrated in the application manufacturer manual.

The application manufacturer must test the application and ensure that neither intended nor unintended use exceeds the battery specification. The application manufacturer must assure other means of movement, e.g. quick release or manual lowering in case of battery failure.

Compatibility:

The BA19 has a built-in charger and is therefore not able to operate with control boxes with charger. Be aware that the BA19 is compatible with CA30, CA40, CA63, CO41, CO61, CO65 and CO71.

4. BA21 Li-Ion (MEDLINE® CARELINE®)

The BA21 Li-Ion back-up battery pack has been specially developed for use with the new control boxes COxx and CAxx, e.g. CO61 and CA40, etc. It is a low weight battery with built-in charger and high performance and safety.

Features and Options

Weight:	0.7 kg
Housing colour:	Light grey (RAL 7035)
Protection class:	IPX6 Washable DURA™
Packaging:	Every battery is packed individually and is fitted with lithium caution (transportation requirement)
Classification:	Internally powered

Usage:

- Compatibility: Battery back-up for CO and CA control boxes
- Duty cycle: 10%, 2 minutes continuous use followed by 18 minutes
- Charging: With integrated charger in battery
- Charging time: Approx. 10 hours
- Recharging during storage: First recharge of the battery must be no later than 12 months after production date stated on the label. Hereafter the battery must be recharged at least every 12 months.
- Operating temperature: +5 °C to +40 °C
- Storage temperature: -10 °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% 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, IEC62133, UL2054, UN38.3 (needed for transport of lithium batteries)

LED functionality:

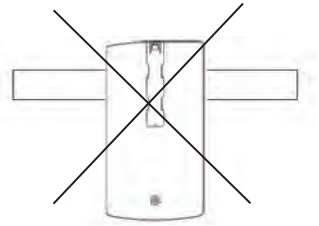
LED	Indication of operation
Solid yellow	Charging
No LED light	Fully charged
Flashing yellow	Error during charging

Buzzer functionality:

The buzzer will make a warning when a button on the hand control is pressed and the battery capacity is low. The buzzer can also be activated by the control box to signal other conditions. This must be specified in the control box software.

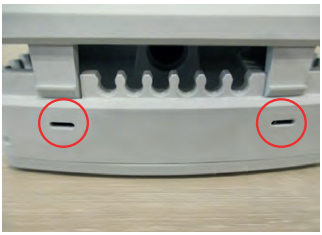
Mounting instructions:

The Battery Pack BA21 can be mounted in several ways on the bed/the application, either separately or together with the control box CO61. It is however not allowed to mount the battery in vertical position with the mounting clip pointing upwards - see illustration :

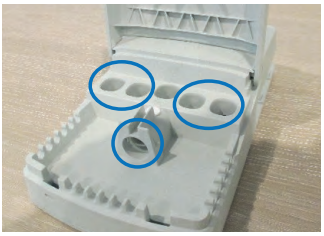


- Disconnect the mains cable to the application at the power outlet.
- Remove the power cable from the control box by inserting a screwdriver into the locking clip marked.

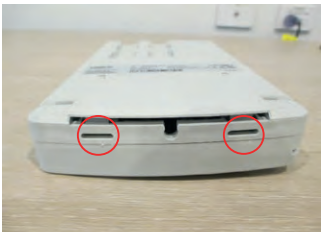
- Release the control box off the application by pressing the tab on the mounting clip.



- Open the lid to the control box by releasing the locking clips.

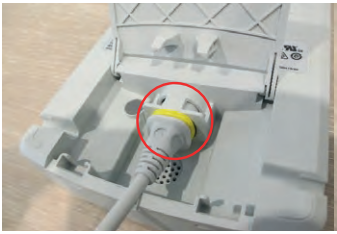


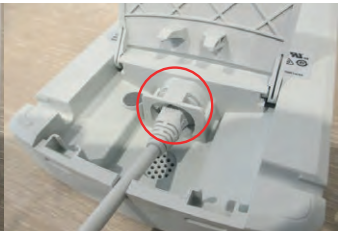
- If you disconnect any actuator cables or hand control cables, please take note of the correct ports.



- Open the lid to the battery box by releasing the locking clips.

- Open the lid for access.



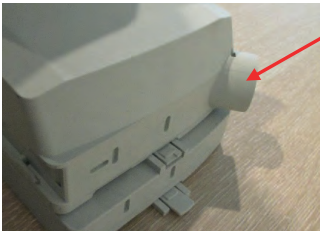


- Insert the battery connection cable supplied in the battery port.
- Ensure that it is fully connected.

- Close the lid, ensuring that the locking clips engage fully when securing the lid.

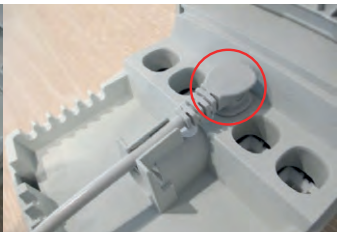
- Connect the battery to the application, ensuring that the locking clip is fully engaged.

- Connect the battery to the application, ensuring that the locking clip is fully engaged.

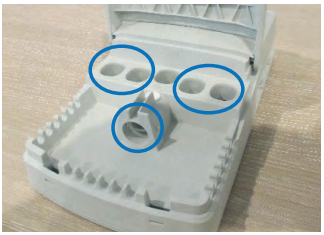


- Connect the control box to the battery, ensuring that the locking clip is fully engaged.

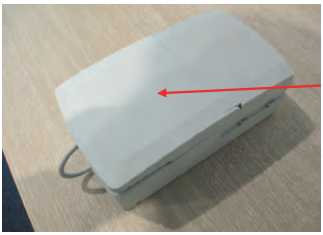
- If the clips are not engaged fully, the tab will be sticking out as indicated.



- Insert the battery connection cable into the battery port in the control box.
- Ensure that it is fully connected.



- Reconnect any actuator cables or hand control cables to the correct ports.



- Close the control box lid, ensuring that the locking clips fully engage.

- Reconnect the mains cable to the control box, ensuring that the locking clip engages.
- Turn on or reconnect the mains outlet.

Deep discharge protection

- The BA21 Li-Ion has a deep discharge protection to protect the battery life. The deep discharge protection is activated when the battery is discharged.
- Charge the battery to exit the deep discharge mode. Ensure that the battery is sufficiently charged before use.

If the battery is completely discharged, the charging will be started at a very small rate to protect the battery. In this case the yellow LED will be flashing. If the battery does not stop flashing and start charging normally within 12 hours (LED ON), the battery is defect and must be disposed according to disposal instructions.

If any and all of the lithium ion batteries built into LINAK products are found to be defective under warranty, LINAK will provide a new product to the OEM. LINAK explicitly disclaims all other remedies. LINAK shall not in any event be liable under any circumstances for any special indirect punitive incidental or consequential damages or losses arising from any incident related to the inherent risk of thermal runaway in the lithium ion cell and any use of LINAK products. Moreover, LINAK explicitly disclaims lost profits, failure to realise expected savings, any claim against our customer by a third party, or any other commercial or economic losses of any kind, even if LINAK has been advised of the possibility of such damages or losses.

Transportation

The lithium ion batteries must be packed and transported according to applicable regulations. Always ask your local transportation provider how to handle the transportation of lithium ion batteries.

Recommendations:

- Charge the battery fully before first use.
- Adhere to the battery storage temperature or else the lifetime and performance will be reduced.
- Allow the battery to settle to room temperature before use or charging.
- Adhere to the duty cycle or else the lifetime and performance will be reduced.
- BA21 Li-Ion is neither intended for use in outdoor applications, pool environments nor other harsh environments.
- Recharge the battery before storage if it has been completely discharged.
- Unintentional use of the emergency button, for instance short activation and deactivation of the emergency button after operating the actuators, can lead to an error indication of remaining battery capacity. The battery capacity will however be shown correctly approx. 20 seconds after activation of the emergency button.
- Only charge with applicable LINAK control boxes.

Safety feature
BA21 Li-Ion contains several mechanisms to protect itself from being damaged due to excessive use.
In case of overheating, the device will activate a thermal protection. No power output will be available until the temperature has returned to normal operating range. Overheating may occur by extensive use at high temperature or by exceeding the 1/19 duty cycle.

BA21 safety
LINAK Li-Ion batteries for medical use are designed and manufactured to be safe through the product life. LINAK has performed various tests of the batteries in normal use, abuse and failure situations to verify the design and production methods. These tests have not shown any unacceptable risks.

The batteries are UL-tested to have an independent organisation verify the safety of the design and to obtain a safety certificate. This means that UL regularly inspects the factory to check that standards are complied with.

UL has tested in accordance with the following standards:

UN38.3 Battery Transportation Safety

IEC62133 Battery Safety

UL2054 Standard for Household and Commercial Batteries

Compatibility:

The BA21 has a built-in charger which means that it cannot operate with control boxes with charger, e.g. CB6 and similar. The BA21 is compatible with CA30, CA40, CA63, CO41, CO53, CO61, CO65 and CO71.

Warnings:

All Li-Ion battery users must read these important battery safety instructions before using Li-Ion batteries. Failure to read and follow Li-Ion safety instructions and warnings may lead to personal injury and equipment damage if the battery is charged and/or used improperly.

Lithium ion batteries differ from the lead acid technology as they have a built-in deep discharge protection.

- In case of continuous use despite warnings, a power loss might occur due to the battery deep discharge protection. In this event, there may be no warning and the application may not be able to move when expected.
- The application manufacturer must test the application and ensure that intentional and unintended operations do not exceed the battery specification limits. The risk analysis for the final application must allow for the ensurance of alternative means to make movement, for instance quick release or manual lowering.
- If product caution is not clearly visible at low light intensity, read the product label instructions symbol. A warning must be included in the application manufacturer's manual for the medical device.
- Do not open, disassemble or modify the battery housing as cell or circuitry damage may develop excessive heat.
- Discontinue the battery use immediately if the battery emits an unusual smell, feels hot, changes colour or shape, shows signs of damage or corrosion or appears abnormal in any other way.
- In case the battery turns hot, disconnect and remove the battery from the room. If not possible to remove the battery, then evacuate the room.
- Defective or damaged lithium ion batteries or batteries that produce excessive heat or fire are not allowed for transportation.
- For safety reasons, please adhere to the indicated charging, storage, and operation temperature as extreme temperatures (low or high) might ignite the batteries and cause fire.
- The mounting instructions must be followed in order to avoid exposing batteries to water.
- The customer is responsible for determining that charger and host device work properly.
- Recharge batteries every 12 months at a minimum.
- Dispose of batteries in accordance with local regulations.

DO NOT:
- heat, burn or short circuit the batteries
- expose the batteries to high impact
- crush or puncture the batteries
- charge or store the batteries near combustible material
- charge the batteries without supervision
- expose the batteries to water or other liquids

Any of the above mentioned can cause fire or injury.

LINAK® will remedy defective Li-Ion batteries built into LINAK products in accordance with the terms stipulated in the LINAK Li-Ion battery disclaimer available on the LINAK website. LINAK explicitly disclaims all other remedies and liability.

5. CS16 (TECHLINE®)

The CS16 electronic limit switch is connected between the LINAK® actuator and a non-LINAK power supply, where it cuts out the current to the actuator in end position of if an obstacle is encountered. The PCB contains a variable current limit setting and is available in different versions, depending on the actuator with which it is to be used.

The CS16 should be connected between the linear actuator and the power supply, where it will switch off the power when the actuator reaches end position or if the actuator is overloaded.

As the CS16 are open PCB's, they have to be installed in an encapsulation to prevent damage. (LINAK® offers one type of encapsulation for CS16)**.**

Adjustment of CS16

The CS16 has a rotary potentiometer for adjusting the value of the cut-off current. To obtain the correct cut-off current, connect the CS16 and turn the potentiometer as far as it will go/anticlock wise to set the maximum cut-off current.

Then subject the actuator to the maximum load it will be exposed to in the application. At the same time turn the potentiometer clockwise, reducing the cut-off current, until the actuator stops (not in end position).

Then turn the potentiometer approx. quarter of a turn anti-clockwise and the system is ready for use.

As the CS16 is a open PCB's, it have to be installed in an encapsulation to prevent damage. (LINAK® offers one type of encapsulation).

6. DJB (MEDLINE® CARELINE®)

The DIN Junction Box is designed for use where there is a need for more than 1 or 2 controls to be connected to a control box.

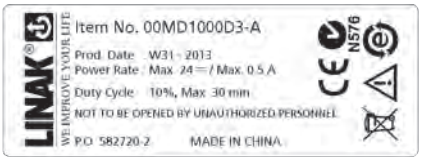
The DIN Junction Box is constructed for connection of up to 4 controls with 8-pin DIN plugs. Furthermore, the box is constructed so that all channels for connetion are placed on the same side of the box.

This gives the box a clean design and makes it easy to mount e.g. in a bed frame.

Usage:

- Compatibility: CB8, CB9, CB12, CBJ and OpenBus™ control boxes
- 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
- Operational meters above sea level: Max. 3000 meters
- Latex free: Yes
- Approvals: IEC 60601-1
  ANSI/AAMI ES60601-1
  CSA CAN/CSA-C22.2 NO. 60601-1
  IEC 62366

7. Massage Motor Medical (MEDLINE® CARELINE®)



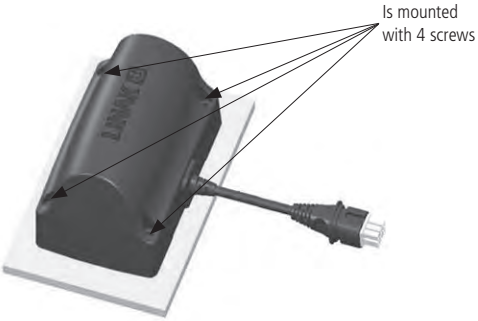
The massage motor can be added to all kinds of couches and tables, chairs or beds for treatment and examination. It enables comfort, relaxation and tension release for patients and clients. The massage motors are directly connected to the actuator port at the control box – no extra wiring at the application, simple and easy mounting.

Usage:

- Compatibility: CB6 OBMe, CB16 OBF, (CB20 pending) MJB006-0x to be used for OpenBus™ impulse drive
- Duty cycle: 10 %, 30 min. max.
- 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: Medical approvals to be determined

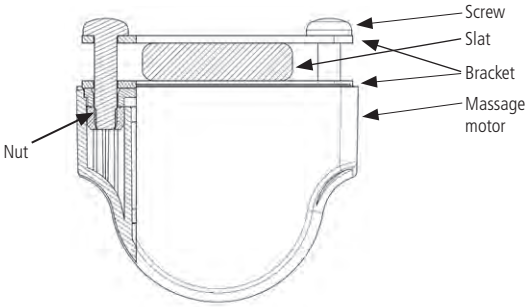
Mounting:

Massage motor on a plate



Mounting of the screw with max. torque 2 Nm

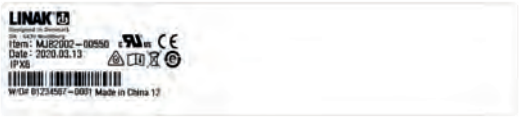
Mounting of massage motor by using brackets:



The massage unit is mounted with 4 x M6 roundheaded machine screws with flat underside. 15 to 20 mm long + the thickness of the bracket. Torque max. 2-3 Nm.

2 brackets must be used - one on each side of the slat.

8. MJB2 (MEDLINE® CARELINE®)



The MJB2 is a compact 2-port repeater designed for use together with analogue or OpenBus™ control boxes. It is optimised for use in systems where 1 extra port is needed for easy connection of a hand control, a foot switch or an accessory like the UBL. It is easy to integrate in a wide range of healthcare applications such as hospital beds, surgery tables, and treatment chairs.

Usage:

- Usage temperature: +5 °C to +40 °C
- Storage temperature: -10 °C to +50 °C
- Compatibility: Connection to LINAK OpenBus and analogue control boxes
- Relative humidity: 20% to 80% – not condensing
- Atmospheric pressure: 700 to 1060 hPa
- Latex free: Yes
- Approvals: IEC 60601-1
  ANSI/AAMI ES60601-1
  CAN/CSA-22.2 No 60601-1

Recommendations

- Always use locking mechanism and O-ring.
- Unused socket(s) must be fitted with blind plug(s) to ensure the IP degree.
- When mounting, a screw torque 0.8-0.9 Nm is recommended.
- Hot-plugging: removing or adding any OpenBus™ cables is not allowed when the control box is powered by mains supply.
  If still required, follow this procedure:
  1. Remove mains and wait for 5 seconds
  2. Connect or disconnect the required cables
  Non-observance of this procedure may lead to a damaged OpenBus driver curcuit.
  The risk of a damaged circuit increases, if the accessory shows a high starting current or inrush current.

Warnings

- Using a wrong type of MJB2, for instance 10 wires in an OpenBus system, can lead to unintended movement or no movement.
- Using wrong screws or the wrong torque can lead to cracks in the housing.
- The cable is not to be exposed to high pull force or sideway traction.

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 3rd party products.

MJB5 Plus Port Repeater, version 000:
The MJB5 Plus version 000 is used where there is a need for more ports than available in the control box.
It is possible to connect multiple MJB5 Plus boxes obtaining unlimited extra connections to the control box.

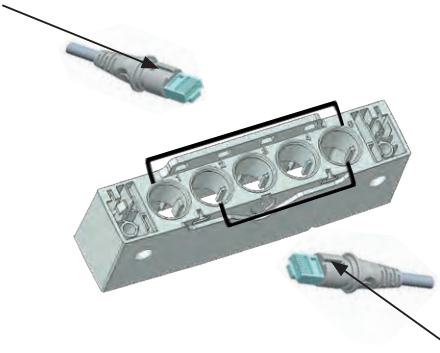
Usage:

• 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, IEC60601-1-6 ANSI/AAMI ES60601-1 CAN/CSA-22.2 No 60601-1

MJB5 Plus Port Repeater usage:
Compatibility: All OpenBus products and CA control boxes.

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

MJB5 Plus mounting without bracket

MJB5 Plus can be mounted directly on the application from the MJB5 Plus side or via the top.

It is recommended to use screw type DIN912 M4 for mounting without the bracket.

When mounting, ensure that a screw torque limit of 1.0 Nm is not exceeded.

Mounting from the MJB5 Plus side

Mounting from the MJB5 Plus top

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

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

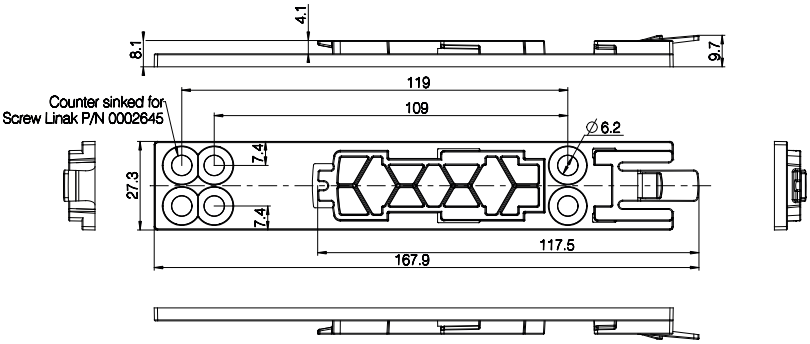
1. Align the locking mechanism with the MJB5 Plus.

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



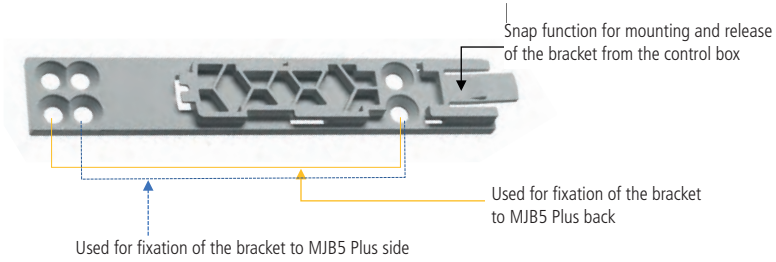
Drawing no.: 0835012

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 fiixations.

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.

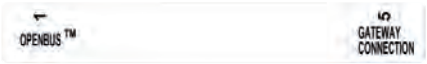
Mounting examples

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.
- 3rd party products must be designed with the following isolation:
  Minimum 1 MOPP (creepage distance/clearance according to IEC 60601-1).
- Ensure that a screw torque of 1.0 Nm is not exceeded when mounting the MJB5 Plus with or without the bracket.



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

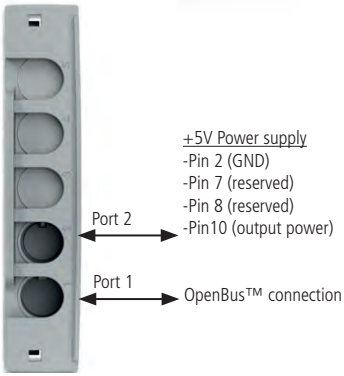
The MJB5 Plus makes it possible to connect multiple hand controls and attendant controls. It can even be used for charging or to connect the Under Bed Light and 3rd party products.

MJB5 Plus with Switch Mode Power Supply (SMPS)
5V SMPS, version 502-010.
The SMPS is to be used where there is a need for power supply near the bed. For example, to charge electronical devices.

It is also possible to connect a bedside lamp from our 3rd party supplier. This will be connected directly to the MJB5 Plus port 2 via a modular plug. The SMPS indicates with an LED on the hand control whether the power supply is switched on or off.

Usage:

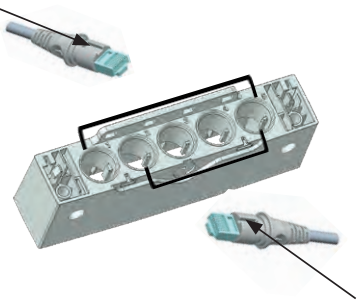
• Compatibility:	All OpenBus products
• Operation temperature:	+5 °C to +40 °C
• Storage temperature:	-10 °C to + 50 °C
• Relative humidity:	20% to 80% non-condensing
• Atmospheric pressure:	700 to 1060 hPa
• Operational meters above sea level:	Max. 3000 meters
• Latex free:	Yes
• Approvals:	IEC60601-1, IEC60601-1-6 ANSI/AAMI ES60601-1 CAN/CSA-22.2 No 60601-1



Standard functionality:
Port 1 is to be connected to the OpenBus control box.
The electronic device must be connected to PORT 2. The power on port 2 can be switched on/off via the patient control (key 1) or the attendant control (key 2), the status is indicated on the OpenBus. Switching on/off the power supply is useful, for instance when the SMPS is used together with a bedside lamp. If an error occurs, this is indicated on the OpenBus. As standard, it is switched off.

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

MJB5 Plus mounting without bracket

MJB5 Plus can be mounted directly on the application from the MJB5 Plus side or via the top.

It is recommended to use screw type DIN912 M4 for mounting without the bracket.

When mounting, ensure that a screw torque limit of 1.0 Nm is not exceeded.

Mounting from the MJB5 Plus side

Mounting from the MJB5 Plus top

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

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

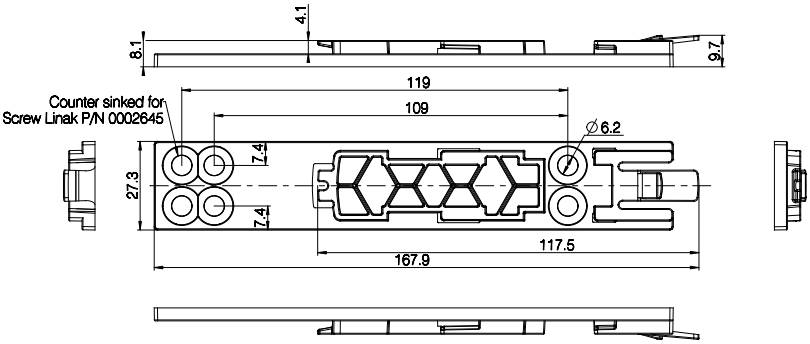
1. Align the locking mechanism with the MJB5 Plus.

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



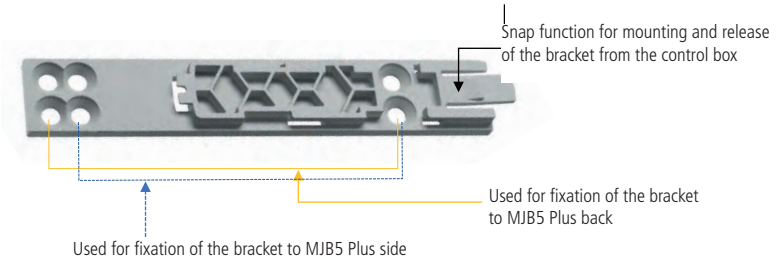
Drawing no.: 0835012

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 fiixations.

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:

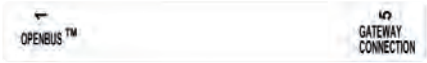
- The MJB must be mounted on an even surface
- The locking surface must be free of other material
- Always use locking mechanism and O-ring
- Sockets not used must be fitted with blind plugs to ensure the IP degree
- HOT PLUGGING
  Removing or adding any OpenBus cables are not allowed when the control 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.
- 3rd party products must be designed with the following isolation:
  Minimum 1 MOPP (creepage distance/clearance according to IEC 60601-1).
- Ensure that a screw torque of 1.0 Nm is not exceeded when mounting the MJB5 Plus with or without the bracket.

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

11. MJB5 Plus Gateway (MEDLINE® CARELINE®)



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 3rd 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.

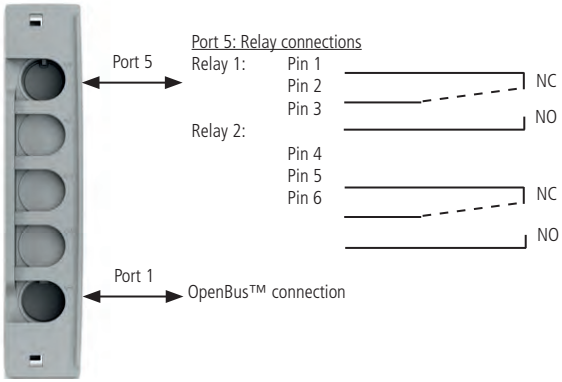
Please note that notifications are only to be used as service information and not for emergency issues.

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

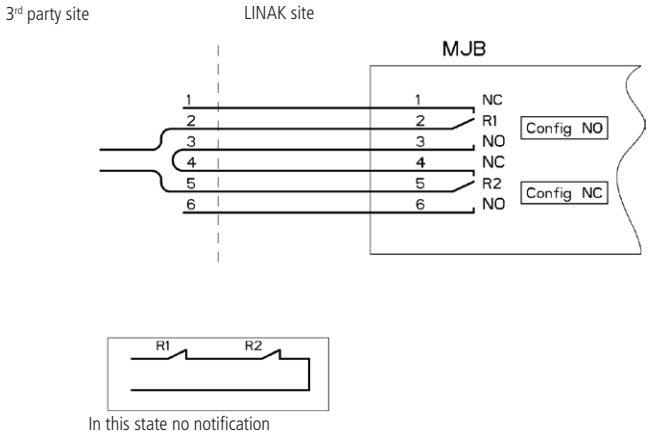
When using this combination, is it important to have the MJB5 Plus 505/506 connected to the system all the time. If it is not connected, the Gateway MJB5 Plus will see it as a notification and the relay will be activated. The Gateway MJB5 Plus is "scanning" the OpenBus system. every minute for a notification.

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.

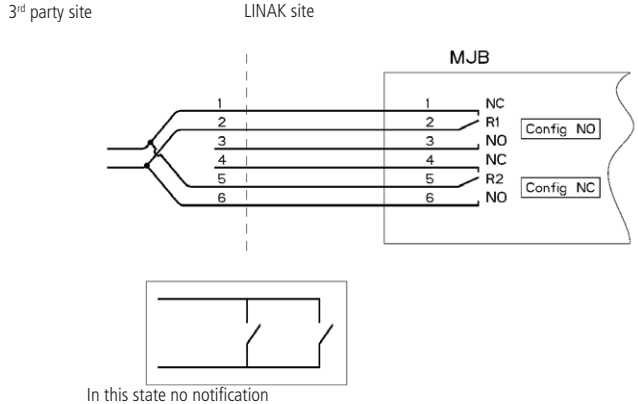
** Notification generated by nurse call or bed notifications.

Example of closed loop:



In this state no notification

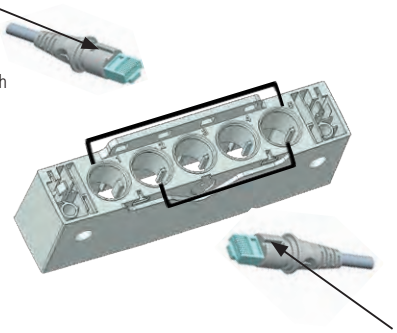
Example of open loop:



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

MJB5 Plus mounting without bracket

MJB5 Plus can be mounted directly on the application from the MJB5 Plus side or via the top.

It is recommended to use screw type DIN912 M4 for mounting without the bracket.

When mounting, ensure that a screw torque limit of 1.0 Nm is not exceeded.

Mounting from the MJB5 Plus side

Mounting from the MJB5 Plus top

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

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

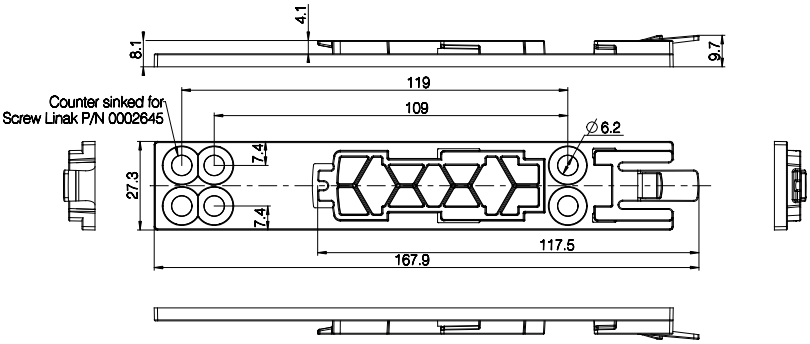
1. Align the locking mechanism with the MJB5 Plus.

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



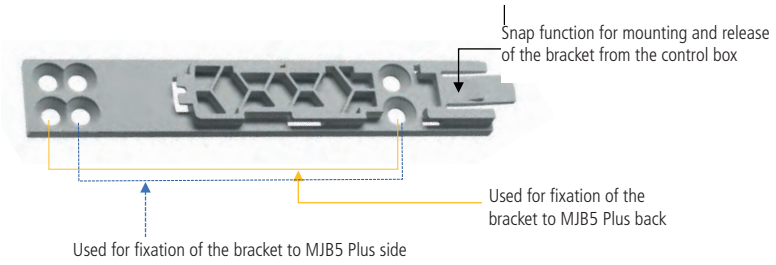
Drawing no.: 0835012

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.



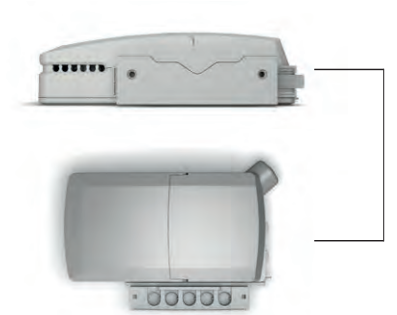
The bracket is very flexible for mounting but we recommend one of the following fiixations.

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.
- 3rd party products must be designed with the following isolation:
  Minimum 1 MOPP (creepage distance/clearance according to IEC 60601-1).
- Ensure that a screw torque of 1.0 Nm is not exceeded when mounting the MJB5 Plus with or without the bracket.

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:
- 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.

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

12. MJB5 Plus UBL (int) (MEDLINE® CARELINE®)

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 3rd party products.

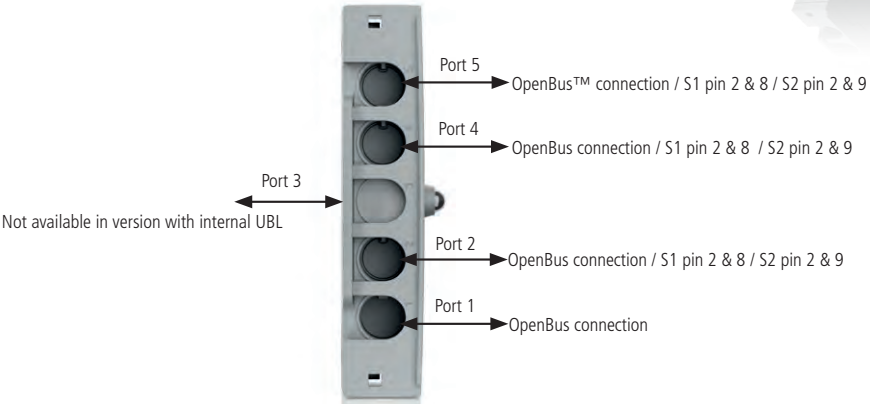
MJB5 Plus with Under Bed Light (int.) and Switch Input (S1/S2)
MJB5 Plus versions 505-010 and 505-020:
The MJB5 Plus is a modular junction box with 3 different options, Under Bed Light (UBL) and 2 different switch inputs, S1 and S2, which can be used for an external switch.

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 theattendant 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).

MJB5 Plus mounting without bracket

MJB5 Plus can be mounted directly on the application from the MJB5 Plus side or via the top.

It is recommended to use screw type DIN912 M4 for mounting without the bracket.

When mounting, ensure that a screw torque limit of 1.0 Nm is not exceeded.

Mounting from the MJB5 Plus side

Mounting from the MJB5 Plus top

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

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

1. Align the locking mechanism with the MJB5 Plus.

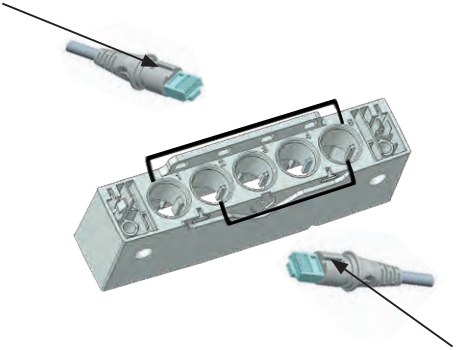
2. Press the cable locking mechanism down until you hear a click sound.

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

4. MJB5 Plus with a locked cable mechanism.

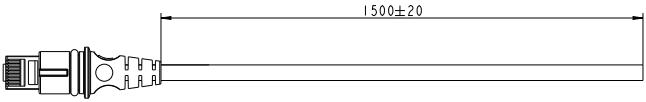
Modular plug cable, narrow/wide alignment grooves:

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.

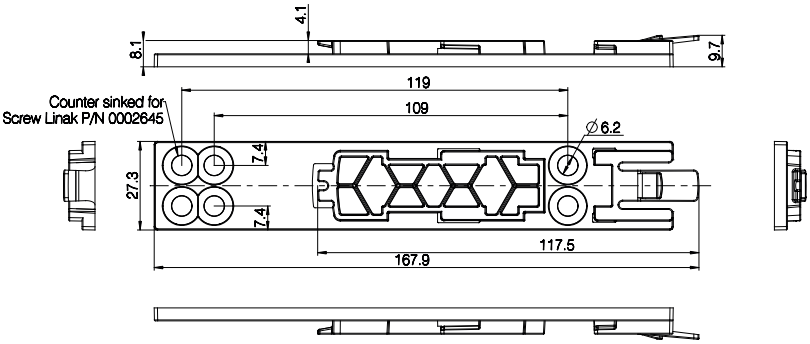


Modular plug with narrow alignment groove.
To be used with 3rd party products.
Can only be connected to ports in the MJB5 Plus with narrow slit. This is to prevent 3rd party products to interfere with the OpenBus™ connections.

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



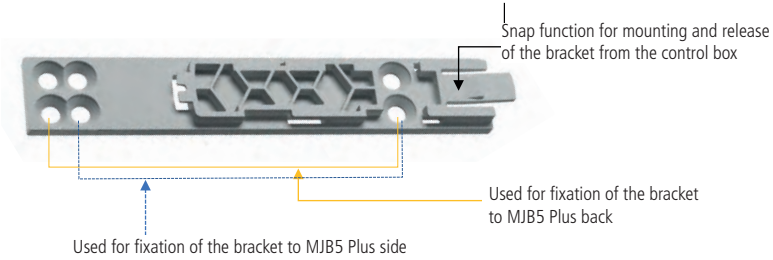
Drawing no.: 0835012

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 fiixations.

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.
- 3rd party products must be designed with the following isolation:
  Minimum 1 MOPP (creepage distance/clearance according to IEC 60601-1).
- Ensure that a screw torque of 1.0 Nm is not exceeded when mounting the MJB5 Plus with or without the bracket.

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

13. MJB5 Plus UBL (ext) (MEDLINE® CARELINE®)

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 3rd party products.

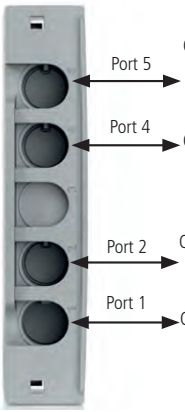
MJB5 Plus with Under Bed Light (ext.) and Switch Input
MJB5 Plus versions 506-010 and 506-020:
The MJB5 Plus is a modular junction box with 3 different options, Under Bed Light (UBL) and two switch inputs, S1 and S2, which can be used for an external switch.

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,



Port 3 is not available

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).

MJB5 Plus mounting without bracket

MJB5 Plus can be mounted directly on the application from the MJB5 Plus side or via the top.

It is recommended to use screw type DIN912 M4 for mounting without the bracket.

When mounting, ensure that a screw torque limit of 1.0 Nm is not exceeded.

Mounting from the MJB5 Plus side

Mounting from the MJB5 Plus top

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

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

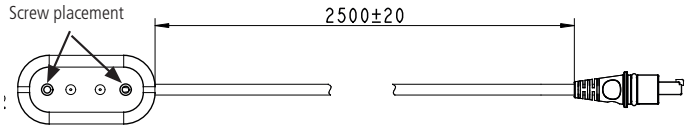
1. Align the locking mechanism with the MJB5 Plus.

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

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

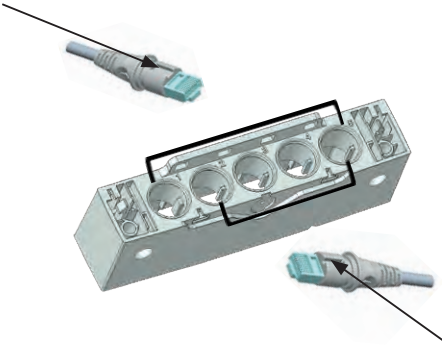
4. MJB5 Plus with a locked cable mechanism.

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



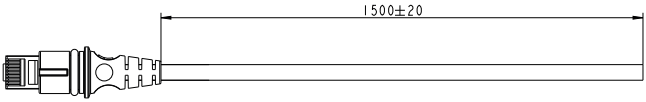
Modular plug cable, narrow/wide alignment grooves:

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.

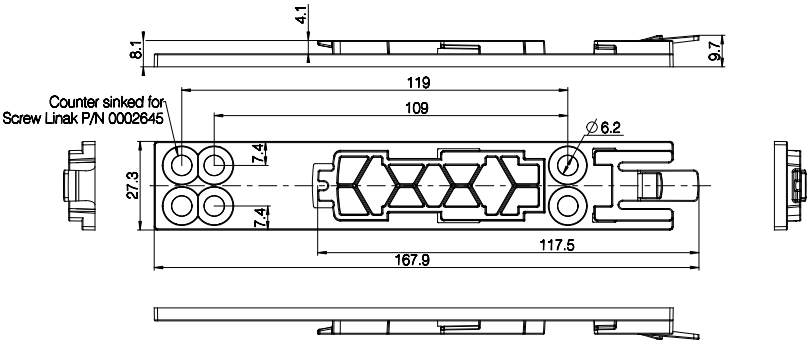


Modular plug with narrow alignment groove.
To be used with 3rd party products.
Can only be connected to ports in the MJB5 Plus with narrow slit. This is to prevent 3rd party products to interfere with the OpenBus™ connections.

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



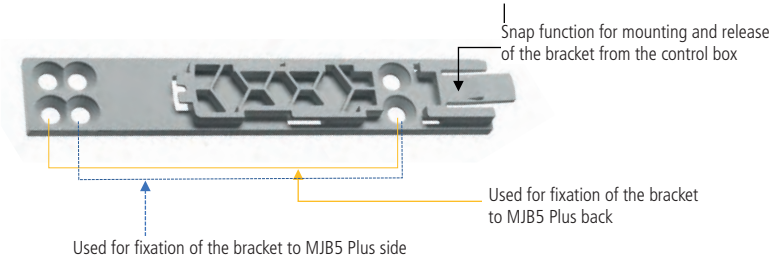
Drawing no.: 0835012

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 fiixations.

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.
- 3rd party products must be designed with the following isolation:
  Minimum 1 MOPP (creepage distance/clearance according to IEC 60601-1).
- Ensure that a screw torque of 1.0 Nm is not exceeded when mounting the MJB5 Plus with or without the bracket.

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 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 3rd party products.

MJB5 Plus – Analogue to Openbus Converter (AOC)
MJB5 Plus versions 509

The AOC is an Analogue to OpenBus™ Converter. It is the perfect match for especially medical applications where the customer needs to add own products or 3rd party controls in an OpenBus system, e.g. multi-purpose foot switches.

The MJB5 AOC is available with or without power request.

Usage:

- Compatibility: All OpenBus control boxes except CB20.
- 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, IEC60601-1-6
  ANSI/AAMI ES60601-1
  CAN/CSA-22.2 No 60601-1

Port 5 → Common positive (input 9, 10, 11, 12, 13, 14, 15 or 16)

Port 4 → Common positive (input 1, 2, 3, 4, 5, 6, 7, 8)

Port 3 is not available

Port 2 → OpenBus connection or 4 inputs with common GND (input 17, 18, 19 or 20)

Port 1 → OpenBus connection

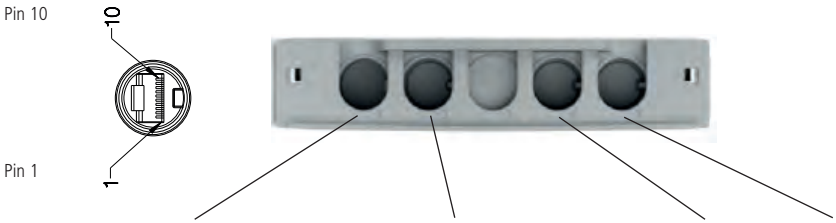
The product label is added for correct connection to the ports:

The MJB5 AOC has 4 ports.
Port 1 is for OpenBus connection.
Port 2 has 4 common ground switch inputs or an OpenBus hand control.
Port 4 has 8 common positive switch inputs or an analogue hand control.
Port 5 has 8 common positive switch inputs or an analogue hand control.

Port 1 for connection to the control box and port 2 can be used for an OpenBus control. The standard inputs are made so that a system containing an analogue hand control can be used for an OpenBus control box in port 4 or port 5.

AOC pin connections

Please be aware of the cable and pin orientation:



Port/pins	Port 1	Port 2	Port 3	Port 4	Port 5
		Common ground		Common positive	Common positive
Port used for	**OpenBus connection**	**OpenBus™ connection OR extra 3rd party connection**		**3rd party connections**	**3rd party connections**
Pin 1				GND	GND
Pin 2		GND		Vperm*	Vperm*
Pin 3				Input 1	Input 9
Pin 4				Input 2	Input 10
Pin 5				Input 3	Input 11
Pin 6				Input 4	Input 12
Pin 7		Input 17		Input 5	Input 13
Pin 8		Input 18		Input 6	Input 14
Pin 9		Input 19		Input 7	Input 15
Pin10		Input 20		Input 8	Input 16

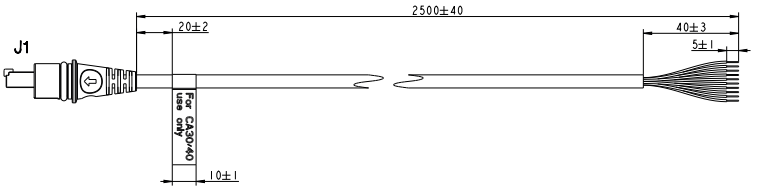
** The voltage can vary from 18 V on battery and up to 50 V on mains with CO control boxes.*

Requirements for 3rd party products

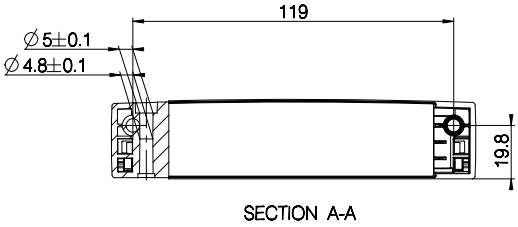
When the connection is activated, the resistance value must be <100 Ω. When there is no activation the resistance value must be >1 M Ω. As the MJB5 AOC is to be used with 3rd party products, it needs to be designed with the following isolation: minimum 1 MOPP (creepage distance/clearance).

E.g. 1 MOPP at 60 VAC or 85 VDC
Creepage distance 2.3 mm
Clearance 1.2 mm

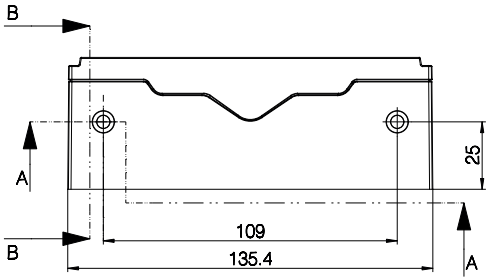
Cable 0965347-A is a modular cable with straight jack plug and 10 open-end wires. It is used between Port 4 and/or Port 5 and 3rd party products.

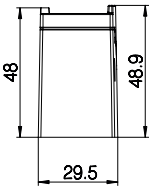


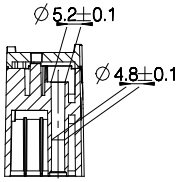
Dimension



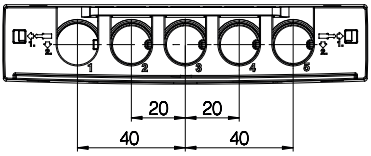
SECTION A-A







SECTION B-B



Standard configuration

Table 1: Overview of pin activation and OpenBus codes
When a pin is activated, different OpenBus codes from port 4 and port 5 will be sent.
Table 1 is the standard configuration.

Example: If Pin 3 is activated, it will send OpenBus code H1 from port 4 and H11 from port 5.

Table 1

Pin	Wire colour	Port 1	Port 2	Port 4	Port 5
Pin 1	Black			GND	GND
Pin 2	Red			Vperm*	Vperm*
Pin 3	Orange			H1	H11
Pin 4	Green			H0	H10
Pin 5	White			H3	H13
Pin 6	Blue			H2	H12
Pin 7	Purple			H5	H15
Pin 8	Yellow			H4	H14
Pin 9	Brown			H7	H17
Pin 10	Grey			H6	H16

*: The voltage can vary from 18V on battery and up to 50V on mains with CO control boxes.

Table 2

Function CA30/CA40	Function CB6P2	Pin
		Pin 1
		Pin 2
CH1 in	CH1 in	Pin 3
CH1 out	CH1 out	Pin 4
CH3 in	CH2 in	Pin 5
CH3 out	CH2 out	Pin 6
CH2 in	CH3 in	Pin 7
CH2 out	CH3 out	Pin 8
CH4 in	CH4 in	Pin 9
CH4 out	CH4 out	Pin 10

Table 2: Overview of pin activation and channels in systems with an analogue control box.
When an analogue hand control is combined with analogue control box and it is connected to the MJB5 AOC, the analogue signals will be converted to OpenBus signals.

Example: If an analogue hand control is connected to CA30/CA40 and CH1 is activated on 'button X', 'button X' is pin 3. If this hand control is connected to the MJB5 AOC, it will give an 'H1' or 'H11' OpenBus code when connected to port 4 or port 5.

MJB5 Plus AOC Special Recommendations:

When the MJB5 Plus AOC with or without power request is being used on a system with battery, the functionality will follow the power-down mode of the control box.
If there is no power request on the inputs, it is not possible to wake up the control box via the MJB5 AOC inputs when the control box is in power-down mode.

Please note that the MJB5 AOC or the OpenBus unit will be damaged if they use Vpermanent and are attached to port 4 or port 5. An example of an OpenBus unit using Vpermanent could be the scale solution including QLCI2.

MJB5 Plus mounting without bracket

MJB5 Plus can be mounted directly on the application from the MJB5 Plus side or via the top.

It is recommended to use screw type DIN912 M4 for mounting without the bracket.

When mounting, ensure that a screw torque limit of 1.0 Nm is not exceeded.

Mounting from the MJB5 Plus side

Mounting from the MJB5 Plus top

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

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

1. Align the locking mechanism with the MJB5 Plus.

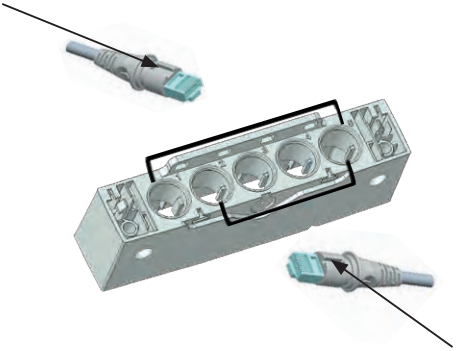
2. Press the cable locking mechanism down until you hear a click sound.

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

4. MJB5 Plus with a locked cable mechanism.

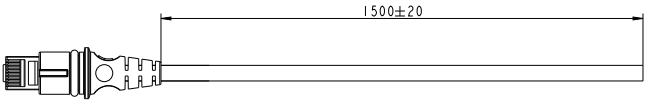
Modular plug cable, narrow/wide alignment grooves:

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.

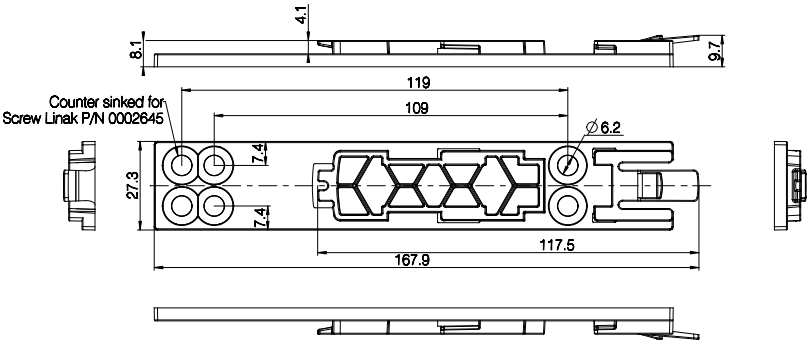


Modular plug with narrow alignment groove.
To be used with 3rd party products.
Can only be connected to ports in the MJB5 Plus with narrow slit. This is to prevent 3rd party products to interfere with the OpenBus™ connections.

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



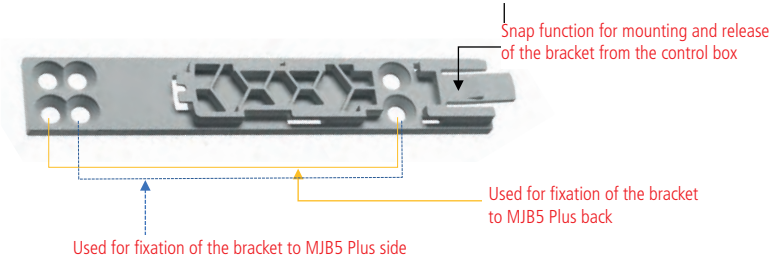
Drawing no.: 0835012

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.



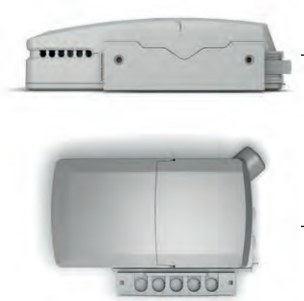
The bracket is very flexible for mounting but we recommend one of the following fiixations.

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.
- 3rd party products must be designed with the following isolation:
  Minimum 1 MOPP (creepage distance/clearance according to IEC 60601-1).
- Ensure that a screw torque of 1.0 Nm is not exceeded when mounting the MJB5 Plus with or without the bracket.

15. Simulator tool (MEDLINE® CARELINE®)

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.

16. SLS (MEDLINE® CARELINE® TECHLINE®)

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.

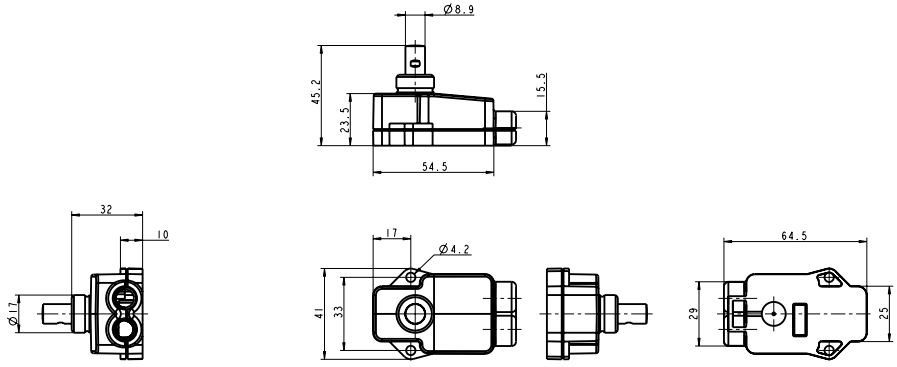
The active type has power request when the switch is activated and can be used for activating a function (actuator movement).

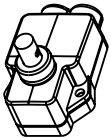
The passive type does not have power request when the switch is activated. The passive SLS can be used as a brake buzzer switch or as part of an activation, for instance in combination with a hand control, for example HB80.

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

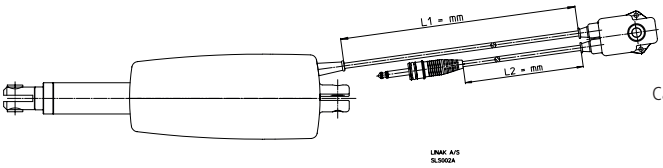
Dimensions:



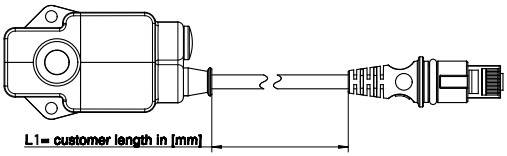


Drawing no.: 0914649

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

17. Under Bed Light (MEDLINE® CARELINE®)

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.

18. 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 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).
- 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.

19. QLCI2 (MEDLINE® CARELINE®)

The Quad Load Cell Interface 2 (QLCI2) for the hospital and care segment is a scale system accessory with weighing capabilities and Out of Bed functionality.

The housing, makes the QLCI2 easy to mount by unique slide-on brackets and has an IPX6 Washable DURA™ ingress protection.
The QLCI2 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 3rd 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.

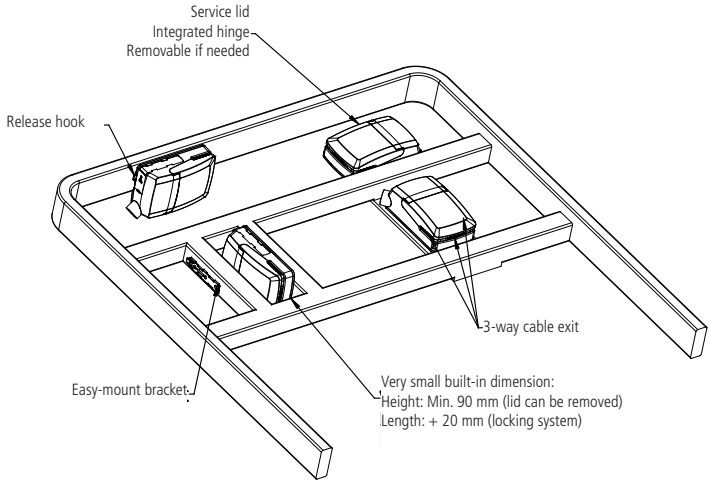
2. Verification by "first-time" verification Bodies.

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:

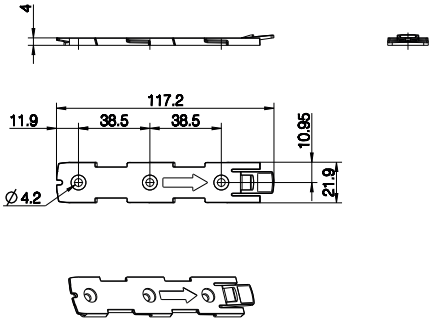
- The Type Approval Certificate number MUST be marked at the label on the weight unit.
- The Type Approval Certificate must be issued according to and including reference to the Directive for "*non-automatic weights*" 2009/23/EC (new non-modified version of 90/384/EEC).

Mounted on frame:



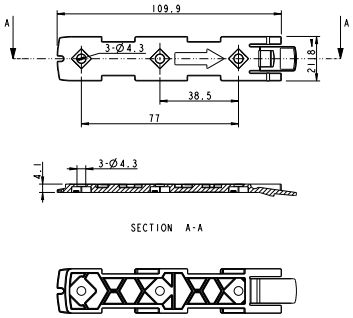
Drawing No.: 1013W4008

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 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 QLCI2 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 QLCI2 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.

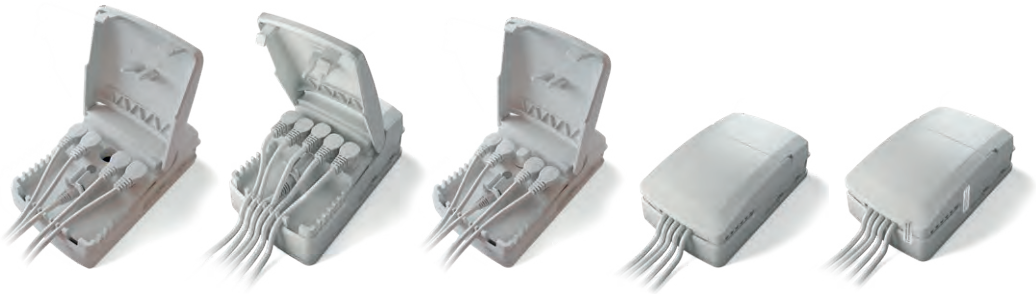
Mounting of cables and cable lock:

The QLCI2 have a uniquely designed cable lid. The lid also works as an integrated cable lock when closed.

1. Mount load cell cable plugs in QLCI2
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.

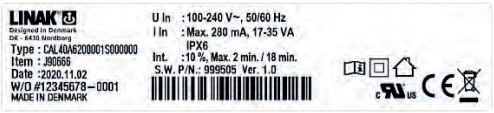
1 Mount load cell cables | 2 Calibrate the system | 3 Mount blind plug | 4 Close lid until it snaps | 5 Place void label

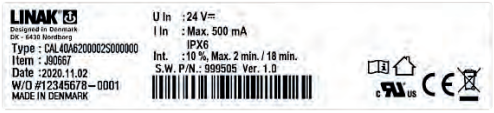


Only 1 label is required. The label can be placed anywhere along the opening of the lid on the QLCI2 box.

9. Information on specific LIFT products

1. CAL40 (MEDLINE® CARELINE®)





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

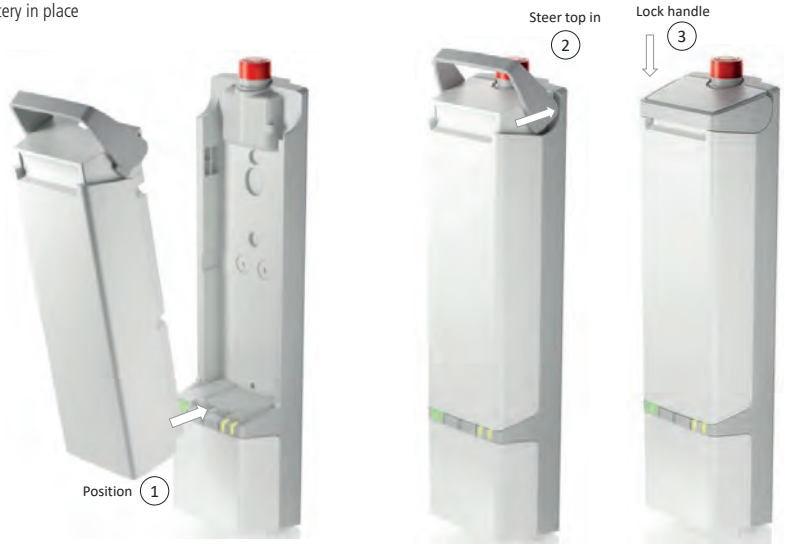
General functionality – LIFT40

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

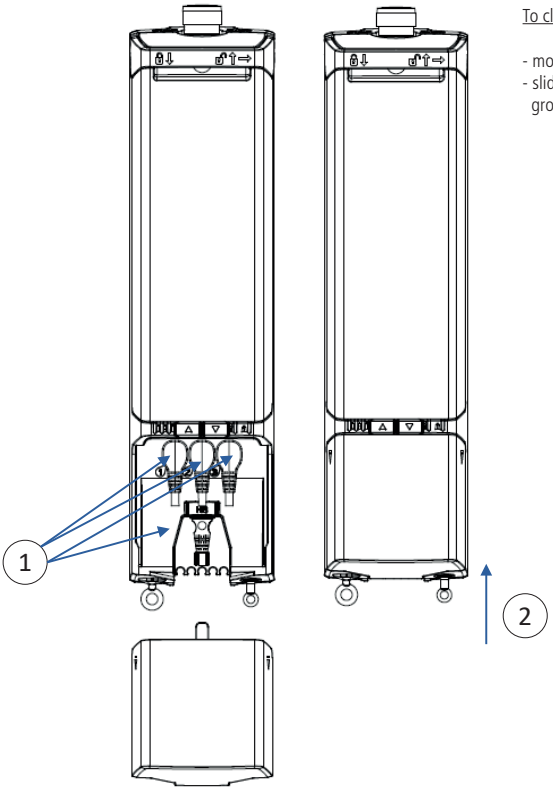
Mounting battery:

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)