Operating Manual

Control SM 8

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Control SM8

The control SM8 is operated with the keypad SM7 and is very versatile. Depending on the assembly, 1 to 4 motor-driven LN-axes can be connected.

The control SM8 is also compatible with the control systems SM5, SM6 and SM7.
Up to eight LN-controls can be networked in-line.

The control SM7 features 2 operating modes:

A: The control SM8 is used in combination with one keypad.
B: The control SM8 is integrated into an existing SM5/SM6/SM7 or SM8 system.

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Safety instructions

1.1 General instructions

The manipulators and moving-tables are designated for the positioning of repositories, microscopes or tools.
(e.g.: capillaries, measuring electrodes, stimulating electrodes… etc.)

For a safe function of the manipulators pay attention to the operating and assembly manuals.
Our service team will assist you, if additional information is required.

Comply with the security advice of this manual.

The intended protection can be endangered if the device is not used according to the operating manual of the producer.

1.2 User instructions

Do not touch the motor-driven manipulators during the positioning process in order to avoid injuries and bruises, and to avoid damaging the stated functions of the device.

As a result of the modular, individually constructed device by the customer, different areas can be danger zones with an increased risk of injury or wounds.

Avoid bringing your face too close to the moving devices,
because the cramped space in combination with faulty operation of the manipulators can easily lead to the breakage of glass and glass splinters in the eye. The provided protective covering must be assembled according to the operation manual.

1.3 Transport instructions

The manipulators and moving tables are transported in a special packing
in order to avoid possible damages during transportation.

1.4 Service and maintenance instructions

The manipulators and moving tables are maintenance-free.

In order to maintain the functional efficiency of the the devices, they must be protected from humidity and excessive heat.
Strong jerks can lead to an incorrect adjustment which limits the functional efficiency, with the exception of the activities mentioned in the operating manual or if instructed by our service team. No personal changes are allowed.

1.5 Installation location instructions

Install the devices at locations with adequate air supply for aeration of the equipment.

The main control switch of the device has to be easily accessible at all times.

1.6 Disposal instructions

Broken devices or those no longer needed do not belong in the household rubbish!
Dispose of them according to the local legal regulations.
If in doubt, ask the service team of Luigs & Neumann for help.

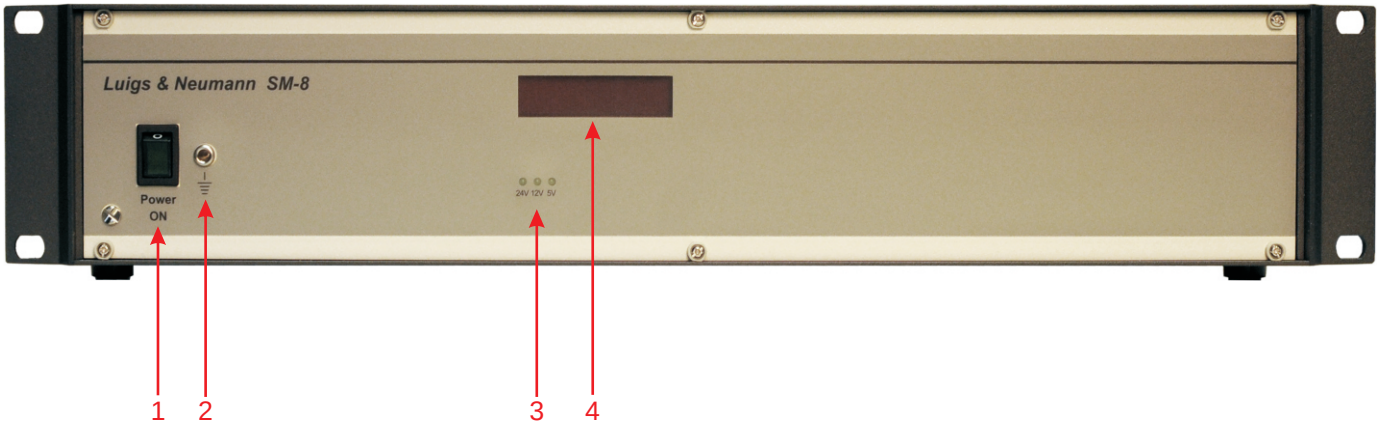
1.7 Guarantee instructions

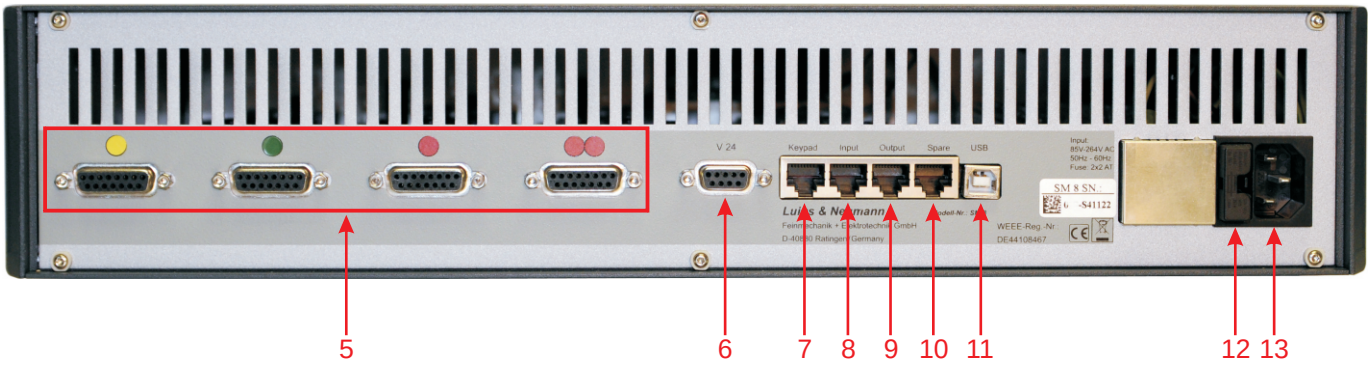
The producers are not liable for damages caused by unauthorized interference.
Unauthorized interference terminates all warranty claims.

1.8 Repair and readjustment instructions

The devices must be packed according to the legal regulations. Contaminated devices must be cleaned beforehand if possible, otherwise a user declaration must be provided in which the substance is described and the absolute safety of the health of human-beings is confirmed.

Overview: Control SM8





1 Power switch.....: On / off switch of the control

2 Earth plug socket.....: Earth the control box

3 Display .....: Display

4 LED-Display.....: Power supply 5v, 12V and 24V

5 Motor connection 1 - 4 .....: Connection for motor-driven LN-axes

6 V.24 .....: Configuration of the controller and Interface control

7 Keypad.....: Plug for keypad SM7

8 Input.....: Link SM8 with other controls

9 Output.....: Link SM8 with other controls

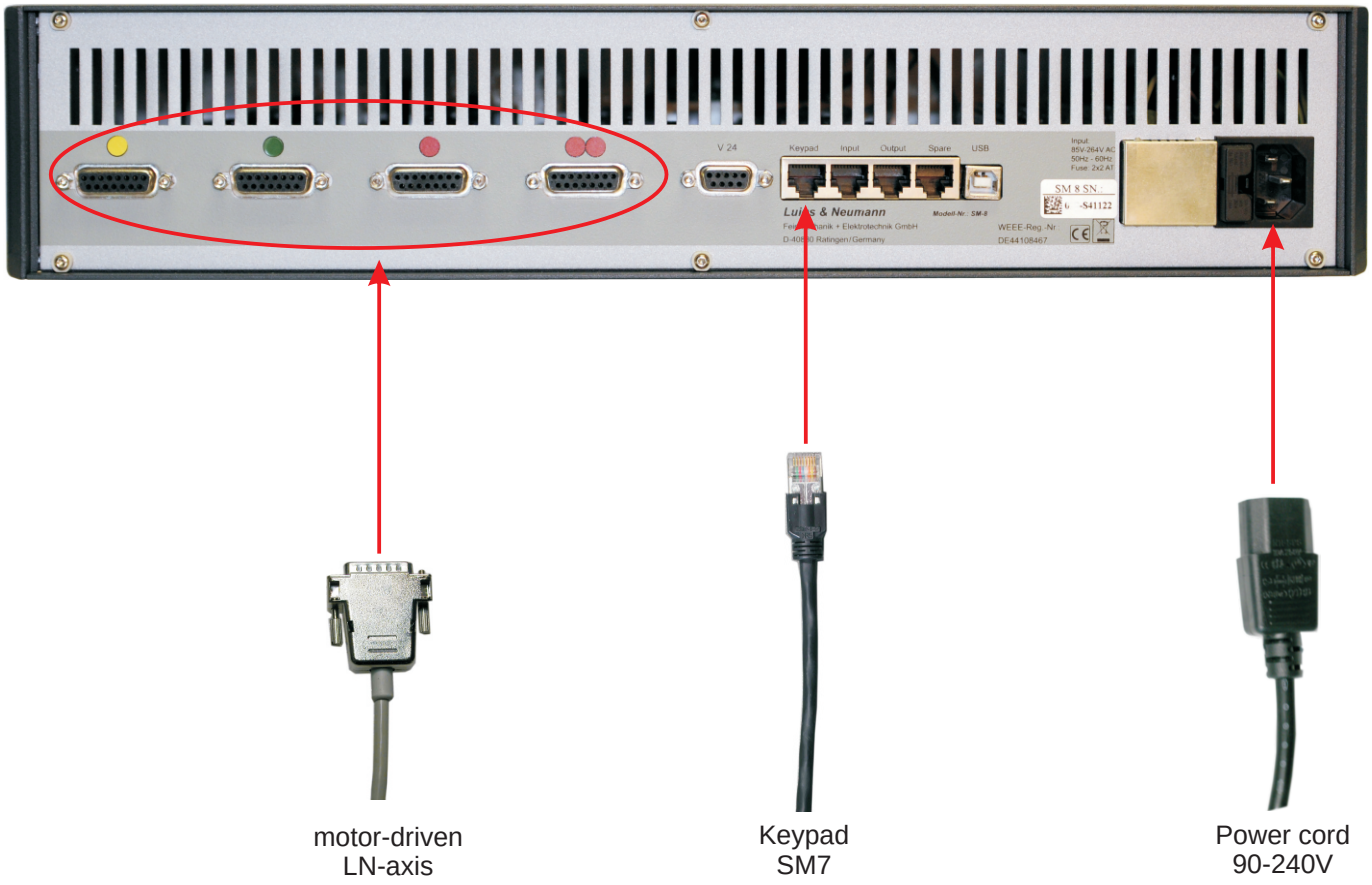
10 Spare.....: Free

11 USB .....: Configuration of the controller and Interface control

12 Fuse insertion.....: Fuses: 2x T2A

13 Power input.....: 90-240VAC

Start up of the control SM8



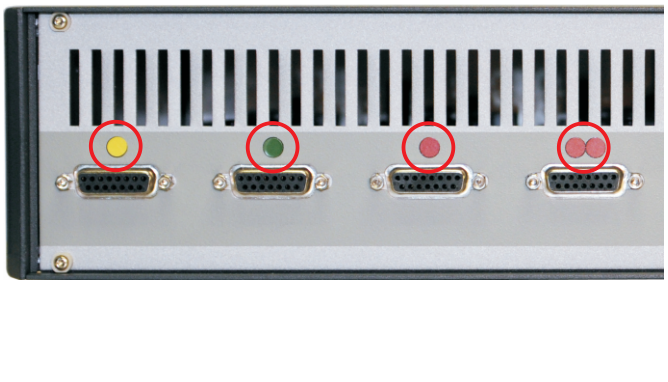
Connect the keypad and manipulators, only in the off-mode.

The keypad SM7 can only be connected to a control box with the adress 113.

* Connect the control SM8 with the power cord.

* Connect keypad SM7 with the keypad cable on the socket “Keypad“.

* Connect the motoric LN-axes with the correspnding motor connections①...④ of control SM8. The motor connections and the LN axes are colour-coded.



Start up of the control SM8

* Switch on the control SM8 over the power switch [1].

The display shows:

SSK Ver.:0.1.4
Searching stages

The program version of the Interface card.

System ready
Adr:113-Master

The control address is shown.

The control is ready for operation.

Implement control SM8 into an existing LN control system

The control SM8 can be cross-linked with other controls (SM5, SM6, SM7 and SM8).
Up to 8 controls can be linked which can be operated with the keypad SM7.
The first control which is connected with the keypad must have the address 113 and is labelled as Master control.
All subsequent additional controllers have the address 114 and are labelled as slave controls.
Each controller has to have an individual address. No address may be repeated.

Master control has only got the address 113.
Slave control begins with adress 114 and ends with adress120.

The actual control address is shown on the display of the controlbox SM7.

S	y	s	t	e	m		r	e	a	d	y			
A	d	r	:	1	1	3	-	M	a	s	t	e	r	

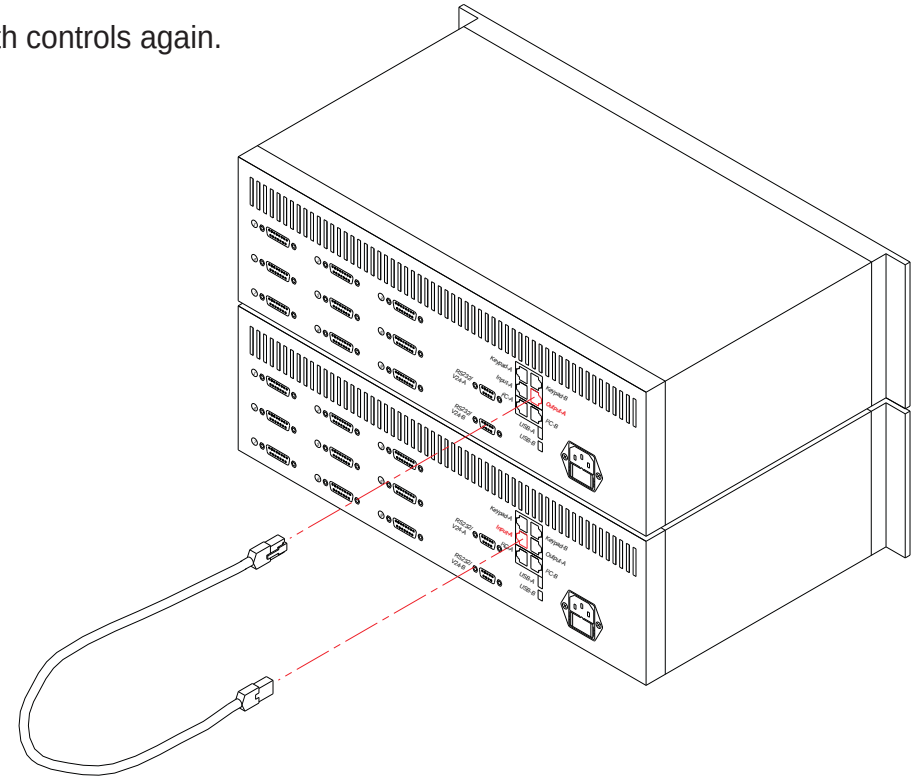
The control address can be changed by using the programme
„ **LN-SM7-Configuration Tool** “.

Cross-link a Slave control with a Master control

- Switch off both controls.

- Plug one end of the LAN cable in the Output bush of the Master control and the other end in the Input bush of the Slave control.

- Switch on both controls again.



Master = The first connected controls in the network-chain,
set to adress 113 and attached to the keypad SM7.

Slave = All following controls in the network-chain.
The slave control starts at address 114.
One master control can be networked with up to seven slave controls.
No slave control can be connected with a keypad.

LN-SM7 ConfigurationTool

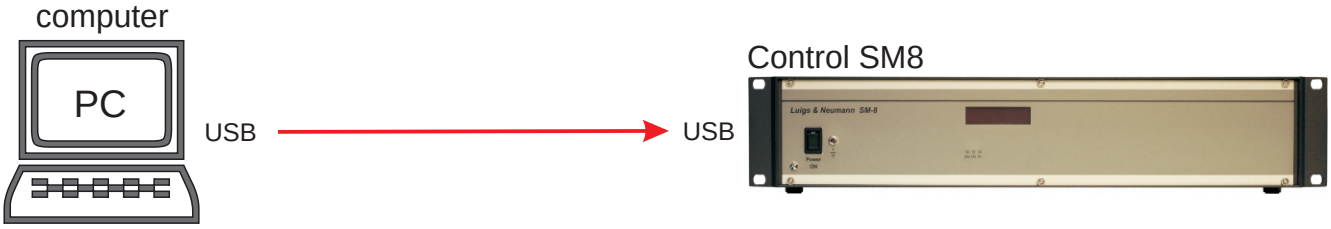
Each control SM7 has fixed physical addresses according to the number of motor drivers. These physical addresses are related to virtual addresses. The configuration of the devices follows automatically. Altogether eight controls can be cross-linked. This complies with maximum 72 motor drivers / motor-driven axes.
The programme "*LN-SM7 ConfigurationsTool*" is used for the configuration of the virtual addresses. A condition for using installed at Microsoft .NET Framework 4 Extended or higher. Check under System control (Systemsteuerung) .....Programme (Programme).

Should a further control be connected with a control SM8, the address on the additional control must be changed. The first control which is connected with the keypad has got the label Master control and the address 113. The subsequent controls have got the label Slave control and the addresses from 114 to 120.
No address may be repeated.
The control address can be changed by using the "LN-SM7 ConfigurationTool"

Changing address

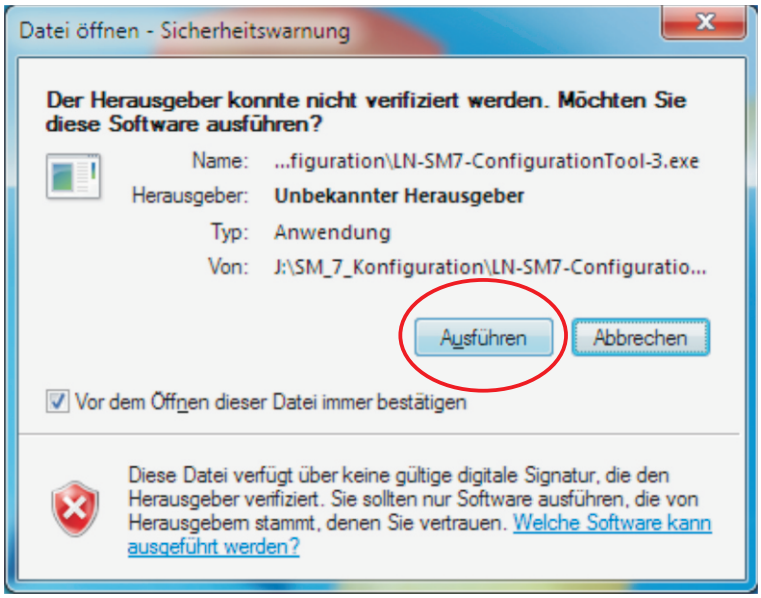
- Connect the controller to the computer over USB and switch on the control SM8

When addresing the controller to the computer,
the control may not be connected with another control.

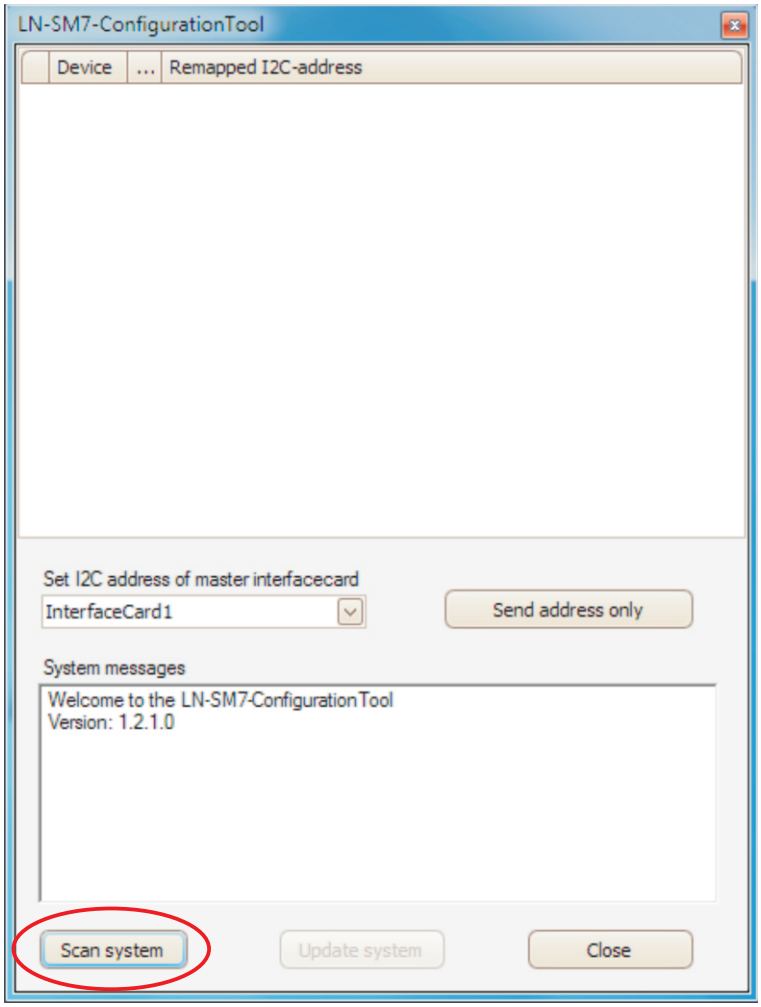


Setting the control address

Start “**LN-SM7-ConfigurationToll**“



Click on “**Ausführen**“

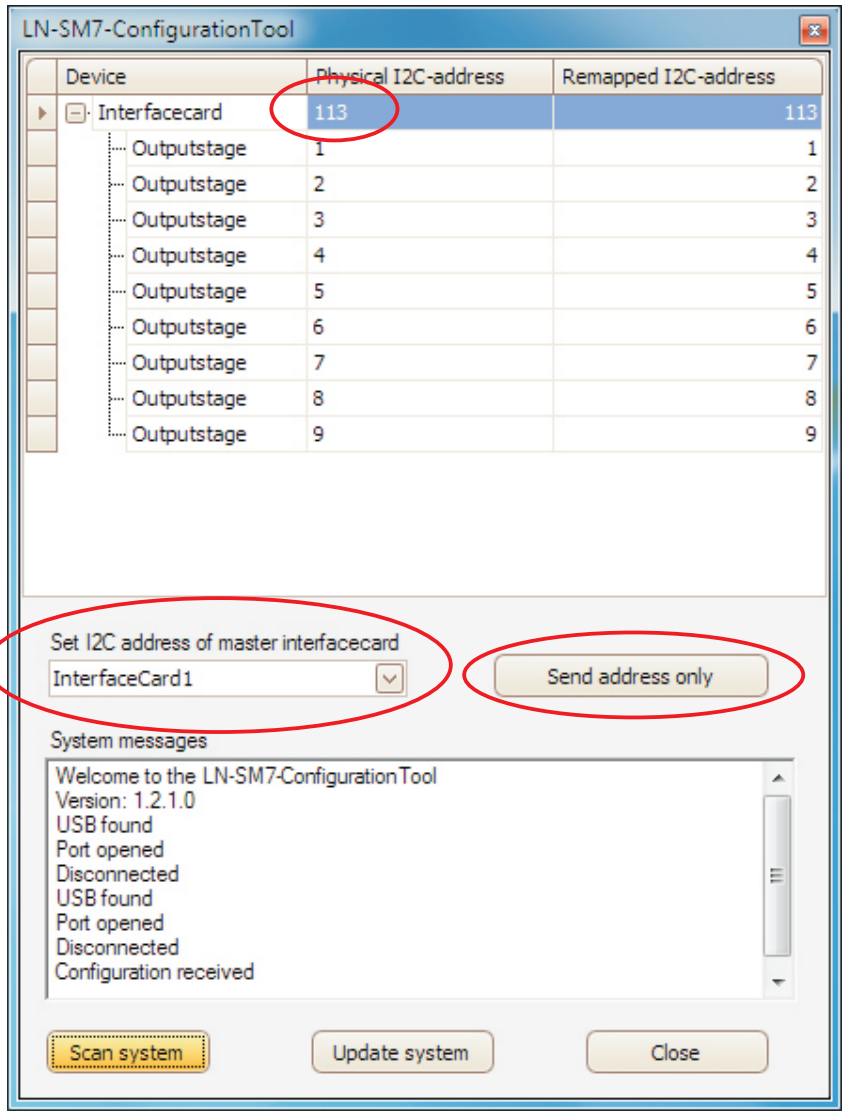


Click on “**Scan system**“

Setting the control address

The result is shown:

Example: Control SM7 with 9 motor-driver and the adress 113



Relation of addresses:
InterfaceCard 1 = **113** (Master)
InterfaceCard 2 = **114** (Slave)
InterfaceCard 3 = **115** (Slave)
InterfaceCard 4 = **116** (Slave)
InterfaceCard 5 = **117** (Slave)
InterfaceCard 6 = **118** (Slave)
InterfaceCard 7 = **119** (Slave)
InterfaceCard 8 = **120** (Slave)

The actual address is shown in the line “Intertfacecard“.

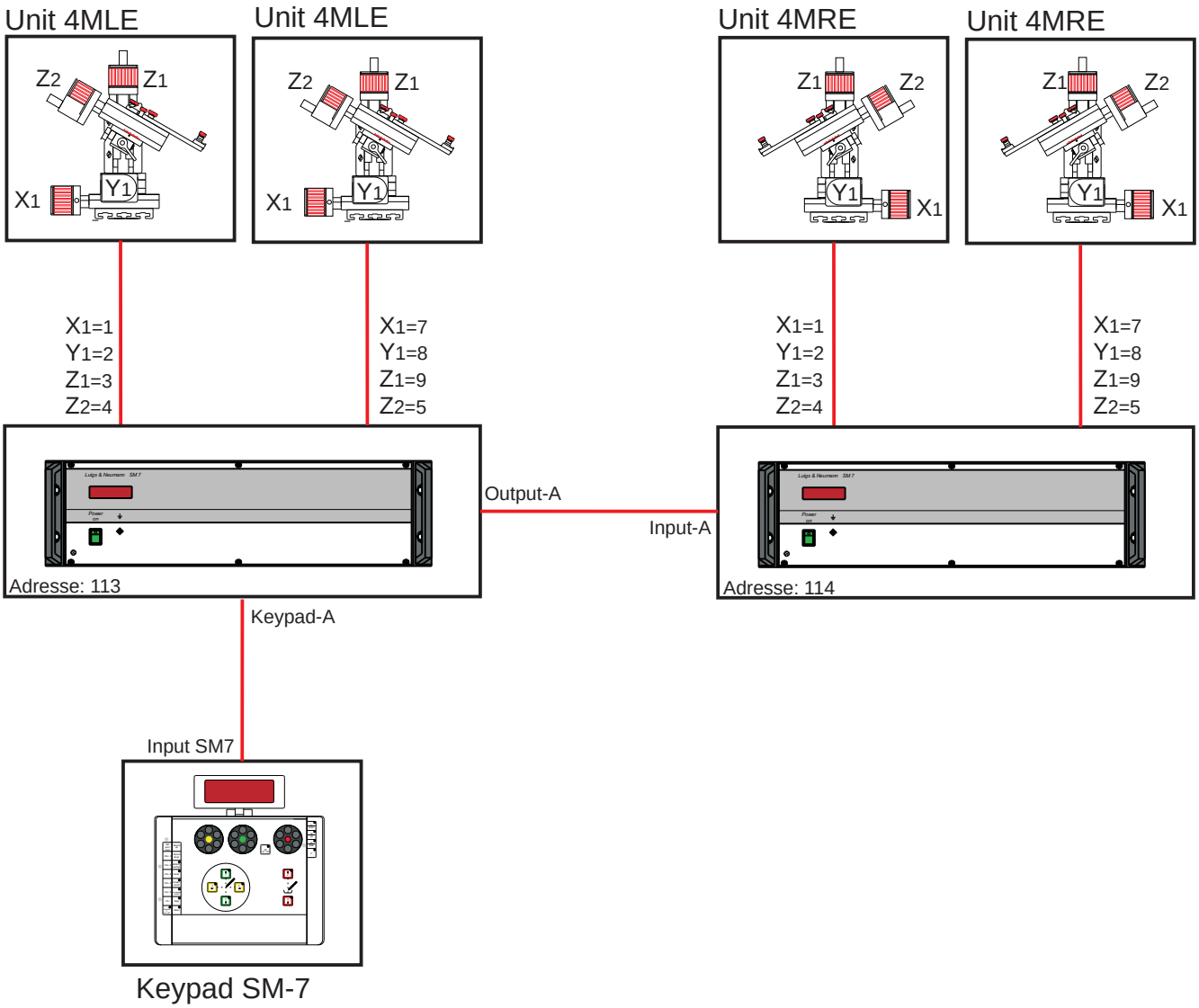
In the line “**Set I2C adress of master interfacecard**“ the desired address is set and confirmed by clicking “**Send address only**“.

After the restart of the control SM7, the new address is taken over.

Example: Address the control on 114 and configauration the motor connections

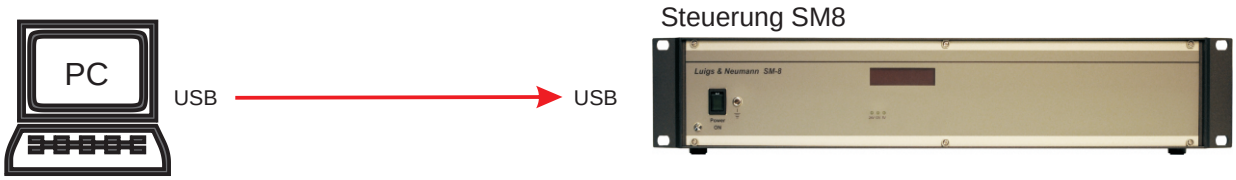
Example:

Two controllers with eight motor-drivers should be installed for a work station with four 4-axes manipulator units.
The first control which is connected with the keypad Sm-7 must have the address 113 and the second control the address 114.

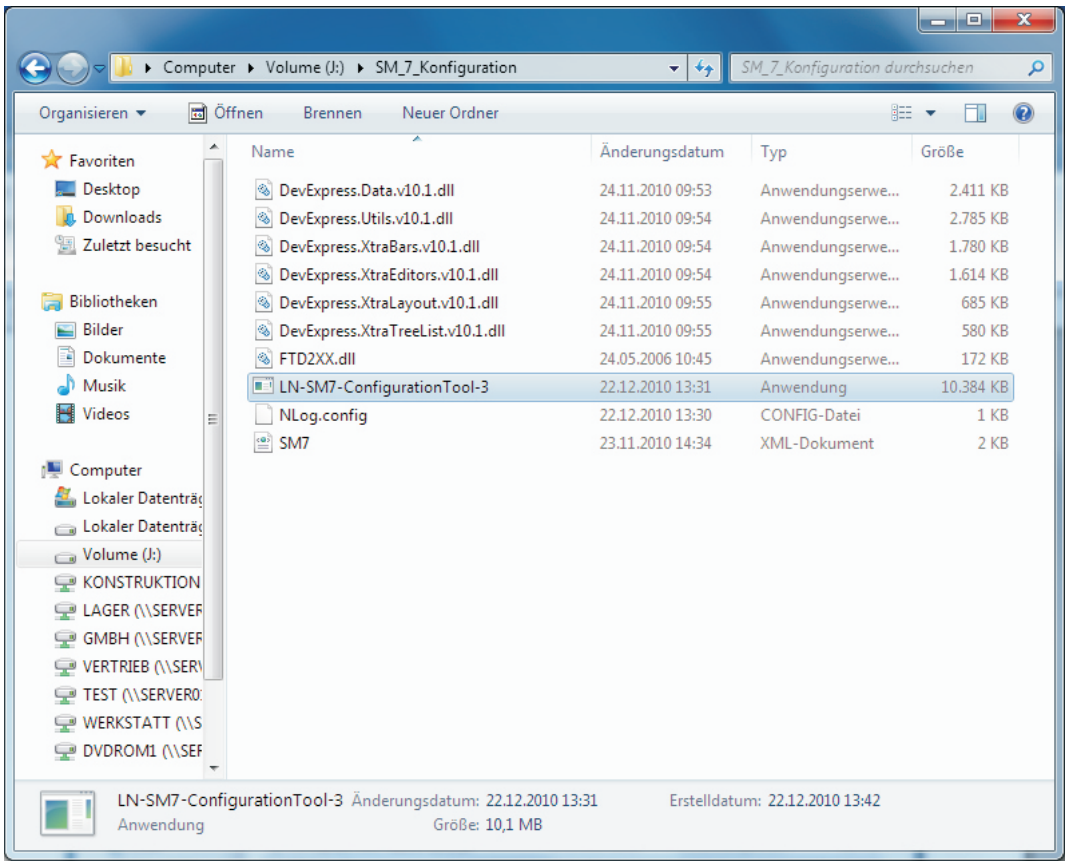


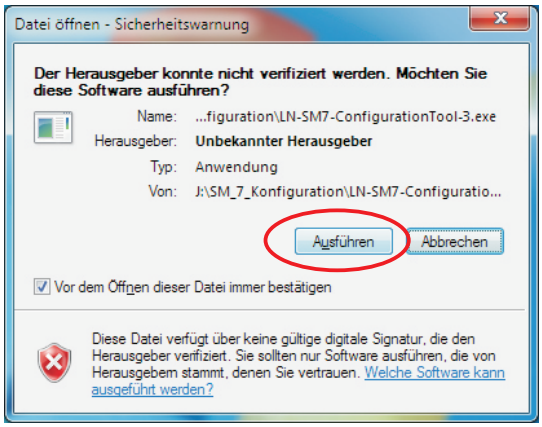
Example: Address the Slave-control on 114

Connect the controller to the computer over USB.



Select and open the programme “**LN-SM7-ConfigurationTool**“

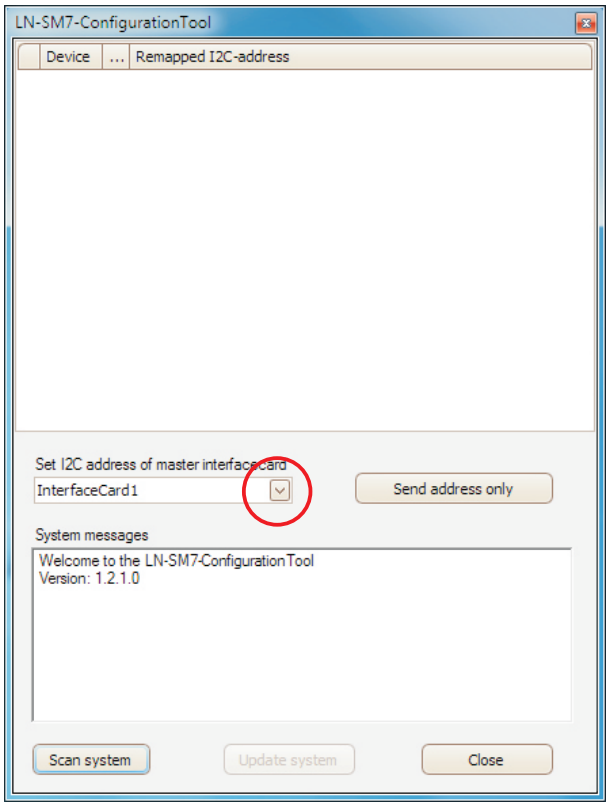


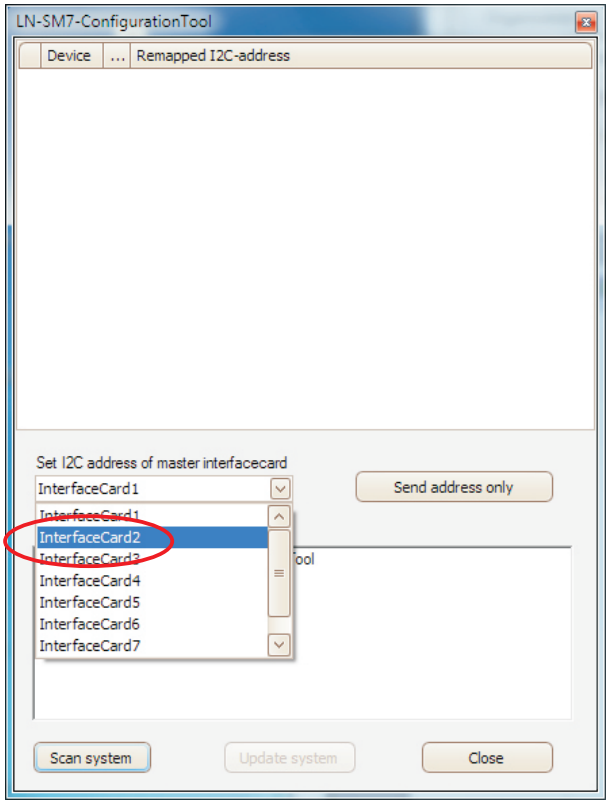


Click on “**Ausführen**“

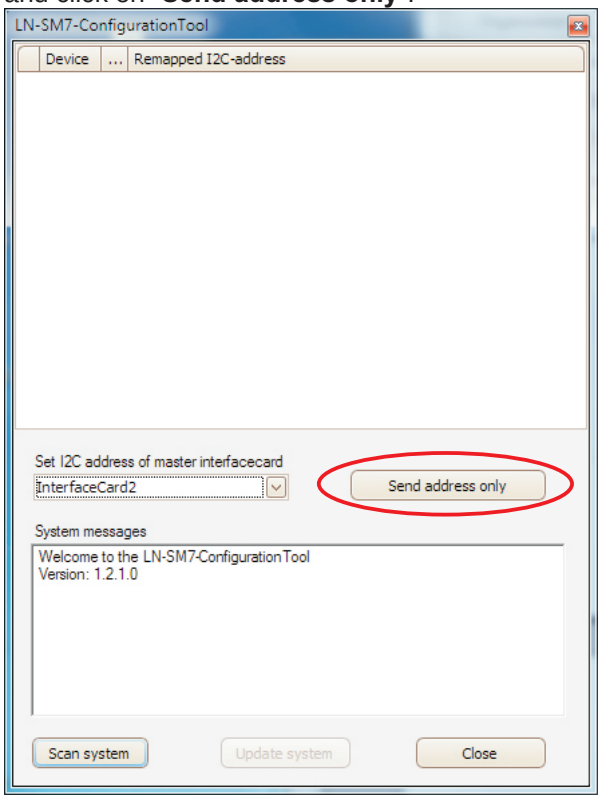
Example: Address the Slave-control on 114

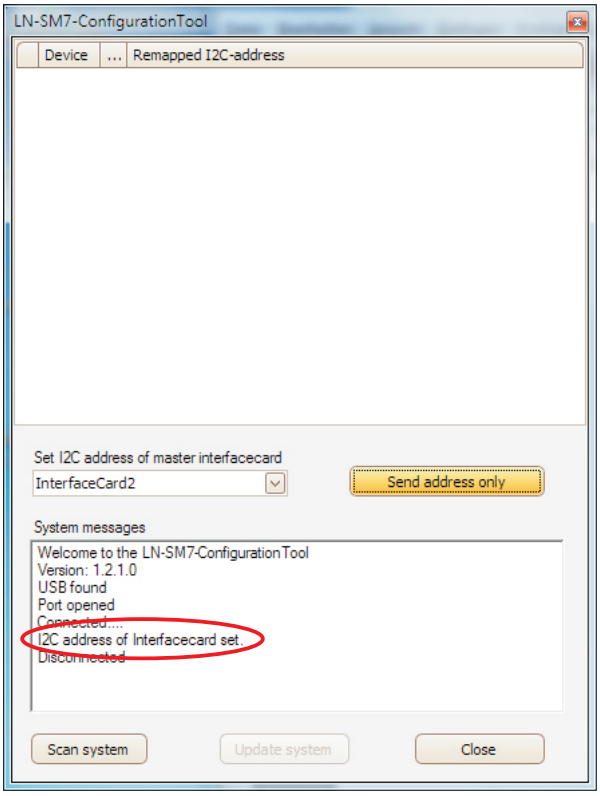
Set the address 114 for the secand control:
Additionally, in the line „ **Set I2C address of master interfacecard**“ select InterfaceCard2





and click on “**Send address only**“.



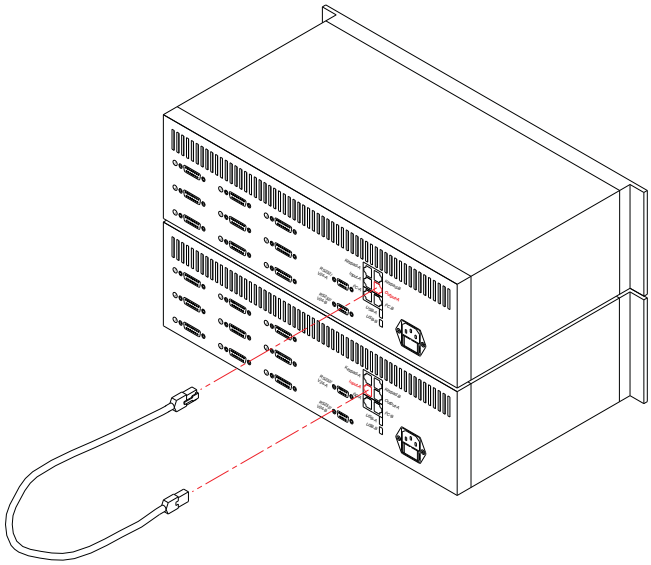


In the line “**System messages**“
the confirmation of changes is shown:
I2C address of Interfacecard set.

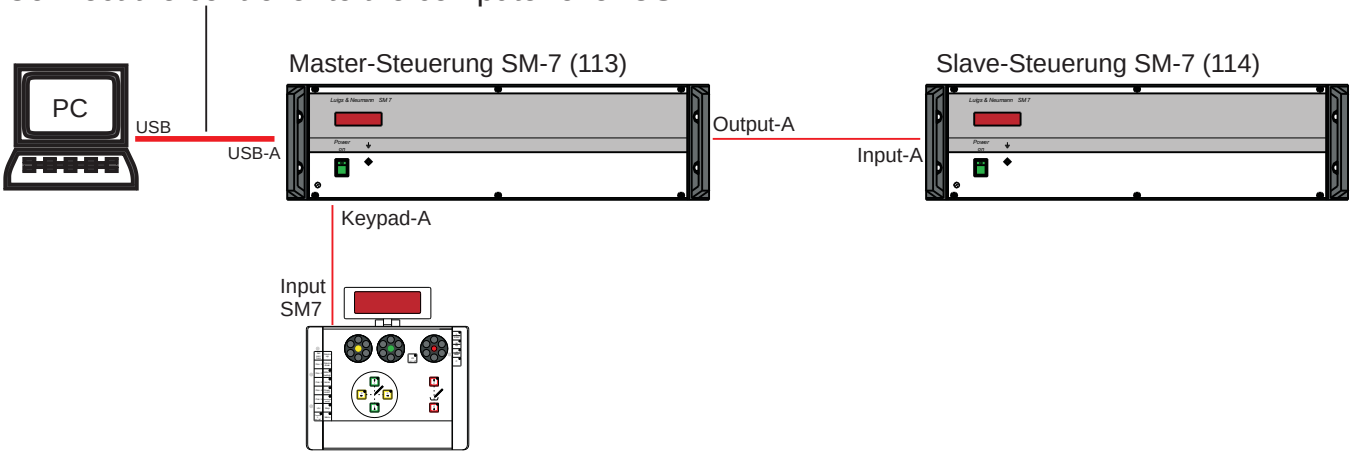
Example: Configuration motor connections

- Close the “**LN-SM7-ConfigurationTool**“ and switch off both controls.

- Plug one end of the LAN cable in the “**Output“** socket of the master control and the other end in the “**Input“** socket of the slave control.



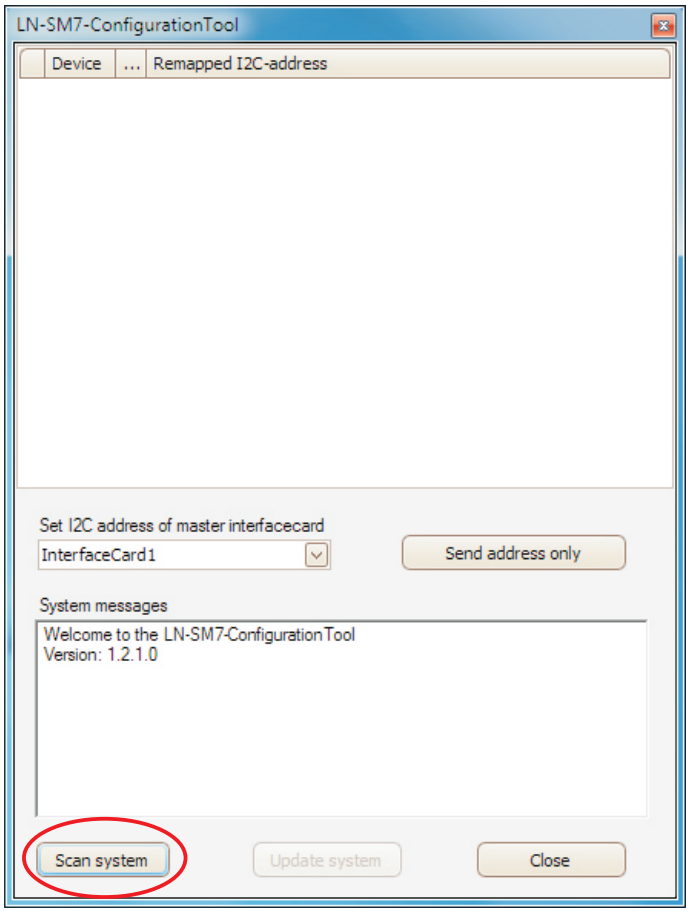
Connect the controller to the computer over USB

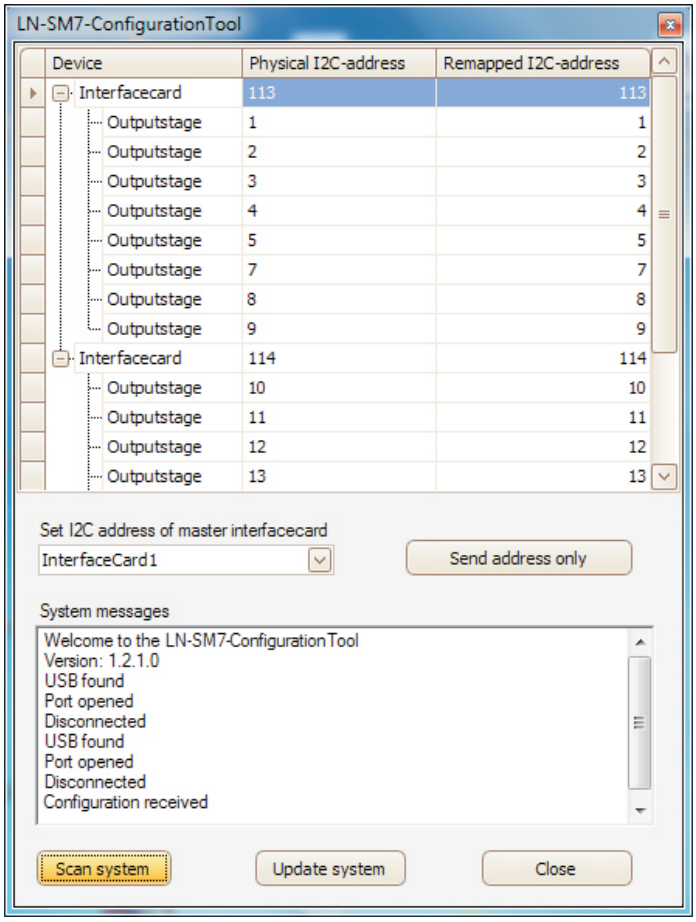


Switch on both controls and start “*LN-SM7-ConfigurationTool*“.

Example: Configuration motor connections

Click “**Scan system**“





The configuration of the motor connections is shown.

Example: Configuration motor connections

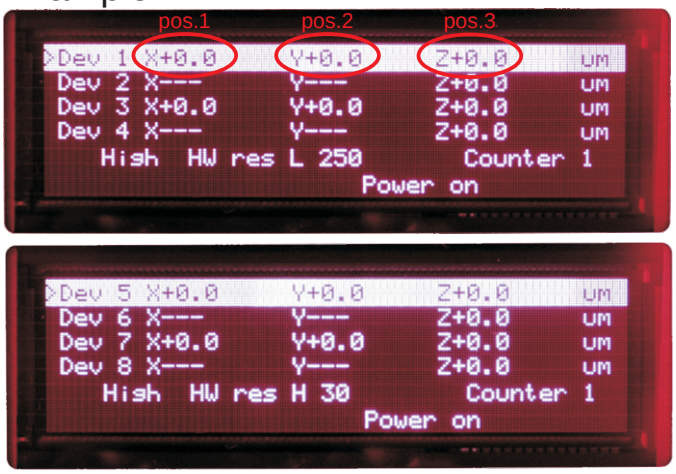
The keypad SM-7 should show the following virtual configuration.
For that the single motor connections in the control SM7 must be set up with the programme “ LN-SM7-ConfigurationTool“.

Keypad SM7: Display position-No.

Dev 1	X 1	Y 2	Z 3
Dev 2	X 4	Y 5	Z 6
Dev 3	X 7	Y 8	Z 9
Dev 4	X 10	Y 11	Z 12
Dev 5	X 13	Y 14	Z 15
Dev 6	X 16	Y 17	Z 18
Dev 7	X 19	Y 20	Z 21
Dev 8	X 22	Y 23	Z 24

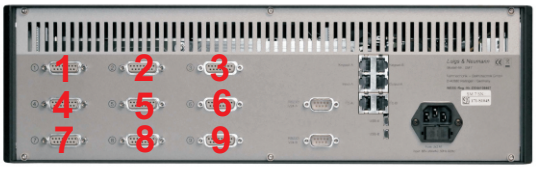
Virtual co-ordination of display position

Example:

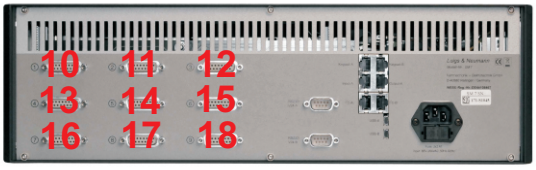


	Axes	Remapped I2C-adress Display-position Keypad SM-7	Physical I2C-adress Motor connection Control SM-7
1. Unit MLE	X1	1	1
	Y1	2	2
	Z1	3	3
	Z2	6	4
2. Unit MLE	X1	7	7
	Y1	8	8
	Z1	9	9
	Z2	12	5
3. Unir MRE	X1	13	10
	Y1	14	11
	Z1	15	12
	Z2	18	13
4. Unit MRE	X1	19	16
	Y1	20	17
	Z1	21	18
	Z2	24	14

Physical co-ordination of motor connection
1. control: Master

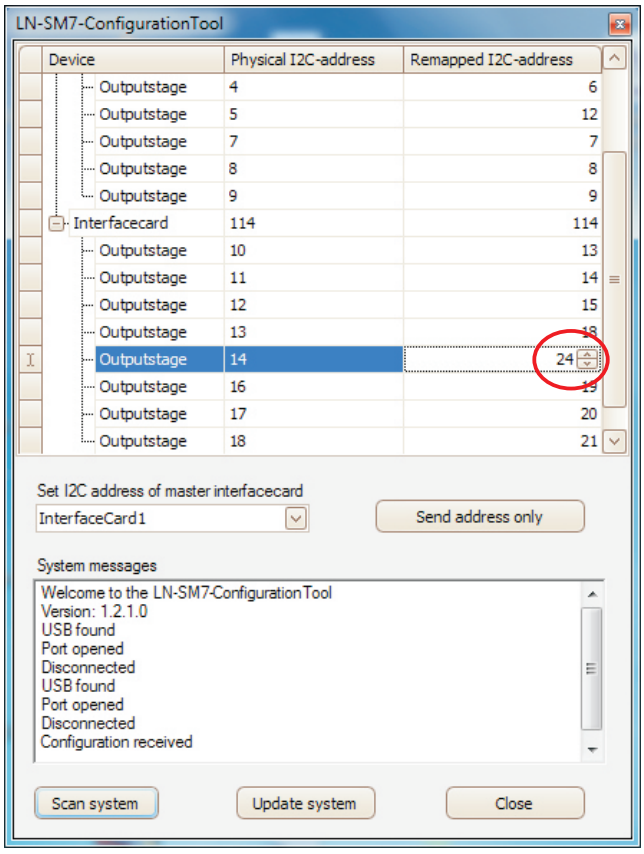


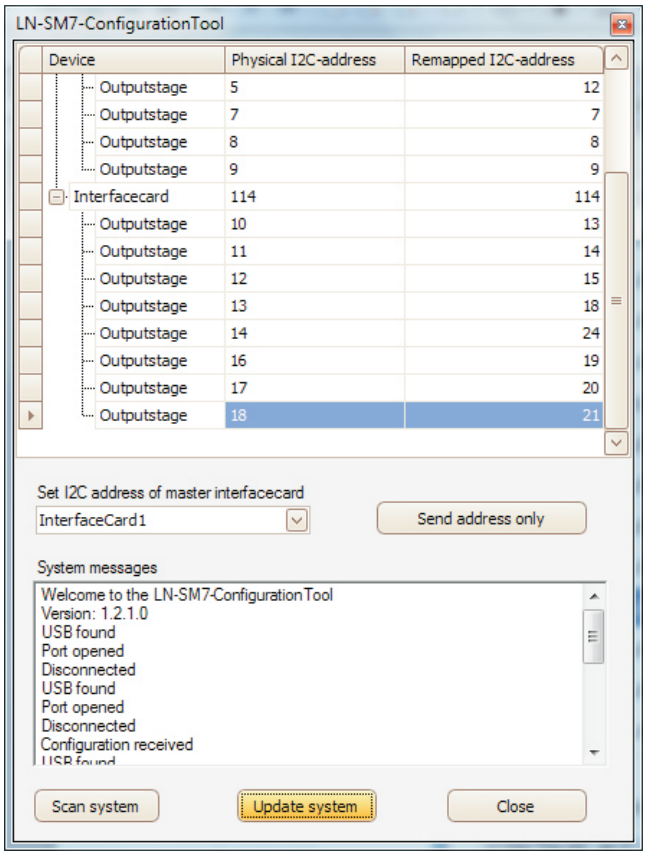
Physical co-ordination of motor connection
2. control: Slave



Example: Configuration motor connections

Enter the desired virtual co-ordination of the single axes in the column “Remapped I2C-address“





Click “Update system“

Switch both controls off and then on again.
The desired axes configuration is shown on the display of the keypad.

Appendix - A

Vonnection line LN V.24

SM-8: RS232 / V.24
9pol. D-Sub, pin

SM-8
RS 232 / V.24
9pol.
D-Sub
bushing

PC
RS 232 / V.24
9pol.
D-Sub
bushing

PC: RS232 / V.24
9pol. D-Sub, pin

PIN	Description
1	- free -
2	- free -
3	GND
4	RXD
5	- free -
6	- free -
7	- free -
8	- free -
9	TXD

PIN	Description
1	- free -
2	RXD
3	TXD
4	- free -
5	GND
6	- free -
7	- free -
8	- free -
9	- free -

Technical data

Casing	: 19“ / 2HE, 315mm deep
Exterior dimensions	: 449mm x 89mm x 315mm
Weight	: 4,5kg
Input voltage	: 85V – 264V AC, (47-63Hz)
Fuse	: 2x T2A
Performance	: 100W
Current	: max. 1,3A
Inrush current (100V/200V AC)	: 14 / 28A
Ambient temperature	: 0°C – 40°C
Relative humidity	: 90%

Applicable law:
EMV Richtlinien 04/108/EG
Niederspannungsrichtlinie 72/23/EGW
Ergänzt durch 93/68/EWG