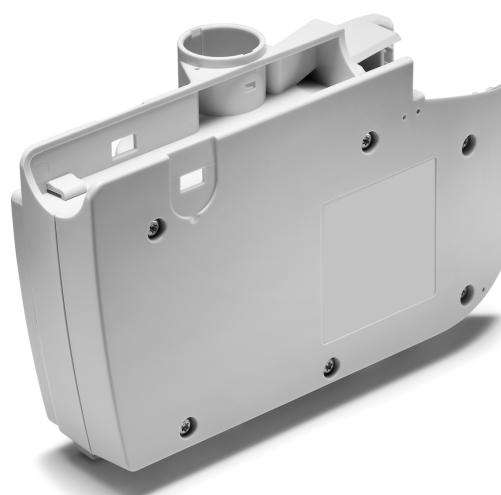




CB6S MK3
CB6SMK3

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Introduction

The CB6S MK3 is part of the LINAK OpenBus™ Bluetooth® product range that provides more flexible solutions no matter which actuator concept is preferred.

It is a powerful control box with Switch Mode Power Supply (SMPS) which is typically used for applications like hospital beds, couches/tables for treatment and examination and other medical applications.

The universal SMPS makes the control box adaptable to the worldwide market irrespective of the input voltage.

Easy troubleshooting and the possibility for read-out of lifetime actuator information and battery state on a laptop via Service Data Tool (SDT).

With the CB6S MK3 you get more benefits such as:

- Bluetooth® communication
- Universal SMPS covering from 100-240 VAC
- 200 W powerful SMPS with full software power management
- Exchangeable mains cables for worldwide compatibility
- Easy documentation of service visits with Service Data Tool (SDT), OneConnect™
- SMPS saves weight
- Easy software configuration in SoftCon2

The CB6S MK3 comes with a built-in main power varistor that protects the control box in case of overvoltage which makes it an ideal choice for countries with voltage spikes, such as Brazil, India and Mexico.

Yellow line - information also in data sheet

Red line - information also in user manual



Features and options

Power supply:	SMPS Universal: 200 W, 100-240 VAC 50/60 Hz
Standby current consumption, SMPS:	Approx. 0.8 W (230 V)
Channels:	4
Varistor:	For input voltage protection
Colour:	Light grey (RAL7035)
Weight:	700 g
Battery charger:	Yes
Charging indicator:	Supported
Battery alarm:	Yes, at medium battery level (19.6 V)
EOP:	Implemented in standard software
Housing type:	V-0
IP rating:	IPX6
Operation:	Real parallel (feedback possible)
Max. current, total:	10 A (EOP supported)
μ-processor:	128 kB (supports more complex software, for instance true parallel operation, feedback is possible)
Management:	With full software power management
Speed control:	Possible with special software (common for all channels)
Start/stop:	Soft start/direct stop
Light background:	Background light in hand controls supported (Vpermanent)
Control concept:	Relays (fully software-controlled EAS protection)
Service monitor:	Yes, supported
External battery connection (BA18):	Capacity: 1.3 Ah, must be ordered separately
Accessories:	OpenBus™ accessories Max. 200 mA (Vbus). Accessories must be low power or green, compatible to maintain low power (1.5 W) - this must be ensured by the sales engineer.
Software:	GP094 or SoftCon2
Safety system:	Controlled and monitored by hardware (but position lost and fatal error controlled by software)
Hot-plugging protection:	Protected against hot-plugging (protected against cable removal when powered)



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

Meters above sea level: Max. 3000 meters

Mains supply grid should be limited to the highest prospective short circuit current of 1500 A.

Demands to mains supply safety for the application in accordance with IEC 60601-1 ed. 3.2, § 8.11.5

Compatibility: See chapter 3 for further details



Low power consumption

If there is no activity for 2 minutes, the CB6S MK3 will shut down and thereby turn off the lights in all accessories.

If any accessories or other devices activate power request, the CB6S MK3 will wake up again. See the state and transitions diagram of the CB6S MK3 below.

Mains operation

Mains is connected and full operation is possible. If the CB6S MK3 is charging the battery, it will stay in this state. All indicators will turn off after 2 minutes, except the charging indicator.

Mains low power

Mains is connected, but the CB6S MK3 is shut down to save as much power as possible.

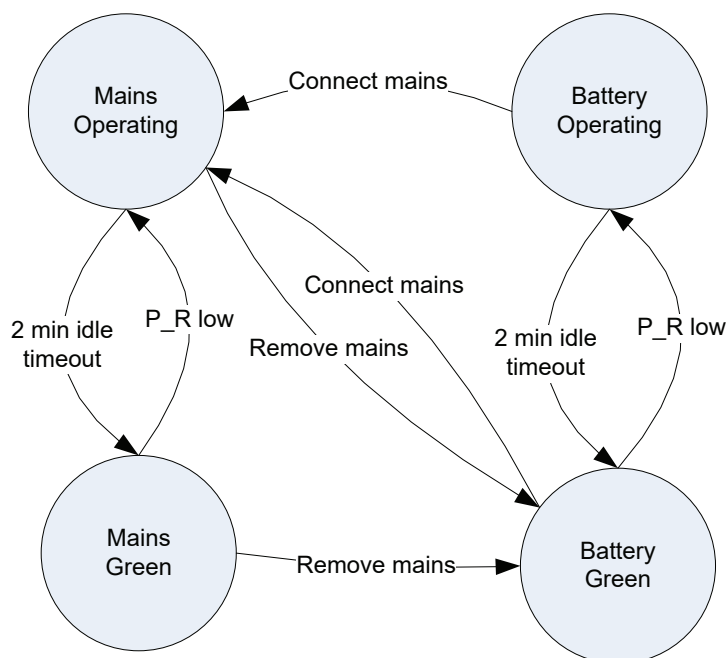
Battery operation

Mains is disconnected and the CB6S MK3 operates on battery. Full operation is possible as long as the battery voltage is above approx. 22 V.

Battery low power

Mains is disconnected and the CB6S MK3 is shut down to save as much battery power as possible.

The diagram below shows the state and transitions of the CB6S MK3.

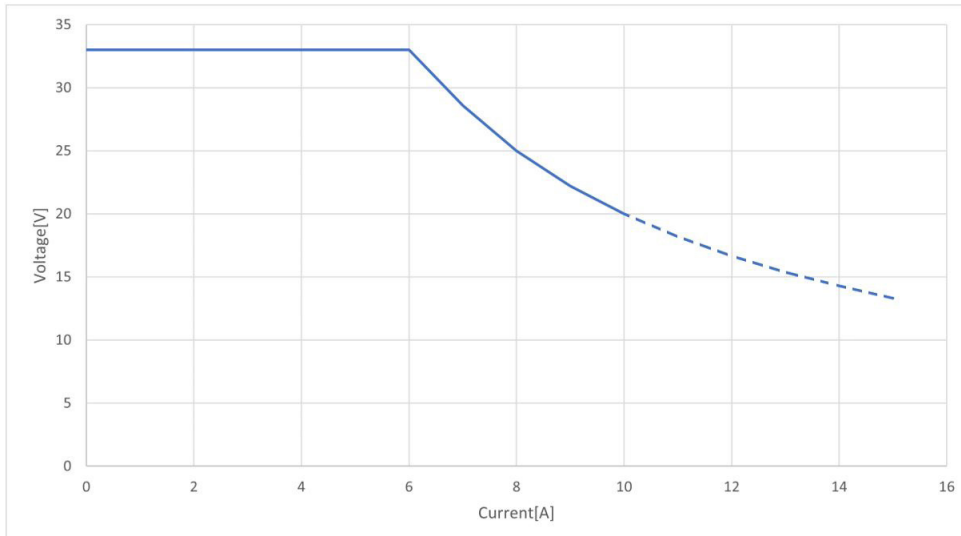


CB6S MK3 Power Output

The power output enables high performance even at heavy loads. Compared to traditional transformer characteristics (voltage/speed), the power output is close to flat until maximum power output is reached.

At approximately 6 A, the power output module will operate the actuator at the highest speed (approximately 33 V). At higher loads, the voltage output will be regulated to keep the maximal power output. See output voltage curve.

CB6S has a max. output current of 10 A.



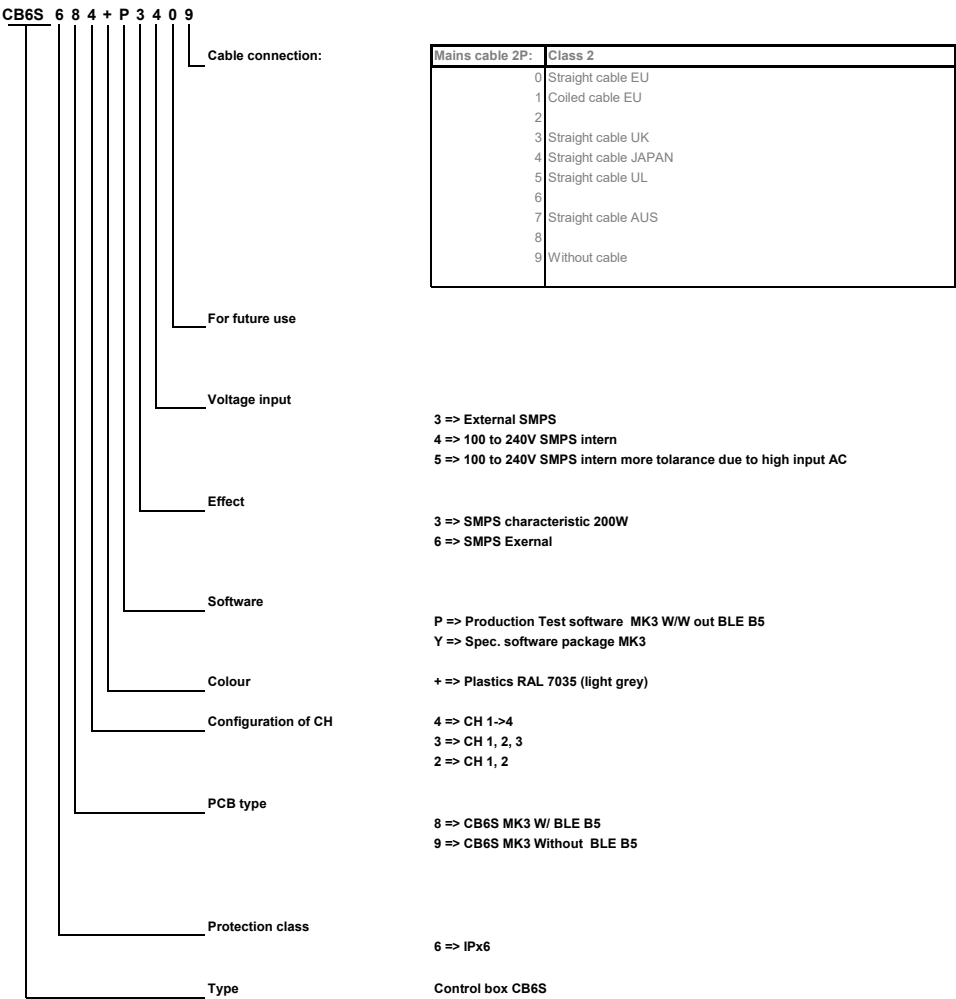
At approx. 10 A, the power output module will shut down. To reset the power output module, the activated key is to be released, and the load (overload) is to be reduced.

Thermal Protection

CB6 is thermally protected. If the permitted duty cycle limit is continually exceeded or the control box is exposed to other kinds of thermal stress, the CB6 will protect

itself by shutting down. Once the thermal condition is normalised, the CB6 will recover and allow further operation.

Ordering example



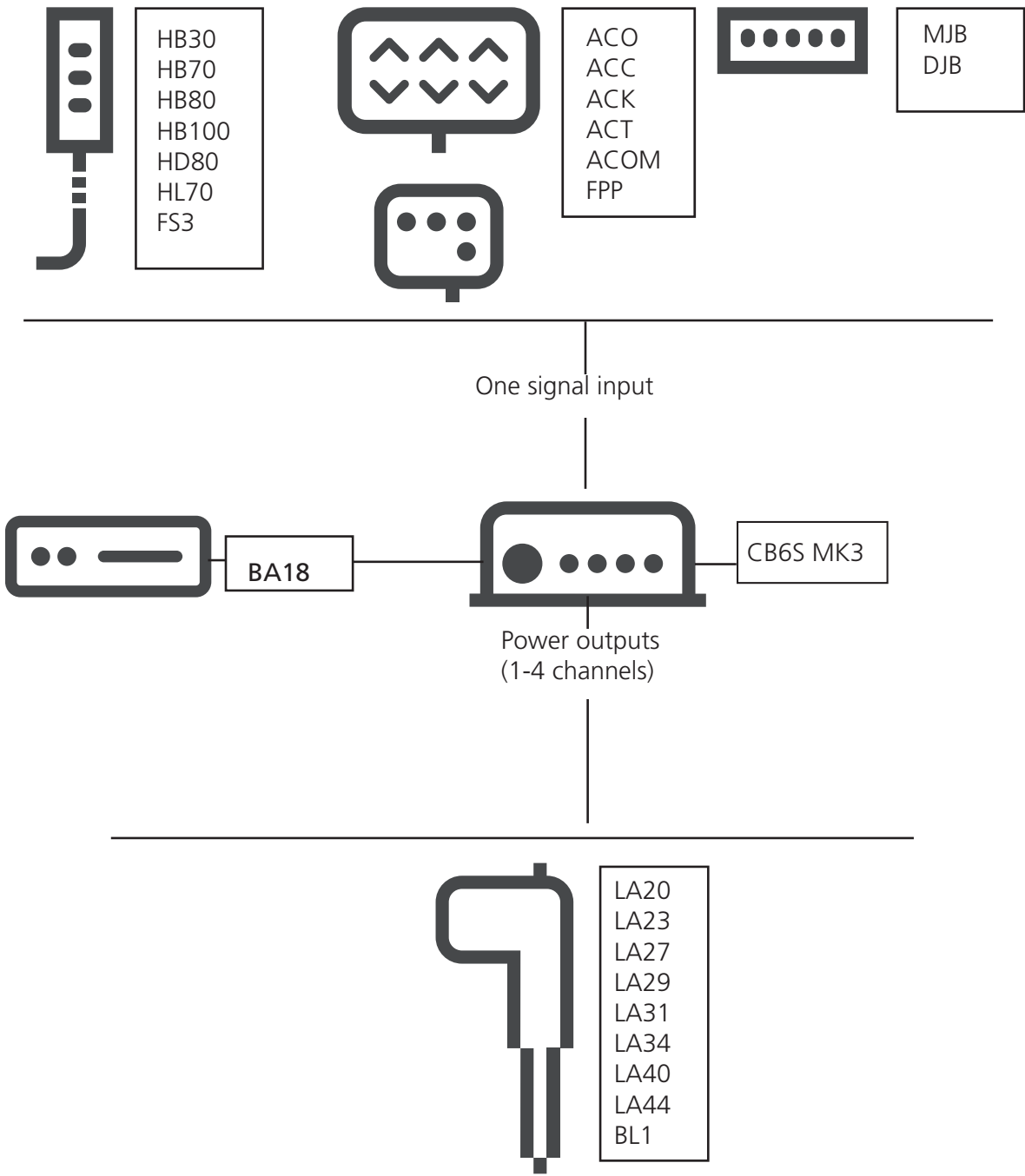
Possible combinations

If a mains cable with pigtail is applied, CLASS I is obtained – however the CB label will indicate CLASS II. Eventually, the OEM applying for an application approval must clarify if such a solution is accepted by the used test house.

See chapter 3 for combination details.



System overview



For details, see sales backup chapter 3.1.27 CB6S MK3 Compatibility.



LED status during usage

The LED on CB6S MK3 can show 3 different colours during usage.

Green	CB6S MK3 is connected to mains supply.
Green + Yellow	CB6S MK3 is operated on mains supply. (* See later page re. 'First-failure-safe monitoring')
Yellow	CB6S MK3 is battery-operated (power request)

Remarks re. software functionality possibilities

- CB6S MK3 supports locking of any function. Use SoftCon2 or the GP94 software template to determine how to lock the actuator system.
- Because the CPR function is an emergency function, it should never be locked.
- There should be no EOP on the CPR function which means that it will always try to run despite the load condition.

Uploading new software

With the programming tool, box PB31001-00, it is possible to upload software to CB6S MK3.

Please see sales backup chapter 10.33.

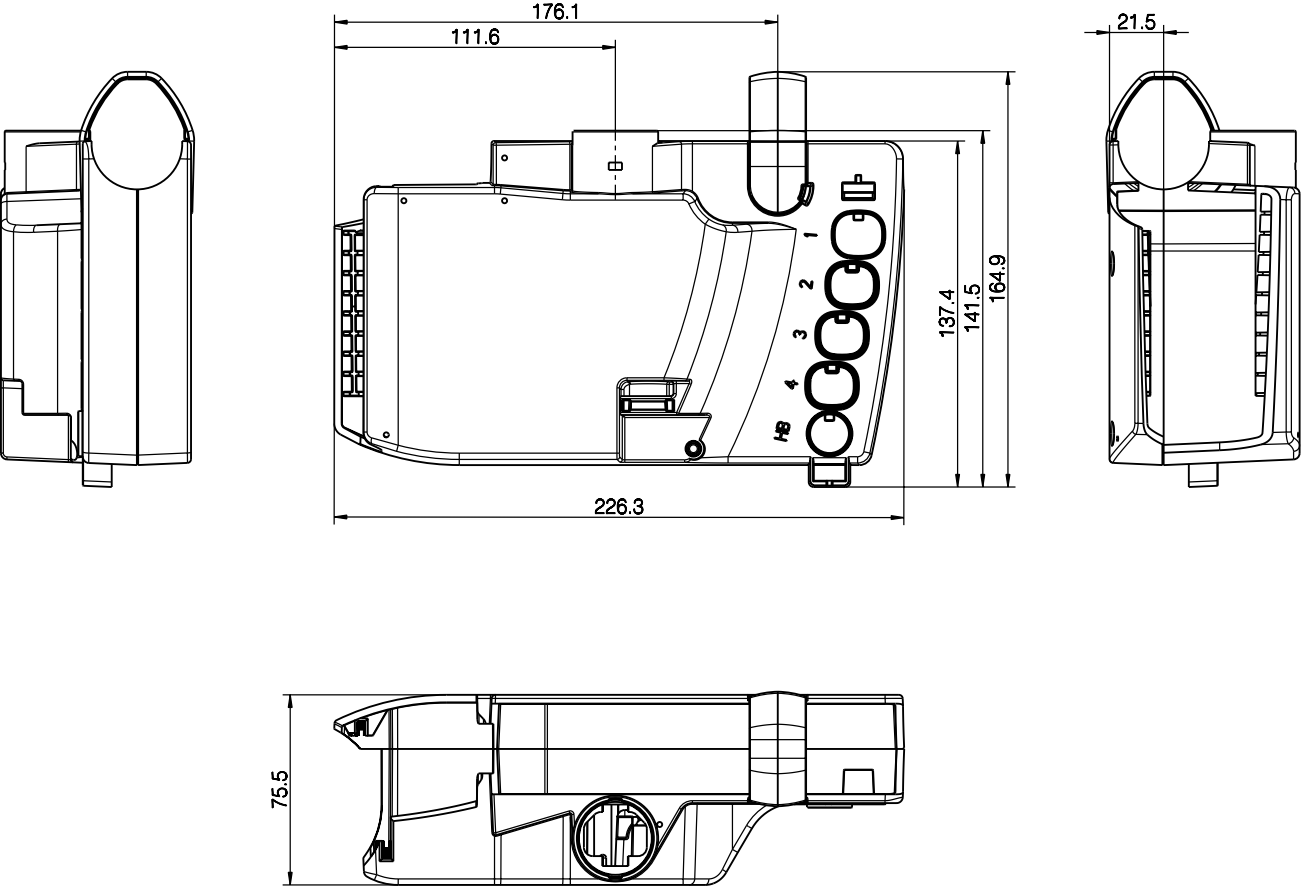


Compatibility/accessories list

Actuators	LA20, LA23, LA27 (cable type '0 or B'), LA29, LA31, LA34, LA40, LA44, BL1
Controls	HB7x, HB8x, ACO, FPP, UBL2
Accessories	MJB2, MJB5
Mains cables (must be ordered separately)	2-pole without earth or 3-pole with pigtail For cable details see chapter 4.1.4/see cable configurator
Battery back-up (external)	BA18 - Capacity: 1.3 Ah/24 VDC
Locking mechanism, cables	009271042 (RAL 7035, light grey)
Locking mechanism, battery	009271232 (RAL 7035, light grey)
Mounting brackets (separate mounting)	9271233 chromatised or 9271237 non-chromatised. If another actuator than LA27 is used, mounting cannot take place via the actuator. Instead a mounting clip for separate mounting is available.
Mounting adapter/clip for LA27	009271043 (RAL 7035, light grey)
Blind plugs, actuator	009271049-A (RAL 7035, light grey), O-ring included 0988003 (RAL 7035, light grey), O-ring included
Blind plugs, battery	00918174 (RAL 7035, light grey), consists of item 00918035-A + O-ring 0007018



Dimensions



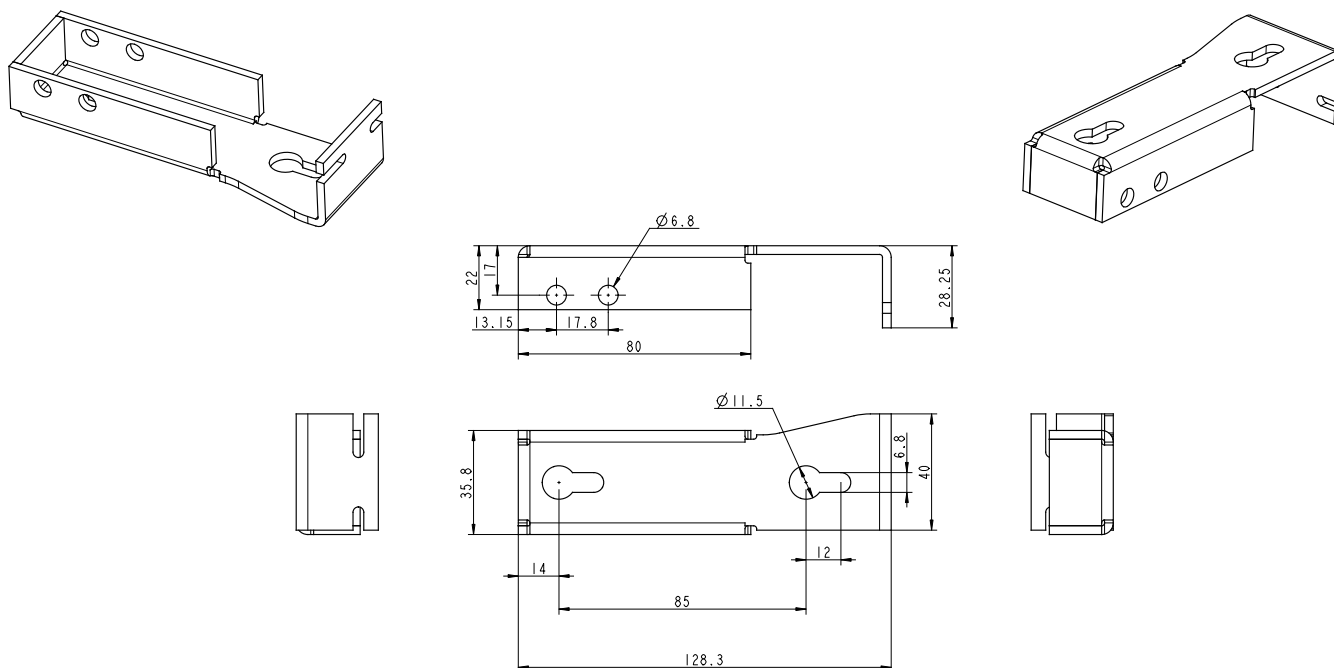
Drawing No.: 9279019



Mounting of CB6S MK3

Article no. 9271233 (galvanised) + 9271237 (iron oil)

Apart from LA27, it is not possible to mount CB6S MK3 onto LINAK actuators. In such case, you need a CB6 mounting bracket which can be welded or similar to the application. This bracket is shown below:



Drawing No.: 9271233

First-failure-safe monitoring

CB6S MK3 is equipped with a first-failure-safe indication controlled by hardware (power request). At normal operation (no failure observed), the power LED turns yellow when a hand control button is activated.

If the LED has turned yellow AND the hand control has NOT been activated, it indicates that a failure has occurred (first failure).

NOTE

Even though the LED lights yellow before the hand control is activated, it is possible to operate the CB6. However, the first failure is somehow still in the control box and must be removed to prevent a further failure that might lead to a hazardous situation.

To meet the safety requirements, the device must have a dual switch safety concept.

Further information about OpenBus™ safety concepts can be found in the sales backup chapter 4 re. the safety concept.

The safety function must be monitored and this monitoring is implemented in the software. In case of a failure (fatal error), any further operation of any channels is prevented. In case of a fatal error, the CB6S MK3 responds with the following information:

Failure indication:

▲	All control LEDs are blinking
▲	The CB6S MK3 buzzer beeps shortly if a hand control is activated
▲	The error can be reset by activating H0 and H1 OR H10 and H11 or H20 and H21(standard SW only) on a hand control.

CB6S MK3 compatibility

CB6S MK3 supports both digital and analogue encoded signals.





Recommendations

- To avoid unintended activation of actuators if hand control cables short-circuit, LINAK recommends to use an OpenBus™ system (CB6S MK3).
- If there is a risk that the system is overloaded and therefore shuts down thermally, LINAK recommends to use quick release actuators. These will allow functions to be lowered manually in case of a CB6S MK3 malfunction due to misuse/abuse.
- If the customer has other essential performance than 'no unintended movement', he must consider this in his own risk analysis. LINAK disclaims any liability.
- If the actuator or the control cable is removed from the control box, the cable lock must be applied. To ensure movement in this case, LINAK recommends to use quick release actuators in the application.
- To avoid cables from being damaged by pulling, LINAK recommends to make safe cabling. If movement is an essential performance, LINAK recommends to apply quick release actuators, for instance, to ensure movement.
- To avoid thermal protection from being activated, do not exceed load specifications. If movement is an essential performance, LINAK recommends to apply quick release actuators, for example, to ensure movement.
- Sales must request a review of the products according to current cut-off limits.
- Push plugs fully into correct sockets and make sure that the plugs are completely inserted.
- Mount control box cover and close cover until locked in place.
- When mounting the CB6S MK3 using the two screw holes, you must use the spacer. This is to avoid the CB6S MK3 housing from breaking which can lead to malfunction and lower IP ratings.

Motor cable

Always use 6-wire cables.

Please note that straight motor cable plugs are required for connection to the control box.





Warnings

- Use EPR or ensure that the user takes care not to squeeze the mains cable.
- Always check correct assembly after mounting and service to ensure that the cable lock is mounted. (connectors are usually removed during cleaning)
- Always use approved chemicals with the housing as the plastic may show corrosion caused by some chemicals. As a result, water may accumulate/gather in the housing.
- Take special precautions concerning third-party interfacing. Please contact LINAK for further information.
- Make a review of all product specifications before system setup, if the current cut-off limit is higher than the maximum allowed current cut-off for the actuator.
- To avoid cable interruption and actuator defects, make a proper cable installation and inspect regularly for wear and damage. Defective parts must be replaced.
- After service inspection, the application must be tested for correct functionality before it is put into operation to avoid actuator plugs being mixed during service. Operators must not be inside entrapment area.
- To avoid electrical failure or system disturbance, inspect regularly for wear and damage. Defective parts must be replaced.
- Make a proper cable installation to avoid short-circuit cables for hand controls and other controls. Regular inspection must be made for wear and damage. Defective parts must be replaced.
- Do not mount the actuator with the spindle facing downwards to avoid that the actuator slips off the bracket when the control box is mounted. The bracket can come loose when exposed to shock or hard vibrations, for instance when passing doorsteps. Regular inspection must be made to ensure proper fixation of control box and bracket on the actuator.



FCC STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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

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

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

Radiation Exposure Statement

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance of 20cm from your body.

Product Model: CB6S MK3	PMN: CB6SMK3
IC: 12338B-CB6S684	HVIN: CB6S MK3

ISED statement

English:

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions: (1) This device may not cause interference. (2) This device must accept any interference, including interference that may cause undesired operation of the device.

French: Cet appareil contient des émetteurs/récepteurs exempts de licence qui sont conformes aux RSS exemptés de licence d'Innovation, Sciences et Développement économique Canada. L'exploitation est soumise aux deux conditions suivantes : (1) Cet appareil ne doit pas provoquer d'interférences. (2) Cet appareil doit accepter toute interférence, y compris les interférences susceptibles de provoquer un fonctionnement indésirable de l'appareil.

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment. Cet équipement est conforme aux limites d'exposition aux rayonnements du Canada établies pour un environnement non contrôlé.

The device has been evaluated to meet general RF exposure requirement. This equipment should be installed and operated with minimum distance 20mm between the radiator & your body. L'appareil a été évalué pour répondre aux exigences générales d'exposition aux RF. Cet équipement doit être installé et utilisé avec une distance minimale de 20 mm entre le radiateur et votre corps.