

DL1A and CBD4, CBD5, CBD6 system **User manual** 



# **Contents**

Important information Safety instructions Before installation, re-installation or troubleshooting Before start-up During operation Repairs Manufacturer's declaration Misc. on the DESKLINE® DL1A system Warranty Maintenance  Description of the DESKLINE® DL1A system Mounting guidelines for the DESKLINE® DL1A Mounting guidelines CBD4/CBD5/CBD6  Initialisation of the DL1A system  Accessories and repair Disposal of LINAK's products  Labels  Trawing appendix  Declaration of Conformity  Addresses	Preface	3
Before installation, re-installation or troubleshooting Before start-up During operation Repairs Manufacturer's declaration Misc. on the DESKLINE® DL1A system Warranty Maintenance  Description of the DESKLINE® DL1A system Mounting guidelines for the DESKLINE® DL1A Mounting guidelines CBD4/CBD5/CBD6 Electrical connection of the DL1A system Initialisation of the DESKLINE® DL1A parallel systems  Accessories and repair Disposal of LINAK's products  12 Drawing appendix Drawing appendix Declaration of Conformity  26  27  28  29  20  20  20  20  20  20  20  20  20	Important information	4
Before start-up During operation Repairs  Manufacturer's declaration Misc. on the DESKLINE® DL1A system Warranty Maintenance  Description of the DESKLINE® DL1A system Mounting guidelines for the DESKLINE® DL1A Mounting guidelines CBD4/CBD5/CBD6 1. Electrical connection of the DL1A system 1. Initialisation of the DESKLINE® DL1A parallel systems 1. Accessories and repair 1. Disposal of LINAK's products 1. Labels 1. Drawing appendix 1. Drawing appendix 2. Declaration of Conformity 2. 2. 2. 2. 2. 3. 4. 4. 4. 5. 4. 5. 5. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6.	Safety instructions	4
During operation	Before installation, re-installation or troubleshooting	5
Repairs  Manufacturer's declaration.  Misc. on the DESKLINE® DL1A system  Warranty.  Maintenance  Description of the DESKLINE® DL1A system  Mounting guidelines for the DESKLINE® DL1A.  Mounting guidelines CBD4/CBD5/CBD6  Electrical connection of the DL1A system.  Initialisation of the DESKLINE® DL1A parallel systems.  14  Accessories and repair.  Disposal of LINAK's products.  16  Labels.  17  Drawing appendix.  18  Declaration of Conformity.  26	•	
Manufacturer's declaration  Misc. on the DESKLINE® DL1A system  Warranty  Maintenance  Description of the DESKLINE® DL1A system  Mounting guidelines for the DESKLINE® DL1A  Mounting guidelines CBD4/CBD5/CBD6  Electrical connection of the DL1A system  Initialisation of the DESKLINE® DL1A parallel systems  Accessories and repair  Disposal of LINAK's products  Labels  12  Drawing appendix  Drawing appendix  26  27  28  29  20  20  20  20  20  20  20  20  20	During operation	5
Misc. on the DESKLINE® DL1A system.  Warranty.  Maintenance  Description of the DESKLINE® DL1A system.  Mounting guidelines for the DESKLINE® DL1A.  Mounting guidelines CBD4/CBD5/CBD6.  Electrical connection of the DL1A system.  Initialisation of the DESKLINE® DL1A parallel systems.  14  Accessories and repair.  Disposal of LINAK's products.  16  Labels.  17  Drawing appendix.  18  Declaration of Conformity.		
Warranty	Manufacturer's declaration	7
Warranty	Misc. on the DESKLINE® DL1A system	8
Description of the DESKLINE® DL1A system		
Mounting guidelines for the DESKLINE® DL1A	Maintenance	8
Mounting guidelines for the DESKLINE® DL1A		
Mounting guidelines CBD4/CBD5/CBD6	Description of the DESKLINE® DL1A system	9
Electrical connection of the DL1A system	Mounting guidelines for the DESKLINE® DL1A	10
Initialisation of the DESKLINE® DL1A parallel systems 14  Accessories and repair 15  Disposal of LINAK's products 16  Labels 17  Drawing appendix 18  Declaration of Conformity 26		
Accessories and repair	Electrical connection of the DL1A system	13
Disposal of LINAK's products 16 Labels 17 Drawing appendix 18 Declaration of Conformity 26	Initialisation of the DESKLINE® DL1A parallel systems	14
Labels 1  Drawing appendix 18  Declaration of Conformity 20	Accessories and repair	15
Drawing appendix	Disposal of LINAK's products	16
Declaration of Conformity	Labels	. 17
·	Drawing appendix	18
Addresses 24	Declaration of Conformity	20
	Addresses	24

# **Preface**

#### Dear User.

We are delighted that you have chosen a product from LINAK®.

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.

This User Manual does not address the end-user. It is intended as a source of information for the manufacturer of the equipment or system only, and it will tell you how to install, use and maintain your LINAK electronics. It is the responsibility of the manufacturer of the end-use product to provide a User Manual where relevant safety information from this manual is passed on to the end-user.

We are sure that your LINAK product will give you many years of problem-free operation. Before our products leave the factory they undergo full function and quality testing. Should you nevertheless experience problems with your systems, you are always welcome to contact your local dealer. LINAK subsidiaries and some distributors situated 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. The products are not to be opened by unauthorised personnel.

The User Manual has been written based on of our present technical knowledge. We are constantly working on updating the information and we therefore reserve the right to carry out technical modifications.

#### LINAK A/S

# Important information

Important information on LINAK® products can be found under the following headings:



# 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 destroyed.

# **Safety instruction**



# General

Safe use of the system is possible only when the operating instructions are read completely and the instructions contained are strictly observed.

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



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. Follow the instructions for mounting — risk of injury if these instructions are not followed.



The appliance is not intended for use by young children or infirm persons without supervision.



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



Note that during construction of applications, in which the actuator is to be fitted, there must be no possibility of personal injury, for example the squeezing of fingers or arms.



Assure free space for movement of application in both directions to avoid blockade.

# Before installation, re-installation, or troubleshooting:

- Stop the DL1A
- Switch off the power supply and pull out the mains plug.
- Relieve the DL1A 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 of the control box is correct before the system is connected to the mains.
- System connection. The individual parts must be connected before the control box is connected to the mains. See the User Manual for LINAK actuators, if necessary.

# **During operation**

- If the control box makes unusual noises or smells, switch off the mains voltage immediately.
- Take care that the cables are not damaged.
- Unplug the mains cable on mobile equipment before it is moved.
- The products must only be used in an environment, that corresponds to their IP protection.

# Misc.

The actuator system has a sound level below 55dB(A) in typical applications.

Updated manuals and declarations can always be found here: www.linak.com/deskline

# Only for EU markets



This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.



Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

# **Only for Non EU markets**



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, sensory 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 the operator's responsibility to ensure that there is free space for the application to move without risk for the operator or bystanders before operating the application.

# Misuse



Do not overload the actuators – this can cause danger of personal injury and damage to the system.



Do not use the actuator system for lifting persons. Do not sit or stand on a table while operating – risk of personal injury.



Do not use the system in environments other than the intended indoor use

# **Repairs**

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



### Warning!

If any of the DESKLINE® products are opened, there will be a risk of subsequent malfunction.



# Warning!

The DESKLINE® systems do not withstand cutting oil.

#### DECLARATION OF INCORPORATION OF PARTLY COMPLETED MACHINERY

### LINAK A/S

Smedevænget 8 DK - 6430 Nordborg

Herewith declares that LINAK DESKLINE® products as characterized by the following models and types:

Control Boxes CBD6S

Linear Actuators DB5, DB6, DB7, DB9, DB12, DB14, DB16, LA23, LA31

Lifting Columns DL1A, DL2, DL4S, DL5, DL6, DL7, DL8, DL9, DL10, DL11, DL12, DL14, DL15,

DL16, DL17, DL19, BASE1

Desk Panels DPA, DPB, DPH, DPF, DPG1K, DPG1M, DPG1B, DPG1C, DPT, DP1, DP1CS,

DP1K, DP1V, DP1U

RF Controls HB10RF, HB20RF, RFT, RFRL Accessories BA001, SLS, Kick & Click

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

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 the Machinery Directive 2006/42/EC where appropriate.

Nordborg, 2017-12-08

LINAK A/S

John Eling

John Kling, B.Sc.E.E.

Certification and Regulatory Affairs

Authorized to compile the relevant technical documentation

# Misc. on the DESKLINE® DL1A system

This system is a DESKLINE system developed for desks and for indoor use in offices. Do not use it in industrial kitchens or in other environments that have to be cleaned with aggressive detergents.

Do not bolt the legs to the floor so that free movement is prevented. This could cause serious damage to the legs in fault situations

### Warranty

There is a 36 months' warranty on the DESKLINE products against manufacturing faults 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.

## Service of double-insulated products:



Class II

A Class II or **double insulated** electrical appliance is one which has been designed in such a way that it does not require a safety connection to electrical earth (US: ground).

The basic requirement is that no single failure can result in dangerous voltage becoming exposed so that it might cause an electric shock and that this is achieved without relying on an earthed metal casing. This is usually achieved at least in part by having two lavers of insulating material surrounding live parts or by using reinforced insulation.

There is no earthing/grounding means provided on the product, and no earthing/grounding means is to be added to the product.

In Europe, a double insulated appliance must be labelled "Class II", "double insulated" or bear the double insulation symbol (a square inside another square).

Servicing a double-insulated product requires extreme care and knowledge of the system, and is to be done only by qualified service personnel. Replacement parts for a double-insulated product must be identical to the parts they replace.



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

# Description of the DESKLINE® DL1A system

Each DESKLINE® DL1A actuator is equipped with a motor and parallel/memory drive is ensured by means of software in the CBD4/CBD5/CBD6 that also takes account of oblique load on the desk. Soft start and stop are also part of this software, which ensures a soft start and stop when adjusting the desk.

## The DESKLINE® DL1A system range contains the following products:

- 1 control box CBD4/CBD5/CBD6
- 1 single DL1A or 2, 3, or 4 parallel
- 1 exchangeable mains cable
- 1, 2, 3, or 4 motor cables
- 1 DP1U/DPF1M (if memory function is required) DP1C/WDPL/DPT/DPF1C (if memory function and display is required) or 1
  DPA/DPB/DP1K/DP1V/DPF1K (if only up/down is required.)

### Options:

Possibility of running extra actuators (LA31 with hall)

# Application of the DESKLINE® DL1A system:

Irrespective of the load the **duty cycle 10%** ~ **6 min./ hour or max. 2 min. at continuous use** stated in the data sheets, must **NOT** be exceeded as this will result in a superheating of the motor, the brake and the spindle nut. Exceeding the duty cycle will result in a dramatic reduction of the life of the system.

Maximum load for each DL1A: 1600 N

Maximum load for a system with CBD4 400 W: 3200 N

Maximum load for a system with CBD4 600 W: 4800 N

Maximum load for a system with CBD5 500 W: 3200 N

Maximum load for a system with CBD6 375 W: 2400 N

# Mounting guidelines for the DESKLINE DL1A



The lifting units are normally mounted with the motor housings upwards and pointing towards each other (see figure 2).

The aluminium motor housing is supplied with 6 pcs. of M6 threaded holes meant for mounting on the desk frame. The threaded holes are rolled into the aluminium housing.

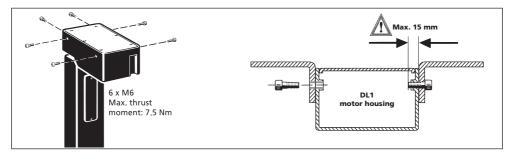


Figure 1



It is recommended to use all 6 M6 threaded holes. As the tabletop amplifies the sound we advise you to place a vibration/shockabsorbing material between the tabletop and the table frame.

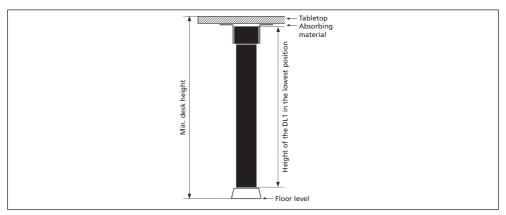


Figure 2

A suitable desk height in the lowest position can be obtained by mounting the lifting unit on a 6-8 mm bottom plate by means of 4 pcs. of M6 countersinked screws. We recommend you to use screws of min. quality 8.8. The thrust moment must not exceed 10 Nm in the bottom plate thread.

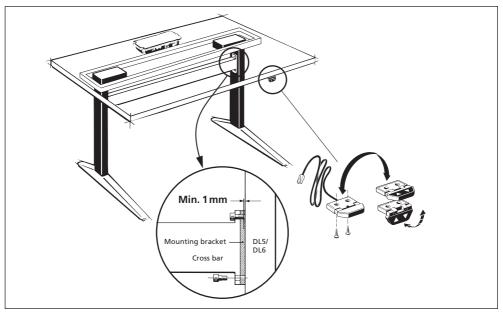


Figure 3 (Example of how to mount a 2 parallel DESKLINE® DL1A system)



To avoid damage of the lifting unit there must be min. 1 mm space between the end of the screw for the mounting bracket and the surface of the lifting unit (see figure 1). The use of any longer screws will come into contact with the inner parts. This will result in an irregular operation or even damage the lifting unit.



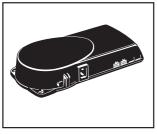
The DESKLINE® DL1A system can only be used in push applications with the motor housing mounted upwards.



Placement of a monitor directly above the motor housing may cause malfunction of the monitor. Magnets inside the motor may interrupt the picture on the monitor depending on the distance and type of monitor. If this is the case the problem may be solved by placing an iron plate/tube or another magnetic material, somewhat larger than the motor housing, between the motor, and the tabletop.

# Mounting guidelines CBD4/CBD5/CBD6

The control box is to be fastened with 4 screws (3 screws for CBD5 and CBD6) with a head diameter between Ø 8 and Ø 10 mm. Out of regard for the tension surface Ø 10 mm is preferable. See drawing appendix for placing of mounting holes and the space the CBD takes up.







CBD4 - Control box

CBD5 - Control box

CBD6 - Control box

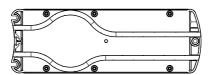
The CBD must not be packed in heat insulating material, but must be placed so that it can emit waste heat into the surroundings. There are no ventilation holes to consider, the CBD emits heat through the surface.

The plug must be visible when the CBD is mounted so that the supply to the CBD can be disconnected at replacement, if any. The mounting screws on the control box must be fastened with a max. torque of 1 Nm.

The mounting surface to which the control box is attached should have a surface evenness of better than  $\pm$  0.5 mm.

# CBD6 - bottom with cable grooves

The bottom of CBD6 is equipped with two cable grooves improving the cable management when mounting. The grooves can be used to bypass the CBD for both motorcables and the mains cable (EU version only) from one side to the other, giving a cleaner design.





Remember to lead the cables through the grooves before mounting the control box.

For mounting and operation of the desk panel, please see the separate user manual for desk panels.

# **Electrical connection of the DL1A system**

The DESKLINE® DL5/DL6 system is to be connected as shown on figure 4. Each DL5/DL6 is to be connected to the sockets on the control box by means of the motor cables, which have an 6-pin pluq in each end.

Finally, the mains cable is to be mounted and power switched on.



Please note that the control box must only be connected to the voltage stated on the label.

### CBD4/CBD5/CBD6 with earth

The CBD4/CBD5/CBD6 earth cable to be mounted on the desk construction (typically the top frame)in a way that ensures good electrical contact. The function of the earth cable is to earth the desk and ground static electricity. The earth connection does not protect other electrical products.



### CBD4/CBD5 with mains cut-off (non ZERO models)

If the power cable is damaged it has to be replaced by an authorized LINAK service centre to avoid any danger.



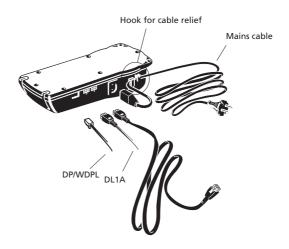


Figure 7

# Initialisation of the DESKLINE DL1A parallel systems

To obtain parallel operation of a DESKLINE® system it is necessary that the system at first activation drives the lifting units DL1 in end stop position bottom. Thus the control box registers the bottom position for each lifting unit.

If an extra actuator apart from the DL1 is connected to the system this actuator must also be initialised. Drive the actuator to inner posistion and then to outer position.

Besides the system has to be initialised when exchanging the lifting units or the control box.

# Accessories and repair

# Ordering accessories

Order from your nearest LINAK® dealer or subsidiary.

### Accessories

Please contact your nearest LINAK dealer for information.

### Repairs

Systems should only be repaired by an authorised LINAK service centre or engineer. Systems to be repaired under warranty must be sent to an authorised LINAK service centre.



### Warning!

By unauthorised opening of the system there is a risk that it may malfunction at a later date.

### Spare parts

Please contact your nearest LINAK dealer for information on spare parts.

# Disposal of LINAK's products

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

#### Guidance

We recommend our products to be disassembled as much as possible and divided into different waste groups for recycling or combustion.

For example, waste can be sorted into metals, plastics, cable scrap, combustible material, and recoverable resources.

Some of these main groups can be further divided into subgroups; e.g. metal can be divided into steel/aluminium/copper and plastic can be divided into ABS/PA/PE/PP.

As an example, the table below breaks down the different components in LINAK products to various recycling groups:

Product	Components	Recycling group				
Columns/ Actuator :	Spindle and motor Plastic housing Cable PCB boards	Scrap Plastic recycling or combustion Cable scrap or combustion Electronics scrap				
Control Box :	PCB boards Plastic housing Cable Transformer	Electronics scrap Plastic recycling or combustion Cable scrap or combustion Metal scrap				
Handset/Control :	Handset/Control: Plastic housing Plastic recycling of Cable Cable Scrap or control PCB board Plastic recycling of Cable Scrap or Cable Scrap					

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	Metal scrap	Cable scrap	Electronics scrap	Plastic recycling or combustin	Comments
DL1A	Х	Х	X	X	
CBD4/CBD5/CBD6	Х	Х	Х	Х	
DPXX		Х	Х	Х	

# 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 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 a 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."

#### Label for DL1A



#### Label for CBD4



#### Label for CBD5

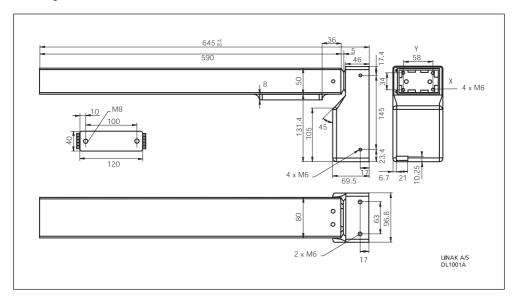


#### Label for CBD6

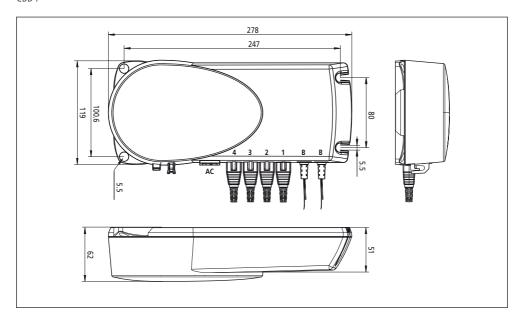


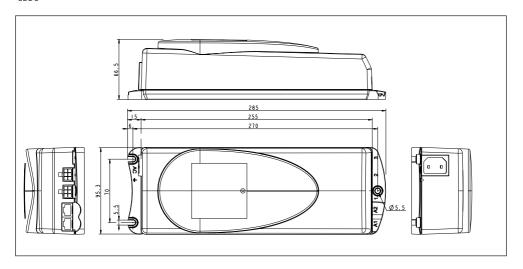
# **DRAWING APPENDIX**

# DL1A lifting unit

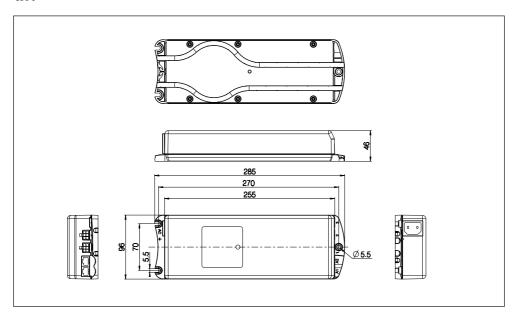


# CBD4





# CBD6



### **DECLARATION OF CONFORMITY**

LINAK A/S Smedevænget 8 DK - 6430 Nordborg

hereby declares that LINAK Actuator System composed of:

Control Box(s) CBD6SP00020A-309

CBD6S\*000\*0A-709

(The '\*' in the product description can either be a character or a number, thereby defining the variation of the product)

And

Linear Actuator(s) 31, DB4, DB5, DB6, DB7, DB9, DB12, DB14, DB16, LA23 series and / or

Lifting Column(s) DL1A, DL2, DL4, DL5, DL6, DL7, DL8, DL9, DL10, DL11, DL12, DL14, DL15, DL16, DL17, DL19,

BASE1 series

And

Desk Panel(s) DP1C, DP1K, DP1L, DP1V, DP1U, DPA, DPB, DPF, DPG, DPH, DPT, WDPL1 series

complies with EMC Directive: 2014/30/EU according to following standards:

EN 61000-6-1:2007. EN 61000-6-3:2007+A1:2011+AC:2012

complies with Low Voltage Directive 2014/35/EU according to the standard:

EN 60335-1:2012+A11:2014

complies with RoHS2 Directive 2011/65/EU according to the standard:

EN 55581:2012

Additional information:

The system does also comply with the standard: EN 13849-1:2015 SRP/CS Cat. B, PL = b and SRESW PL = b Note 1: Exempted CBD6S with SW03003007 printed on the label.

Nordborg, 2017-12-08

LINAK A/S

John Kling, B.Sc.E.E.

Certification and Regulatory Affairs

John Eling

Authorized to compile the relevant technical documentation

Original Declaration

### LINAK 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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