

# TWINDRIVE® TD3.2 / TD3.3





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### **Preface**

We are delighted that you have chosen a product from LINAK A/S. LINAK systems are high-tech products based on many years of experience in the manufacture and development of actuators, electric control boxes, controls, and chargers. We are also constantly improving our products to meet customer requirements.

This User Manual will tell you how to install, use, and maintain your LINAK TWINDRIVE® products.

We are sure that the TWINDRIVE® products will give you many years of trouble-free operation. Before our products leave the factory they undergo a full function and quality test. Should you nevertheless experience problems with your systems, you are always welcome to contact our service departments or service centres.

LINAK subsidiaries and distributors all over the world have authorised service centres, which are always ready to help you.

LINAK provides a warranty on all its products. This warranty, however, is subject to correct use in accordance with the specifications, maintenance being done correctly, and any repairs being carried out at a service centre, which is authorised to repair LINAK products.

Changes in installation and use of LINAK systems can affect their operation and durability. Therefore, changes must only be made according to agreement with LINAK A/S and changes are made at your own risk.

### LINAK A/S

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.

### **Important information**

Important information on LINAK® products can be found under the following headings. Please read and understand these instructions for proper operation. Be sure to keep this instruction manual handy for future reference.

## **Warning!**



Failure to comply with these instructions may result in accidents involving serious personal injury.

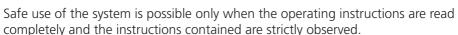


Failing to follow these instructions can result in the product being damaged or being ruined.



For household / residential use only

## Safety instructions /



Failure to comply with instructions marked with the "NOTE" symbol may result in serious damage to the system or one of its components.

Persons who do not have the necessary experience or knowledge of the product/ products must not use the product/products. Besides, persons with reduced physical or mental abilities must not use the product/products, unless they are under surveillance or they have been thoroughly instructed in the use of the apparatus by a person who is responsible for the safety of these persons.

Moreover, children must be under surveillance to ensure that they do not play with the product.



It is important for everyone who is to connect, install or use the systems to have the necessary information and access to this User Manual.



If there is visible damage on the product it must not be installed

### Before installation, de-installation or troubleshooting:

- Stop the TD3.
- Switch off the power supply and pull out the mains plug.
- $\bullet$  Relieve the TD3 of any loads, which may be released during the work.

### Before start-up:

- Make sure that the system has been installed as instructed in this User Manual.
- Make sure that the voltage is correct before the system is connected to the mains. (See TD3 label on page 22).
- System connection. The individual parts must be connected before connection to the mains.

### **During operation**

- Take care that the cables are not damaged or get jammed.
- The products must only be used in an environment, which corresponds to their IP protection or where no IP protection is required.

### **Repairs**

In order to avoid the risk of malfunction, all TWINDRIVE® repairs must only be carried out by authorised LINAK workshops or repairers, as special tools must be used and special gaskets must be fitted. TWINDRIVE under warranty must also be returned to authorised LINAK workshops.

## Warning!



If any of the TWINDRIVE® products are opened, there will be a risk of subsequent malfunction. Furthermore, the warranty will not cover, when the product has been opened by unautorised personnel.



The TWINDRIVE® systems do not withstand cutting oil.

• Statement – for all intentional and unintentional radiators:

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

### • Statement for digital devices for Class B:

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 in-stalled 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.

### Misc. on the TD3 TWINDRIVE® system

This system is a TWINDRIVE system developed for leisure beds and for indoor use in private homes.

### Warranty

There is 36 months' warranty on the TWINDRIVE® products against manufacturing faults calculated from the production date of the individual products (see label). LINAK A/S' warranty is only valid in so far as the equipment has been used and maintained correctly and has not been tampered with. Furthermore, the system must not be exposed to violent treatment. In the event of this, the warranty will be ineffective/ invalid. For further details, please see LINAK A/S' ordinary conditions of sale.

### Maintenance

Clean dust and dirt on the outside of the system, at appropriate intervals and inspect them for damage and breaks.

Inspect the connections, cables and plugs and check for correct functioning as well as fixing points.



The cleaners and disinfectants must not be highly alkaline or acidic (pH value 6-8).



It is not allowed to use solvents for cleaning up.



Max. load running head and foot end motors at the same time in upward direction is 350 Nm on Head motor, and 200 Nm on Foot end motor.



### For customers in the US/Canada:

The mains cable for this product has a polarised plug (one blade is wider than the other). It will only fit in a polarised outlet one way. If it does not fit fully in the outlet, reverse the plug. If it still does not fit, contact a qualified electrician to install a proper outlet. Do not change the plug in any way.

## Description of the TWINDRIVE® TD3 system

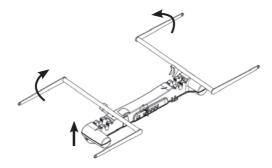
Each TWINDRIVE® TD3 unit consists of 2 internal motors and a built-in control, which makes it a very compact unit. The mains cable is exchangeable. Only the handset must be paired.

### Application of the TWINDRIVE® TD3 system:

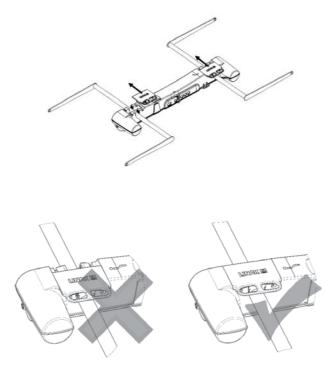
Irrespective of the load the Duty cycle: 10% ~ 3 min./ hour or max. 2 min. at continous use followed by 18 min. not in use.

Do not turn on the system if it is not mounted in a bed.

## Mounting guidelines for the TWINDRIVE® system



Place the TD3 below the twist brackets/"arms" of the bed



Mount the TD3 and slide the closing devices over the gaps and make sure that the closing devices are in place before the TD3 is used.

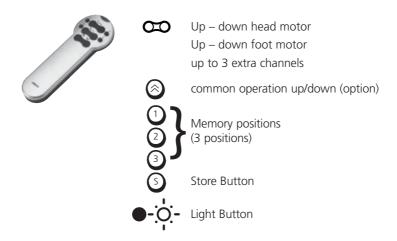
### **Functional description**

### **Transmitter HB10:**



Up – down head motor Up – down foot motor Simultaneous up/down

### **Transmitter HB20:**



### How to store

- Drive to the desired position
- Push "S"
- Immediately afterwards the desired memory position must be pushed (1, 2 or 3)
- The position is now stored

## Drive to stored memory position

Push (1, 2 or 3) keep the button down until the position has been reached.

### Handset for massage

HB22RF2000



### **Usage:**



## **Enter/exit massage command mode**

Sets the control in massage mode for controlling the massage functions (LED flashing) or returns to normal mode for controlling the bed adjustment (LED off). Pressing this key has no influence on the TWINDRIVE unit except from waking it up to make its response time to massage commands shorter. If no keys are pressed for 10 min., the control will automatically go to normal mode (LED off).



## Controlling the backrest massage motor

Short key press turns the backrest massage motor on or off (left key on, right key off).

Turning on a motor, which has been turned off by turning the intensity to off, starts the motor with lowest configured intensity.

Keep key pressed to adjust the intensity up or down (left key up, right key down). Keeping the down key pressed will turn the motor off when going below minimum intensity. The intensity can be controlled when running in a massage program, but the massage program will be temporarily halted and both motors are run with currently chosen intensity until up/down-key is released.



### Controlling the legrest massage motor

Short key press turns the legrest massage motor on or off (left key on, right key off). Turning on a motor, which has been turned off by turning the intensity to off, starts the motor with lowest configured intensity.

Keep key pressed to adjust the intensity up or down (left key up, right key down). Keeping the down key pressed will turn the motor off when going below minimal intensity. The intensity can be controlled when running in a massage program, but the massage program will be temporarily halted and both motors are run with currently chosen intensity until up/down-key is released.



### Controlling the massage program

Short key press on left key turns on a massage program (constant on - handwave - software - hand pulse - soft pulse) or change to next program if a program is already activated.

Starting a massage program always turns on both motors at current intensity.

Short key press on the right key turns off both massage motors no matter if they are running in a massage program, or separately.

Keep key pressed to adjust the motor, change speed up or down (left key down, right key up.)



### Store and recall massage settings.

2 massage settings can be stored.

Adjust the massage to the preferred settings. Pres the "S" key followed by either key "1" or "2". To recall a pervious stored setting pres key "1" or "2".

### In general

Massage will turn off automatically 10 min. after the last adjustment of the settings. Adjusting the bed will turn off the massage, but massage will automatically start up again afterwards.

When turning on a single massage motor it will start up with the same intensity as it was last time it was running as a single motor.

When turning on a massage program it will start up with the same settings (program, motor change speed, intensity) as it was last time.

Turning on a massage function can also be done by keeping the up key pressed.

Then it will turn on, and after a short delay adjust the intensity up.

Massage functions can only be controlled by the transmitter. The receiver is a standard hand control.

Pressing any key on the receiver will stop the massage, and adjust the bed according to the key pressed. After releasing the key, massage will automatically start up again.

In case of any errors: current-limitation, high temperature or short-circuit, the massage system will stop both motors, even if only one motor is affected.

### **Normal operation**

In normal mode to adjust the bed position, the hand control is working exactly as a normal Handset without massage functionality, except there are only 2 memory positions instead of 3.

If there are any extra motors in the system, the keys to control these motors will, as normal, be placed between the leg rest keys and the "reset and massage program" keys.

### **Child lock**

To enable the function, the position of the switch in the front of the transmitter must be changed.

To unlock the handset press up and down keys of the  $2^{nd}$  row at the same time for one sec. When the blue LED turns on the handset is unlocked for 10 sec. after last key press. Then it automatically locks again. If the up + down key is pressed for more than 2 sec. the handset will lock again.

If the handset is locked and the user tries to operate it, it will give a short flash with the LED to indicate "key is pressed, but handset is locked".



### **Enable/Disable Child lock**

To enable the function the position of the switch in the front of the transmitter must be changed.

N.B The Child lock only locks actuator functions. Therefore, it is disabled while the HB is in massage command mode.

### **Unlock of Child lock**

Press up and down keys of the 2<sup>nd</sup> row at the same time for one sec. When the blue LED turns on the handset is unlocked.



The handset is not unlocked If the key is not are released again before the blue led turns off.

### **Automatic lock**

The handset is unlocked for 10 sec. after last key press. Then it automatically locks again.

### Signaling of handset is locked

If the handset is locked and the user tries to operate it, it will give a short flash with the LED to indicate "key is pressed, but handset is locked".

## Start-up - How to install the RF handset:



Please be aware that if you use the TD3 for the first time or it has been disconnected from the mains, the receiver integrated in the TD3 needs approx. 20 sec. before being able to receive a signal.

The TD3 can accept commands from up to 2 RF handsets.

From the factory the TD3 cannot recognise any RF handsets at all and must be matched to the RF handset(s) by the end-user/bed manufacturer before these can control the TD3 operation.

### Conditions which must be fulfilled prior to activating the learning mode:

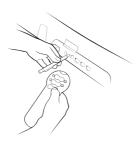
• Both the back and the leg actuators must be in the fully down position; if one or both actuators are NOT in the fully down position; the matching procedure cannot be continued as now an ordinary reset down function is performed instead. Thereafter, the reset key must be released and reactivated.

### **Activating the learning mode:**

- Activate the reset key on the TD3 by using a pen or similar to keep the button pressed.
- Keeping the reset key activated; the RF handset(s) must be activated one at a time by pressing a random key on the RF handset. The RF handset ID's are stored in the TD3 memory and at the same time, previous RF handset ID's are erased.



- After having activated the RF handset keys; the reset key must be released.
- If no RF handset keys are activated during the matching procedure; no changes are made in the ID memory of the TD3.



### **Disturbance of RF signals:**



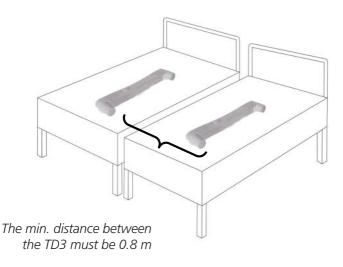
Please be aware that other equipments (as e.g. doorbells), which use the 433 MHz can disturb the RF signal.



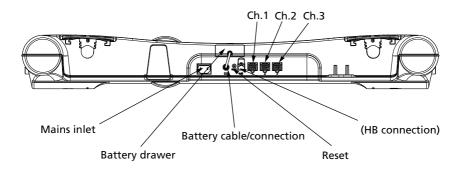
Under some circumstances it is not possible to run 2 or more TD3 at the same time.



Please observe that if you place 2 beds/2 x TD3 at a distance below 0.8 m the RF signals they may interfere each other and the TD3's can run irregularly.



### **Connections**



### Connection of massage motors:

CH1	CH2	
Footrest	Headrest	

### **Connection of LA27 actuators:**

The TD3 will as default detect and run the LA27 using plug and play rules as illustrated in the table below. The idea is that the Headrest is the first actuator, the Footrest second and then Extra function. The Headrest is always the one nearest to the Backend and the Footrest is always the one nearest to the Leg-end.

CH1	CH2	CH3
Headrest	-	-
-	Headrest	-
-	-	Headrest
Footrest	Headrest	-
Footrest	-	Headrest
-	Footrest	Headrest
Footrest	Extra function	Headrest

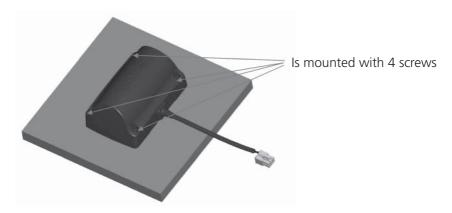
If 2 or 3 x LA27 actuators are connected to the TD3 and one of the LA27 actuators gets disconnected the function of the HB will change according to above scheme.

### Start up/initialisation of LA27:

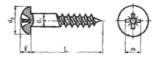
After connection of the LA27, the system has to be initialised. Push down the buttom for the LA27, which has to be initialised. When the sound from the LA27 stops the system is initialised. If more than 1 actuator is connected, the same has to be done with the other channels.

### Mounting instructions for the massage motor:

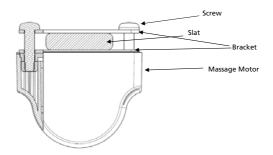
### Mounting on plate:



The massage unit is mounted with  $4 \times 4$  mm round-head wood screws with flat underside. The head must be 8 mm in diameter and in length 19 mm + the thickness of the plate on which the massage motor is mounted. Torque max. 2 Nm + resistance in the plate.

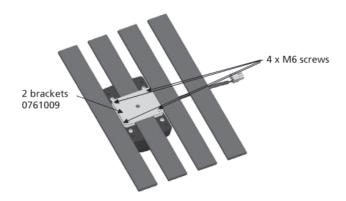


### Mounting instructions for the massage motor by using brackets:



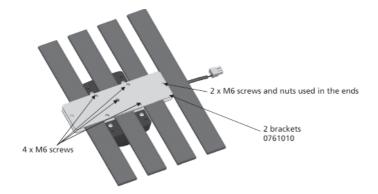
The massage unit is mounted with 4 x M6 round-head machine screws with flat underside. 15 to 20 mm long + the thickness of the bracket. Torque max. 2-3 Nm. 2 Brackets must be used – one on each side of the slat.

### Mounted on one slat:



The massage motor is mounted on to the slat by using 2 brackets 0761009 and 4 x M6 screws of good quality. Inside the motor 4 self-locking nuts avoid the mounting screws to get loose.

### Mounted on three slats:



### **Accessories:**

The TD3 can handle different kinds of accessories. The 3 main types are:

- 1. LED Lightbox : A light unit
- 2. DC Connector: Connection possibilities of units with DC plugs
- 3. USB Connector: Connection possibilities with units with USB plugs

Cable for connection to the TD3 is a separate unit: 0617101, 205 mm long

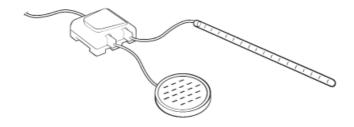
### 1. LED Lightbox

Just connect the LED Lightbox to the TD3 system via the motor cable. The light can be turned on and off via the handset.

### 2. DC Connector

Connect the DC Connector to the TD3 system via the motor cable. Before use the system must be configured via the TD3 configurator to be able to handle the mounted DC unit. The TD3 configuratior is a PC software program. Connect your DC unit with the DC Connector e.g. a LED light rail and the light can be turned on and off via the handset. As standard the TD3 can handle DC units using 12V. Units using other levels must be configured.

See system example



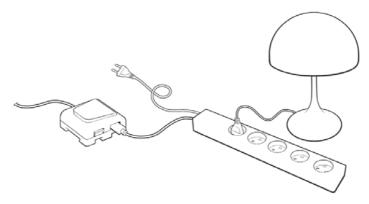
### 3. USB Connector

Connect the USB Connector to the TD3 system via the motor cable. Before use the system must be configured via the TD3 configurator to be able to handle the mounted USB unit. The TD3 configurator is a PC software program.

Via this unit you can connect a range of different accessories and gadgets with a USB plug, just as long as the device works in accordance with the general USB charger standard (max. 5V and supply max. 0.5A).

Example of a USB unit could be an energy saving busbar to which a standard lamp can be connected. The lamp can then be turned on and off via the handset, see example below.

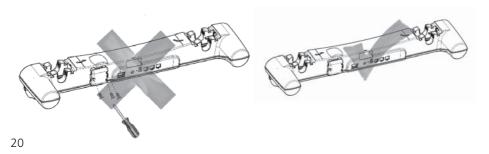
### Mounting of the accessories:



All 3 types can either be mounted on the bed using screws <u>OR</u> simply slide the unit(s) on the groove on the TD3. The mounting screws must be fastened with a max. torque of 1 Nm.

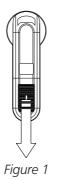
For mounting on the bedframe: use wood screws (M4) with a maximum head diameter of 8 mm, and a suitable length.

If several units are used in a system they can be stacked/mounted on top of each other, taking up a minimum of space.



## **Changing of batteries**

- 1. Remove the battery cover (see Figure 1).
- 2. Use a blunt instrument to remove the battery.
- 3. Place 3 new batteries type R03 or LR03 (AAA) in the transmitter. Press a button for 3 sec. If above procedure not is performed the handset will function anyway after app. 5 minutes. Direction of how to place the batteries in the transmitter is shown in *Figure 2*



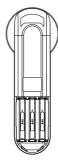


Figure 2

## **Emergency lowering function: (optional)**

Emergency lowering is meant for lowering the bed if a power failure occurs and the bed needs to be driven down into horizontal position.

The internal motors in the TD3 and all external motors connected can run in a random order depending on which button is activated on the handset. When the synchronous drive/reset button on the handset is activated, the system will run in a sequence running the internal motors first and then the external motor. The default sequence of the emergency lowering is backrest => leg rest => headrest. If more external motors are connected, they will not run by activating the synchronous drive/reset button, but only if the belonging button on the handset is activated. If the system does not work as described above the setup is not standard.

Please observe that all motors will be driven singularly.

### **Emergency lowering after 2 hours (disconnection of mains):**

If a power failure or a disconnection of the mains continues for more than 2 hours, the TD3 will go into a hibernation mode. When the TD3 is in hibernation mode, the bed can only be activated by activating the reset button (see page 15) on the TD3. Keep the button pressed or use the handset to drive to horizontal position.

### **Connection of Emergency lowering:**



Please observe that if you order the TD3 with 2 x 9V batteries mounted, the batteries will not be connected. The customer needs to connect the cable from the battery drawer to the TD3 when installing the bed and connecting the mains.



If the batteries are connected and the bed is not connected to the mains, the batteries will discharge in approx. 2 months and it will not be possible to perform an emergency lowering.

### Lifetime of batteries:



The batteries must be changed after an emergency lowering has been performed. Batteries that have not been used must be changed after approx. 3 years.

### Battery type:

Alkaline 9 V batteries 9F22 or 6LR61.

### The correct way to use the functionality:

If the key is released during the lowering, always wait 60 sec before pressing the key again.

### Removal/fitting of the 2 x 9 V batteries:

To change the  $2 \times 9 \text{ V}$  batteries for emergency lowering the first step is to disconnect the cable and then pull out the drawer of the TD3. On the bottom of the drawer, there are 2 holes, which are to be pushed with a finger or a blunt instrument. The batteries will be released from the drawer when pushing. The new batteries can be placed in the drawer. Afterwards, place the drawer in TD3 and connect the cable again.

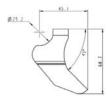
Only use alkaline batteries, and make sure to polarise the batteries correct according to the symbols in the drawer.



### Welding the twist bracket on the frame

 For the TD3 it is important that it is not welded on the outside of the twist bracket because there is not room for a welding seam in the motor housing. Instead weld the bracket on the whole length of its ends.





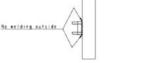




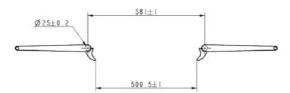
2) To maintain the correct angle of rotation of the headrest and the foot rest it is important that the twist bracket is welded according to the below instructions. Non-compliance with the instructions could lead to a smaller angle of rotation or in a worst case damage to TD3.



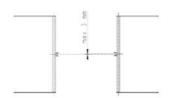




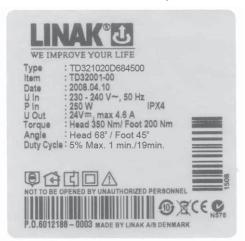




Tolerance of the parallels:



### Label for TD3 TWINDRIVE® System



The shown TD3 label is an example for one model part number.

The power ratings for other models are:

For TD3x10xxxxxxx U in: 230V, 50 Hz P in: 250W

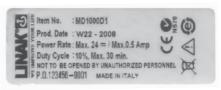
For TD3x11xxxxxxx U in: 120V, 60 Hz

P in: 240W

### Label for LA27



### Label for Massage Motor



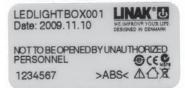
### Label for HB12

### Label for HB20





### Label for LED Lightbox



### Label for DC Connector



### Label for USB Connector



### **Disposal of LINAK's products**

As LINAK's customers often ask us how our products can be disposed of or scrapped we have prepared this guidance that enables a classification to different waste fractions for recycling or combustion.

### Guidance

We recommend to disassemble our product into as many fractions as possible at the disposal and try to make it recycable. As examples of main groups within waste fractions we can mention:

Metal, plastic, cable shoe, combustible waste, and collection for recovery.

Some of these main groups can be subdivided, e.g. metal can be divided into iron, stainless steel and aluminium, and alloy steel. Plastic can e.g. be divided into ABS, PA, PE, and PP.

As an example of sorting, please find below a list stating in which recycling groups the differenct components of LINAK's products ought to be placed:

Product	Components	Recycling group		
Actuator:	Spindle and motor Plastic housing Cable	Scrap Plastic recycling or combustion Cable scrap or combustion		
Massage motor:	Plastic housing Cable	Plastic recycling or combustion Cable scrap or combustion		
TWINDRIVE:	PCB Plastic housing Cable Trafo Scrap Batteries Spindle and motor	Electronics scrap Plastic recycling or combustion Cable scrap  Recovery Scrap		
Handset/Control: LED/DC/USB	Plasic housing Cable PCB Batteries	Plastic recycling or combustion Cable scrap Electronics scrap Recovery		

By now almost all our casted plastic parts are supplied with an interior code for plastic type and fibre contents, if any.

### Main groups of disposal

Product main groups	Scrap	Cable scrap	Electronics scrap	Plastic recycling or combustin	Comments
LA27	X	Х	Х	X	The metals can be sorted for steel or aluminum
TD3	X	Х	X		
HB10		Х	X	×	
HB20		Х	X	X	
MD1	X	Х		X	
LED Lightbox		Х	X	X	
DC Connector		Х	X	X	
USB Connector		Х	Х	X	

### Disposal of batteries.

Details regarding safe disposal of used and leaking batteries:

Batteries should be disposed in accordance with appropriate federal, state and local regulations. LINAK recommends that used or leaking batteries are disposed through the local recycling system. Please do not throw used or leaking batteries in normal household waste or in nature. This will cause damage to the environment.

### How to deal with leaking batteries.

Leaking batteries should be disposed as described above.

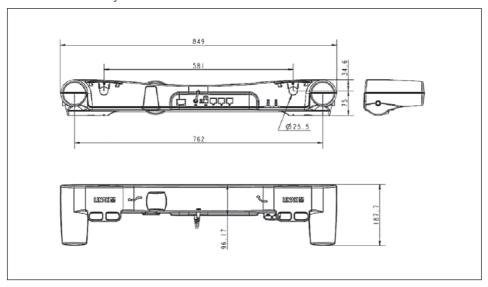
If leaking batteries are discovered in the product the batteries must be removed at once to minimise damage to the product. If leaking batteries are left in the product it might become defect.

It is recommended to use plastic gloves when handeling leaking batteries. The contents of leaking batteries can cause chemical burns and respiratory irritation.

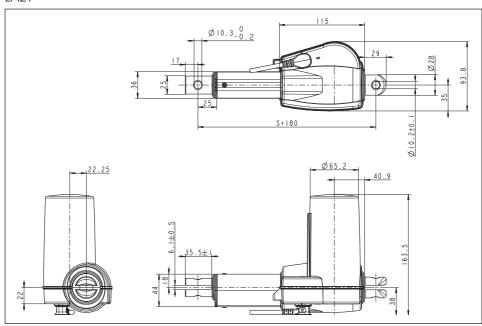
If exposed to the contents of a leaking battery, please wash with soap and water. If irritation persists, please seek medical attention. In case of eye contact, please flush eyes thoroughly with water for 15 minutes and seek medical attention.

### **DRAWING APPENDIX**

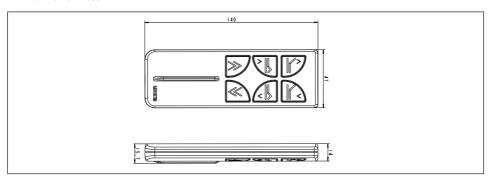
### TWINDRIVE® TD3 System



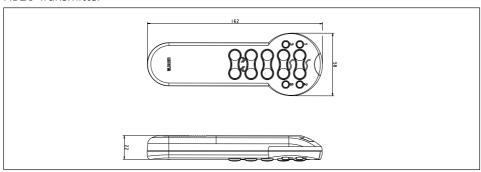
### LA27



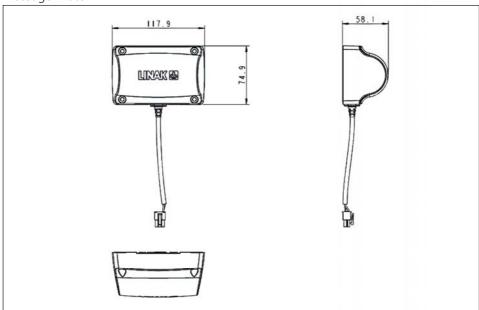
### **HB10** Transmitter



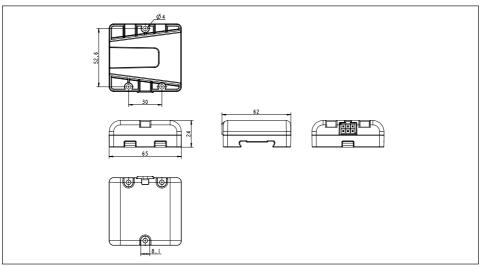
## HB20 Transmitter



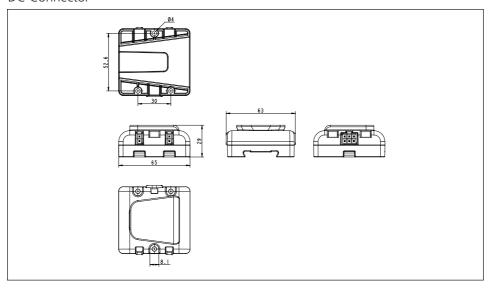
### Massage motor MD1



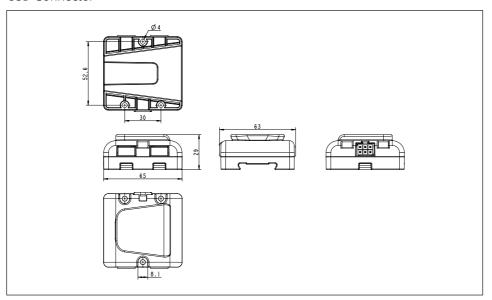
## LED Lightbox



### DC Connector



### **USB** Connector







#### DECLARATION OF INCORPORATION OF PARTLY COMPLETED MACHINERY

#### LINAK A/S Smedevænget 8 DK - 6430 Nordborg

Name and address of the person authorized to compile the relevant technical documentation: John Kling, Group Headquarters, Guderup, DK-6430 Nordborg, email jkl@linak.com

Herewith declares that LINAK Actuators and Actuator Systems comply with the following parts of the Machinery Directive 2006/42/EC, ANNEX I, Essential health and safety requirements relating to the design and construction of machinery.

1.5.1 Electricity supply: Directive 2006/95/EC on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits.

1.5.10 Radiation, 1.5.11 External radiation: Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

The relevant technical documentation is compiled in accordance with part B of Annex VII and that this documentation or part hereof will be transmitted by post or electronically to a reasoned request by the national authorities.

This partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of this Directive, where appropriate.

Date: 2010-01-01

Signature:

John Kling Certification and Regulatory Affairs

John Eling

### **I INAK APPLICATION POLICY**

The purpose of the application policy is to define areas of responsibilities in relation to applying a LINAK product defined as hardware, software, technical advice, etc. related to an existing or new customer application.

LINAK products as defined above are applicable for a wide range of applications within the Medical, Furniture, Desk, and Industry areas. Yet, LINAK cannot know all the conditions under which LINAK products will be installed, used, and operated, as each individual application is unique.

The suitability and functionality of the LINAK product and its performance under varying conditions (application, vibration, load, humidity, temperature, frequency, etc.) can only be verified by testing, and shall ultimately be the responsibility of the LINAK customer using any LINAK product.

LINAK shall be responsible solely that the LINAK products comply with the specifications set out by LINAK and it shall be the responsibility of the LINAK customer to ensure that the specific LINAK product can be used for the application in question.

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