

Operating Manual

Control SM5



Luigs & Neumann GmbH
Boschstrasse 19 * D-40880 Ratingen * Germany
Tel. : +49 2102 947000 * Fax.: +49 2102 442036
www.luigs-neumann.com

Control SM5

The control SM5 is very versatile and configurable.

Several different key panels (SM5, SM6 or Trackball) can be attached.

Depending on equipment one to six motor-driven LN-axes can be attached.

The control SM5 is also compatible with the control systems SM5-8, SM5-9 and SM6.

Up to eight LN-controls can be networked in-line.*

* Only with key panel SM5.

Contents

Security advice.....	Page 3
Overview.....	Page 4
Wiring of control SM5.....	Page 5
Starting up.....	Page 6
Cross-link the control with other control units.....	Page 7
Appendix A, change addressing.....	Page 8 to12
Appendix B, pin assignment V.24.....	Page 13
Technical data.....	Page 14

1 Security advice

1.1 General advice

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 regard the operating and assembly manuals. Our service team will assist you, if additional information is required.

Especially comply with the security advices of this manual.

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

1.2 User advice

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

As a result of the modular, individually by the customer created arrangement it is possible that miscellaneous areas with increased risk of injury (especially bruises) exist.

Avoid bringing your face to close to the moving devices, as the cramped arrangement in combination with faulty operation of the manipulators can lead to breakage of glass. This can lead to severe injuries (e.g.: splinters of glass in the eye)

The provided protective covering has to be assembled accordingly to the operation manual.

1.3 Transport advice

The manipulators and moving tables are transported in a special packing in order to avoid damages and inaccuracies of the adjustment.

1.4 Service and maintenance advice

The manipulators and moving tables are maintenance-free.

For the maintenance of the operation of the devices, protect them from humidity and excessive heat. Fierce crushes can compromise the correct adjustment, which lowers the functionality of the devices.

No internal interferences are allowed, with exception of the activities mentioned in the operating manual or if instructed by our service team.

1.5 Installation location advice

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 time.

1.6 Disposal advice

Broken or no longer required devices do not belong in the household garbage! Dispose of them accordingly to the local legal regulations. In case of doubt ask the service team of Luigs & Neumann for help.

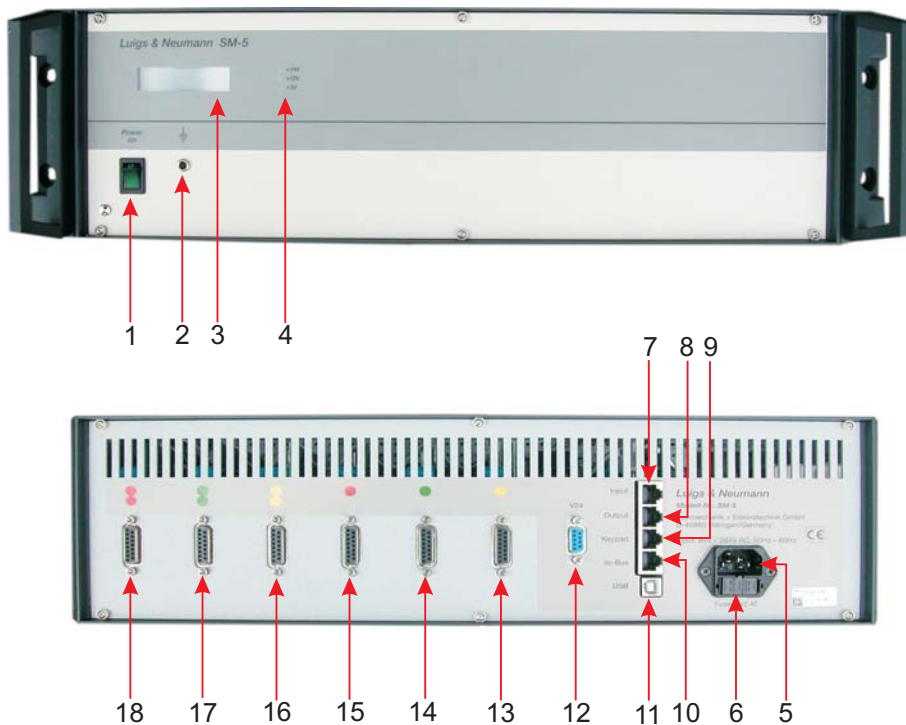
1.7 Guarantee advice

The producers are not liable for damages caused by not authorized interferences. Unauthorized interferences terminates all warranty claims.

1.8 Repair and readjustment advice

The devices have to be packed according to the adequate regulations. Contaminated devices have to be cleaned if possible. If this is not possible, please provide a user declaration which describes the substance and affirms the harmlessness for humans.

Overview: Control SM5

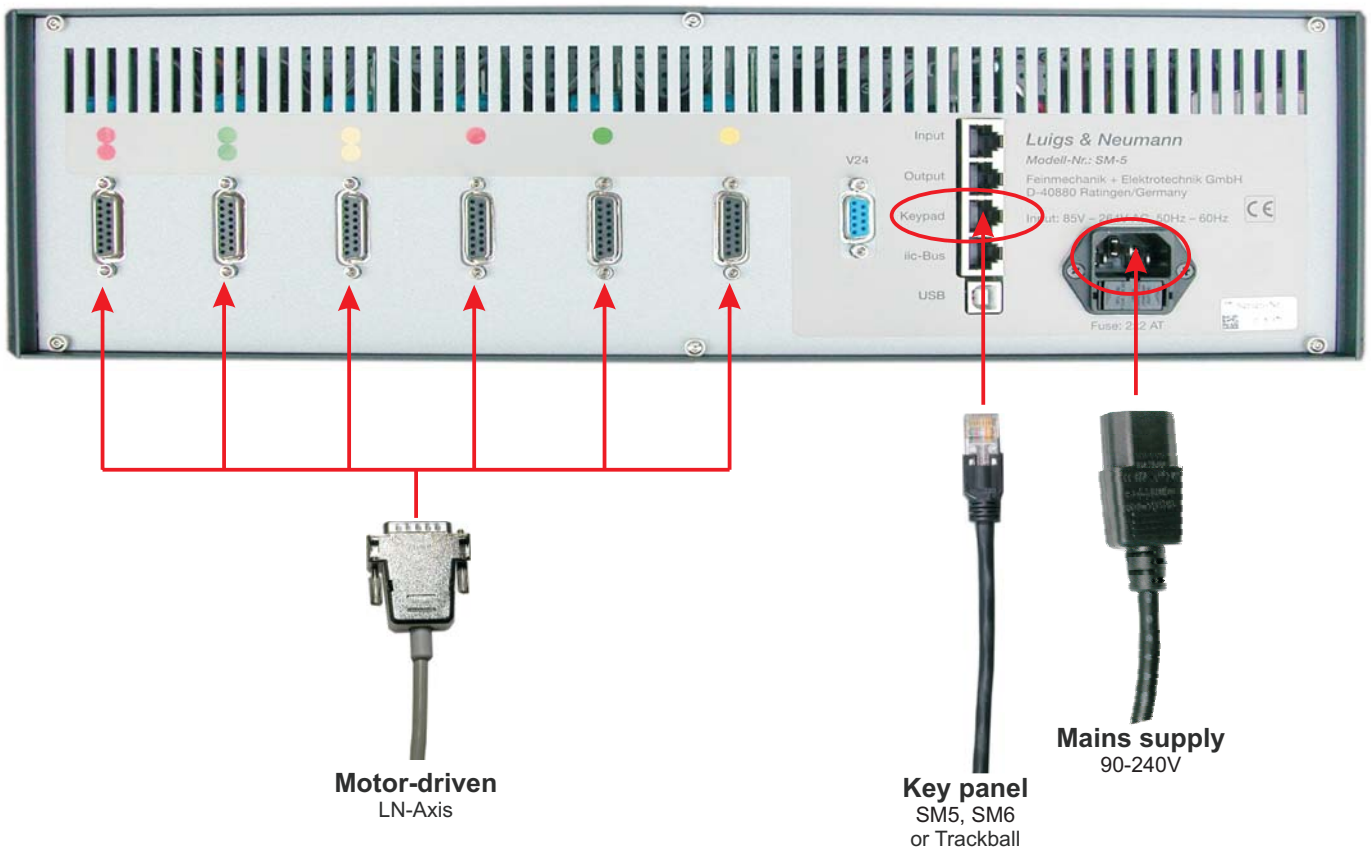


- 1 **Power switch**..... On/off switch of the control
- 2 **Earthing plug socket**..... Earth the control
- 3 **Display**..... Display
- 4 **LED-Display**..... Supply Voltage +5V, +12V, +24V

- 5 **Power input**..... 90-240VAC
- 6 **Fuse insertion**..... Fuses: 2x T2A
- 7 **Input SM5/6**..... Link SM5 with other control
- 8 **Output SM5/6**..... Link SM5 with other control
- 9 **Keypad**..... Plug for key panel SM5, SM6 or trackball
- 10 **I²C-BUS**..... Add-on for additional devices
- 11 **USB**..... Configuration of the interfacecard, Update of control and key panel
- 12 **V.24**..... Configuration of the interfacecard, Update of control and key panel

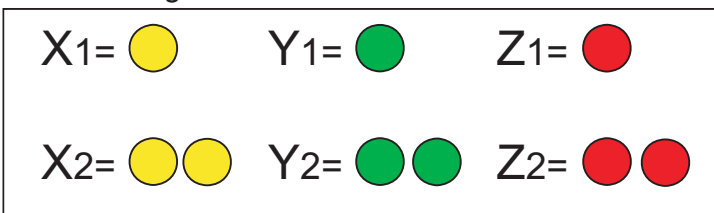
- 13 **Motor connection X1**..... Connection for motor-driven LN-axis
- 14 **Motor connection Y1**..... Connection for motor-driven LN-axis
- 15 **Motor connection Z1**..... Connection for motor-driven LN-axis
- 16 **Motor connection X2**..... Connection for motor-driven LN-axis
- 17 **Motor connection Y2**..... Connection for motor-driven LN-axis
- 18 **Motor connection Z2**..... Connection for motor-driven LN-axis

Wiring of Control SM5



- * Only re-wire the control in off-state.
- * Connect power input plug [5] of the control SM5 with the mains cable to the mains supply.
- * Connect the key panel with the key panel cable to the keypad plug [9].
(Key panels can only be connected to controls which are set to address 10 (master).)
- * Connect the motor-driven LN-axes with the according motor connections [13....18] of the control SM5. The motor connections are color-coded.

Color-coding of the motor connections:



Starting up

* Activate the control SM5 by pressing the power switch [1].

* The LED-Display [4] confirms that the supply voltages 5V, 12V and 24V are ready-to-operate.

The display shows:

```

initializing
Please wait
    
```

```

Luigs & Neumann
Germany
    
```

```

Tel +49 21 02 94 70 00
Fax +49 21 02 44 20 36
    
```

```

SSK V2.8.3
own address 10
    
```

The program version of the IFC* is shown and additionally which address is configured (10 = Master, 20 up = Slave).

* IFC = Interfacecard

```

Loader V1.2.0
    
```

The active bootloader version for updates is displayed.

```

Keyboard found
    
```

Indication that the control is connected.

```

Number of Cubes
detected: 0
    
```

Indication how many cubes are connected.

```

Trackball found:
none...
    
```

Indication that no trackball is connected.

```

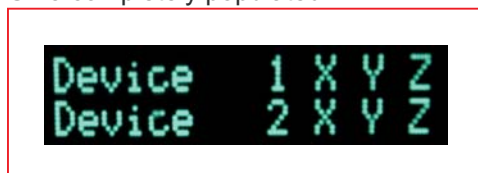
Please wait...
    
```

```

Device 1 X Y Z
Device 2 X Y Z
    
```

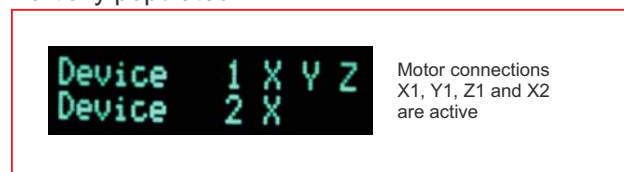
Shows the mounting of the control and informs that the control is operable.

SM5 completely populated



or
e.g.

Partially populated



Motor connections
X1, Y1, Z1 and X2
are active

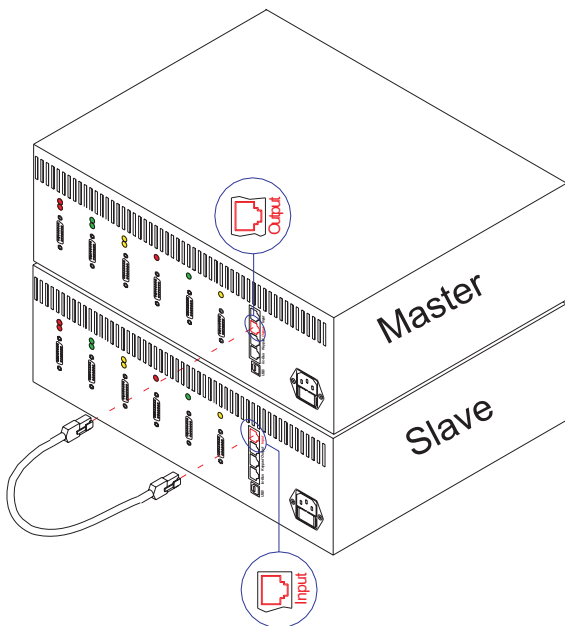


Cross-link the control with other control units (Master-Slave)

The control SM5 can be cross-linked with other controls (SM5 or SM6) as master or slave. Up to eight controls can be networked in-line and operated with the key panel SM5.

Each control has an individual address. The key panel SM5 has to be connected to the first control, which has to have address 10. This control is the designated master control. All other controls (with address 20, 30, 40...) are slave controls. Each address has to be unique. The master/slave configuration is accomplished with the "micromanipulator controlcenter" program.

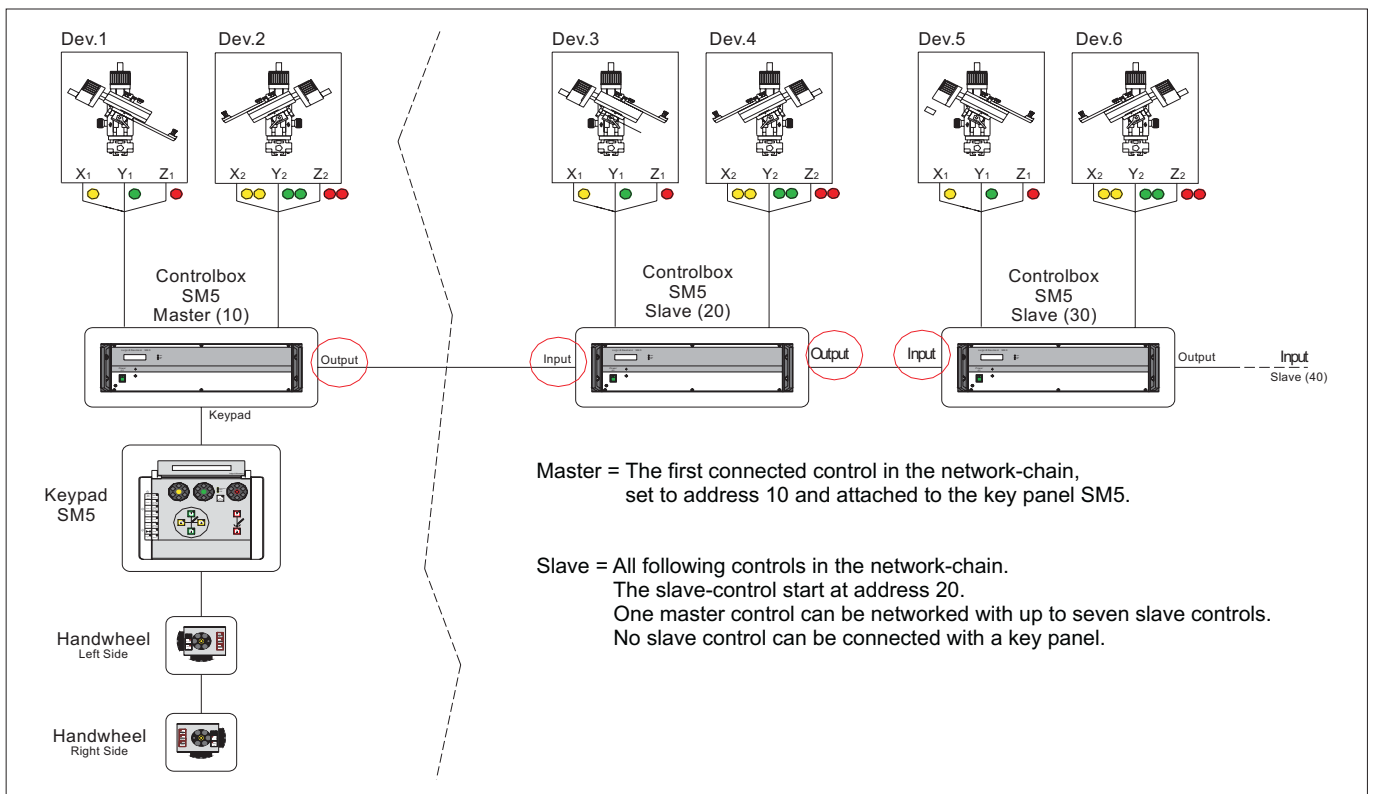
* See Appendix A



* Both controls have to be turned off.
One control has to be configured as master and the other control as slave.

* Plug one end of the cable in the "OUTPUT"-bush of the master-control and the other end in the "INPUT"-bush of the slave-control.

Additional slave-controls can be cross-linked, but only if each of them is set to an individual address.

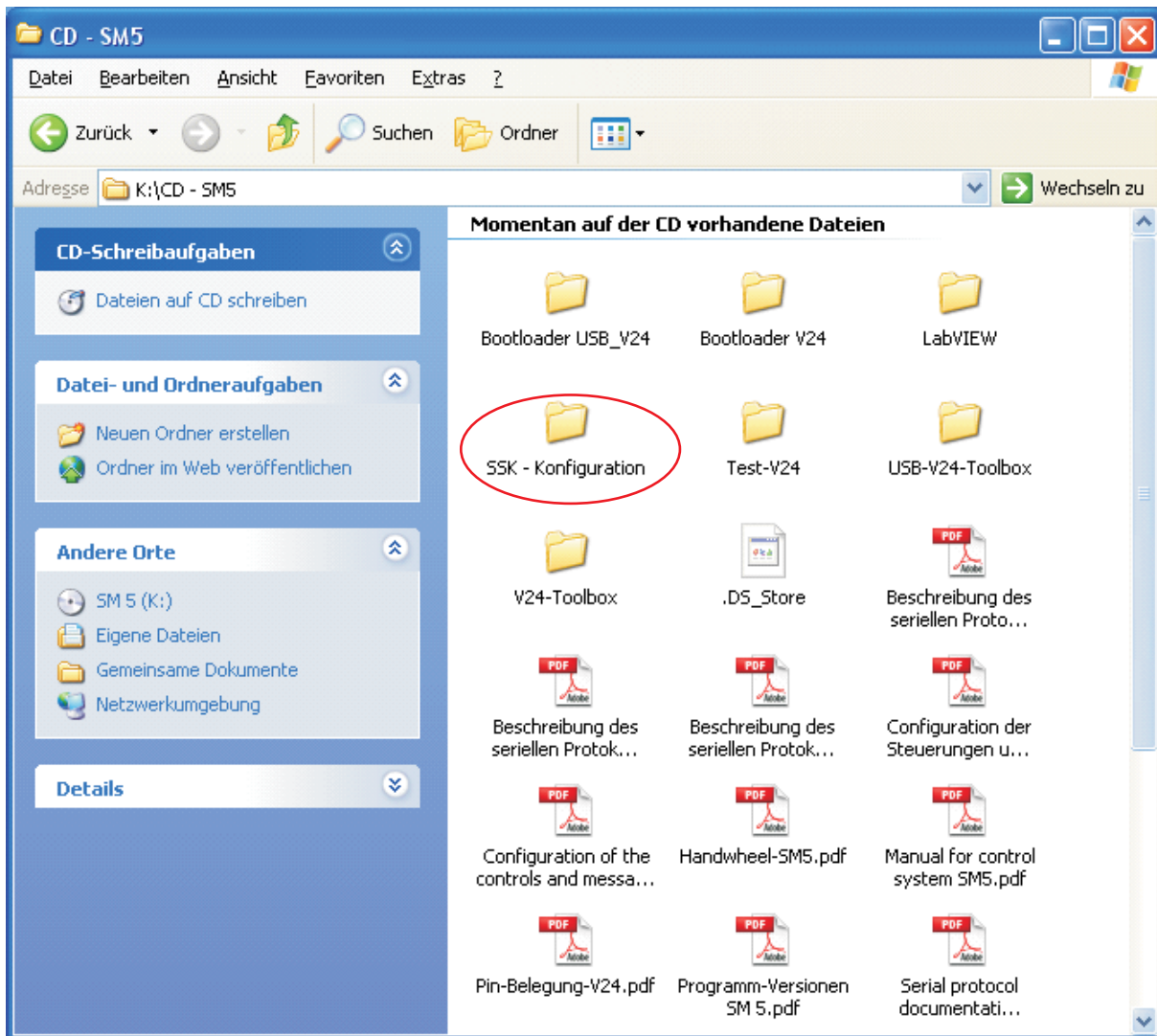


Appendix - A

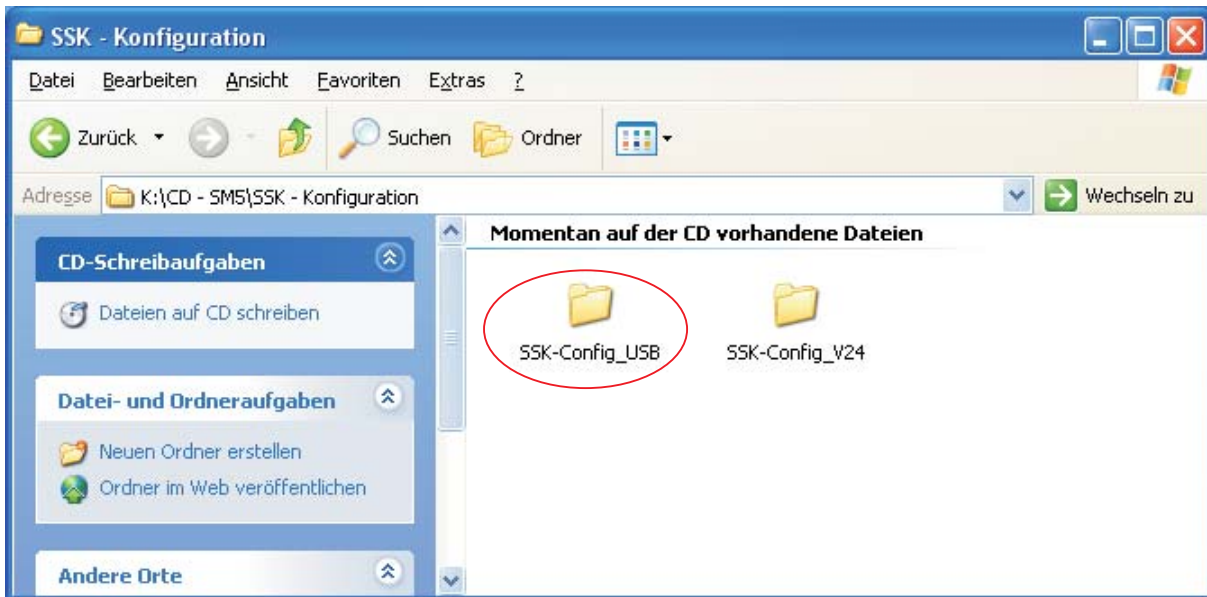
Configuration of the control

*with the “*Micromanipulator Controlcenter V1.1.1 Beta*” program

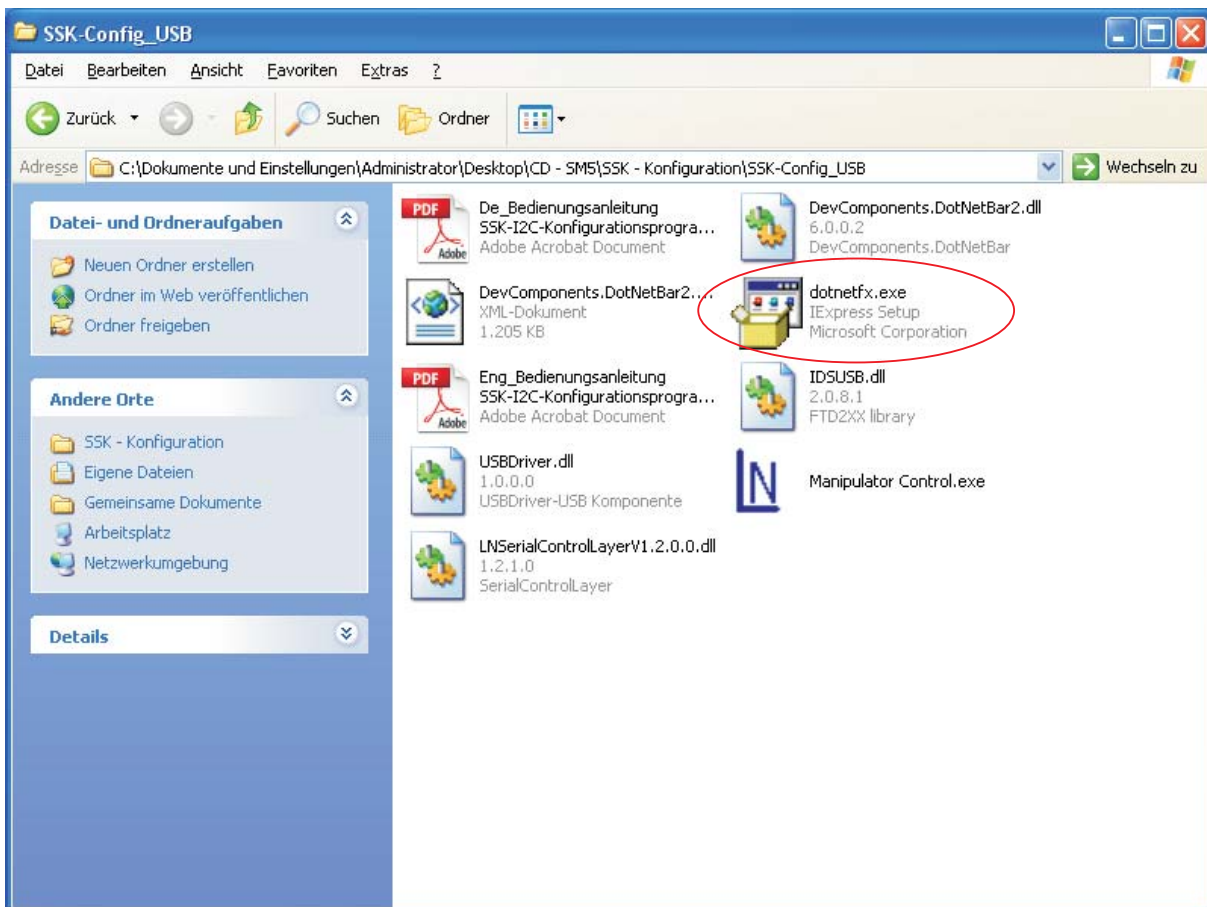
Copy the folder **SSK – Config_USB** located in the parent directory **SM5 / SSK – Konfiguration** from the cd SM 5 to your harddrive.



Open folder **SSK-Config_USB**



Start **Dotnextfx.exe** in order to start the installation



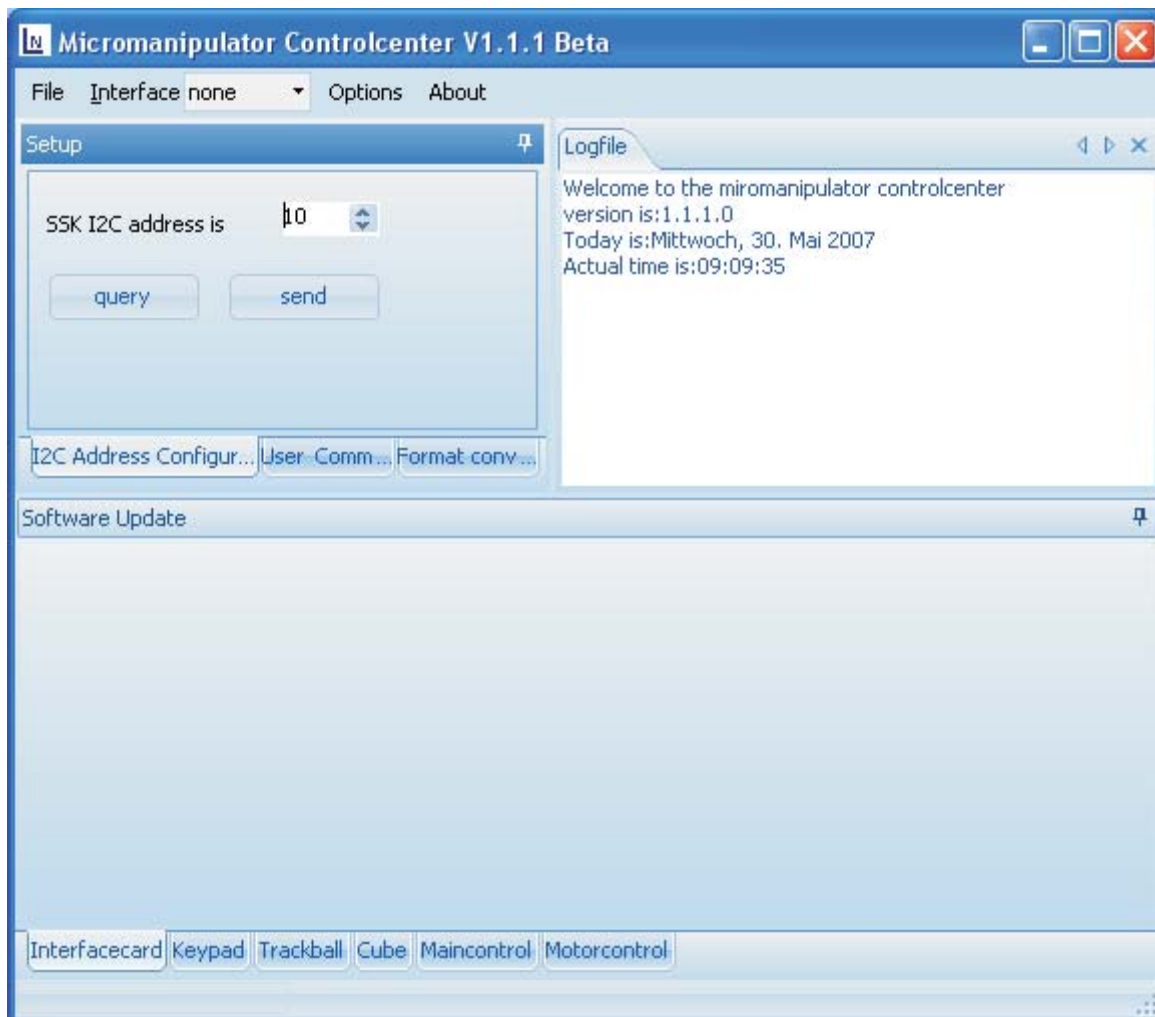
If you own multiple connected control, please keep in mind that address adjustment is not possible beyond multiple units.
Disconnect the network connection (input/output) with the other controls.
It is necessary to connect the PC with that control directly in order to change the address.

Establish a connection between PC and control with a USB-cable or a V24-cable.

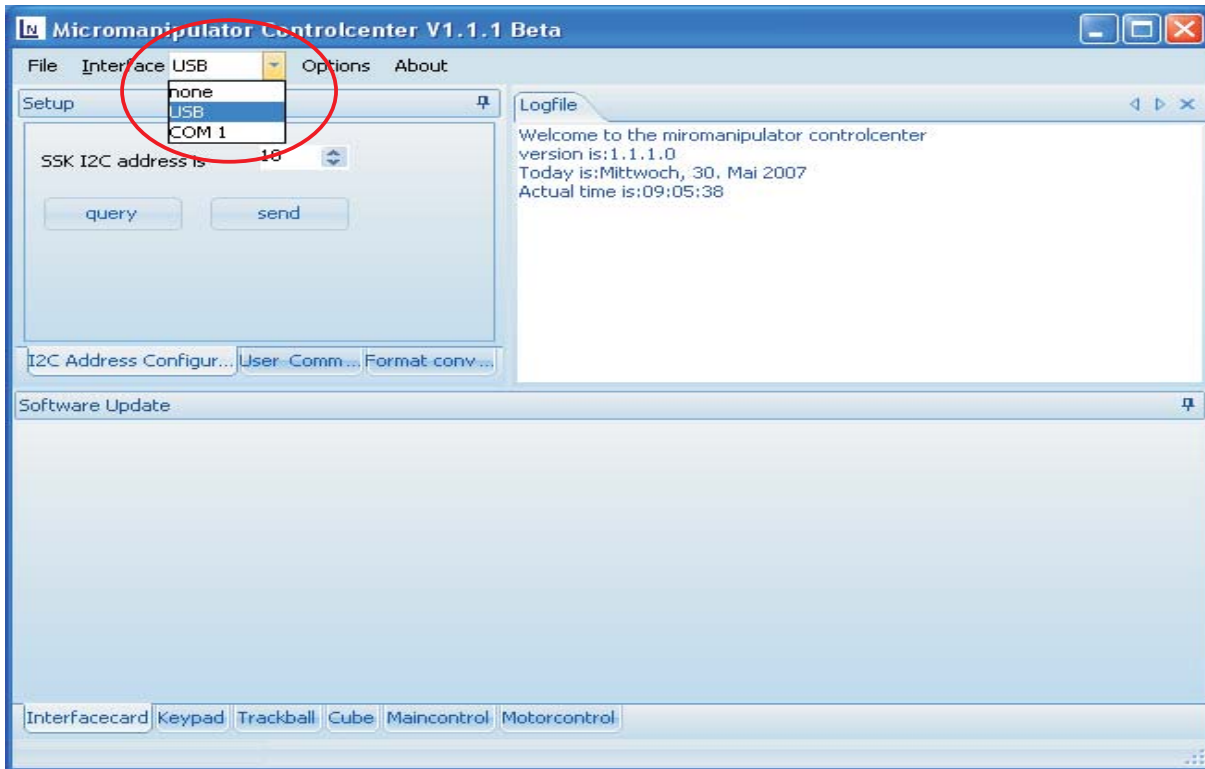
Activate control, after booting up the display shows the message:



Starting the „*Micromanipulator Controlcenter*“ program



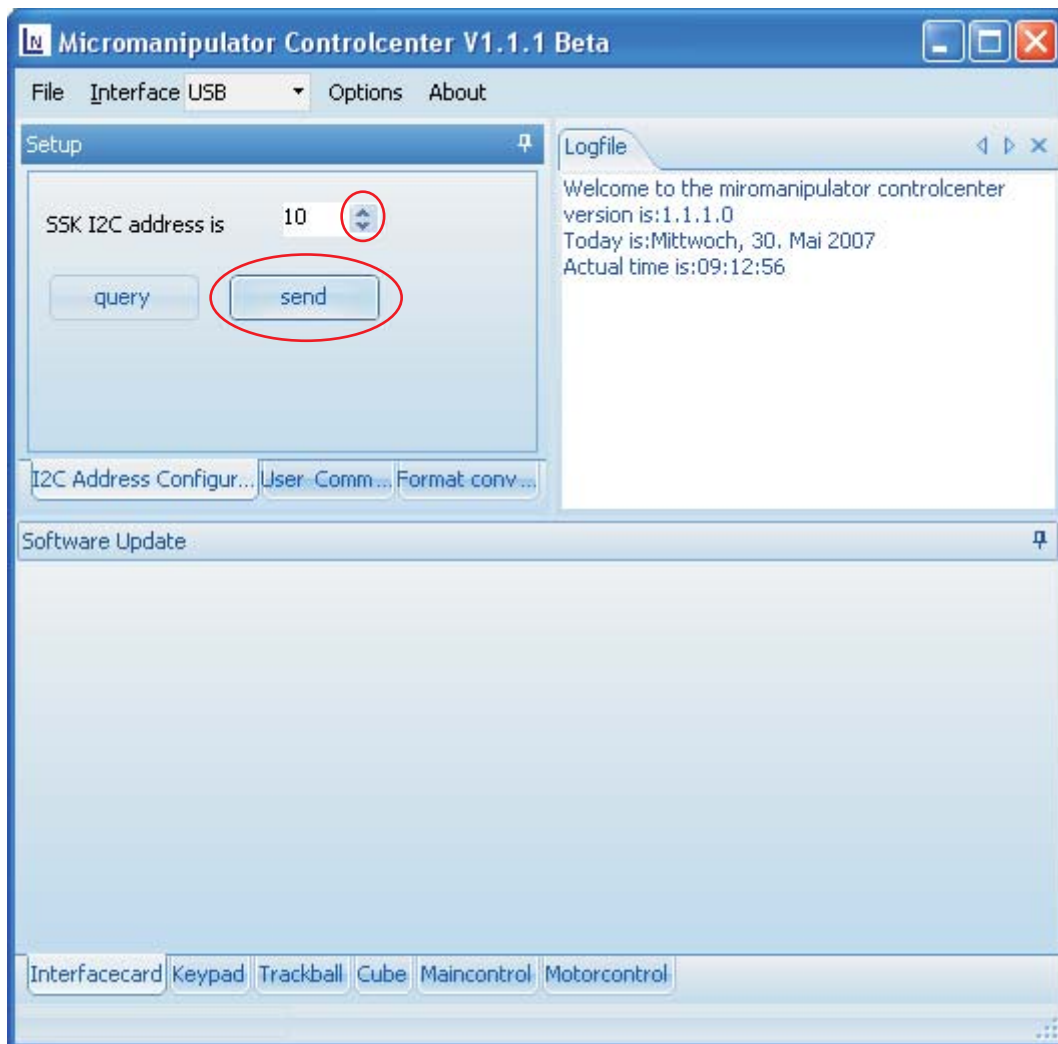
Choose **USB** or **COM** for the V24 cable in the **Interface** dropdown menu



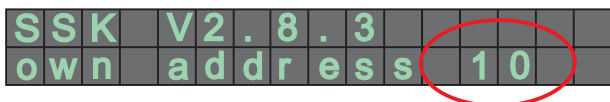
Click „**query**“ and the „**SSK I2C address**“ array shows the current address



Change the address value of „SSK I2C address is“ with the **up / down** buttons.
(for master = 10, slave = 20 – 80)
press „send“



Deactivate the control and reactivate it hereon. The current address is shown on the display during the booting process.

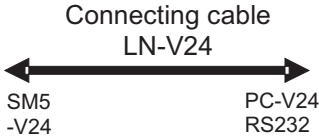


The control operates as master and a key panel can be attached.

Appendix - B

SM5: V.24 - RS232^[12]
 Plug 9pol. D-Sub, **bushing**

Pin	Designation
1	- free -
2	TXD
3	GND
4	- free -
5	- free -
6	RXD
7	- free -
8	- free -
9	- free -



PC: V.24 – RS232
 Plug 9pol. D-Sub, **bolt**

Pin	Designation
1	- free -
2	RXD
3	TXD
4	- free -
5	GND
6	- free -
7	- free -
8	- free -
9	- free -

Technical Data

Chassis	: 19" / 3HE, 315mm deep
Dimensions in mm	: approx. 449mm x 133mm x315mm
Weight	: 6,5kg
Input Voltage	: 85V – 264V AC, (47-63Hz)
Fuse	: 2x T2A
Performance	: 100W
Current	: max. 1,3A bei 100VAC / 0,65A bei 200VAC
Inrush current (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