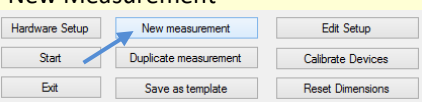
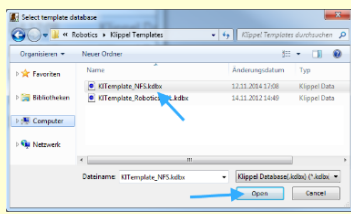
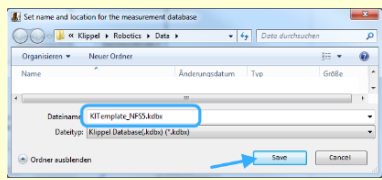


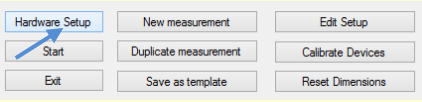
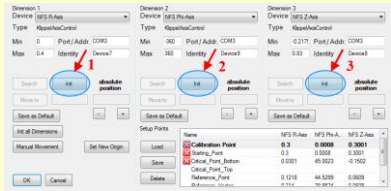
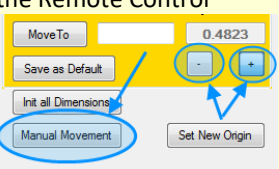
Quick Setup Guide – Near Field Scanner 3D (NFS)

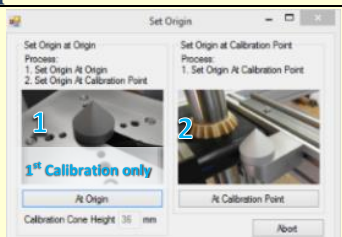
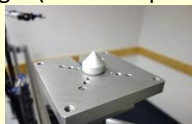
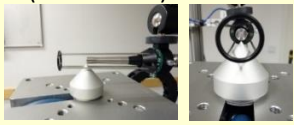
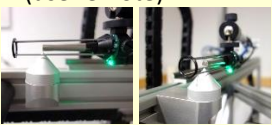
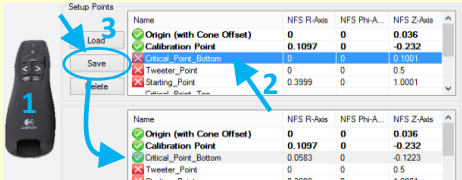
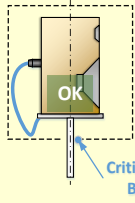
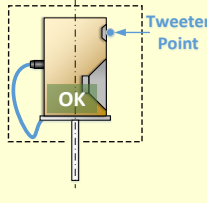
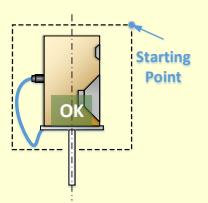
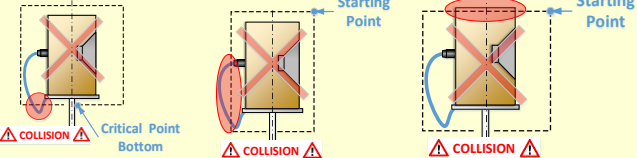


1 Start Klippel Robotics and Create New Measurement

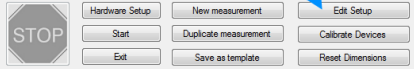
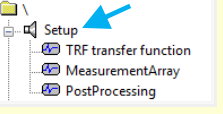
1) Start Klippel Robotics:  Open Robotics Software and click: "New Measurement" 	2) Select Template: Choose "KlTemplate_NFS.kdbx". 	3) Select Results Path: Select a folder and a Name for the measurement database. 
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2 Hardware Setup

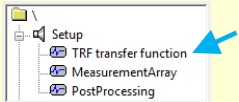
1) Open Hardware Setup: Click: "Hardware Setup" to open the hardware dialog window. 	2) Initialize Axes: Click the "Init"-Button of each axis.   Please consider the correct order: 1st: R-Axis (Dimension 1) 2nd: Phi-Axis (Dimension 2) 3rd: Z-Axis (Dimension 3)	3) Activate Remote Control: Click "Manual Movement" to activate the Remote Control   Now you can move the axes with the remote control or the "-" / "+" buttons.  How to use the remote? (See Page 3)
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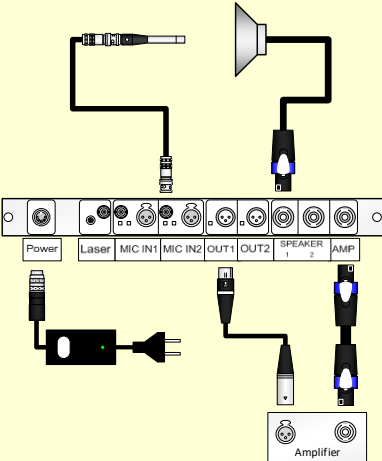
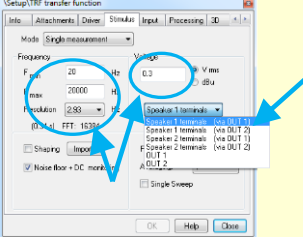
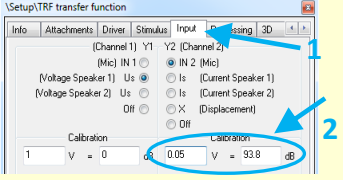
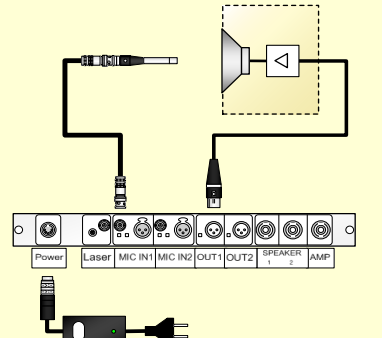
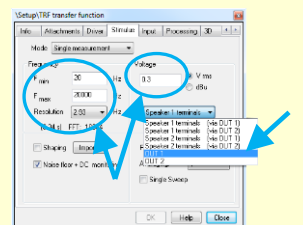
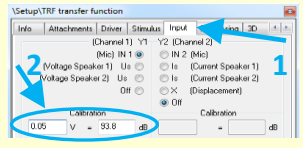
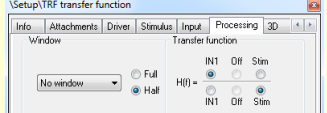
4) Calibrate Microphone Position: Clicking "Set New Origin" will open a calibration dialog   The microphone must be calibrated either at "Origin" (required for 1 st calibration) or at "Calibration Point". 1) Origin (1st Calibration) a) Put the cone to the Origin (center of plate)  b) Drive the microphone to the tip of the cone (use remote)  c) Confirm the position by clicking: "At Origin" 2) Calibration Point a) Put the cone to the Calibration point.  b) Drive the microphone to the tip of the cone (use remote)  c) Confirm the position by clicking: "At Calibration point"  Drive the microphone close to the tip of the cone, but do not hit the calibration cone.	5) Configure Setup Points: Put the loudspeaker on the Near Field Scanner and confirm all required setup points. Do the following procedure: 1) Drive microphone to the point 2) Select the Point in List 3) Press "Save"  The following point have to be defined: Critical Point Bottom   It must be below the platform and the tube and other obstacle must be inside the critical radius Tweeter Point   Set it approximately 5mm in front of the tweeter. Starting Point   It must be above the upper edge and all obstacles must be inside the radius  Avoid collision: Make sure that all obstacles are inside the specified surface. 
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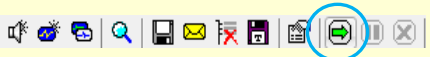
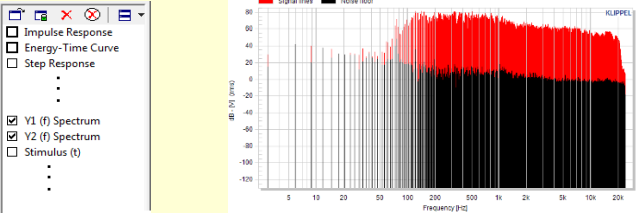
3 Save Hardware Settings and Open Measurement Database

1) Confirm Hardware Settings: Click "OK" to confirm your Settings 	2) Open Database: Click "Edit Setup" to open the database. 	3) Select Setup Object: Select the "Setup". The Object consist of 3 Operation for measurement configuration 
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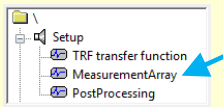
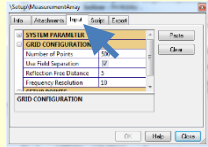
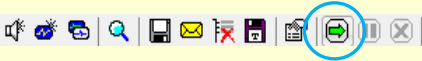
4 Measurement operation – TRF transfer function

1) Select operation Select the operation: "TRF transfer function" 	2) Properties Window: Open "Properties" Windows to configure the measurement operation. 
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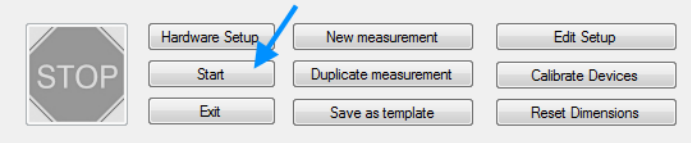
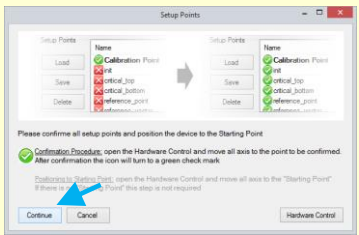
3) Connect Hardware Passive Speaker 	4) Configure Stimulus Select the "Stimulus" tab and define: "Speaker 1 (via OUT1)" Configure Parameters Frequency Range, Frequency resolution and Input Voltage for your device 	5) Define Channels and H(f) 1) Select the "Input" tab and define: Channel 1 - (Voltage Speaker 1) Us Channel 2 - IN 2 (Mic) 2) Insert the Calibration of the mic 
Active Speaker 	Select the "Stimulus" tab and define: "OUT1" Configure Parameters Frequency Range, Frequency resolution and Input Voltage for your device. 	1) Select the "Input" tab and define: Channel 1 - IN 1 (Mic) Channel 2 - Off. 2) Insert the Calibration of the mic 
		3) Select the "Processing" Tab and define: $H(f) = IN2 / Us$ 

6) Run Operation Run the TRF operation by clicking on the green arrow.  The measurement should be performed in front of the loudspeaker. Move the microphone to the On-Axis position.	7) Check SNR (Signal-To-Noise-Ratio) Open the Result Windows "Y1(f) Input Spectrum" and "Y2(f) Input Spectrum" And check if the microphone signal has a SNR of at least 40dB in the passband.  If the SNR is less increase the voltage of the Stimulus or apply averaging.
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5 Measurement Grid – MeasurementArray

1) Select Operation	2) Configure Parameter:	3) Run Operation
Select the operation: "MeasurementArray"  and open the Properties Windows. 	All Parameter, listed under "Grid Configuration", have to be defined.  ! For information about the parameters, see the software help [F1]	Run the MeasurementArray operation by clicking on the green arrow.  After running the Script, the distribution of measurement points is visualized in the result windows.

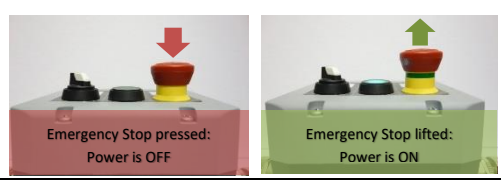
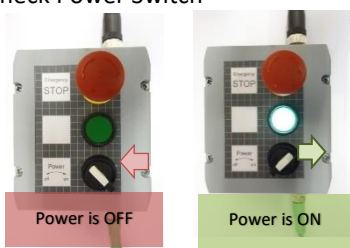
6 Start Measurement

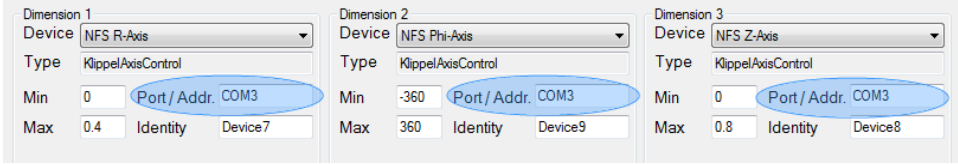
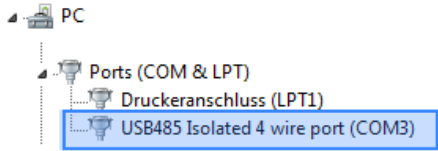
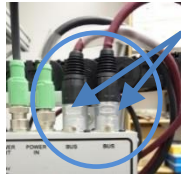
1) Start Measurement
Close the database to get back to the Robotics and Press "Start"  Press "continue" to Start the measurement. 

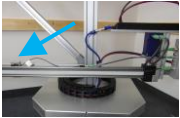
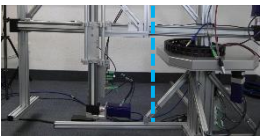
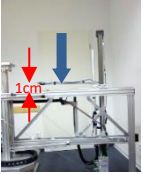
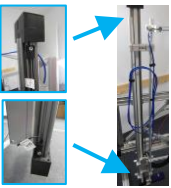
Remote Control - Assignment of Keys

	Movement Modes: <i>Continuous Movement - Rough Positioning</i> Dragging a movement Button, the Axis accelerate at first and continue with a uniform speed. Lifting the button stops the motion. <i>Single Step Mode – Precise Positioning</i> Pressing shortly a movement Button, the Axis will move a single step.
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Trouble Shooting

Error: Nanotec Device not connected			
1) Check Power Supply	1) Check the 5V and 24V LEDs at the motor boxes.  If they are on, everything is OK with the power supply.	2) Check Emergency Stop	
	3) Check Power Switch 	4) Check all power connections	

2) Check COM-Port	Check if the devices are assigned correctly. Dimension 1: NFS R-Axis Port/Addr.: COM<Portnumber> Dimension 2: NFS Phi-Axis Port/Addr.: COM<Portnumber> Dimension 3: NFS Z-Axis Port/Addr.: COM<Portnumber>  Please check the Windows device manager, which COM-Port has been assigned to the USB-RS485 converter.  Use this port number and enter it in the Port/Addr field. (e.g. for COM port 3 enter "COM3" into the Port/Addr field)
3) Check RS485 Bus	Reconnect RS485-USB adapter to PC  Check BUS connection at the motor boxes 

Microphone cannot reach "Origin" / "Calibration Point"		
	R-Axis	Z-Axis
1) Check Position of End switches	Check if the minimum end switch of R-Axis is placed correctly  It is supposed to be above the edge of the table, so the motor does not hit the foot structure. 	Drive the microphone into the minimum end switch of the Z-axis and check microphone position. It should be about 1cm above the frame structure.  Caution: Take care, that the microphone pole will not hit the structure. Check the position of the Z-Axis end switches, as well. 
2) Adjust Microphone arm by hand	For the rough positioning, loose the screw at the connector and shift the microphone pole.  Adjust the microphone position precisely using the ball-joint microphone adapter. 	- Loose the screw of the connector. - Shift the microphone by hand to correct position. - Tight the connector screw. 
After finishing the mechanical adjustment. The calibration must be repeated at the Origin.		