



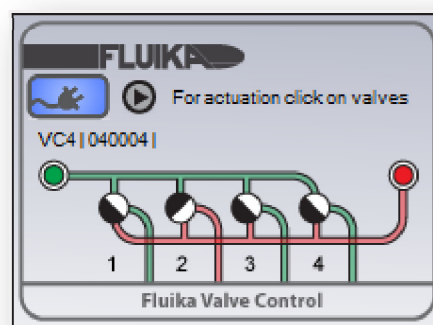
FLUIKA™ Miniature Pneumatic Control Kit

.NET library for FLUIKA valve controller

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CONTENT

This document contains detailed information how to use .NET library to control FLUIKA™ valve controller. For General information and guidance, please read first General User's Manual of FLUIKA™ Kit (Document: FD001) and hardware manual of valve controller (Document: FD004). Present document describes:

- User interface
- .NET programming
- An example

USER INTERFACE

For easy and convenient development of your custom control applications, Fluika .NET library provides graphical user interface components, which can be quickly integrated into your program.

For use in your .NET project, place Fluika library containing FluikaVC.dll, FluikaDeviceManager.dll and folder FDM_Settings into your development folder (and eventual folder of your application). Add component FluikaVC into your toolbox (Toolbox --> Right mouse click --> "Choose Items ..." from drop down menu -->.NET Framework components -->Browse --> Choose FluikaVC.dll file)

Now you can place a graphical control element (type: **FluikaVC.FluikaVCControl**) into your software (Figure 1). Use as many control elements as many different valve controllers are needed in the project. The actual software design can be slightly different weather you use one or multiple controllers at the same time. See later examples.

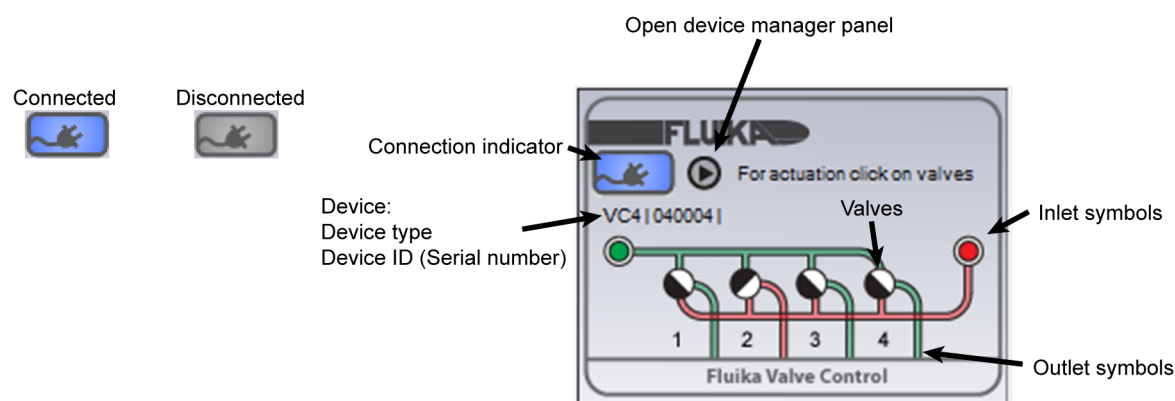


Figure 1 | Graphical user element component (size: 215 x 159 pix) containing everything for manual connection and control of the device. To change valve state on user interface click on the valve symbol, which of the inlets is connected to which of the outlets is indicated by colors.

PROGRAMMING

Syntax here is given for .NET C++, but component can be equally used with other languages such as C# or Visual Basic. See example projects! Components and examples have been developed with Visual Studio 2008 and are working on both 32- and 64-bit Windows computers.

Properties

<code>bool valve1</code>
Set the state of valve 1. True corresponds to valve on (red) state, and false to valve off (green) state.
<code>bool valve2</code>
Set the state of valve 2. True corresponds to valve on (red) state, and false to valve off (green) state.
<code>bool valve3</code>
Set the state of valve 3. True corresponds to valve on (red) state, and false to valve off (green) state.
<code>bool valve4</code>
Set the state of valve 4. True corresponds to valve on (red) state, and false to valve off (green) state.
<code>String^ searchID</code>

Is 6 character long string of device ID (Serial number), which this component shall connect. * can be used as a wildcard to replace characters, which shall be not considered in search.

`bool enableAutoConnectByID`

If automated searching of devices with ID specified in property *searchID* allowed.

Methods

`void activate()`

Activates FLUIKA device system. This function shall be called first before others. It initializes the component.

`void valvesOff()`

Switches all valves off.

`array<array<String^>>^ getDeviceList()`

Returns the latest list of connected devices. This list is a string array with size 256 x 5. Each of 245 lines represents on COM port counted from 1 to 256. Each line has 5 String values:

- First is by port number (1 to 256) as a string.
- Second port status, which can have 4 different states:
 - "OFFLINE" No device connected to this port.
 - "BUSY" Port could not be opened. Either hardware problem or port is already opened by same or another program.
 - "NOREPLY" Device do not reply as fluika device. Either connected device is not fluika device, or hardware failure has occurred.
 - "FLUIKA" Device is recognized as FLUIKA device.
- Third is deviceID (SN: 6-digits), if it is fluika device, otherwise empty string
- Fourth is device type (eg. "PG500")
- Fifth is device alias name (*this is becoming obsolete!*)

`String^ deviceID()`

Gets device ID (Serial number) of currently connected device

`String^ deviceType()`

Gets device type of currently connected device. Eg. "PG500" or "VG350"

`String^ devicePort()`

Gets COM port of currently connected device

`bool isConnected()`

Is device connected currently

`void updateDeviceList()`

Gets device ID (Serial number) of currently connected device

`void connectDevice(int portNr)`

Connect to a device with following COM port number

`void disconnectDevice()`

Disconnect device

Events

BecameConnected
This event is called when device became connected
BecameDisconnected
This event is called when device became disconnected, either by programmed disconnection or by physical loss of connection (eg. cable was pulled out)
ErrorOccured
This event is called when error occurred
UpdatedDeviceList
This event is called when device list became updated

EXAMPLE

Following describes a simple example with one valve controller. Place control component (fluikaVCControl1) on your form (Form1). Take form Load event and insert following code.

```
private: System::Void Form1_Load(System::Object^ sender,
    System::EventArgs^ e)
{
    fluikaVCControl1->activate(); //Activate component
    fluikaVCControl1->searchID="*****"; //Connect to any device
    fluikaVCControl1->enableAutoConnectByID=true; //Allow autoconnect
}
```

This program would automatically connect to valve controller, which is connected to computer. You can try to connect the device physically to USB port and then disconnect and connect again. This program shall automatically detect the presence of the device and connect to it.

If you have more than one Fluika device in your project, then you need to use **FluikaInstrument** component to manage connectivity of all Fluika devices properly. Please see manual. Otherwise there is risk that multiple components will access same ports simultaneously, which can lead to malfunction.

See also source codes of sample projects!