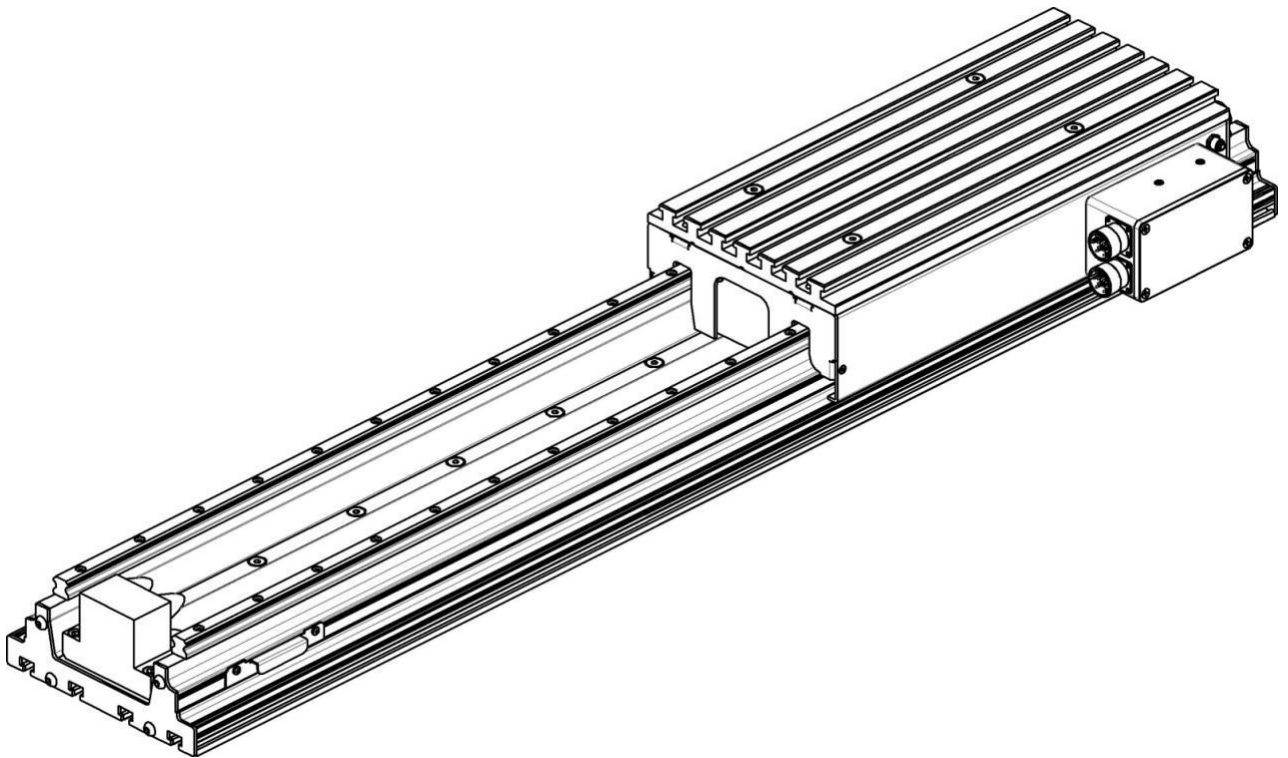




Linear units with direct drive

ILD 50-6

**Assembly
instructions with:**

- Installation instructions
- Maintenance guide
- Declaration of incorporation

for a drive system
(an incomplete machine pursuant to Machinery Directive 2006/42/EC)

About these assembly instructions

Abbreviations

MRL = Machinery Directive 2006/42/EC

ILD = isel linear direct drive

PDF = Portable document format

Terminology

In these assembly instructions 'product' always stands for linear unit with direct drive.

Symbols used

In these instructions you will find various symbols intended to draw your attention to important information / content and dangers:

Symbol	Text	Meaning
	Danger	Warning that people may suffer serious to fatal injuries.
	Caution! Voltage hazardous to life!	The lightening symbol explicitly warns of dangers caused by electric current. Disregarding the warning can lead to injuries with fatal consequences.
	Warning, beware!	Warning of possible minor injuries, of possible defects / possible destruction of the product or potential material damage. Failure to adhere to the content (text, image or table) that comes after this symbol can result in significant material damage.
	Important information or advisory note	Important information or an advisory note is given here in relation to how the product works.

Observing the safety information



Before commissioning the ILD50-6 linear units (as an incomplete machine), working with the linear units or making any additions or modifications to the linear units' electrical installation, please be sure to carefully read:

- The safety information in these assembly instructions
- The safety information relating to electric drives and control units in the operating manual of the positioning module, drive system controller, drive system module or drive system control unit being used.

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Despite every care being taken, printing errors and mistakes cannot be ruled out. Suggestions for improvement and notification of any errors or content formulated/presented in a confusing way are gratefully received.

Note on CE conformity in the case of incomplete machines:

isel linear units are CE-compliant. They are regarded as incomplete machines pursuant to Machinery Directive 2006/42/EC and are therefore not explicitly furnished with the CE mark.

It is only the (complete) machine or plant, into which these linear units are fitted, that receives the CE mark from the manufacturer / distributor after conclusion of the conformity appraisal procedure for that machine.

For all other machine parts and/or machine components to which the CE safety guidelines apply commissioning is not permitted until all relevant requirements of Machinery Directive 2006/42/EC have been fulfilled.

As soon as you make any modifications of any kind to the linear unit, *isel* Germany AG accepts no responsibility.

The EMC test as per EMC Directive 2004/108/EC is valid only for the linear unit's original ex-works configuration, including linear motor, measuring system and original cabling (this being the sensor lines, the lines for the motor and any brake included as an option).

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This document was last edited: November 2014

Other *isel* Germany AG documentation:

"Nothing is so good that you couldn't make it (even) better." It is on the basis of this motto that all our manuals (including operating guides and assembly instructions) are constantly improved, involving a not inconsiderable effort for us as the manufacturer.

We feel obliged to do this. However, it also has its benefits both for us and for you as our customer: we want you to be able to work efficiently with the relevant manuals and to find the information you are looking for quickly. A lot of details in the manuals stem from things that our customers have pointed out.

To assist you, you will find every manual available to download in PDF format from our website:

<http://www.manuals.isel.com>



In your own interest:

Please read these assembly instructions carefully and keep hold of them. These instructions are an integral part of the ILD50-6 product, regardless of whether they are being supplied / made available on an electronic storage device (CD, DVD or USB memory stick) as a PDF file or in printed form.

Please take note of and follow the safety information in these assembly instructions.

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1 General

You will find in this manual all key information relating to the assembly / installation, commissioning and maintenance of your ILD50-6 linear unit. It also provides you with information and important advice for your safety.

isel IDL50-6 linear units are ready-to-install linear modules with direct drive, which are predominantly used in factory automation, industrial handling and light engineering.

These linear units can be supplied in various standard lengths and, on request, in custom lengths as well.

Where the previously standard linear units with spindle drive reach their limits, linear units with linear motors bring their advantages to bear:

- They achieve high levels of acceleration
- Drive up to position with pinpoint accuracy
- Thanks to the lack of any mechanical links work practically free of any wear.

Please note:

The product is not a (complete) machine, but rather an 'incomplete machine' as per Machinery Directive 2006/42/EC.

1.1 Safety information



The following information on safety and potential dangers is intended to protect you, third parties and the product. It is therefore essential that you pay attention to it.

- The product must not come into direct contact with moisture or water. This system (the machine/plant in which the product is fitted) is suitable only for dry indoor areas. (Protection level IP40) For safety reasons no unauthorised conversion or modification of the linear unit is allowed.
- When in operation, the linear unit must not be covered by any supply lines (electric or pneumatic), objects (e.g. tools), tarpaulins, packaging materials or fabrics etc. (e.g. clothing), as this could lead to mechanical damage or a build-up of heat and potentially fire.
- When switching from cold to warm surroundings, let the product adjust to the temperature for a few hours before taking it into use, as otherwise damage may be caused by condensation.
- Avoid surroundings with direct sunlight and/or that are very hot, cold, humid or wet.
- Do not touch the motor when being used with high clock rates (acceleration/braking). The motor could be too hot!
- Do not touch or remove any internal parts of the linear unit while the unit is connected to any electric voltage. Before servicing the linear unit or disassembling any components, the unit must be disconnected from the power supply.
- The linear unit could be dangerous for people with pacemakers or any other magnetically sensitive medical devices.
- Magnetically sensitive devices/applications may be adversely affected by the magnetic fields.
- The customer must take precautions to protect against penetration of any ferromagnetic parts/particles, as the linear unit may otherwise be destroyed.
- In the case of applications for vertical use, a brake/clamp with appropriate activation must always be provided.
- As in the case of linear units accelerations of up to 5G can occur, there must be nobody present within the immediate working range while the skid is moving.

Operation

(Applies only to products that have been supplied with an appropriate motor output stage or controller)

- The product (as a functional drive system) will function correctly only if the motor, the tactile or inductive limit switches, the brake and the measuring system relating to the motor output stage / controller are correctly assembled / wired and parameter settings, commissioning and operation / programming are correctly done. In the event of any malfunction or unclear operating conditions, you should consult the relevant operating manuals / assembly instructions.

<http://www.manuals.isel.com>

You will find in them both instructions and advice for checking the desired function and/or for rectifying the cause of any malfunction / having such cause rectified.

In order to ensure that the linear unit functions correctly,

- it must be adequately mechanically fixed / bolted down (as per these instructions and adhering to the applicable standards) in the place intended for its use and
- all lines must be connected to a suitable control system as per these instructions.

In order to avoid the risk of injury, never let children or any other people in need of protection operate the product without supervision.

The following resultant residual risks should be taken into account:

When carrying out the assessment of their machine's risks required by the EC Machinery Directive, system integrators must take into account the following residual risks emanating from the components for controlling and driving an isel direct drive system:

1. Unwanted movements of powered machine parts during commissioning, operation, upkeep or repair, e.g. caused by hardware and/or software errors in the sensors, controls, actuators and/or connection

methods, control or drive system response times, operation and/or ambient conditions outside of the specification, errors in the parameter setting, programming, cabling or assembly, use of wireless devices / mobile phones in the immediate proximity of the control system, outside influences / damage.

2. Extraordinary temperatures and emissions of light, noise, particles and gas, e.g. caused by the failure of building elements, software errors, operation and/or ambient conditions outside of the specification, outside influences / damage.

3. Dangerous touch voltages, e.g. caused by the failure of building elements, influence in the event of electrostatic charges, induction of voltages in the event of moving motors, operation and/or ambient conditions outside of the specification, condensation / conductive contamination, outside influences / damage

4. During normal operation, electric, magnetic and/or electromagnetic fields, which, e.g. for wearers of pacemakers, implants or metallic objects, can be dangerous at insufficient distance.

5. Release of environmentally harmful substances and emissions in the event of incorrect operation and/or incorrect disposal of components.

1.2 Proper use

The ILD50-6 linear unit is for the linear movement of loads mounted firmly on the skid plate in surroundings with no risk of explosion and with the ambient conditions and conditions of use defined for this product. The unit can be fitted in any position (horizontally, vertically or at an angle).



If the linear unit is fitted vertically, its motor should have a holding brake that safeguards the unit's movable slides from dropping/sinking down when power to the unit is off. If no holding brake is mounted on the motor at the factory, another brake or counterweight is to be used.

The ILD50-6 linear unit is an incomplete machine (cf. Article 2g of Machinery Directive 2006/42/EC). An incomplete machine is defined there as follows (and we quote):

"Partly completed machinery means an assembly which is almost machinery but which cannot in itself perform a specific application.

A drive system is partly completed machinery.

Partly completed machinery is only intended to be incorporated into or assembled with other machinery or other partly completed machinery or equipment, thereby forming machinery to which this Directive applies."

The ILD50-6 linear unit product is intended for incorporation into a machine or assembly with other partly completed machinery.

The product is not intended for use outdoors or for the conveyance of people or in the foodstuffs sector.

Any use other than described above is improper and can lead to injury or damage.

1.3 Items included

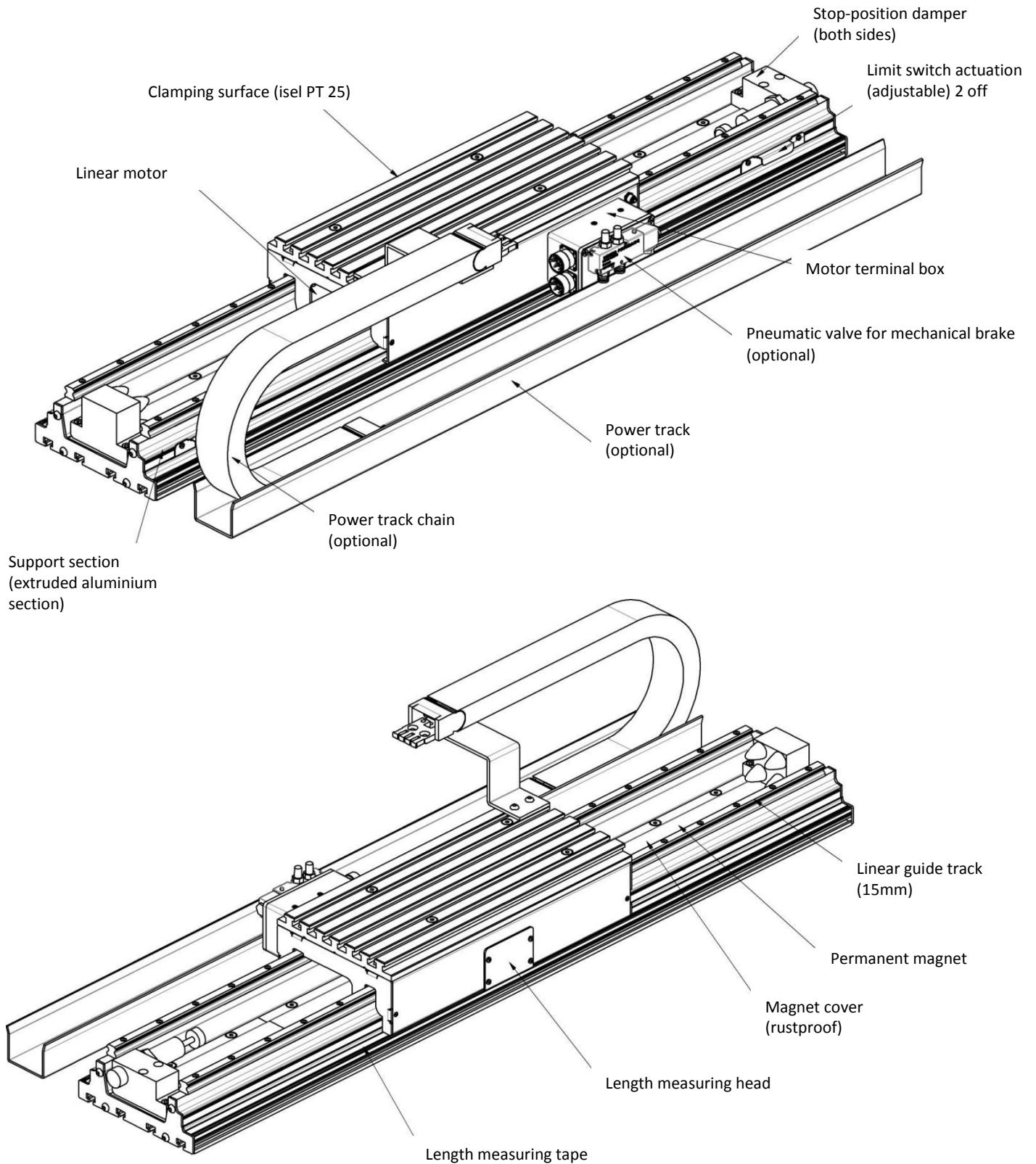
The ILD50-6 product includes the following:

- ILD50-6 linear unit
- Assembly instructions with declaration of incorporation pursuant to Machinery Directive 2006/42/EC
- Stickers: yellow block arrow for marking the axes (X, Y, Z, A, B or C-axis) and the positive (+) / negative (-) axis direction.

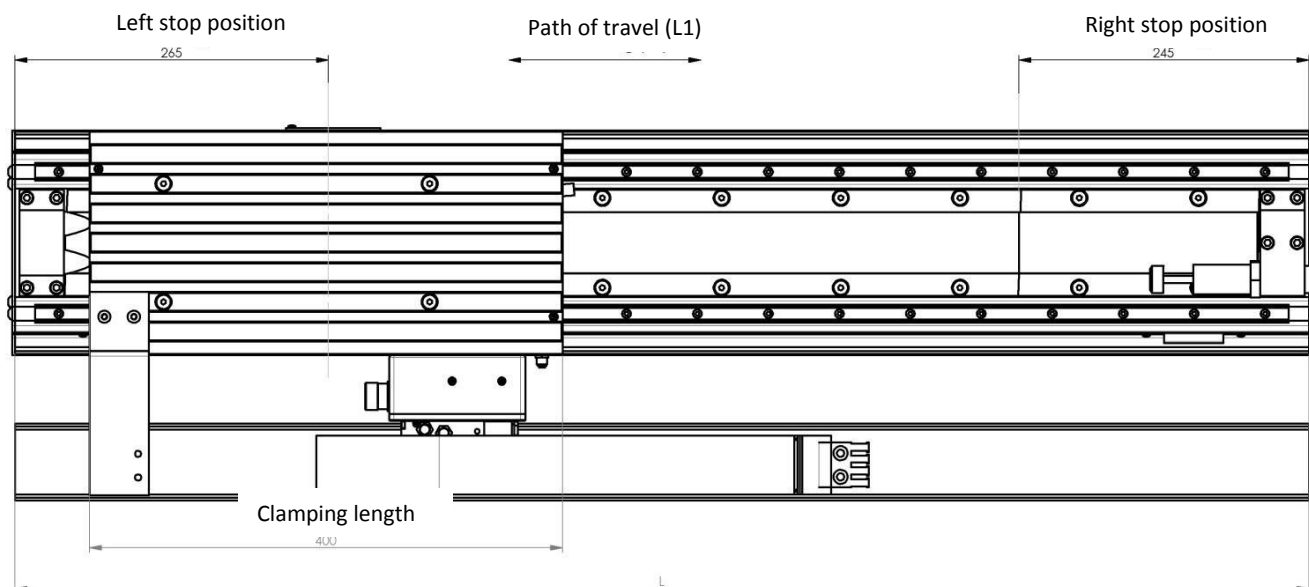
2 Installation instructions and functional overview

Here you initially get an overview of the mechanical set-up, the installation and/or assembly of the ILD50-6 linear units.

2.1 Overview of the mechanical set-up of the ILD50-6



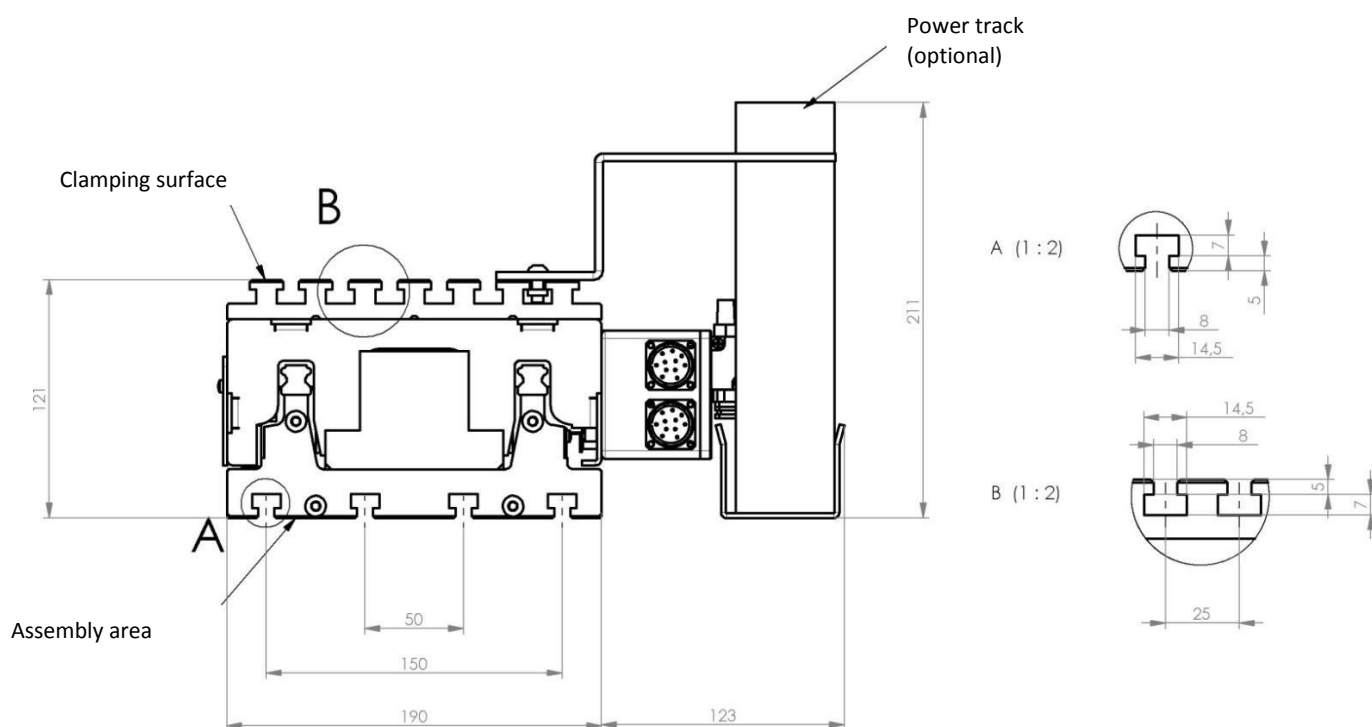
2.2 Measurements - Paths of travel



Item no.

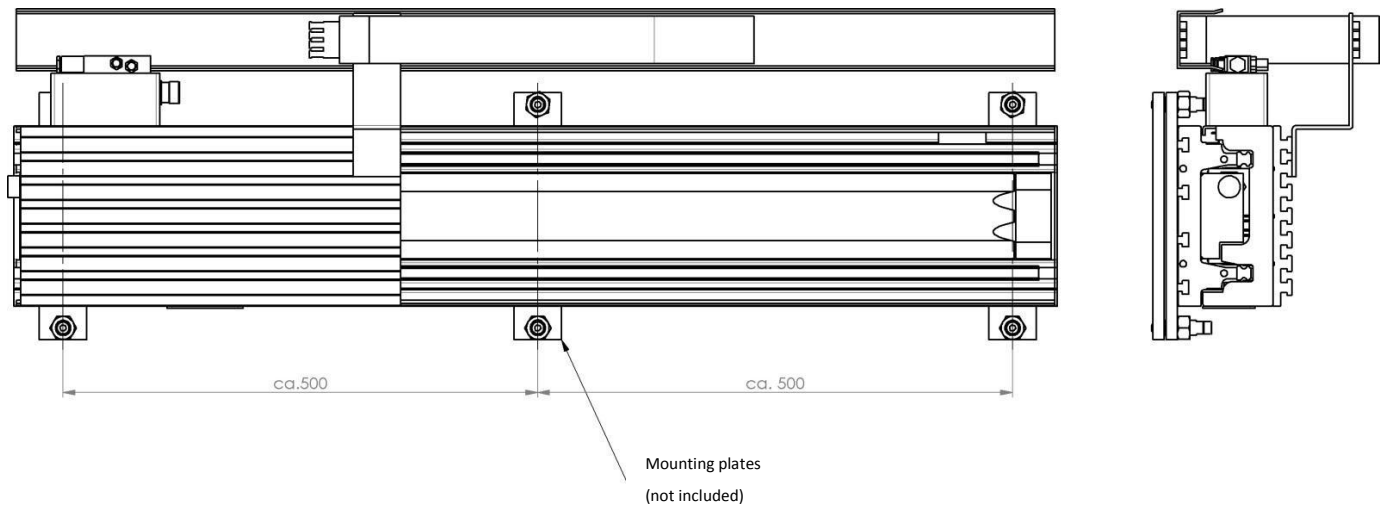
	L	L1
237110 0001	691	181
237110 0002	892	382
237110 0003	1094	584
237110 0004	1296	786
237110 0005	1497	987
237110 0006	1699	1189
237110 0007	1900	1390
237110 0008	2102	1592
237110 0009	2304	1794
237110 0010	2505	1995
237110 0011	2707	2197
237110 0012	2908	2398
237110 0013	3110	2600
237110 0014	3312	2802
237110 0015	3513	3003

2.3 Measurements - Assembly



2.4 Assembly

Assembly example:



The iLD50-6 should be mounted using mounting plates at a distance of c. 500mm. Make sure here that the linear unit does not become distorted.



Note in relation to this the safety information at the start of these instructions!

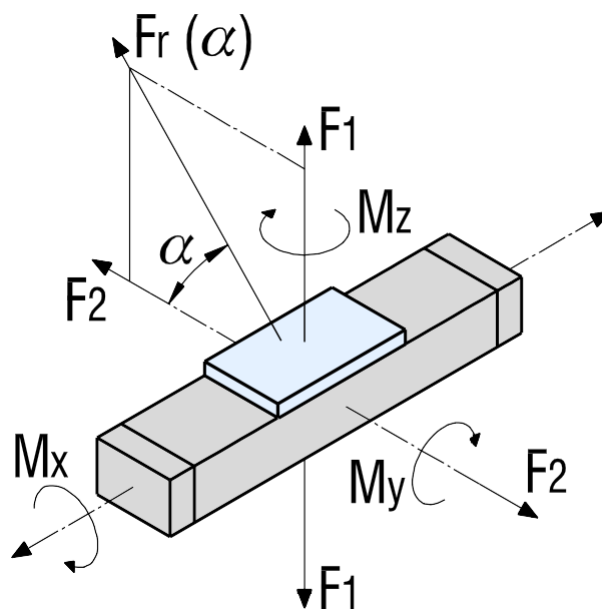
2.5 Loading capabilities

Load ratings

Valid for centred application of load	Distance travelled [m]	100000
		iLD 50-6 skid unit
		6x QHH15CA
C0	[N]	34190
C	[N]	33048
F1stat	[N]	25352
F1dyn	[N]	14524
F2stat	[N]	27352
F2dyn	[N]	16524
M0x	[Nm]	1521
M0y	[Nm]	2789
M0z	[Nm]	3009
Mx	[Nm]	871
My	[Nm]	1598
Mz	[Nm]	1818

$$Fr(\alpha) = \frac{F_2}{\cos \alpha}$$

$$Fr(\alpha) = \frac{F_1}{\sin \alpha}$$

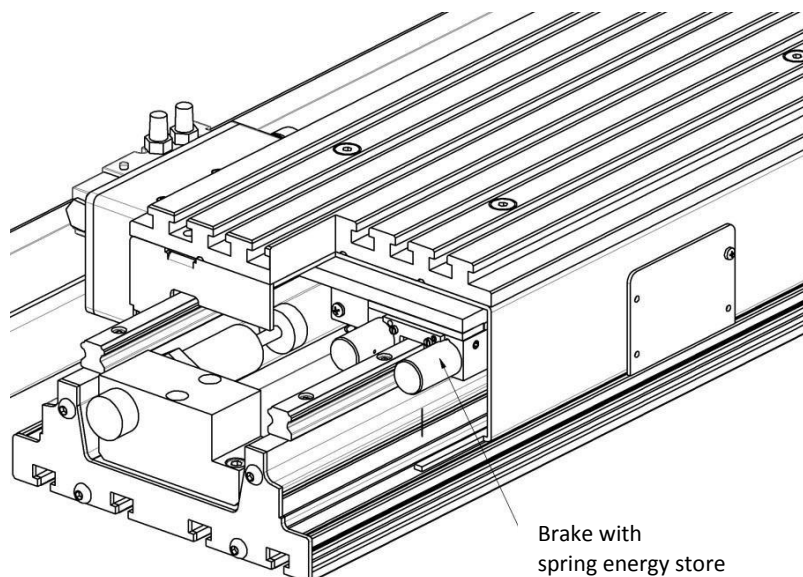


3 Options

3.1 An integrated pneumatic brake is available as an option for the iLD50-6.

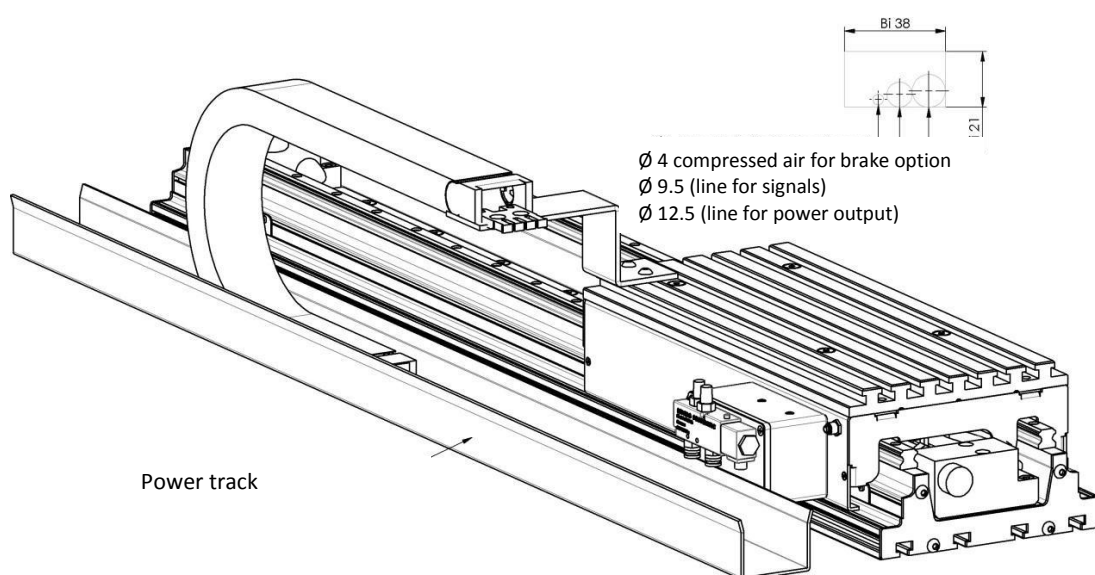
Optionally available for the iLD50-6 is a pneumatic brake with spring energy store. The braking power is 750N. This spring energy store gets filled with compressed air prior to commissioning → the brake opens. In the event of an emergency stop or when there is no current, the air gets released from the store → the brake clamps.

Cleaned, oiled air must be used for the pneumatic elements. The recommended filter size is 25 µm. Matching the air connection, the cross-section of the elements' lines should be configured as large as possible. Smaller line cross-sections impair the elements' response and reaction times. The supply lines should be kept as short as possible.



3.2 A power chain with guide track is available as an option for the iLD50-6.

Power chain configuration



A power chain with guide track is available as an option for the iLD50-6. The power chain is configured as illustrated and thus makes it possible to connect power lines from the customer's premises.

4 External electrical interfaces

The ILD50-6 linear unit has an external terminal box. The lines for the power output and control line can be connected here. These lines each get connected to the terminal box by an M23 plug connector. For the sake of completeness, the internal connections are shown here as well. However, for normal connection at the customer's premises these are of no interest. You should use the M23 plug connectors with the original connecting lines. In that way there is also no need to open the terminal box.

4.1 Connection cable (servo output stage connection side)

Configuration of the connection cable for power output (ferrules)

PIN	Signal
1	Motor U
2	Motor V
3	Motor W
GN/YE	Motor PE
5 (BN)	Brake +24VDC
6 (WT)	Brake GND
7 (GN)	Temperature sensor
8 (YE)	Temperature sensor

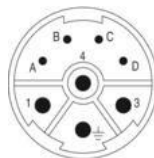
Configuration of signals plug connector (D-Sub - socket, 15-pin)

PIN	Signal
1	Hall A
2	+5V encoder/Hall
3	Encoder track /Z
4	Encoder track /B
5	Encoder track /A
6	+24VDC stop-position
7	Stop-position switch 1
8	GND stop-position switch
9	Hall B
10	GND encoder/Hall
11	Encoder Z
12	Encoder track B
13	Encoder track A
14	Hall C
15	Stop-position switch 2

4.2 Terminal box (M23 plug connector)

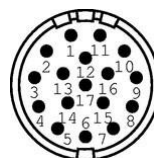
Configuration of power output plug connector (M23, 8-pin)

PIN	Signal
1	Motor U
3	Motor V
4	Motor W
PE	Motor PE
A	Brake +24VDC
B	Brake GND
C	Temperature sensor
D	Temperature sensor



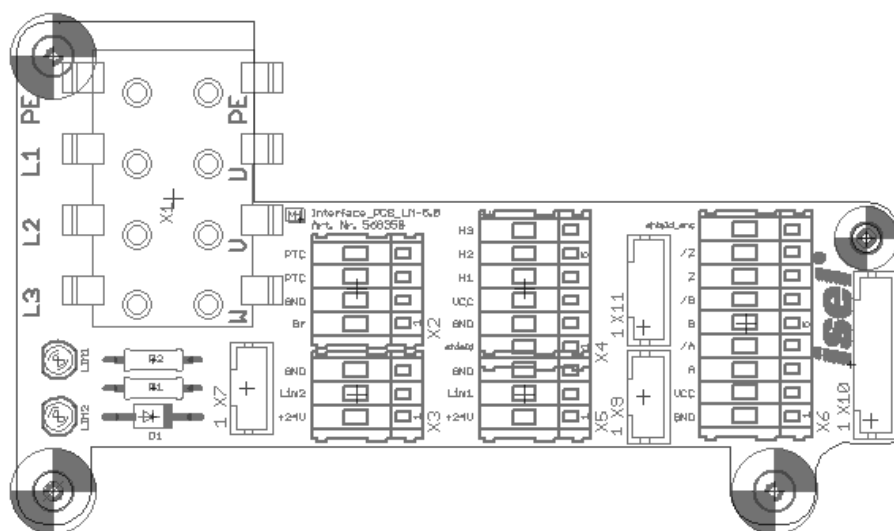
Configuration of signals plug connector (M23, 17-pin)

PIN	Signal
1	Encoder track A (V1+)
2	Encoder track /A (V1-)
3	Encoder track Z (V0+)
4	Hall 1
5	Hall 2
6	Hall 3
7	GND encoder
8	GND Hall
9	+5V Hall
10	+5V encoder
11	Encoder track B (V2+)
12	Encoder track /B (V2-)
13	Encoder track /Z (V0-)
14	+24VDC stop-position
15	GND stop-position switch
16	Stop-position switch 1
17	Stop-position switch 2



4.3 External electrical interfaces (internal)

Inside the terminal box is a connection circuit board, which serves as the interface of the connections from motor and peripherals (switches, measuring system, Hall effect sensors) to the motor cables to be connected.



X1 – Motor (axle / motor cable)

PIN	Signal
PE	Motor/inverter grounded conductor connection
L1	Phase U from inverter
L2	Phase V from inverter
L3	Phase W from inverter
U	Phase U from motor
V	Phase V from motor
W	Phase W from motor

X2 – Thermal sensor / brake (axle)

PIN	Signal
Br	Brake +24VDC
GND	GND brake
PTC	PTC Thermistor
PTC	PTC Thermistor

X3 – limit switch 2 (axle)

PIN	Signal
+24V	+24VDC supply
Lim1	Limit switch signal 2
GND	GND limit switch

X4 – HALL sensors (axle)

PIN	Signal
GND	GND Hall effect sensors
VCC	+5VDC Hall effect sensors supply voltage
H1	Hall effect sensor 1 (U)
H2	Hall effect sensor 2 (V)
H3	Hall effect sensor 3 (W)

X5 – limit switch 1 (axle)

PIN	Signal
+24V	+24VDC supply
Lim1	Limit switch signal 1
GND	GND limit switch

X6 – encoder (axle)

PIN	Signal
GND	GND encoder
VCC	+5VDC encoder supply voltage
A	Encoder track A
/A	Encoder track /A
B	Encoder track B
/B	Encoder track /B
Z	Encoder track Z
/Z	Encoder track /Z
shield	Encoder line shield

X7 – Thermal sensor / brake (motor cable)

PIN	Signal
Br	Brake +24VDC
GND	GND brake
PTC	PTC Thermistor
PTC	PTC Thermistor

X9 – limit switch (motor cable)

PIN	Signal
GND	GND limit switch
+24V	+24VDC supply
Lim1	Limit switch signal 1
Lim2	Limit switch signal 2

X10 – encoder (motor cable)

PIN	Signal
GND	GND encoder
VCC	+5VDC encoder supply voltage
A	Encoder track A
/A	Encoder track /A
B	Encoder track B
/B	Encoder track /B
Z	Encoder track Z
/Z	Encoder track /Z

X10 – Hall effect sensors (motor cable)

PIN	Signal
GND	GND Hall effect sensors
VCC	+5VDC Hall effect sensors supply voltage
H1	Hall effect sensor 1 (U)
H2	Hall effect sensor 2 (V)
H3	Hall effect sensor 3 (W)

4.4 Status indicators

Inside the terminal box there are 2 LED status indicators for signalling the status of the built-in limit/reference switches (LIM1/LIM2).



'Limit switch status indicator' image

Status indicator	Meaning
LED (Lim1, Lim2) glowing	Limit switch not activated (normal operating status)
LED (Lim1, Lim2) not glowing	Skid is in range of the limit switch

4.5 Measuring system

The ILD50-6 linear unit works with a contactless IMS measuring system. The version fitted inside the standard linear unit is the '5μ - incremental measuring system'. This has a simple resolution of 2520 impulses/pitch.

A measuring head scans a magnetically coded measuring tape and provides the data incrementally in accordance with the RS422 standard (sin/cos interface in development).

A key advantage compared to significantly more expensive optical systems is the lack of susceptibility to contamination caused by liquids, grease or dust. Other available versions can be supplied on request.

5 Commissioning, general information

The linear unit is commissioned after the respective drive modules have been assembled and the necessary cabling has been done.



The commissioning of the linear axle is dependent on the system components being used. It is imperative that only authorised and trained personnel commission the linear axle. The system components' commissioning documents must all be available and duly observed.

In addition, follow the relevant instructions in the documentation for the motor module, output stages and/or control system being used.

Proceed as follows to prepare the linear unit for commissioning:

Fix the linear unit securely in the intended position (wall, frame, floor etc.). Create the required connections (motor lines) to the control system.

If the unit has an integrated brake/clamp, ensure the relevant pneumatic supply (6 bar). Thereafter follow the control system's commissioning instructions.



Important: note here

that in the case of vertical installation the axle has to be held in position by a brake or counterweight, that only original motor cables are used and that the cables are run professionally, e.g. using cable carriers.



In the event of incorrect assembly (including putting a strain on the linear unit), cabling and/or commissioning, the status indicators of the control system being used cannot help in diagnosing the cause. There is an increased danger.

6 Fault list



Have any repairs to the product's electrical components carried out only by a qualified electrician. Otherwise there is a risk of death from electrocution!

Problem/fault	Possible cause(s)	Remedy
Axle does not travel the prescribed distance (too short or too long)	Encoder line count was not set correctly in the control system	➤ Check whether the correct encoder line count has been set (output stage). Note whether in the case of your output stage the single or quadrupled value has to be entered.
Control system reporting distorted phasing	The phase connections have been mixed up.	➤ Connect phases correctly to the output stage. (L1-1, L2-2, L3-3)
Limit switches' switching is inverted	Closing contacts have been defined as limit switches in the control system	➤ Define opening contacts as limit switches in the control system.
 Important: In an unfavourable electro-magnetic environment interference may occur.		

7 Technical data

7.1 ILD50-6 mechanical data

Parameters	Value	Unit
*a max. permissible speed	5	m/s
*v max. permissible acceleration	30	m/s ²
Noise level at 1.5m/s (1m away)	74	db
Protection type	IP20	
Storage temperature range	0 - 50	°C
Operational temperature range	10 - 40	°C
Relative humidity (w/o condensation)	<90	%
Dust	Clean workplace atmosphere	

7.2 ILD50-6 motor data

Parameters	Ref.	Value	Unit
Intermediate circuit voltage	U_{ZWK}	565	VDC
Continuous traction / current	F_N/I_N	285/6.0	N/A
Max. speed (I_N , 115V)	v_N	5.1	m/s
Max. traction / current ($2.5 \times I_N$)	F_{max}/I_{max}	675/15	N/A
Max. speed ($2.5 \times I_N$, 115V)	v_{FMax}	3.6	m/s
Max. idling speed (115V)	v_0	7.1	m/s
Traction	F_A	2000	N
Continuous power loss	V_N	105	W
Strand resistance (20°C)	R_{20}	0.74	Ω
Inductivity (strand, I_N)	L_d/L_q	15/15	mH
Inductivity (strand, $2.5 \times I_N$)	L_d/L_q	15/10	mH
Electrical time constant	T_d	20	ms
Pole pitch		25.2	mm
Flux linkage (effective)		0.21	Vs
EMC constant	E	18.4	V/(m/s)
Motor constant	k_M	47.5	N/A
Thermal resistance	R_{TH}	1.4	K/W

7.3 Measuring system data

Parameters	Value	Unit
Type	RS422	
Signals	A, /A, B, /B ¹⁾	
Supply voltage	5	VDC
Current Consumption	< 100	mA
Sensor – magnetic tape distance	0.4 – 0.7	mm
Dissolution	5 ²⁾	µm
Dissolution – increments (simple)	2520	Increments
Repeat precision	± 1	Increment(s)
Pulse spacing	0.55	µs
Working temperature range	-5 to +80	°C
Storage temperature range	-20 to +100	°C
Weight	70	g

¹⁾ optionally Z and /Z

²⁾ others on request

7.4 Temperature sensor data

The temperature sensors used are PTC resistors. These work as opening contacts. Upon reaching the critical temperature (in this case 130°C), the contact is opened.

Name	Value
Number of PTC (resistors)	3
Nominal response temperature	130°C
Max. operating temperature	200°C
Max. operating voltage	25V (per PTC resistor)
Max. power loss	640mW

8 Maintenance and cleaning

The ILD50-6 linear unit works with great precision and reliability. The only maintenance work needed involves lubricating and cleaning the linear unit.

The iLD50-6 linear unit is shipped with an initial greasing already done. The unit should then be re-lubricated at regular intervals. The length of the intervals will be based on the load levels and ambient conditions. For normal ambient conditions the grease needed is c. 1.6cm^3 / 2000km of distance travelled.

Use only lubricating greases as per DIN51825.

Dirt can settle or set hard on the unit. Clear the unit regularly of such residues.

Do not hose down the axle and do not use any aggressive cleaning agents.

9 Decommissioning / disposal



The symbol on the product or its packaging indicates that the product may not be disposed of with normal household rubbish.

Users have an obligation to hand the products / old appliances in at a collection point for waste electrical and electronic equipment. Separated collection and proper disposal of your products / waste equipment contributes to the conservation of natural resources and guarantees a recycling process that protects public health and avoids harm to the environment. Information on where you can find collection points for your waste equipment can be obtained from your city council, the local waste disposal operators and online.

10 CE conformity



The ILD50-6 linear unit is an 'incomplete machine' pursuant to MRL 2006/42/EC and as such CE-compliant (see declaration of incorporation from manufacturers isel Germany AG).

Being an 'incomplete machine', the product does not carry the CE mark. However, it nevertheless complies with the relevant European directives.

In relation to this product isel Germany AG herewith confirms conformity with the following directives:

- EU directive 2006/42/EC 'Machinery Directive'

- EU directive 2006/95/EC 'Electrical equipment designed for use within certain voltage limits'
/ 'Low Voltage Directive'

- EU directive 2004/108/EC 'Electromagnetic Compatibility (EMC)'

The declaration of incorporation for the ILD50-6 linear unit product is an integral part of these assembly instructions.

11 Support

If you have any questions or problems, please contact our hotline:



Service Hotline

+49 (0)6659 / 981-756

robotik-service@isel.com

For support cases and for setting controller / motor output stage parameters you will be advised by:

Frank Hecht (Dermbach plant - Thuringia):



Telephone: +49 (0)36964 84763



E-mail: Frank.Hecht@isel.com

Frank Jansen (Dermbach plant - Thuringia):



Telephone: +49 (0)36964 84765



E-mail: Frank.Jansen@isel.com



Internet: www.isel-germany.com

12 Warranty

Warranty:

Subject to the following provisos, we guarantee as the manufacturer, over and above the vendor's statutory liability for any defects, the flawless durability of isel Germany AG products when properly used.

The warranty extends to the functioning of isel Germany AG products and covers all defects that are verifiably attributable to errors related to fabrication or materials.

Disclaimer:

All replaceable individual parts, e.g. screws, connecting pins, etc., are excluded from this warranty. Furthermore, no liability will be accepted for any damage caused as a result of:

- Inappropriate and improper use
- Incorrect and negligent handling
- Non-adherence to installation and maintenance instructions, modifications or repairs carried out by the customer
- Detrimental effects to the material surface caused chemically, physically or by improper use, e.g. damage caused by sharp objects

We accept no liability for any consequential losses or damage.

Where material damage or personal injury is caused through improper use or failure to follow safety advice, we accept no liability. In such cases any right to make a warranty claim becomes null and void.

Warranty conditions:

Our warranty consists solely of the undertaking that within the warranty period we will at our discretion either repair the product free of charge for the first/end user or provide a free replacement.

Warranty period:

In accordance with our General Terms and Conditions (isel Germany AG's Ts&Cs, section VI) the warranty period is one year.

If you wish to make a complaint, please contact the vendor or manufacturer, citing the invoice or delivery note's document number.

Manufacturer: isel Germany AG
Bürgermeister-Ebert-Straße 40
D-36124 Eichenzell

 Tel.: +49 (0)6659 9810
 Fax: +49 (0)6659 981776
 E-mail: automation@isel.com
 Internet: www.isel-germany.com

13 Declaration of incorporation pursuant to MRL 2006/42/EC

Declaration of incorporation pursuant to EC Machinery Directive 2006/42/EC, Appendix II B

The manufacturer isel Germany AG
 Bürgermeister-Ebert-Straße 40
 D-36124 Eichenzell

herewith declares that the product (**incomplete machine**)
product name: **isel/ILD50-6 linear units with direct drive**

conforms to the **safety and health-related requirements** underlying EC Machinery Directive 2006/42/EC, Appendix I.

The following EU directives also relevant to this product have been applied:

EMC Directive 2004/108/EC
Low Voltage Directive 2006/95/EC

The following harmonised standards have been applied:

EN ISO 12100-1:2003 Safety of Machinery - Basic terms, general design principles - Part 1: Basic terminology, methodology
EN ISO 12100-2:2003 Safety of Machinery - Basic terms, general design principles - Part 2: Technical Guidelines EN 349:2008-09
EN 14121-1:2007 Safety of Machinery – Minimum distances to avoid squashing any parts of the body
EN 14121-1:2007 Safety of Machinery – Risk assessment – Part 1: Guidelines
EN 60204-1:2006 Safety of Machinery - Electrical equipment of machines - Part 1: General requirements

The **technical documentation** for this incomplete machine was produced based on Appendix VII, Part B. The manufacturer undertakes to send these technical documents electronically to relevant national authorities upon request.

The authorised person for compiling the technical documents / producing the assembly instructions / declaration of incorporation is: **Andreas Trabert**.

The product (incomplete machine) is intended to be fitted into a machine or assembled with other incomplete machines to create one machine as per the MRL 2006/42/EC, Article 1, Section (1), letter a.

Taking the incomplete machine (product) into operation is not permitted until the machine into which it is has been fitted or of which it represents a component conforms to the provisions of all relevant directives (in particular MRL 2006/42/EC) and this (complete) machine has a CE mark.

City, date: Dermbach, 1st September 2011

Hugo Isert, Director

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