ELVE FLOW an ELVESYS brand

Valves & Valve Controller OEM Series

2/2 & 3/2 OEM valve

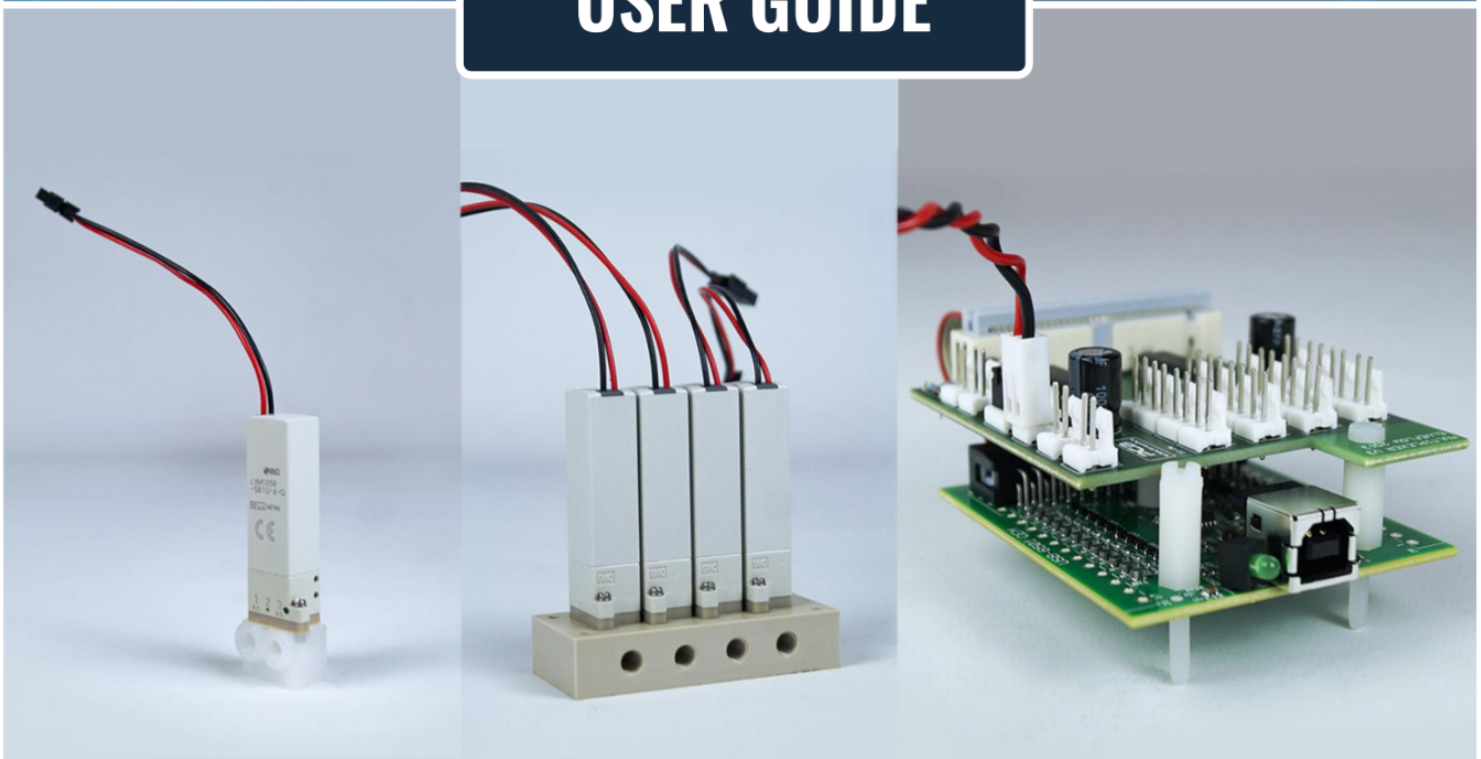
Custom 3 to 1 Manifold

Custom 4 to 1 Manifold

16 ports OEM valve controller

DOCUMENT REF: UGVO-150721

USER GUIDE



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Introduction

The valve controller consists of an array of switches which is designed for versatile uses.

The valve controller allows you to host up & control up to 16 valves of your choice.

Description and typical use

Overview

OEM Valves as well as manifolds and its control system are presented here:
These instruments use electromechanically operated solenoid valves that can be actuated through the Elveflow® Smart Interface or the SDK. With these instruments, you will be able to perform various tasks such as fast sample injection, medium perfusion and switching, and sample analysis in zero-flow conditions.

You will find below a short description of each instrument's features,
We provide a wide range of 2-way and 3-way valves to be used with the valve controller with 16 outlets. These valves have been carefully selected for their convenience and performances to fulfill the needs of most microfluidic applications. We designed a OEM valve controller allowing you to use the valves anywhere in your system in a convenient manner with easy connections.

Our OEM valves come in different versions, each version exists in 3 ports / 2 positions valves or 2 ports / 2 positions valves.

- low pressure (<2bar)
- high pressure (stands up to 4.5 bar)

The 2 ports / 2 positions valve can be chosen as either Normally Open or Normally Closed. They use the ROCKER® valve technology (flow displacement < 10nL).

Manifold:
3 to 1 and 4 to 1 manifolds with low pressure valves are in our OEM catalog and can be used in both directions.

We design on-demand any fluidic manifold compatible with our low pressure valves or high pressure valves to meet your requirements.

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Part numbers

Name	Reference/Part Number Elveflow
Microfluidic 3/2 Peek Valve OEM	MFV-NP-32
Manifold 4 to 1 - OEM	KMM-10-OEM
Manifold 3 to 1 - OEM	KMM-11-OEM
Valve Controller 16 ports OEM	MUX-Q-OEM

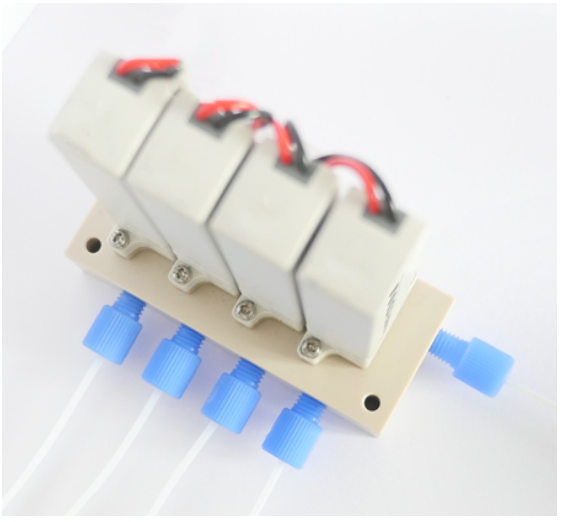
Main Features & Benefits

We provide three types of valves that can be connected to our OEM valve controller with 16 outputs:

- 2.2 Normally Closed: one inlet and one outlet, stop the fluid when it is not powered

- 2.2 Normally Opened: one inlet and one outlet, that block the fluid when it is powered

- 3.2: Two inlets, one outlet, switch between the two inlets when powered.



We provide two types of valves for the manifold that can be connected to our 16 ports OEM valve controller:

- 2.2 Normally Closed: one inlet and one outlet, stop the fluid when it is not powered

- 2.2 Normally Opened: one inlet and one outlet, that block the fluid when it is powered

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Finally we provide an OEM valve controller with 16 ports that can control 24V valves from our catalog but that can also control your 24V valves as long as the polarity and power consumption meets our limits.

Product package contents

Installation & use

Software installation

You are now ready to use your Instrument. It can be either controlled by the Elveflow® Smart Interface software (version ESI V3.04.02 and above) or by our Software Development Kit (C++, Python, MATLAB® and LabVIEW® libraries). The Elveflow® Smart Interface's and the SDK main features and options are covered by specific guides.

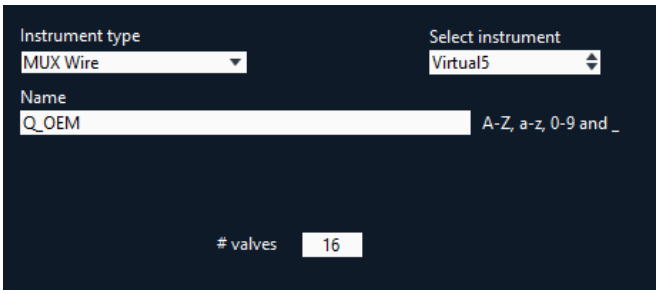
Please refer to the ESI user guide for a detailed description of the software controls.

1. Download the latest ESI version from the Elveflow website.
2. Open the Elveflow folder.
3. Run Install.exe.
4. Follow the instructions presented by the installation assistant.
5. Restart your computer when prompted to finish the installation process.

Note: The MUX-Q-OEM is supported from version V3.04.02 up. Please update your software if you're using an older version.

Using the Elveflow Smart Interface The Elveflow® Smart Interface's main features and options are covered by a specific guide. Please refer to this guide for a detailed description.

When choosing the instrument to add, select MUX-Wire with 16 valves.



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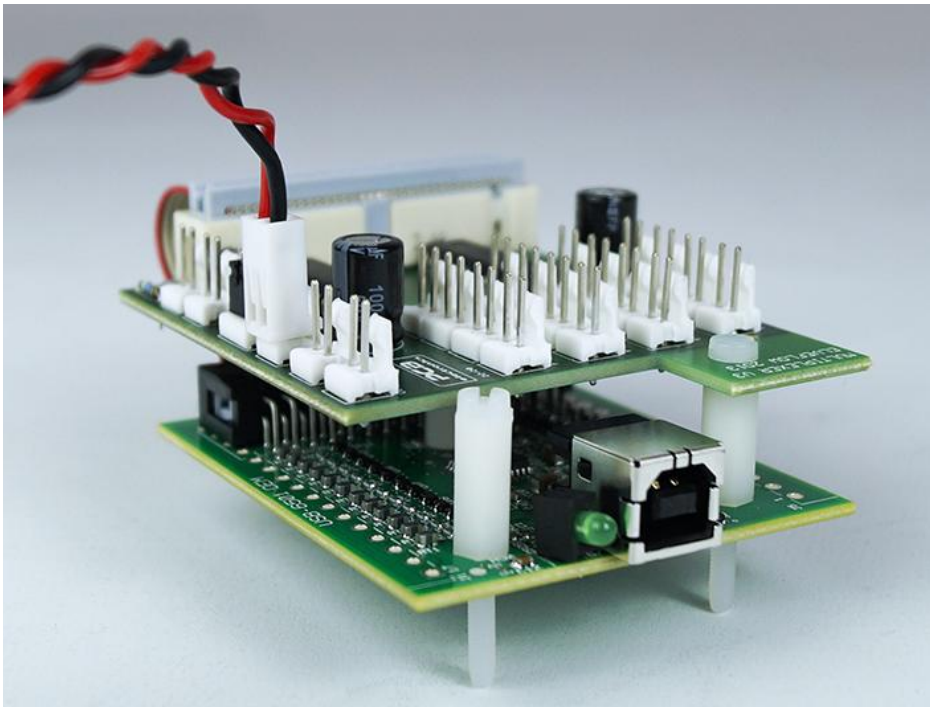
Electrical connections

1. Connect the power cable to your DC power supply respecting the polarity (Red: 24V, Black: GND) or to the adapter socket to the power supply if you requested one.
   The other end of the cable connects to the board on the 2-pin contact labeled ALIM.
2. Connect the USB cable to the computer running the ESI software or SDK.
3. There is no power button in this OEM device.



Valves can be connected over the 2-pin CST-100 connectors numbered from V1.1 to V4.4. Please be sure to keep a track of the place you are connecting your valves so you can later operate them from the ESI or SDK.

Pictures below show the corresponding numbering of the physical valves when using SDK of MUX_Wire array. The order of valves is the same one when using ESI

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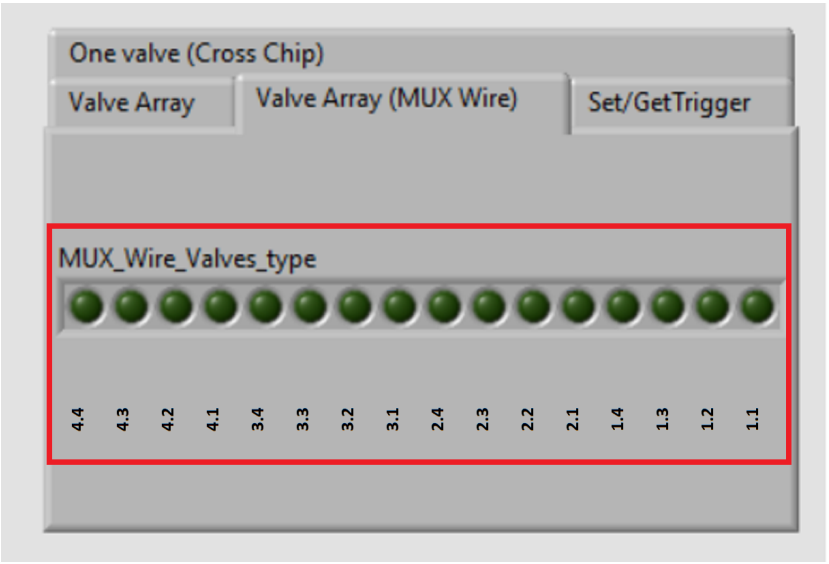

Cleaning and storing

Cleaning the valves and manifolds after use is mandatory in order to prevent solid depositions in its body. These depositions may cause leakages and eventually render the valves unusable.

The valves are cleaned by simply pushing fluids through its inlets. Never insert any solids in the valves, e.g. plastic or metallic sticks, in order to clean them. You risk permanently damaging the instrument.

Cleaning protocols

The following protocols are general examples. Add washing steps according to the substances used during the experiment. Before washing the valves with any substance, its chemical compatibility with the wetted materials must be checked. The wetted materials are PEEK and FKM (Viton).

Do not flow acetone through the valves.

When cleaning the valves after flowing substances with additives, such as salts or surfactants, start by flowing the substance without any additive.

Always finish by the standard protocol below. Isopropyl alcohol is a very volatile solvent and does not leave any residues, as opposed to water and acetone.

Standard cleaning protocol

1 mL of isopropyl alcohol;
30 s of air flushing to dry the valve.

Example of cleaning protocol for PBS-BSA

5 mL of deionized water;
5 mL of 1M acetic acid + 10% SDS;
1 mL of isopropyl alcohol;
30 s of air flushing to dry the valve.

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Example of cleaning protocol for fluorinated oil with surfactant

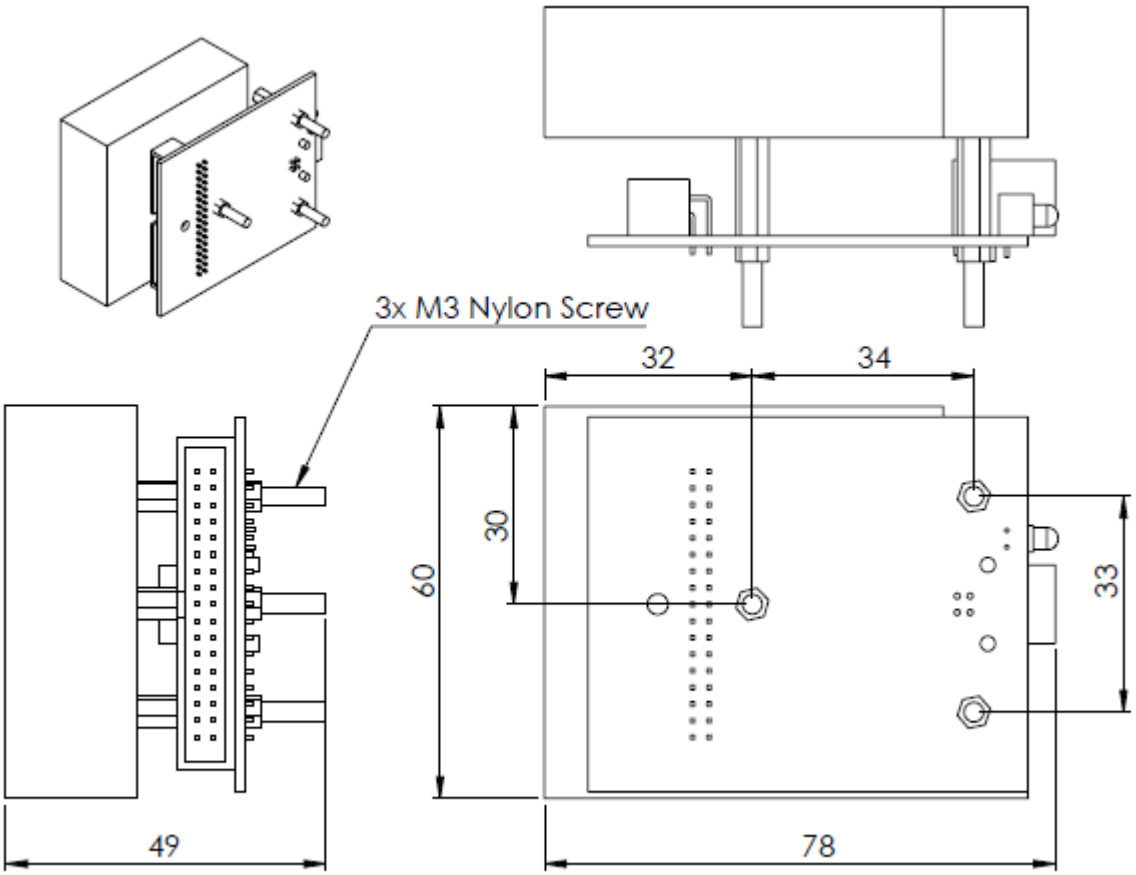
5 mL of fluorinated oil;
1 mL of isopropyl alcohol;
30 s of air flushing to dry the valve.

Storing conditions

Always dry the valves with clean, dry air before storing it.

Integration in your device

The dimensions below will help you to integrate the 16 port OEM Valve Controller in your system:
(3D models can be provided on demand):



Troubleshooting

Is the valve or manifold leaking?

If the valve is leaking, it is most likely due to improper fluidic connection. Please check the following:

- The ferrules are put in the right direction (follow the fluidic connection section)

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- The ¼-28 connectors are tightened properly
- Unused outputs are not sealed

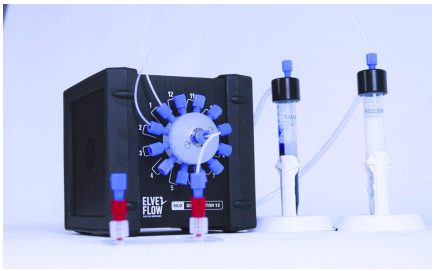
If the Manifold is leaking, please identify where the leak comes from. If the leaking comes from the jointure of the valve and the manifold, you will need to tighten the two screws that secure the valve on top of the manifold. If the leaking comes from the fittings, please check the following:

- The ferrules are put in the right direction (follow the fluidic connection section)
- The ¼-28 connectors are tightened properly

I cannot add or detect the instrument in the ESI software?

Please check that you added the instrument properly. Reminder: the instrument falls under the category "MUX WIRE".
Your instrument might be already added to the software. Launch the ESI software again and click on the refresh button.

Linked products



Perfusion & Sequential injection Pack
An all-in-one solution to quickly swap between up to 12 (or more) fluids (gas or liquids)

OB1 MK3+ Flow Controller
The most responsive and stable flow controller on the market

MUX series: MUX Distribution, MUX Wire, Individual valves...

Customer Support

You are welcome to browse through the Elveflow Support Portal accessible online anytime (https://support.elveflow.com/support/solutions). You can find lots of guidance on how to use our product line. It is most likely that the answers you are looking for are already there.

In case there are still some questions and you would like further clarification, please don't hesitate to let us know by email at customer@elveflow.com.

We are always happy to help.

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