Control Box CO61 MK2

Sales Backup

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Contents

STOP SELLING PCPBUZZ to new projects - see log

PHASE-OUT LOG

DATE	SUBJECT – MARKETING/SALES INFO
04.12.2019	6.20 CO61 MK2 – Full SBU version before phase-out
04.12.2019	PCPBUZZ – Stop selling to new projects

Introduction

The LINAK® control box CO61 MK2 offers a consolidated range of unprecedented features – all utilising standardised technology, interfaces and compatibility.

The CO61 MK2 for LINAK actuators is intended for the control of, for example, hospital bed movement.

Equipped with 200 W SMPS, Bluetooth® Low Energy, excellent and well thought-out cable management as well as multiple easy mounting options, this control box opens up a wide range of application possibilities for the provident hospital and care products manufacturer.

With the CO61 MK2, FET, IPX6 Washable DURA™ protection and a battery port, are all standard options. The entire product platform supports the LINAK principle 'One World – One box' – worldwide operable and applicable.

Yellow line - information also in data sheet
Red line - information also in user manual

Features and options

Features	CO61 MK2	CB6OBMe
Power supply	Universal, SMPS 200 W power output (Switch Mode Power Supply) 100-240 VAC, 50/60 Hz, -15% / +10%	SMPS, 270 W, 100-240 V 50/60 Hz or toroidal transformer 270 W, 230 V
Mains indicator	Yes - Green LED (mains connected)	Yes - two-colour LED Functionality can be defined in software
Actuator interface	4 channels 6-pin Mini-Fit	4 channels 6-pin Mini-Fit
Hand control interface	1 port 10-pin modular plug	1 port 10-pin modular plug
CO-Link™	Link of primary and secondary CO61 MK2 - up to 8 channels and 2x200 W	N/A
Bluetooth® Low Energy	Bluetooth Low Energy gen. 2 available as option	N/A
Battery interface	1 port 4-pin Mini-Fit (output 300 mA when no actuators are running)	Yes
Standby power	w/o Bluetooth Low Energy: Approx. 0.5 W (100-240 V AC) w/ Bluetooth Low Energy: Approx. 0.6 W (100-240 V AC)	Transformer version standby current approx. 2.5 W SMPS version 0.8 W Sleep mode 0.004 W
Colour	Light grey (RAL 7035)	Light grey (RAL 7035)
Output short-circuit protected	Yes	No
Control concept	FET (no relay noise)	Relays (EAS protection)
Power Supply Circuit Method	Half bridge/Full bridge	N/A
Duty cycle	10% - 2/18 min. on/off continuous use. Maximum power is 200 W for 80 seconds and 100 W for 40 seconds at 25 °C	10% - 2/18 min. on/off continuous use
Weight	Low weight 0.7 kg	Transformer version 1.7 kg SMPS version 0.85 kg
Actuator compatibility	Actuators with signal, feedback by hall and potentiometer.	Actuators with no feedback/ encoded feedback, feedback by hall and potentiometer.
Battery charger	Battery input available. No charger, but supports battery with internal charger	Yes, in control box
Charging indicator	Supported by using *BA22*	Supported
Acoustic warning signal	Internal buzzer	Internal

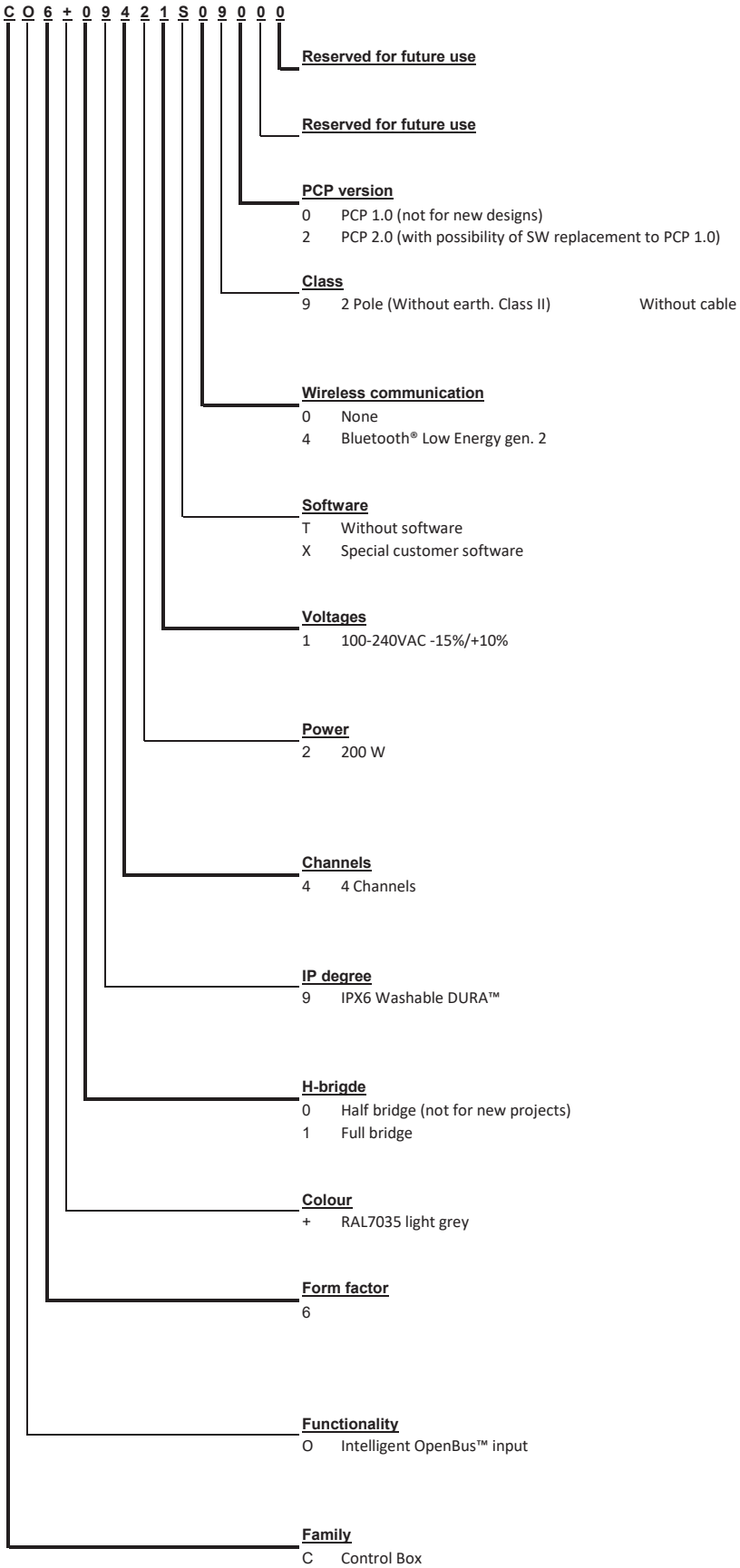
Features (continued)	CO61 MK2	CB6OBMe
Battery alarm	Supported by using *BA22*	Yes, supported (low battery alarm at 19 V)
PCP version	PCP 2.0 (PCP 1.0 available in SW)	N/A
EOP	Yes	Yes
IP-Rating	IPX6 Washable DURA™	IPX6
Operation	True parallel (hall feedback)	Semi-parallel
Max. current	10 A/CH, 2/18 min. Max. 12 A/CH in a limited time period	8 A/CH (peak) at single-channel running is covered by all approvals
Accessories	OpenBus™ standard	OpenBus standard
Power management	High speed at low loads and/or high loads at a lower speed	Not supported
Overload protection	The CO61 MK2 can reduce the output voltages to prevent overload	The CB6 OBMe can reduce the output voltages to prevent overload
Safety system	Thermally protected Short-circuit protected Hot-plugging protected	Transformer version thermally protected by hardware thermofuse. SMPS version thermally protected by software (Duty Cycle Guard) Hot-plugging protected Short-circuit protected
Start/stop	Soft start/direct stop	Soft start/direct stop
Protection class	Class 2 Class 1 is possible with pigtail on mains cable	Class 2 Class 1 is possible with pigtail on mains cable
Cable lock	Integrated in lid	Separate part
Mounting	Compatible with a wide range of mounting brackets	Compatible with existing CB6-bracket. LA27 and LA40 mounting possible (only with SMPS because of weight)
Hand control compatibility	OpenBus standard	OpenBus standard
Housing type	V-0, PP, welded (resistant to chemicals)	V-0, ABS, possible to reopen
Compatibility with hand crank actuators	Not possible	Possible for special articles
External power support (hand control output)	40 V/200 mA (polyfuse protection)	40 V/200 mA (polyfuse protection)

For compatibility see sales backup Chapter 3.

Usage

	CO61 MK2
Operating temperature	+5 °C to +40 °C
Storage temperature	-10 °C to +50 °C
Relative humidity	20% - 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 1,500 A. *Demands to mains supply safety for the application in accordance with IEC 60601-1 ed. 3.2, § 8.11.5*	
Approvals	- IEC60601-1 edition 3.1 - ANSI/AAMI ES60601-1:2005/(R) 2012 - CSA CAN/CSA-C22.2 NO. 60601-1:14 - PSE Japan

Ordering example

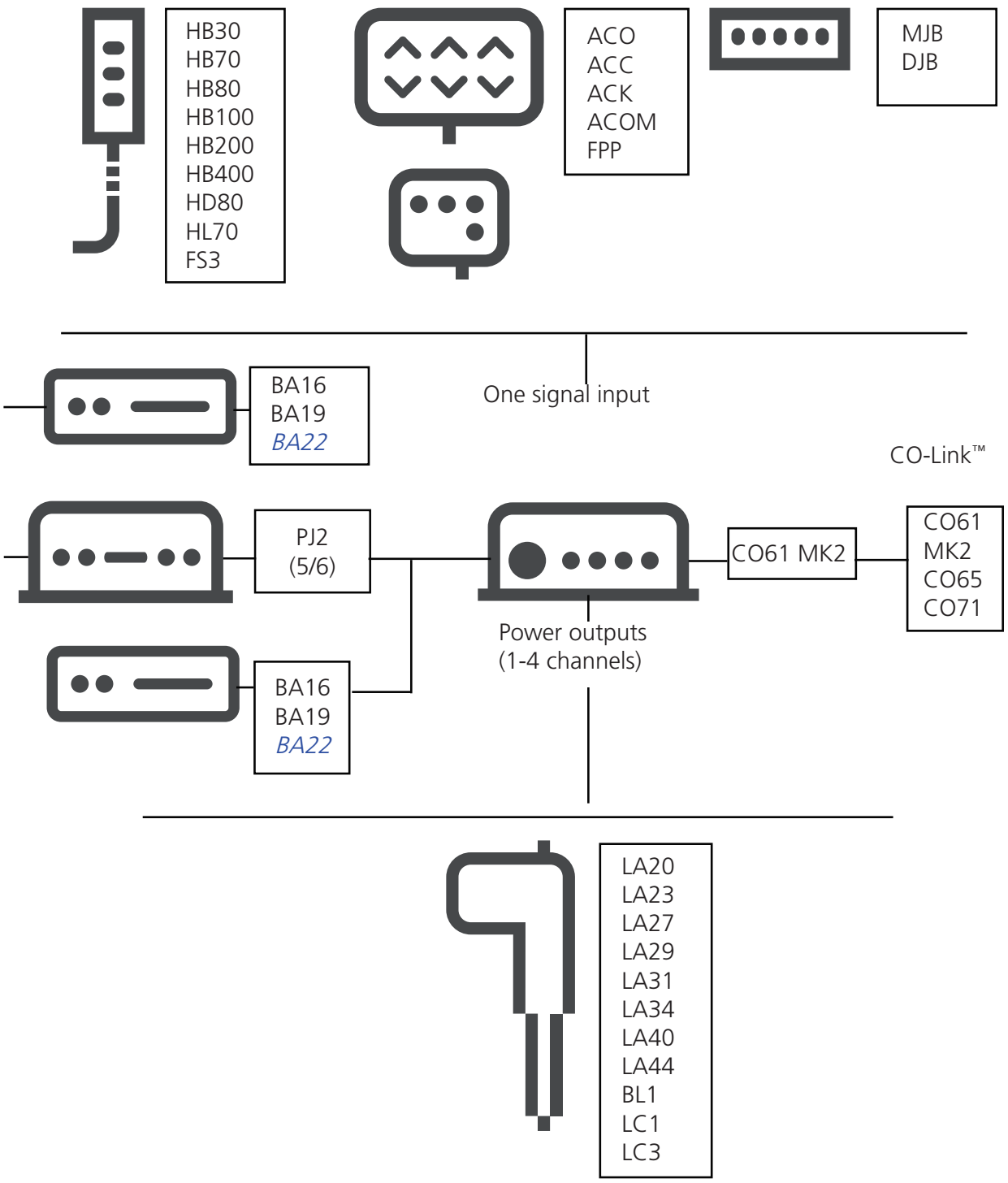


No new projects must be started with 'old version' control boxes.
Remember to order 4-pole cable for *battery BA22* to control box - see cables chapter.

Unique Selling Points (USPs) and Key Success Factors (KSFs)

Specification	USPs	KSFs
OpenBus™	Many opportunities/solutions with the same control box = flexibility	Same bed type, different solutions = extra flexibility
IPX6 Washable DURA™ (standard)	Cleanability Ready for wash tunnel or high-pressure washdown	Prevention of diseases/easy to clean
Cable management	Easy to integrate into design = better design = sales argument	Better cable management = reliability, cleanability
Various mounting options	Innovative bracket solution allows control box to be mounted in various orientations - on frame or on actuator	Best possible design - components are not in the way of bed functionality
Power management/high power - SMPS	High speed and high lifting capacity when required = sales parametre + one worldwide solution	High speed and high lifting capacity when required = high efficiency
Optimised and compact design - plugs are located inside the frame of the box	Easy to integrate into design = better design = sales argument	Best possible design - components are not in the way of bed functionality
Wireless operation	Easy to integrate into design = better design = sales argument	Best possible design - components are not in the way of bed functionality

System overview



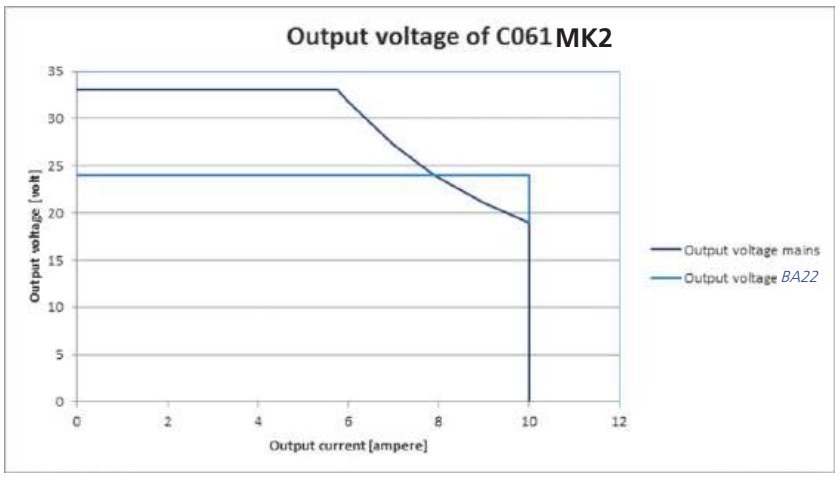
For details see sales backup Chapter 3.1.12 CO61 MK2 Compatibility.

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 max 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 highest possible power output. See output voltage curve.

CO61 MK2 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

CO61 MK2 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 CO61 MK2 will protect itself by shutting down. Once the thermal condition is normalised, the CO61 MK2 will recover and allow further operation.

LED indicator

CO61 MK2 is equipped with a green LED for indication of mains power connected.

When the CO61 MK2 is connected to mains, the LED is green. Connected only to battery, the LED is off.

Connected to MAINS	
LED colour	**Indication of operation**
Green	**On mains, not activated by hand or foot control.** The system is working ok and is ready for normal operation.
Yellow	**On mains, <u>not</u> activated by hand or foot control.** The system is defective and should not be operated.
Yellow	**On mains, activated by hand or foot control.** The system is working.

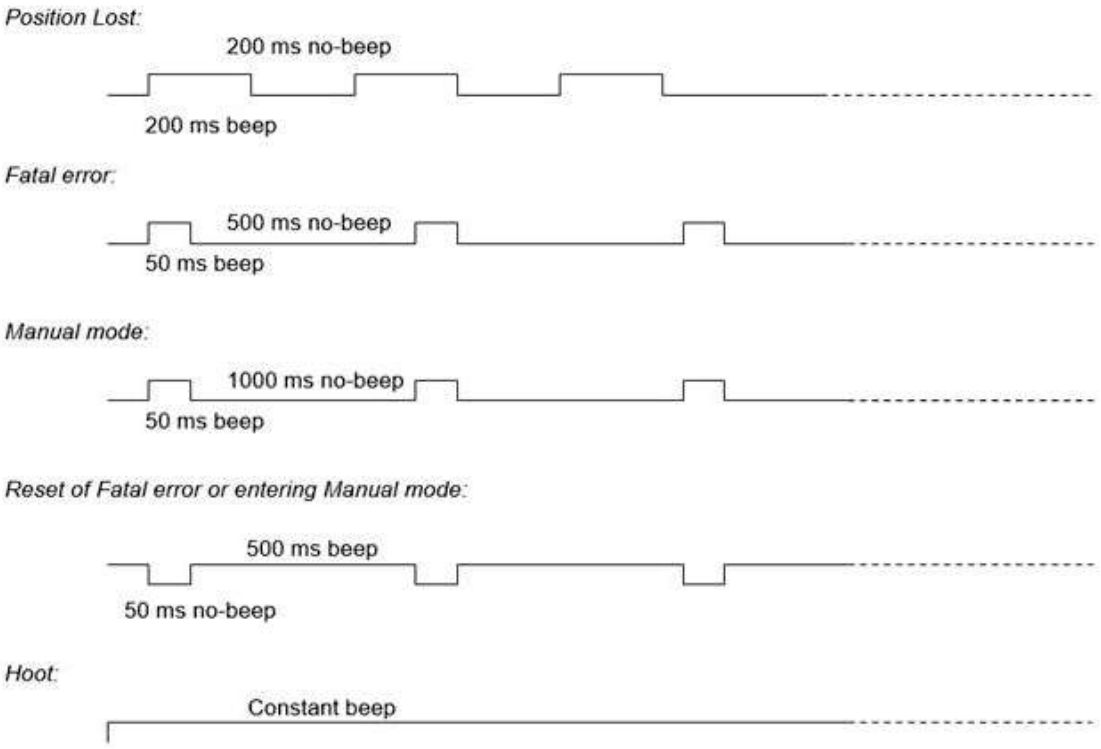
Not connected to mains but with BATTERY back-up	
LED colour	**Indication of operation**
Orange	**On battery, activated by hand or foot control.** The system is working.
No LED	**On battery, <u>not</u> activated by hand or foot control** or CO61 MK2 not connected to mains.

Acoustic signal functionality

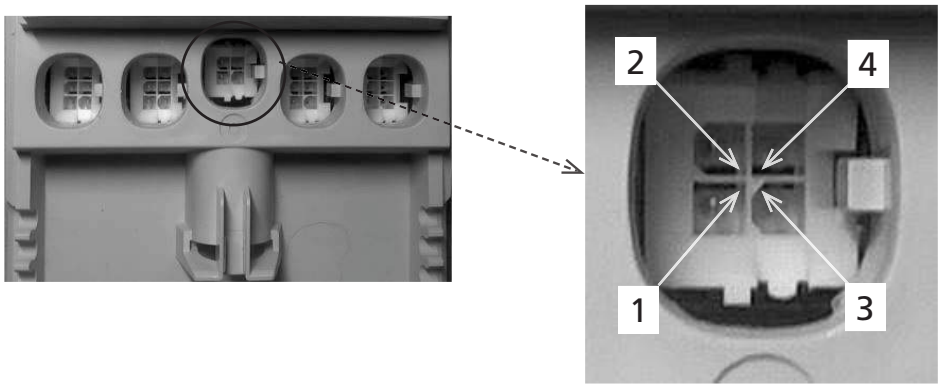
The buzzer will make a warning, when a button on the hand control is pressed, and the battery state of charge is low.

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

Acoustic warning signals



PCP pin functions



1: GND

2: LinBus

3: BI_STATUS

If PCP 1.0: Control box not awake: ~0V
Control box awake and supplied from battery: ~12V
Control box awake and supplied from mains: ~42V

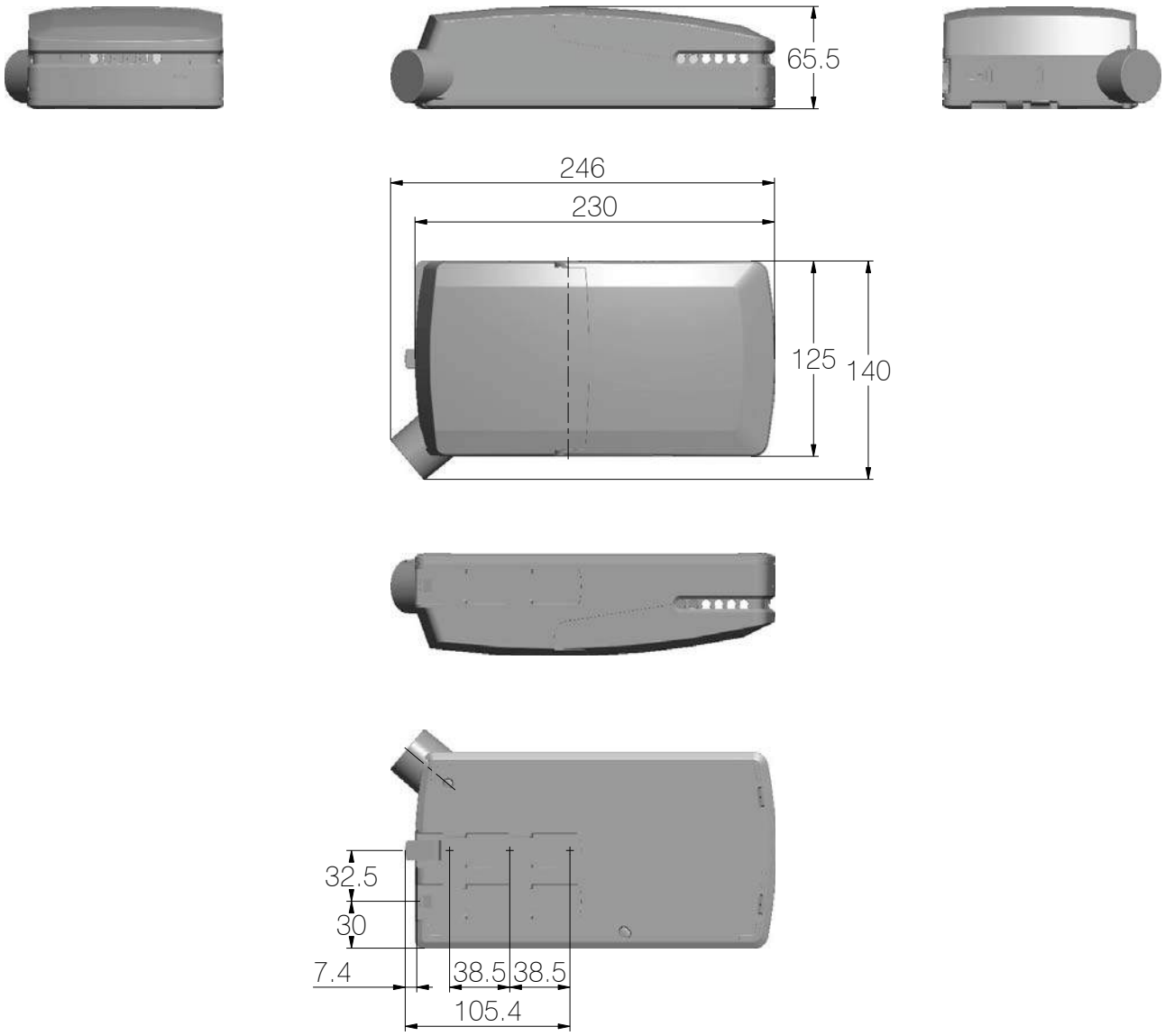
If PCP 2.0: Control box not awake: 0-1V
No power request and control box awake: 4-5V
Power request and control box awake: 9-12V

4: DC voltage from SMPS (or battery if no mains)

Accessories

Actuators	LA20, LA23, LA27 (cable type '0 or B'), LA29, LA31, LA34, LA40, LA44, BL1
HB/ACX	HB3x, HB7x, HL7x, HB8x, HB100, HB200, HB400, HD80, FS3, ACO, ACC, ACK, ACOM, FPP, MJB, DJB
Accessories	CO-Link™ (CO41, CO61 MK2, CO65, CO71) PJ2
Mains cables (must be ordered separately)	2-pole without earth or 3-pole with pigtail (IPX6 Washable DURA™ is pending) For detailed information on cables, please see sales backup chapter 15/see cable configurator
Battery backup (external)	BA22 - Capacity: *2.85 Ah*/73.25 Wh BA19 - Capacity: 1.2 Ah/24 VDC BA16 - Capacity: 1.3 Ah/24 VDC
Cable lock (cover)	1014W1003
Mounting brackets (separate mounting)	LA27 - 1015W9003 LA31 - 1015W1004 LA40 - 1015W1002 Frame flat - 1015W1001 Frame flat M4 nut - 1015W9009
Blind plugs	0961473 for actuator (RAL 7035, light grey, IPX6 Washable DURA™) 0821120 for hand control (RAL 7035, light grey, IPX6 Washable DURA)

Dimension drawing

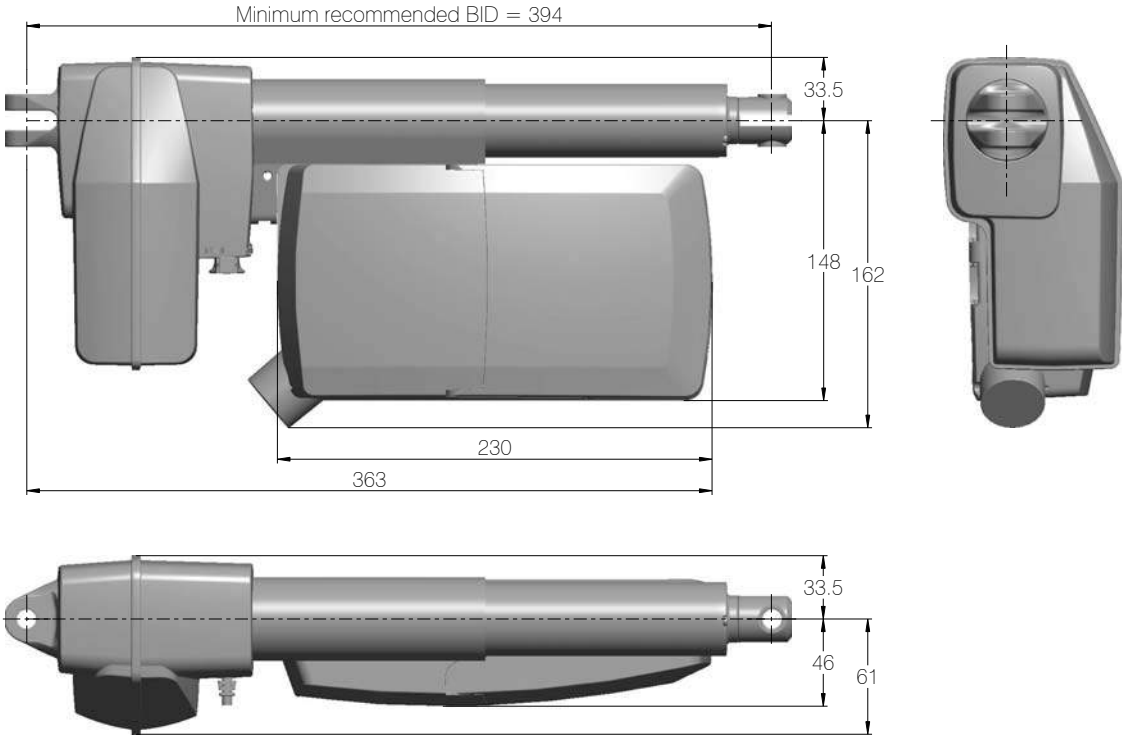


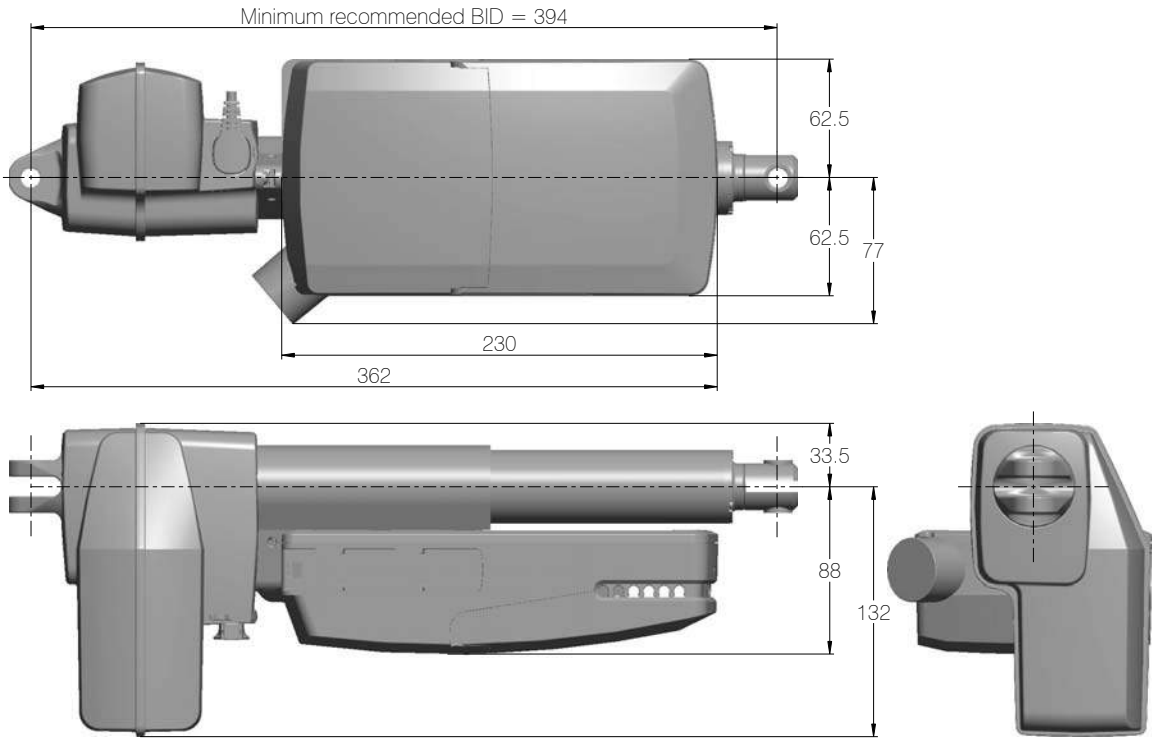
Drawing No.: 1014W4010

Mounting

For mounting on a LINAK actuator (LA27, LA31 or LA40), a mounting bracket is required.

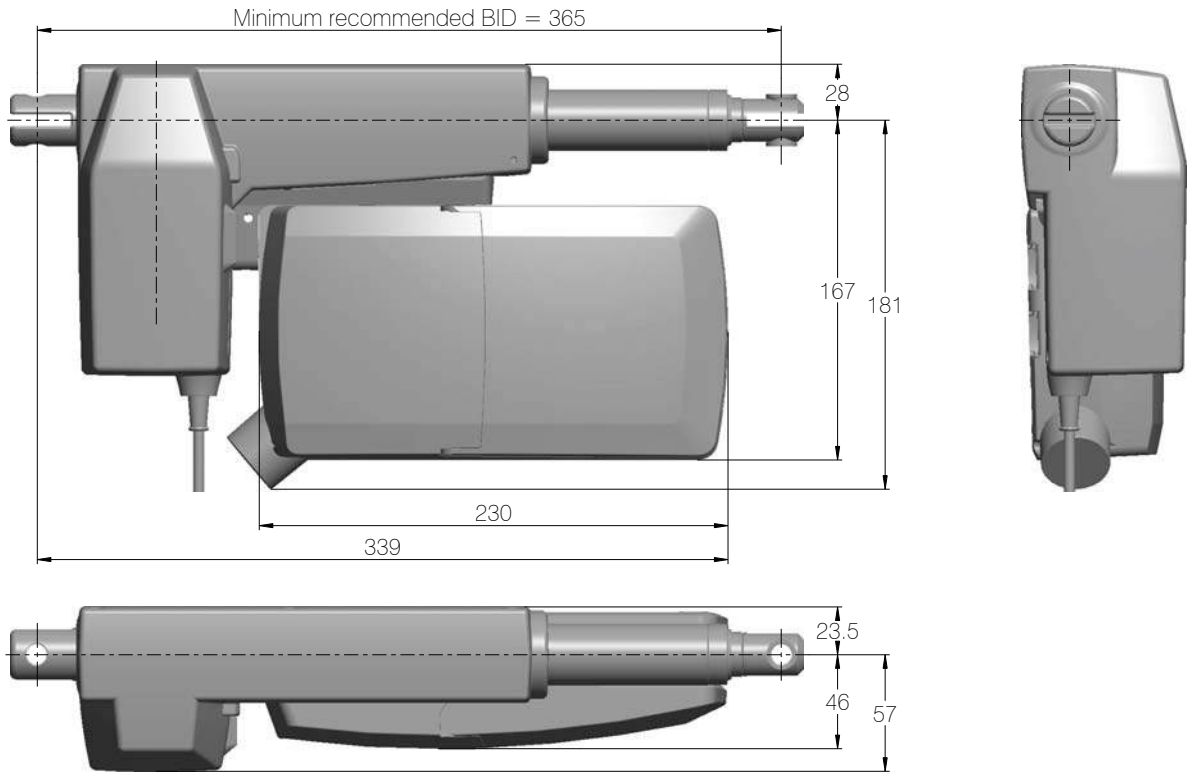
Dimensions – mounted with LA40

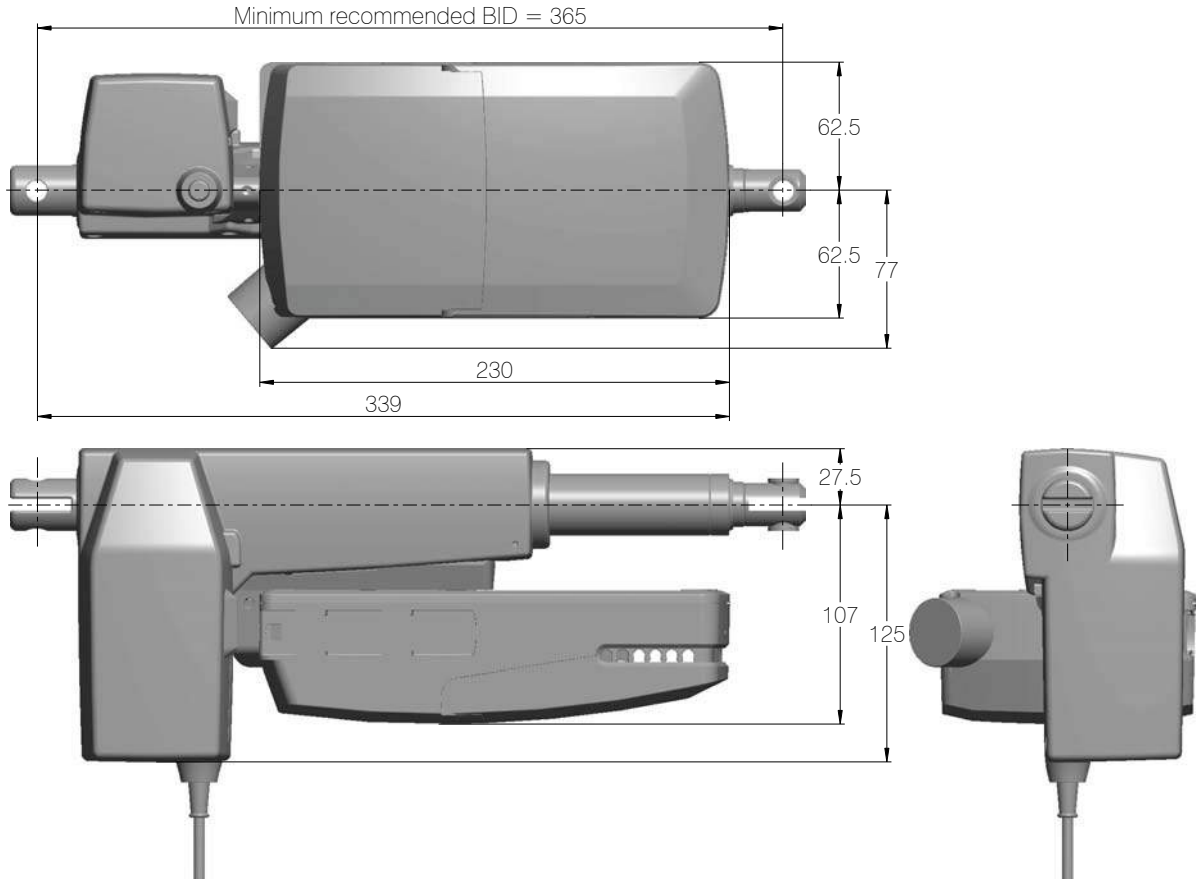




Drawing No.: 1015W4018

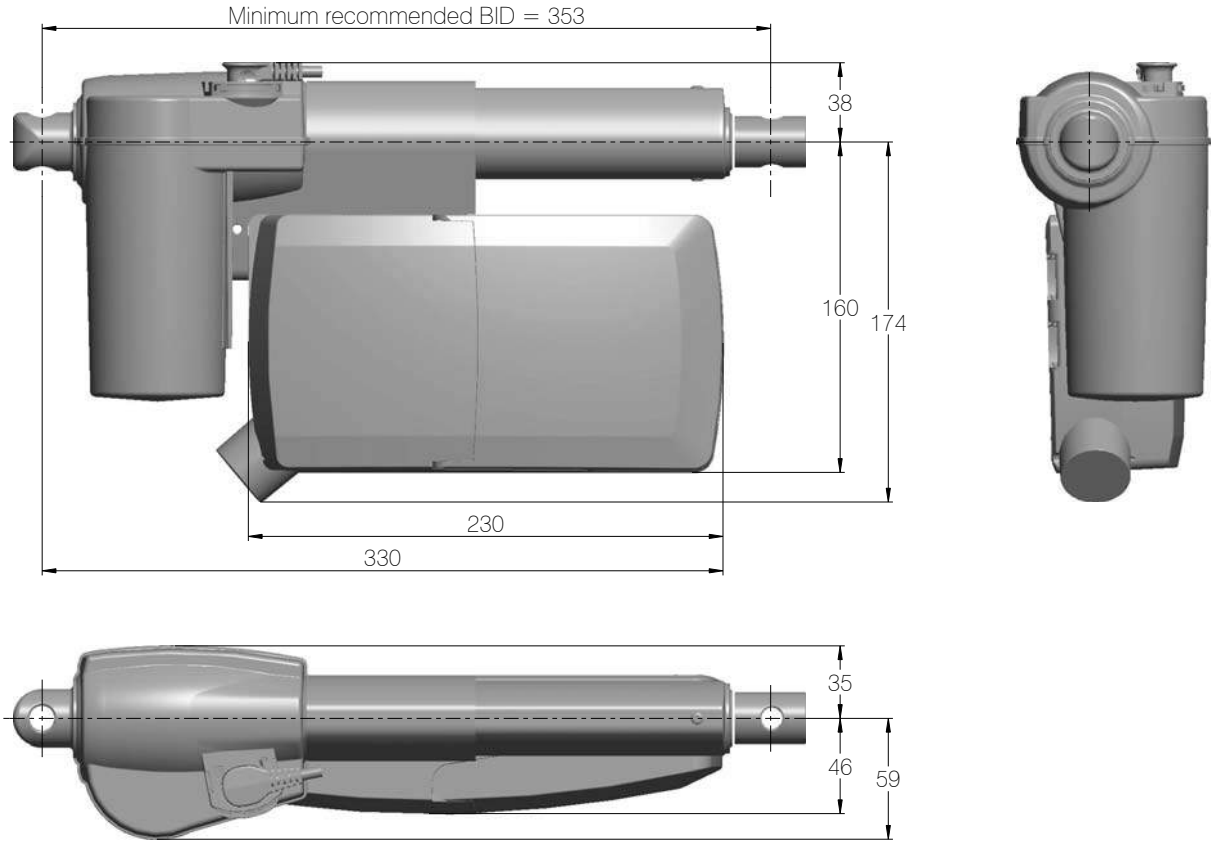
Dimensions – mounted with LA31

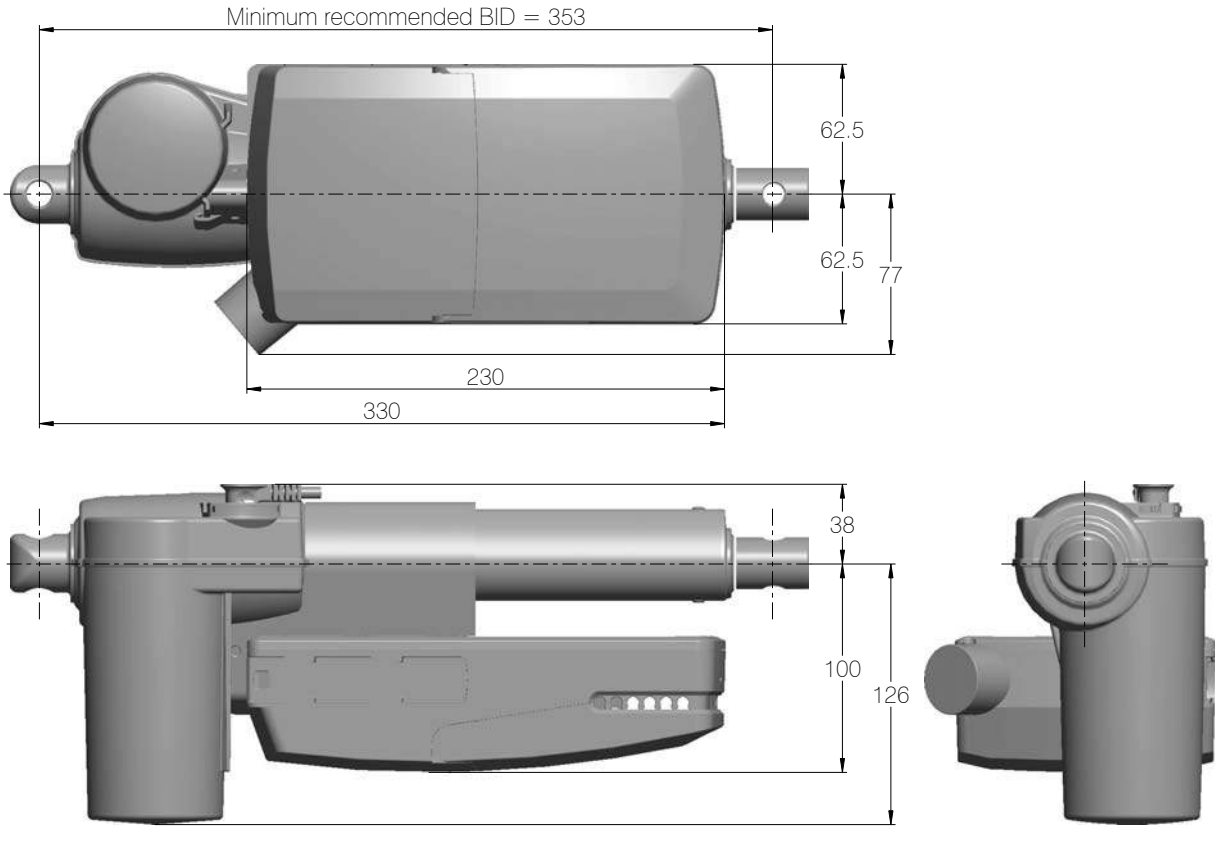




Drawing No.: 1015W4017

Dimensions – mounted with LA27



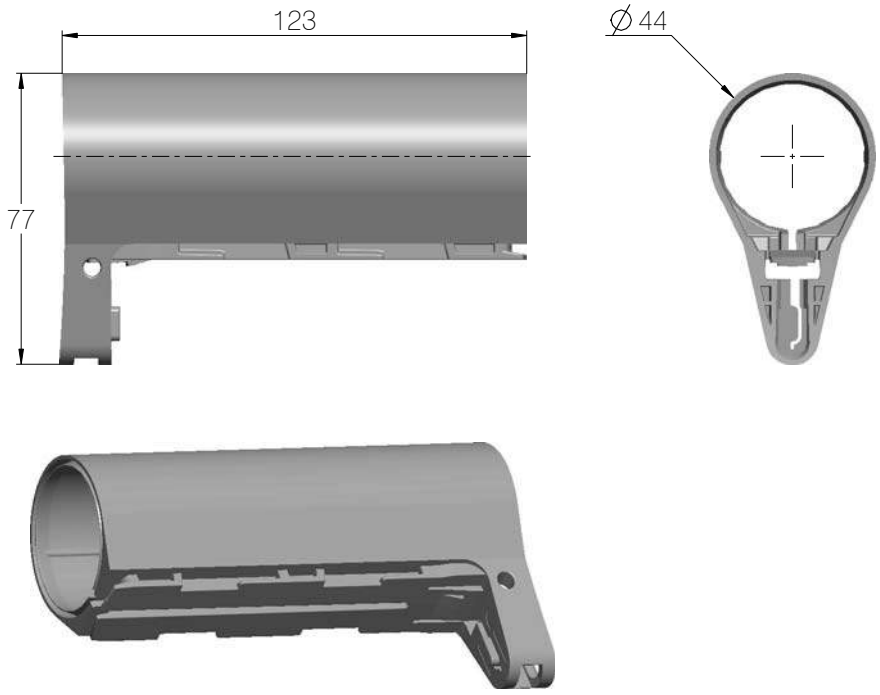


Drawing No.: 1015W4016

Mounting brackets

For mounting with LA40

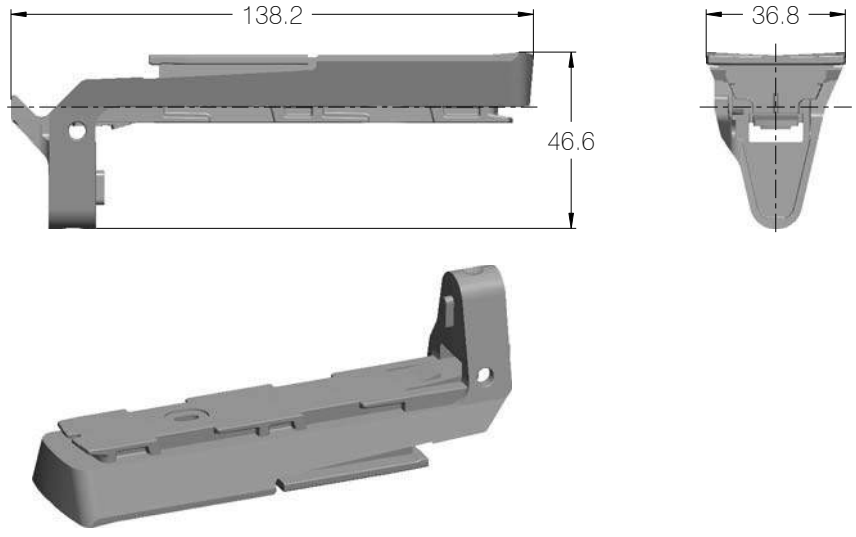
Article No.: 1015W1002



Drawing No.: 1015W4002

For mounting with LA31

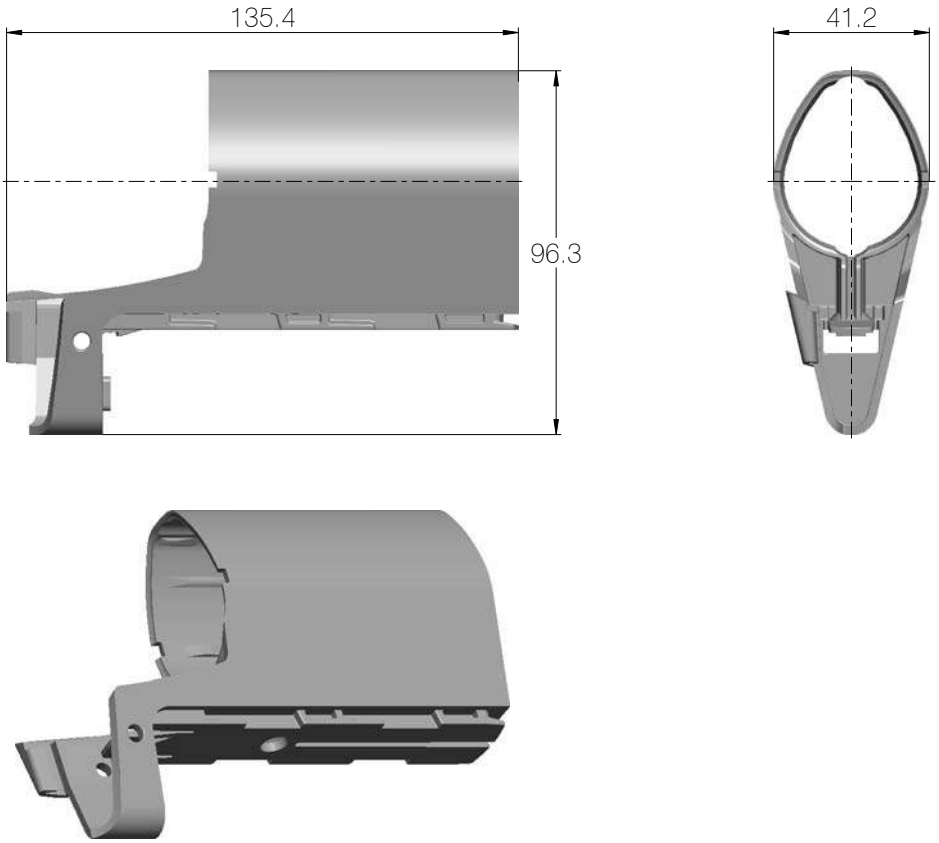
Article No.: 1015W1004



Drawing No.: 1015W4004

For mounting with LA27

Article No.: 1015W9003



Drawing No: 1015W4003

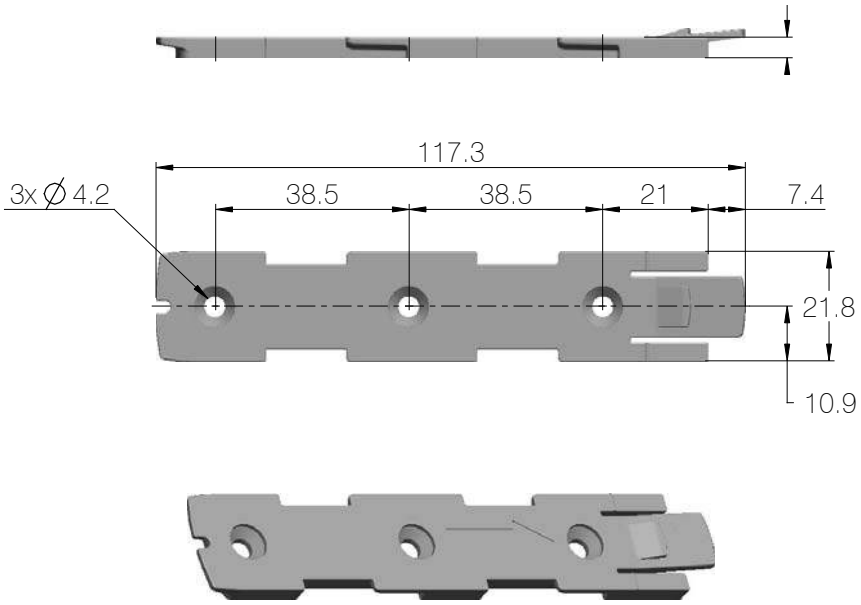
The adapter 1015W9003 includes a screw that is halfway mounted, thus everything as one part.

Screw head torx size: T15

Screw torque: 1.2 ± 0.2 Nm

Mounting bracket (frame flat)

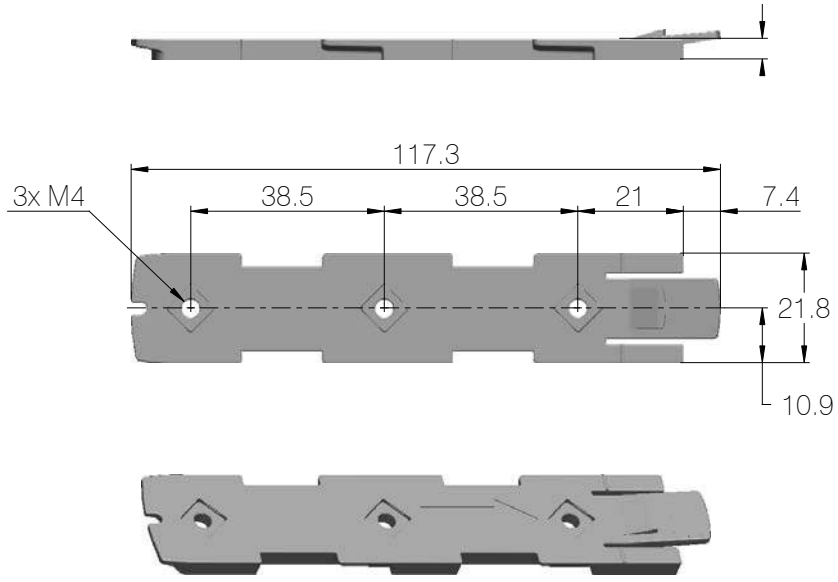
Article No. 1015W1001



Drawing No.: 1015W4001

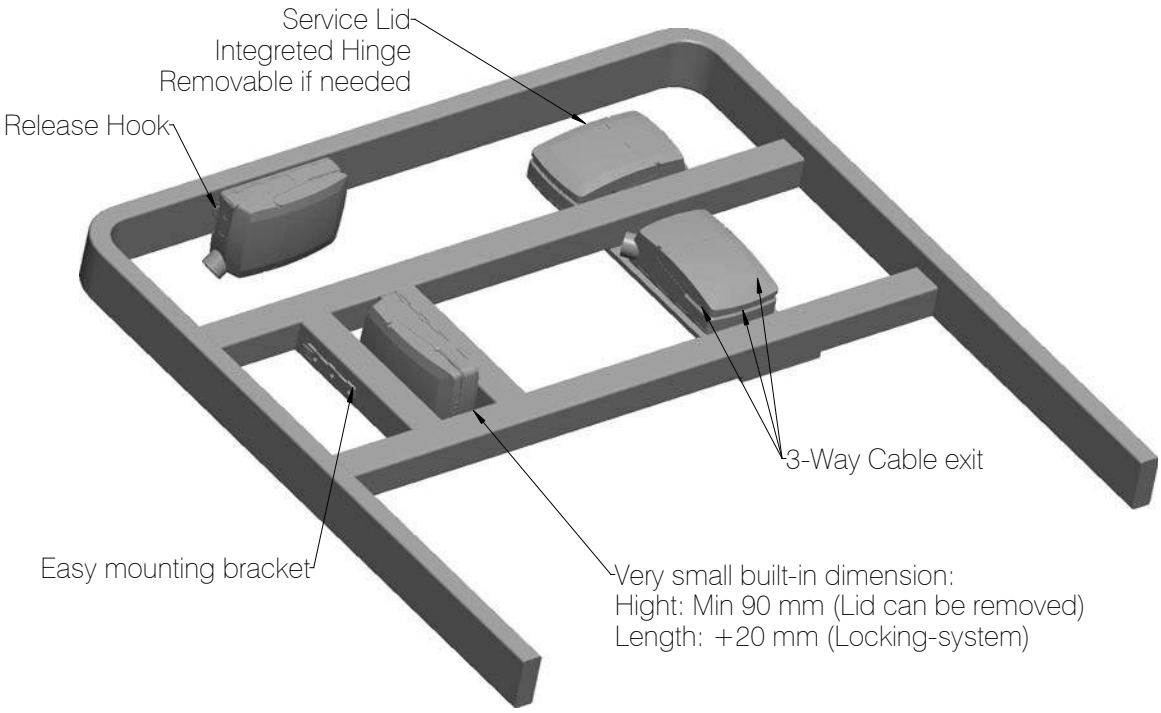
Mounting bracket (frame flat) w/M4 nuts

Article No. 1015W9009



Drawing No.: 1015W4009

Mounted on frame



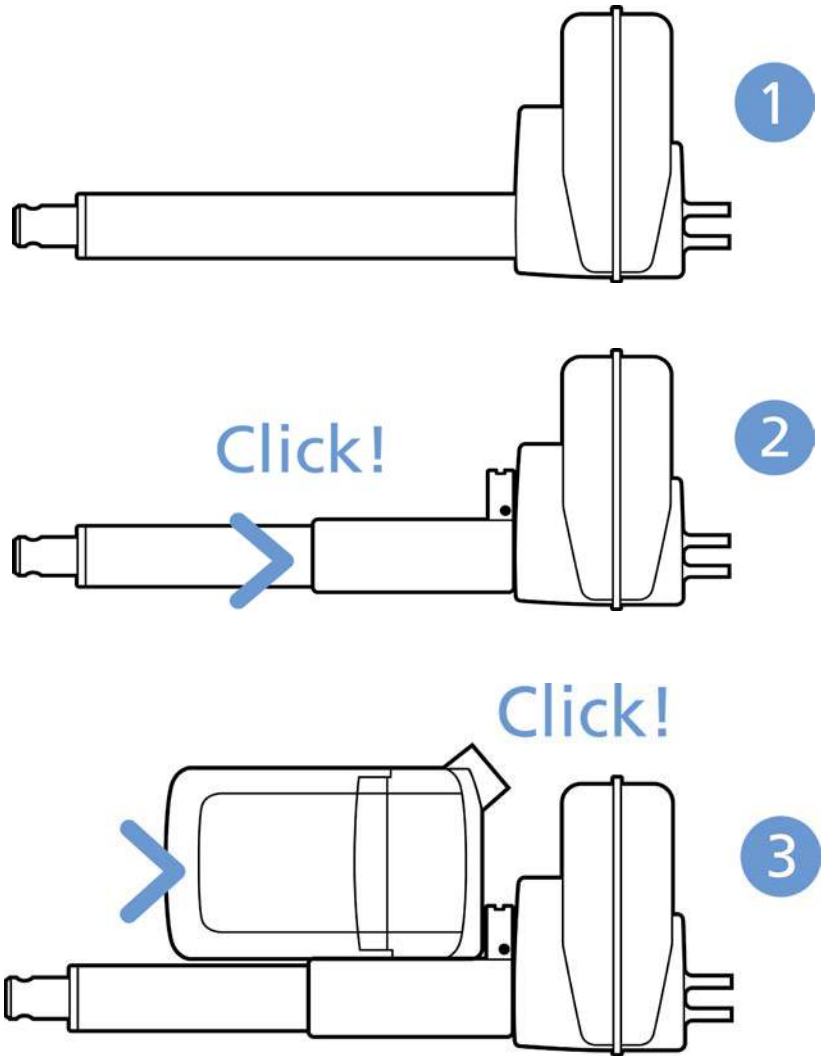
Drawing No.: 1013W4008

Mounting instructions

When mounting the control box onto the actuator (1)

Simply slide on the bracket until you hear a clear click (2)

Slide on the control box until you hear a click and the box is mounted (3)



It is recommended to mount the CO61 MK2 in a position that allows water to escape.

Recommended torque: 0.6Nm +/-0.1

The bracket can be mounted to the bed frame or any other application by following 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

Mounting of cables and cable lock

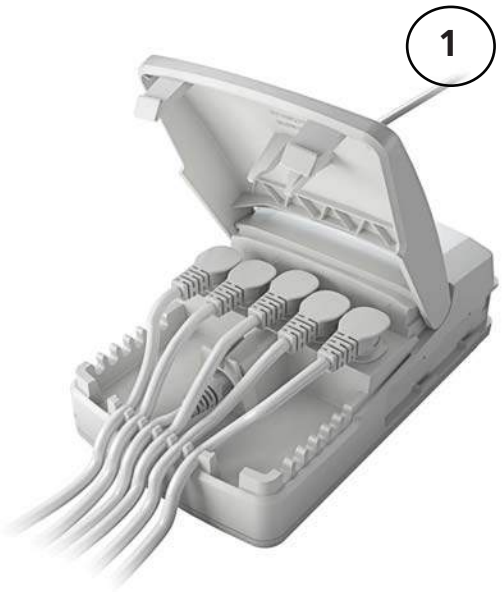
CO61 MK2 has a uniquely designed cable lid. The lid also works as an integrated cable lock when closed.

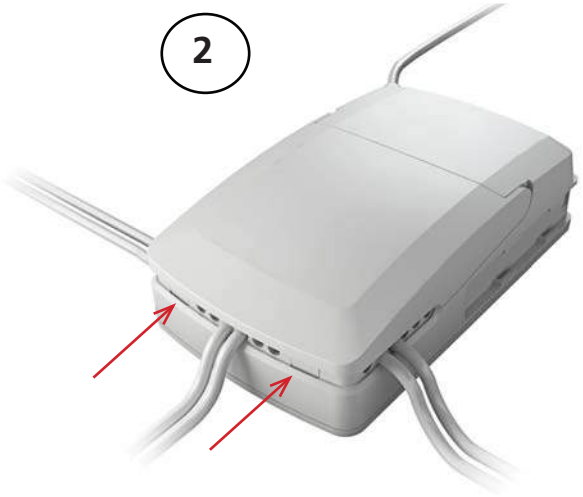
1. Mount cable plugs in control box
2. Close lid until lock snaps into place (see arrows)

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.

Cable management





CO-Link™

Up to 8 channels and 2x200 W (or combinations of all CO-control boxes)

A CO-Link software makes it possible to link two CO61 MK2 control boxes (or combinations of all CO-control boxes) into a system with a primary and secondary control box allowing you to run up to 8 channels with 2x200 W.

All CO61 MK2 benefits and USPs including:

- 1 control – 2 x CO61 MK2s
- 8 channels
- 2 x 200 W
- Standard items
- *2 x 2.85 Ah* battery backup – *2 x BA22*
- SoftCon2 SW – Instant programming and compiling!

Required:

- 2 x CO61 MK2
- 2 x OpenBus™ modular cable
- 1 x MJB000 (3/4/5)000-1023
- 1 x Mains cable + mains-splitter cable (with pigtail = SML912497-A / without pigtail = SML912506-A
- 1 x HB/ACO/ACK etc.
- BA19
- *BA22*

Limitations/notes:

- No parallel or semi-parallel functions across the primary and secondary CO61 MK2
- Only limit lines within the same CO61 MK2
- Only 1 primary and 1 secondary CO61 MK2 are possible
- Note the residual risk related to CO-Link™

Further information for CO-Link software is available in CO61 MK2 software guidance on LINTRA: SA-29-01-007 OpenBus SW guidance – CO61 MK2

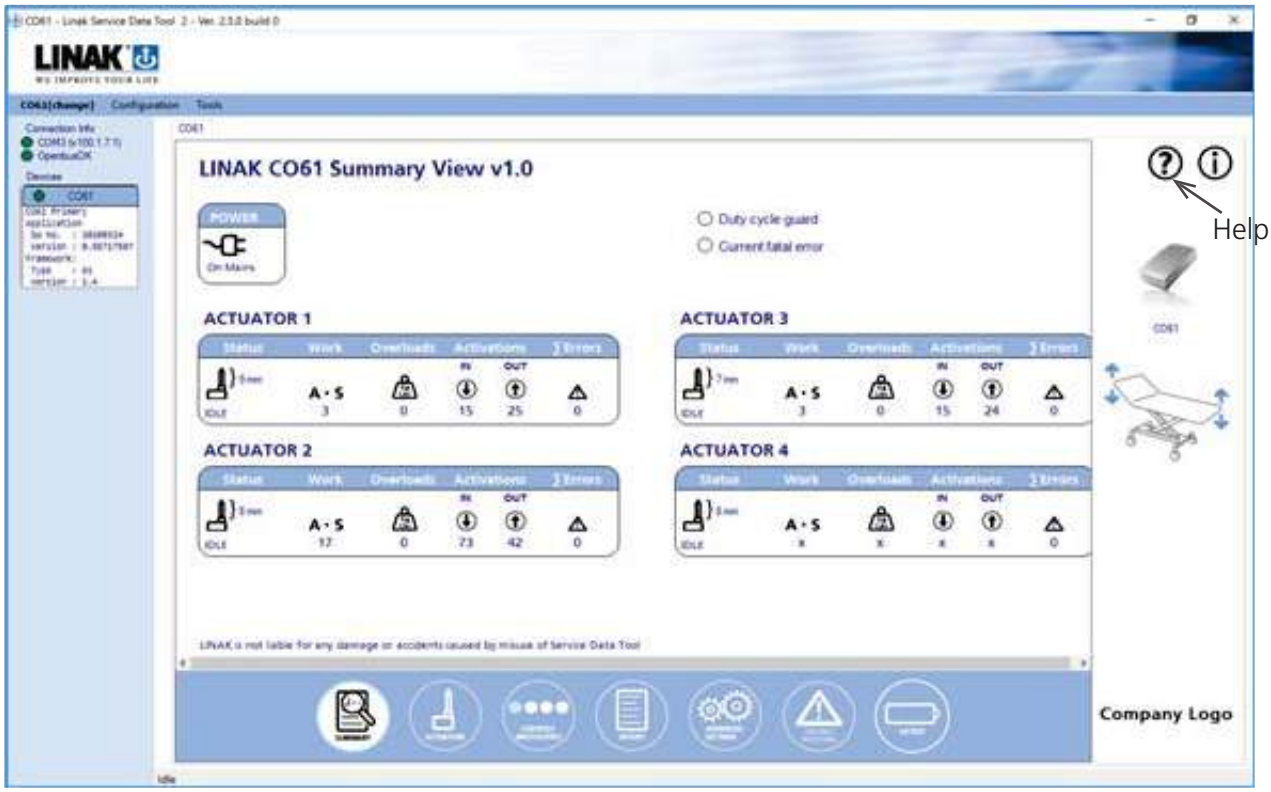
CO61 MK2 and BA22 Service Data Tool

With the Service Data Tool it is possible to read out service data from CO61 MK2 and *BA22* on a laptop.

With CO-Link™ systems, service data can be read out from CO61 MK2 primary and CO61 MK2 secondary.

Equipment needed to read out service data on a laptop:

- Service Data Tool 2 version 2.7.5 or newer version installed on the laptop
- An OpenBus™ programming and data readout box (LINAK item number IB300001)
- A service readout cable (LINAK item number 0964198)
- Modular Junction Box for connection of Service Data Tool (LINAK item number MJB000(3/4/5)000-1023)
- Cable for connection of the Modular Junction Box to CO61 MK2 (LINAK item number 0964461-XXXX-A)
- One USB A-B cable



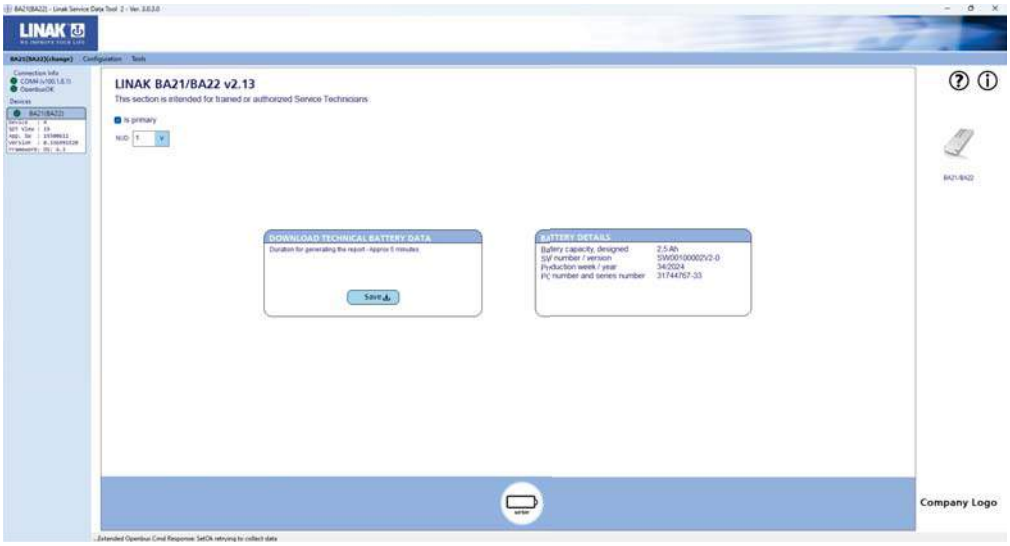
The Service Data Tool includes a user manual always at hand for explanation of service data. It is activated when pressing the "Help" icon.

BA22 service view

If service of the *BA22* battery is required, it is possible to download a *BA22* service view from LINTRA. This is to ensure fast service and to avoid transportation of defect batteries.

This view is sent to the customer for download of a battery log file to be used for technical analysis of the battery. When the log file is returned to LINAK, the data will show if the battery has to be returned for service or should be scrapped.

With the CO-Link™ system, service data can be read out from *BA22* primary and *BA22* secondary.



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.

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 thise quipment 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.

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

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This equipment should be installed and operated with minimum distance 20cm between the radiator&your body.

IC Statement:

This device complies with Innovation, Science and Economic Development Canada' s licence - exempt RSSs. Operation is subject to the following two conditions:

(1) This device may not cause interference; and

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le pr é sent appareil est conforme aux CNR d'Innovation, Sciences et D é veloppement é conomique Canada applicables aux appareils radio exempts de licence. L'exploitation est autoris é e aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radio é lectrique subi, m ê me si le brouillage est susceptible d'en compromettre le fonctionnement.

Recommendations

- To avoid unintended activation of actuators if hand control cables short-circuit, LINAK recommends to use an OpenBus system (CO61 MK2).
- 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 CO61 MK2 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 example, 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 the control box lid and close it until locked in place.

Motor cable

Always use 6-wire cables.

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

Half bridge

Because of the half-bridge technology used in CO61 MK2 there is an interdependence between each half-bridge, CH1 + 2 and CH3 + 4. Half-bridge connected channels cannot run simultaneously in opposite directions. E.g. running a trend function using CH3 and CH4 will not be possible.

Full bridge

If full bridge is chosen (MK2), there is no dependency between bridges.

For explanation of half bridge technology, please see Application Design Recommendations document.

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 housing.
- Take special precautions concerning 3rd party interfacing. Please contact LINAK for further information.
- Make a review of all product specifications before system set-up 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 handset/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 with mounted control box. The bracket can come loose when exposed to shock or hard vibratio, for instance when passing doorsteps. Regular inspection must be made to ensure proper fixation of control box and bracket on actuator.
- If using Bluetooth Low Energy controls, pay attention to stay within viewing distance.