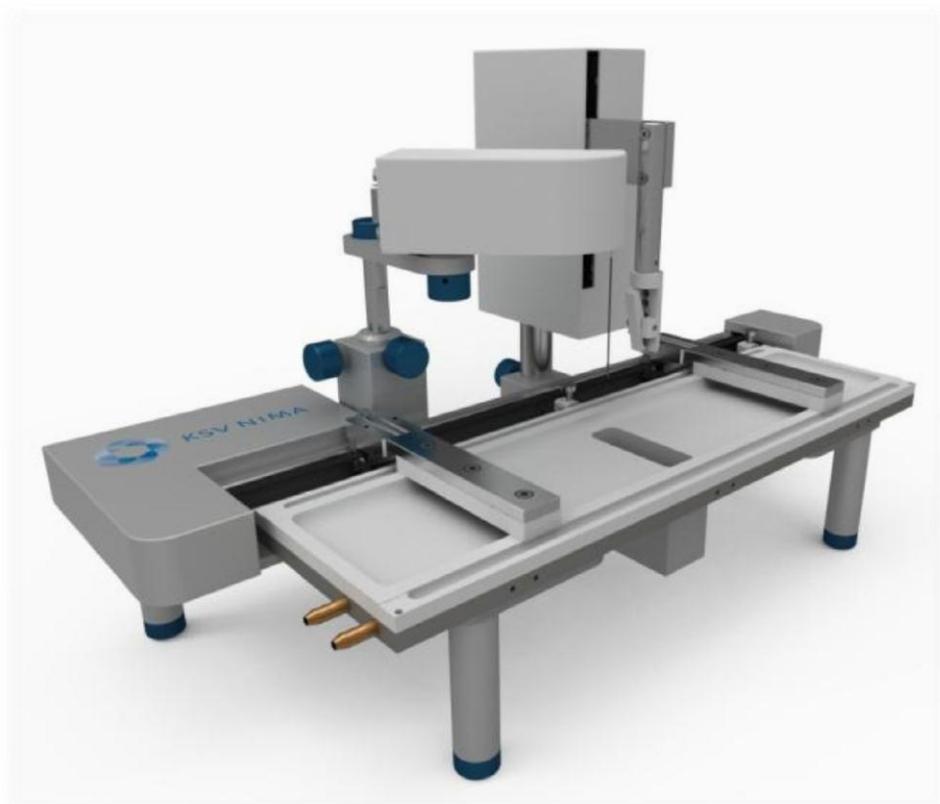


Installation Manual



Langmuir and Langmuir-Blodgett systems All Models

Revision 1.2

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1. Overview

KSV NIMA Langmuir and Langmuir-Blodgett (L and LB) systems consist of different devices connected either to a KSV NIMA Interface Unit or directly into an operating computer. Basic configuration of a LB system is presented in Figure 1.

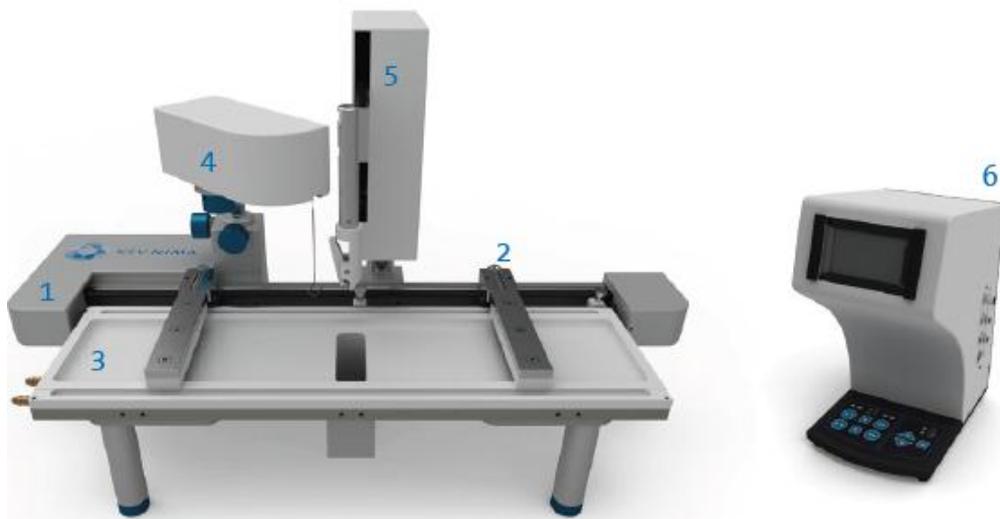


Figure 1. Basic configuration of a LB system. 1) Frame, 2) Barriers, 3) Trough top, 4) Surface pressure sensor, 5) Dipping mechanism (LB option), 6) Interface unit.

The main parts of a Langmuir or Langmuir-Blodgett consist of a frame, barriers, a trough top, a surface pressure sensor, a dipping mechanism (with LB systems), and an interface unit. The frame is the main structure of the system, including attachment places for other devices and a motorized barrier drive mechanism. Barriers are responsible for compressing the surfactant on subphase surface. Trough top holds the subphase and the surfactant. LB trough tops include a dipping well for substrate dipping. Surface pressure sensor, or balance, measures the surface pressure during measurement. With LB systems, the dipping mechanism is responsible for the dipping motion. Finally, the interface unit connects and controls the devices.

In addition to the main L and LB system parts, you may have different accessories for example for Langmuir film characterization. Please refer to separate accessory manuals for installation instructions.

The interface unit is connected to a PC where KSV NIMA LB software controls all the measurement actions. Some actions can also be controlled directly with the interface unit.

This installation manual provides common installation directions for all KSV NIMA L&LB systems. The KSV NIMA LB software can be used with all the KSV NIMA L&LB systems. Please note that your system might look a bit different depending on its model.

2. Mechanical installation

2.1 Quick setup guide

The mechanical installation of KSV NIMA L&LB systems is simple. The following images show the basic steps in the mechanical installation.

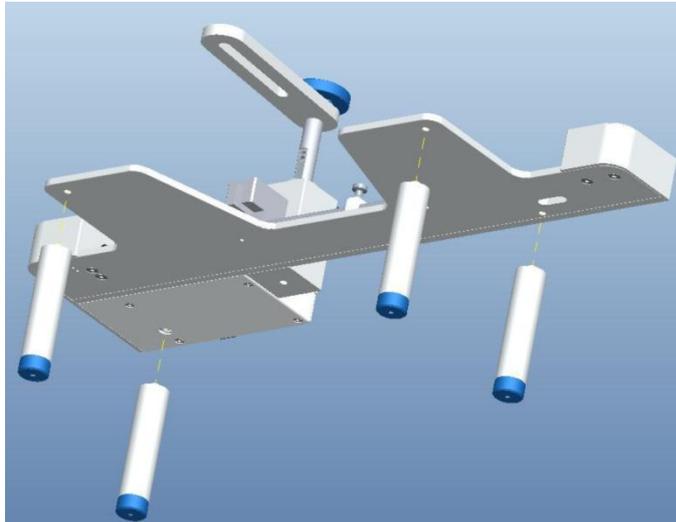


Figure 2. Attach feet to the frame.

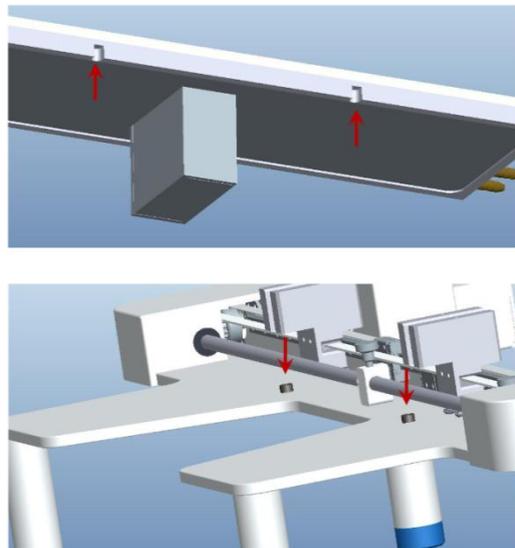


Figure 3. Attach the trough top to the frame. Please see that the slots in the trough top are placed next to the screw heads in the frame.

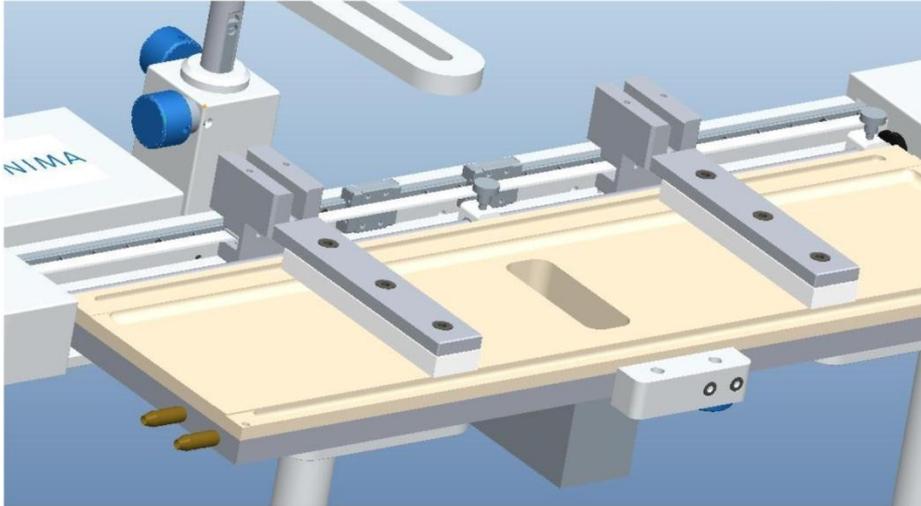


Figure 5. Attach the barriers to the frame.

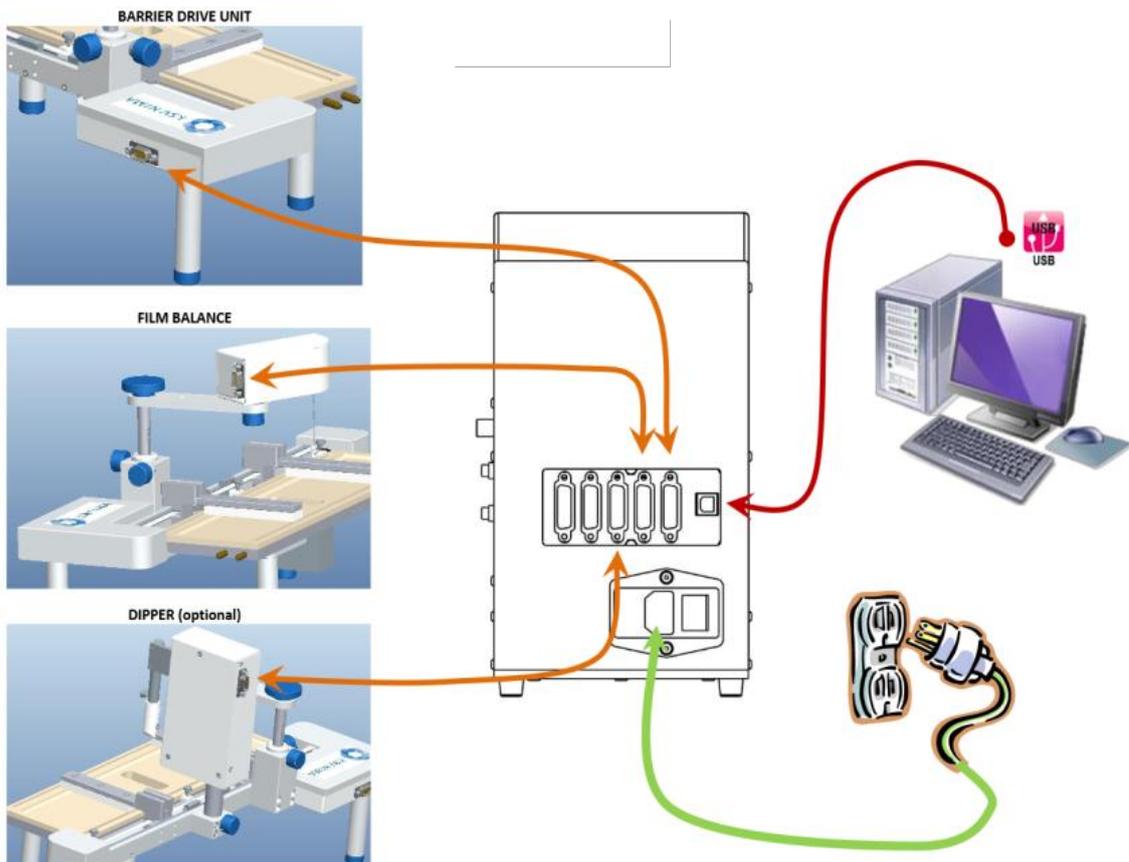


Figure 6. Attach the film balance and the dipper (with LB systems) to the frame. Connect the barrier drive (in the frame), the balance, and the dipper to the interface unit. Connect the power cord to the interface unit and the interface unit to a PC with a USB cord.

Please note that if you have an alternate system, you'll need to install a few more devices. Alternate trough top is divided into three regions in order to enable free dipping sequences between pure subphase and two different surfactants. The KSV NIMA Alternate is presented in Figure 6.

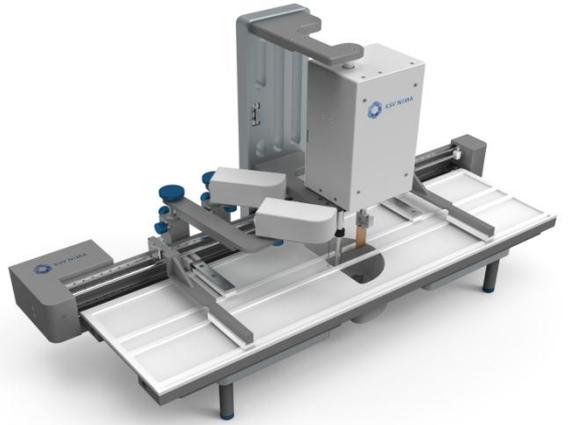


Figure 7. KSV NIMA Alternate.

If you have an alternate system, the following installation actions also have to be performed in addition to the ones mentioned above:

- A second set of barriers needs to be attached to the frame (total of two sets of barriers, one set for each compartment)
- A second balance needs to be attached to the frame (total of two balances, one for each compartment)
- The dipper needs to be attached both from the top and the bottom to the frame. The lower dipper clamp needs to be attached to the dipper separately.
- Both balances need to be connected to the interface unit.

2.2 KSV NIMA Interface Unit

KSV NIMA LayerBuilder is an interface and nexus point between the computer and the various connected devices that comprise an LB measurement system. A running PC program is required for the proper operation of KSV NIMA LayerBuilder.



Figure 8. KSV NIMA Interface Unit (LayerBuilder).

The back of the Interface Unit has six ports . The rightmost port is a USB port, which is used to connect the Interface Unit to the computer that runs measurement software. The remaining five ports are 15-pin serial device ports used to communicate with and provide power for the devices attached to the unit. The ports should be filled from right to left (starting from DEV 1 in Figure 8) without leaving any empty ports between occupied device ports. Below the serial device ports you can find the mains connector and the power switch.

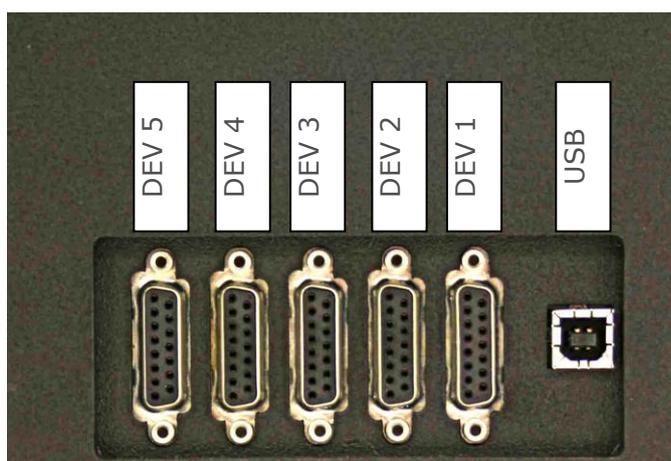


Figure 9. Ports on the back panel of the interface unit.

On the right side of KSV NIMA LayerBuilder there is the connection panel for pH-sensor, temperature sensor, magnetic stirrer and analog input.

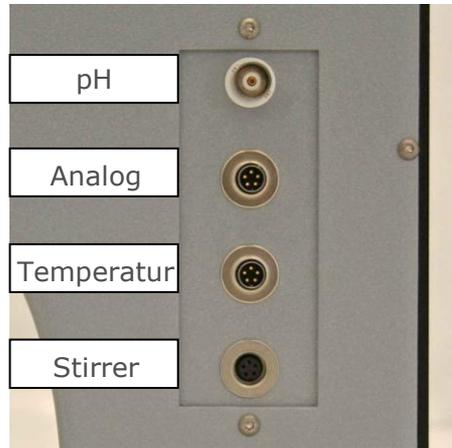


Figure 10. Connection panel on right-hand side of the unit.

The LCD display on the front of the KSV NIMA LayerBuilder unit show three principal fields:

1. Upper device display unit (Display0)
2. Lower device display unit (Display1)
3. Status bar

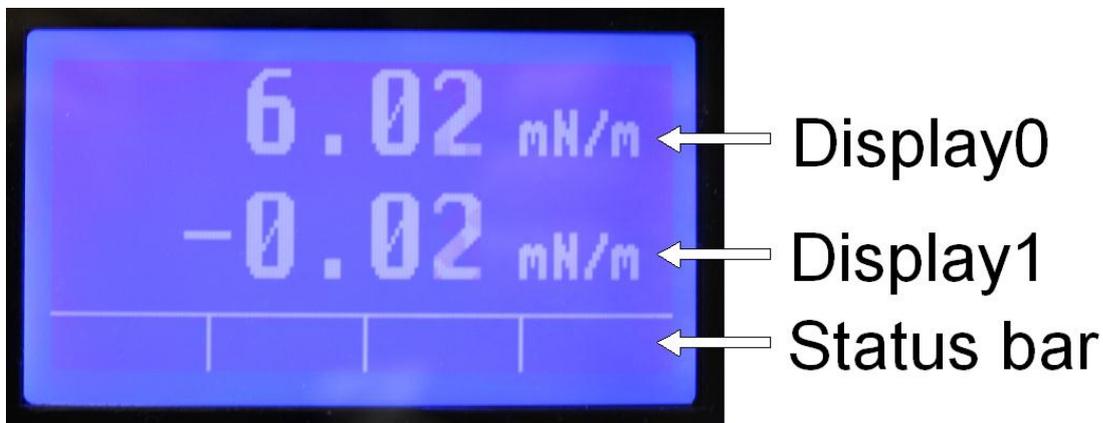


Figure 11. The display consists of three rows: Display0, Display1 and the Status bar.

PC software associates measurement data streams to Display0 and Display1 according to your measurement setting. Typically, Display0 shows surface tension calculated from balance data and Display1 shows barrier position. In Figure 5, both display units are displaying surface tension calculated from balance units.

The status bar shows information symbols about the movement of barriers/stirrer and displays the text "Limit" when a barrier moves to either end of its span of movement.

The manual control keypad is located on the front side, below the display. The keypad has two sets of buttons for horizontal barrier movement and one set of buttons for vertical dipper movement (see Figure 6). If only one pair of barriers is used, the lower row (labelled Barrier 1) can be used to control a stirrer. The assignment of button sets to connected devices is controlled by PC software.

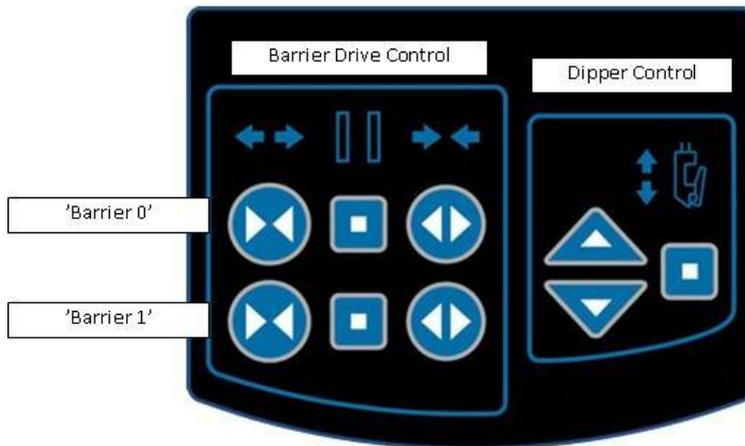


Figure 12. Manual control keypad.

Explanation of icons:

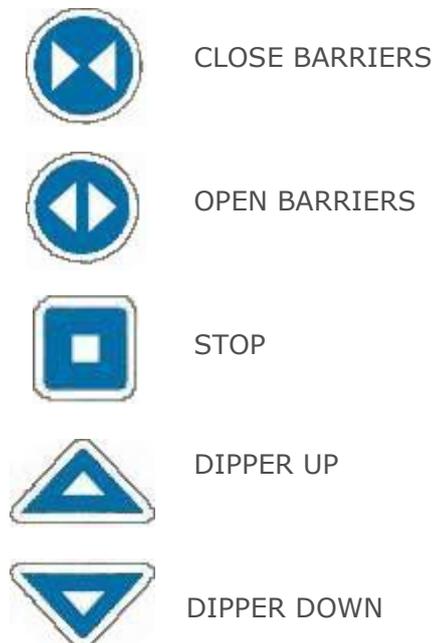
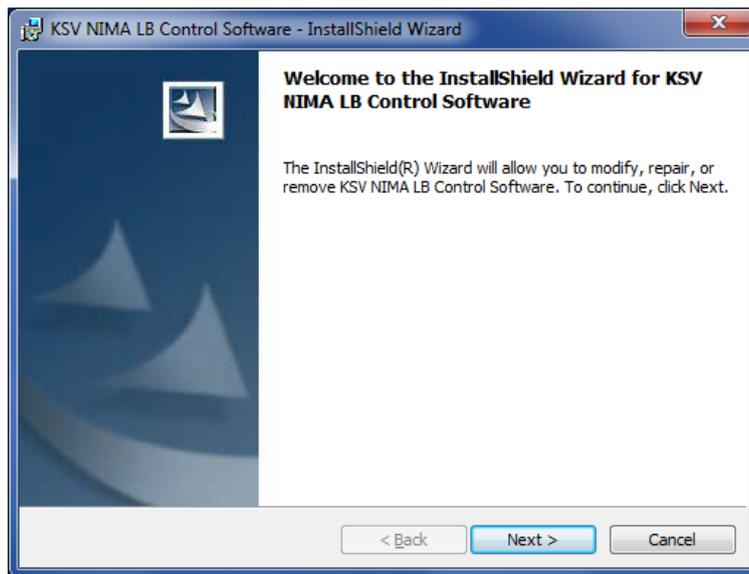


Figure 13. Keypad layout and buttons.

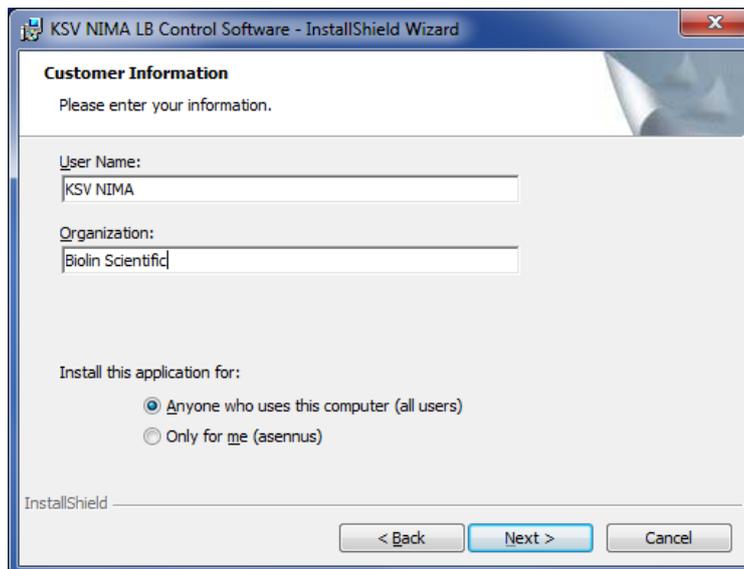
3. Software installation

Before installing the KSV NIMA LB software, please remove all its older versions from the PC if there are any. First safe copy all data, then go to Windows Control Panel → Programs → Uninstall a program → Uninstall any old LB software versions.

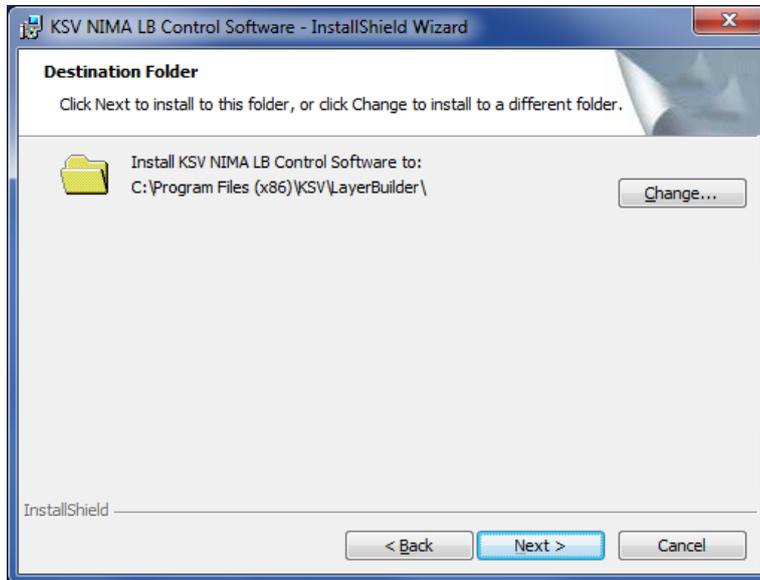
Open the KSV NIMA LB Setup file that you can find in the installation CD provided with your KSV NIMA system. Follow these instructions:



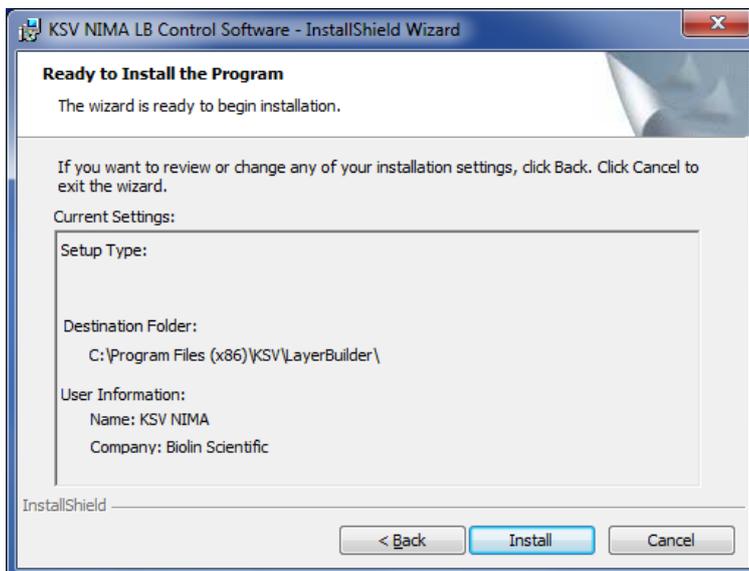
Select "Next"



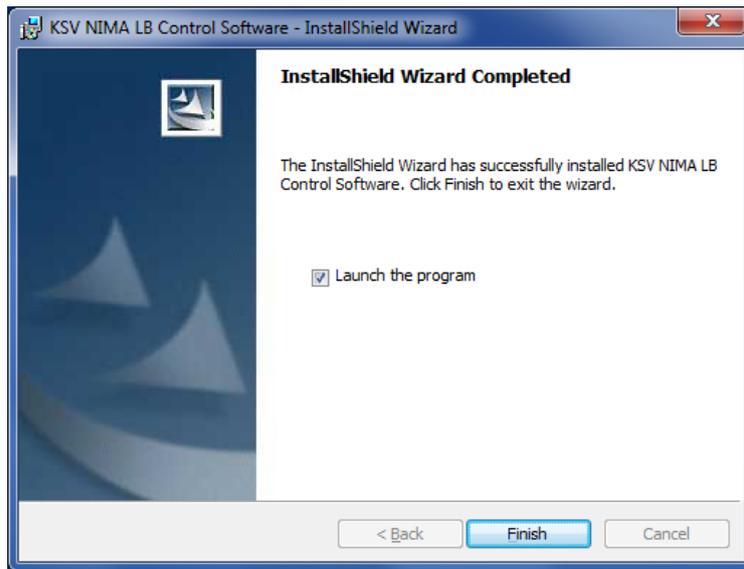
Enter your user name and organization. Select if the software is installed for you or for all users on the computer. Select "Next".



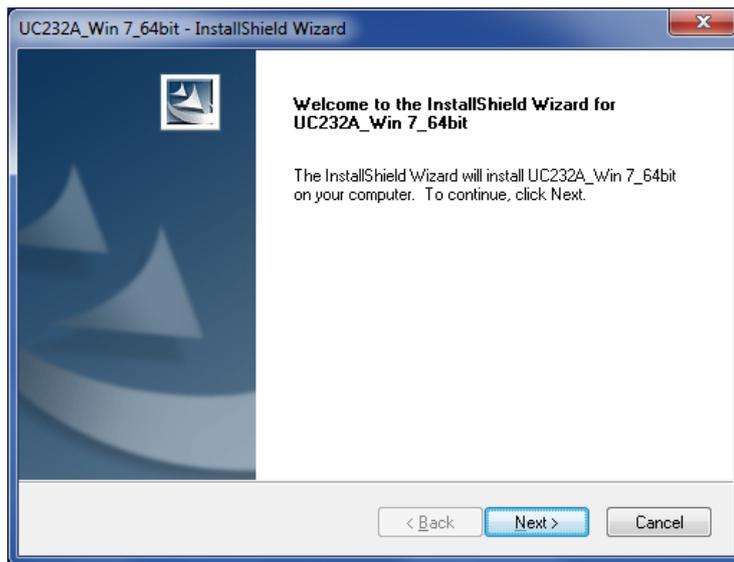
Choose the destination folder KSV NIMA LB software and select "Next".



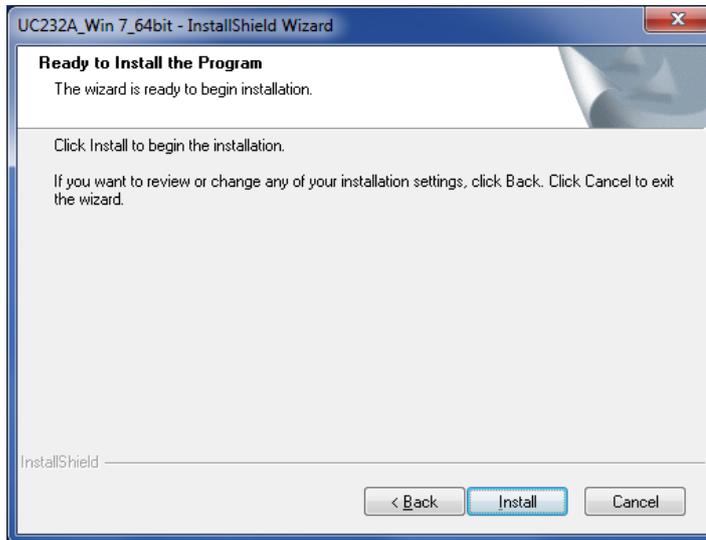
Choose "Install".



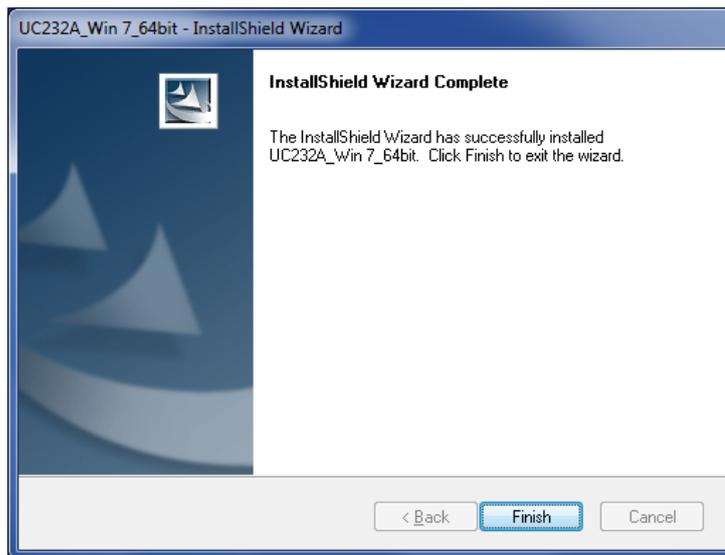
Choose "Finish".



Next, USB drivers are installed. Select "Next".



Choose "Install".



Choose "Finish". The KSV NIMA LB software and its drivers have now been installed.



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4. Contacts

If any problems should arise, please feel free to contact a local distributor or KSV NIMA directly.

KSV NIMA can be contacted from this address:

Biolin Scientific, KSV NIMA

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