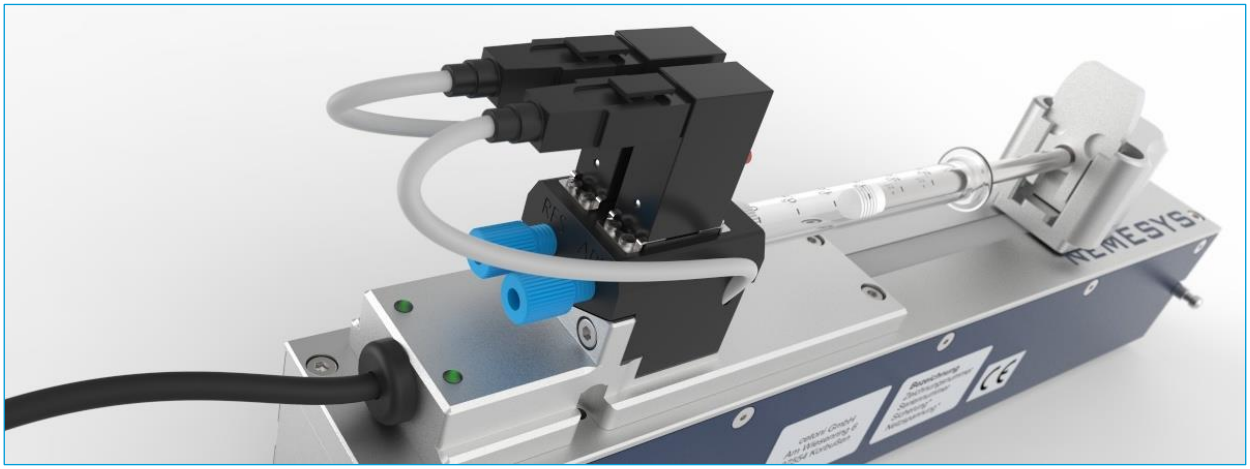
CETONI

CE Contiflow Valve

Hardware Manual



ORIGINAL INSTRUCTIONS 1.01 – JANUARY 2019

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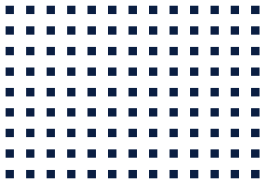


1 Overviews & Directories

1.1 Table of Contents

1.2 Revision History

REV	DATE	CHANGE
1.00	10.10.2018	Creation
1.01	16.01.2019	Added NEM-B147-01 A and NEM-B147-02 A, Section Mounting on NDM adapted

2 Introduction

2.1 Preface

Thank you for purchasing a product from CETONI. With this user manual we would like to support you as well as possible when handling the device. If you have any questions or suggestions, please do not hesitate to contact us.

2.2 Symbols and Keywords Used

The following symbols are used throughout this manual to help you navigate through this document:

HINT. Indicates application tips and useful hints to facilitate operation.

IMPORTANT. Indicates important information and other particularly useful information that does not describe dangerous or harmful situations.

ATTENTION. Indicates a potentially harmful situation. If it is not avoided, the product or something in its environment may be damaged.

CAUTION. Indicates a potentially dangerous situation. If it is not avoided, slight or minor injuries and property damage may result.

2.3 Norms and Directives

CETONI GmbH declares under its sole responsibility, that the individual neMESYS Pressure Sensor complies with the health and safety requirements of the relevant European directives.

2.4 Application Purpose

2.4.1 General Description of the Device

The use of two syringe pumps equipped with Contiflow Valves enables uninterrupted fluid dispensing. The integrated pressure sensor minimizes the pressure drop between emptying and refilling the syringes.

2.4.2 Intended Use

The Contiflow valve is used to generate an uninterrupted fluid flow with syringe pumps. It is intended for use in a laboratory.

2.4.3 Reasonably Foreseeable Faulty Application

A use for applications distinct from the intended purpose can lead to dangerous situations and is to be omitted.

CAUTION. The unit must not be used as a medical device or for medical purposes.

2.4.4 Safety measures

The safety of the user and a failure-free operation of the devices are assured only if original parts are used. Only original accessories may be used. Warranty claims will not be accepted for damage due to the use of alien accessories or expendables.

The devices have been developed and constructed in such a way as to largely rule out hazards due to its intended use. Nevertheless, you must observe the following security measures in order to exclude any remaining hazards.

- CETONI GmbH points out the responsibilities of the operator for the operation of the devices. The laws and regulations of the place of installation must be observed while operating the devices! To ensure a safe work routine, operators and users must assume responsibility for adhering to regulations.
- The devices must not be used as a medical device or for medical purposes.
- The device is designed and approved for operation in systems that fall within the scope of Article 4 paragraph 3 of the Pressure Equipment Directive 2014/68/EU.
  It is the user's responsibility to become familiar with the mentioned Pressure Equipment Directive and to comply with the prevailing requirements.
- Before operating the unit, the user must at all times ensure the operational reliability and the adequate and orderly condition of the unit.
- The user must be familiar with the operation of the device and the software.
- The device as well as cables and pipes must be checked for damage before operation. Damaged pipes, cables and plug devices must be replaced immediately.
- Cables and pipes must be laid in a way that avoids any risk of stumbling.
- It is not allowed to use the device in an explosive atmosphere or with potentially explosive substances.
- Check the tightness of all fluid connections after connection and at regular intervals.
- Relieve the pressure in the system before you release fluidic connections.
- Only use components specified for the expected pressures and media.
- Wear protective glasses if you are working with corrosive, hot or otherwise dangerous substances during assembly work on the device.
- Transportation, storage or operation of the device below 0°C with water in the fluid passages may cause damage to the device.

2.4.5 Measures for Safe Operation

2.4.5.1 ELECTROMAGNETIC EMISSIONS

The device is intended to be operated with a neMESYS System which is connected directly to the public power supply network that supplies buildings used for domestic purposes.

2.4.5.2 ELECTROSTATIC DISCHARGE

Floors should be made of wood, concrete, or ceramic tiles. If the flooring is made of a synthetic material, the relative humidity must be at least 30%.

2.4.5.3 ELECTRIC DISTURBANCES

The quality of the supply voltage should be to the standard of a typical business or hospital environment.

2.4.5.4 MAGNETIC DISTURBANCES

Do not place power connector cables, even of other appliances, in close proximity of the devices and their cables. Mobile communication devices may not be used in closer proximity of the devices or their cables than the recommended safety distance!

2.4.6 Safety Devices on the System

The system can be switched off at any time in an emergency using the main switch on the Base Module (rocker switch on the side of the housing); this will cause no damage to the unit.

2.4.7 Condition of the Devices

Irrespective of the faultless manufacture of the device, damage can occur whilst the unit is in operation. With this in mind, always carry out a visual check of the components mentioned before use. Pay particular attention to crushed cables, damaged tubing, and deformed plugs. If you should notice any damage, please do not use the device and inform CETONI GmbH without delay. CETONI will put your device back to an operational condition at the earliest. Do not attempt to repair the device yourself.

2.5 Warranty and Liability

The devices left our company in perfect condition. Only the manufacturer is permitted to open the devices. All warranty and liability entitlements, particularly damage entitlements due to personal injuries, are void if the devices are opened by an unauthorised person.

The duration of the warranty is 1 year of technical equipment (expect wear parts) from the day of delivery. It is not extended or renewed due to work carried out under warranty.

CETONI GmbH considers itself responsible for the devices with regard to safety, reliability and function only if assembly, new settings, changes, extensions and repairs are carried out by CETONI GmbH or an authorised centre, and if the devices have been used in accordance with the instruction manual.

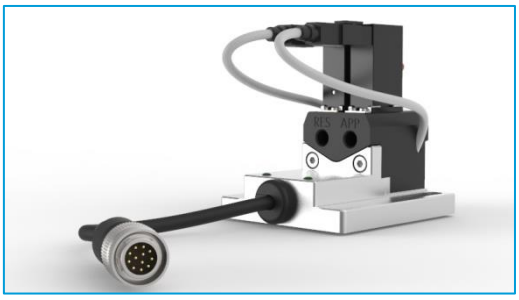
The product conforms to the basic safety regulation standards. Industrial property rights are reserved on the circuits, methods, names, software programs, and units.

2.6 Scope of Delivery

The following items should be included:

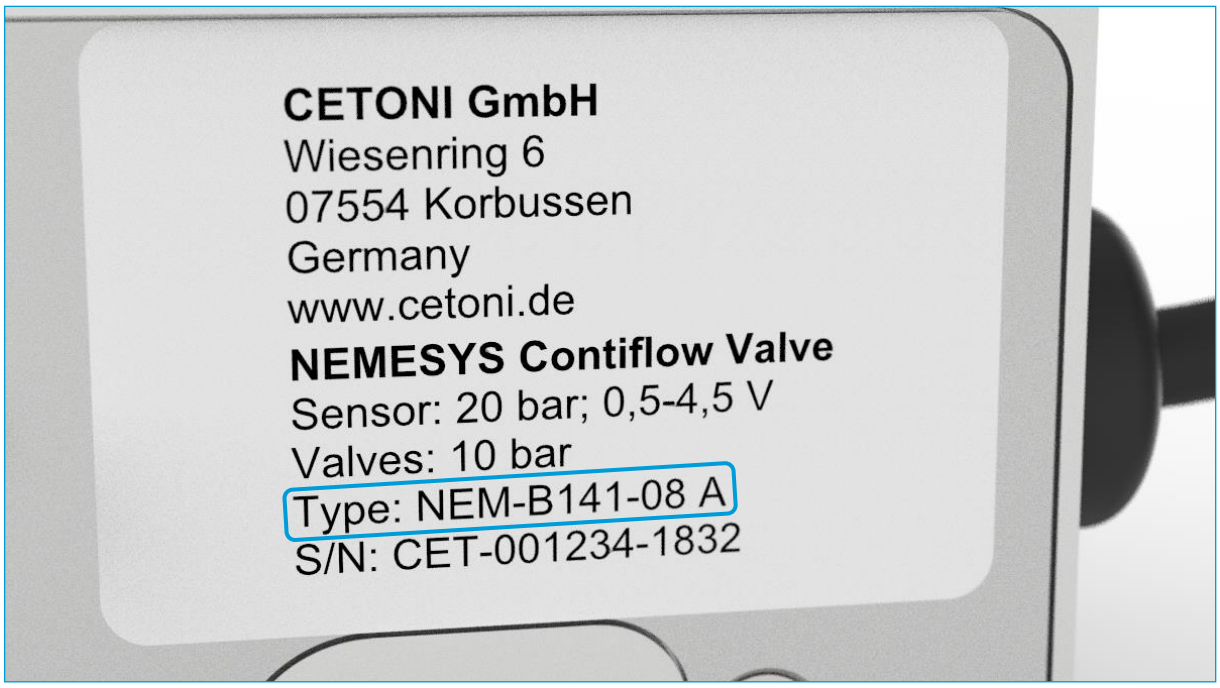
CONTIFLOW VALVE

in the ordered version



3 Technical Data

There are several types of the Contiflow Valve, which differ in their technical data. The data of the type available to you can be found in the following tables using the type designation, which you can find on the nameplate on the underside of the device under Type.



3.1 Environment (all types)

OPERATING TEMPERATURE	0 °C to 50 °C
STORAGE TEMPERATURE	-20 °C to 75 °C
OPERATING AIR HUMIDITY	20 % to 90 %, non-condensing
STORAGE AIR HUMIDITY	20 % to 90 %, non-condensing

ATTENTION. Transportation, storage or operation of the modules below 0°C with water in the fluid passages may cause damage to the module.

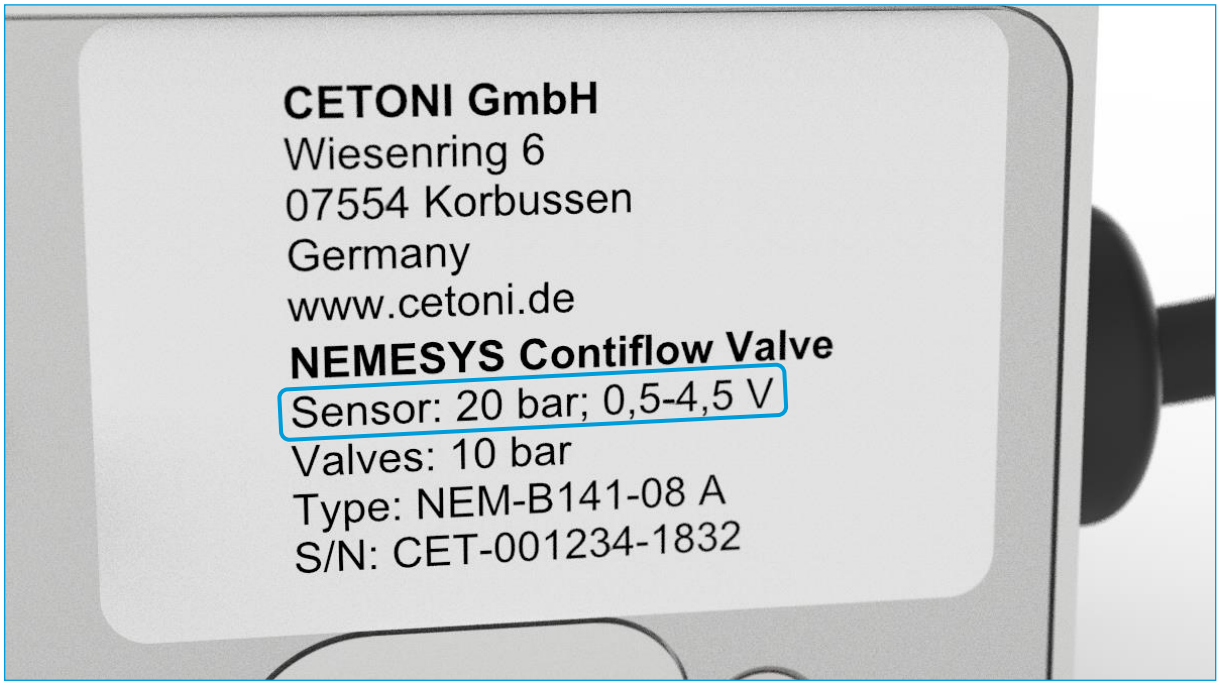
3.2 Specific Data

TYPE	PRESSURE RANGE SENSOR	OUTPUT SIGNAL	PRESSURE RANGE VALVE	WETTED MATERIALS
NEM-B141-07	0 – 20 bar	0.5 – 4.5 V	Vacuum – 10 bar	PPS (Polyphenylene sulphide), FKM (Fluoroelastomer), Al_2O_3 (Aluminum oxide ceramics)
NEM-B141-08	0 – 20 bar	0.5 – 4.5 V	Vacuum – 10 bar	PPS (Polyphenylene sulphide), FKM (Fluoroelastomer), Al_2O_3 (Aluminum oxide ceramics)
NEM-B147-01	0 – 10 bar	0.5 – 4.5 V	Vacuum – 5 bar	PEEK (Polyetheretherketone), FFKM (Perfluoroelastomer), Al_2O_3 (Aluminum oxide ceramics)
NEM-B147-02	0 – 10 bar	0.5 – 4.5 V	Vacuum – 5 bar	PEEK (Polyetheretherketone), FFKM (Perfluoroelastomer), Al_2O_3 (Aluminum oxide ceramics)

4 Operation

4.1 Pressure Range/Configuration

Before use, the Contiflow Valve and the integrated pressure sensor must be selected or configured in the software. The procedure is described in the software manual. During the configuration of the pressure sensor in the software, you must specify the pressure range in bar and the voltage range of the generated measurement signal in volts. These data can be found in section 3.2 and on the nameplate on the underside of the device under *Sensor*.



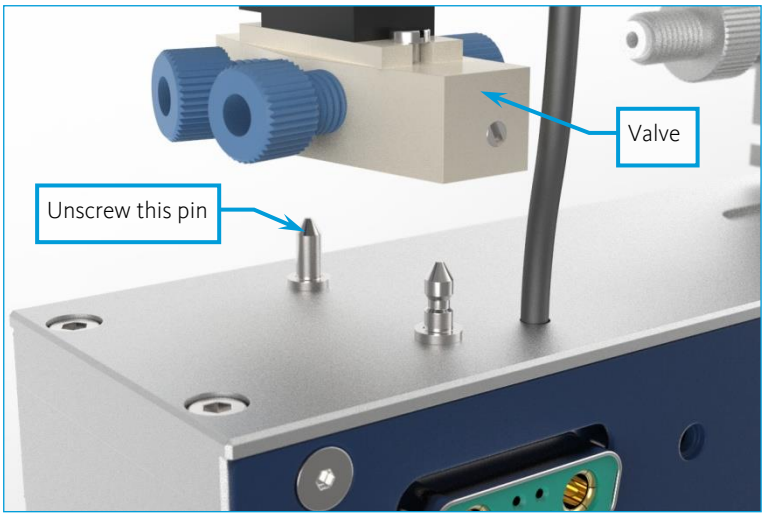
ATTENTION. To avoid damaging the valves, do not exceed the pressure range of the valves specified in section 0. For this purpose, use the pressure monitoring function of QmixElements.

ATTENTION. Configure the pressure sensor before use to prevent damage to the device and your application.

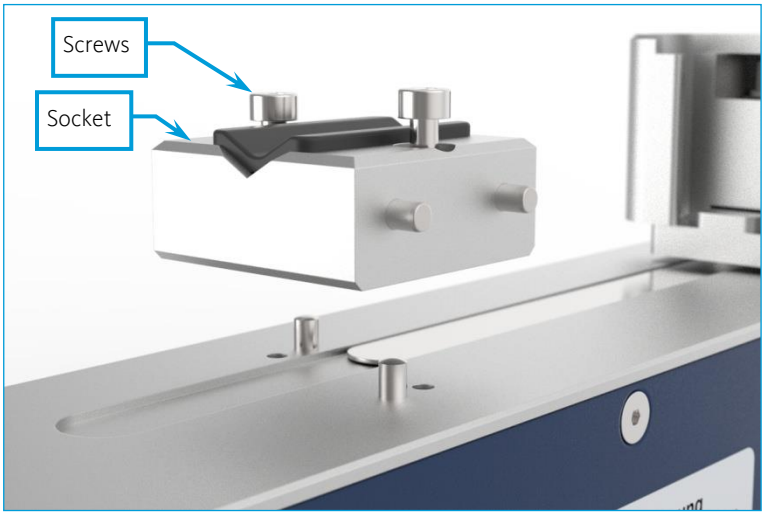
4.2 Mounting on the device

4.2.1 Low Pressure Syringe Pump, OEM 310

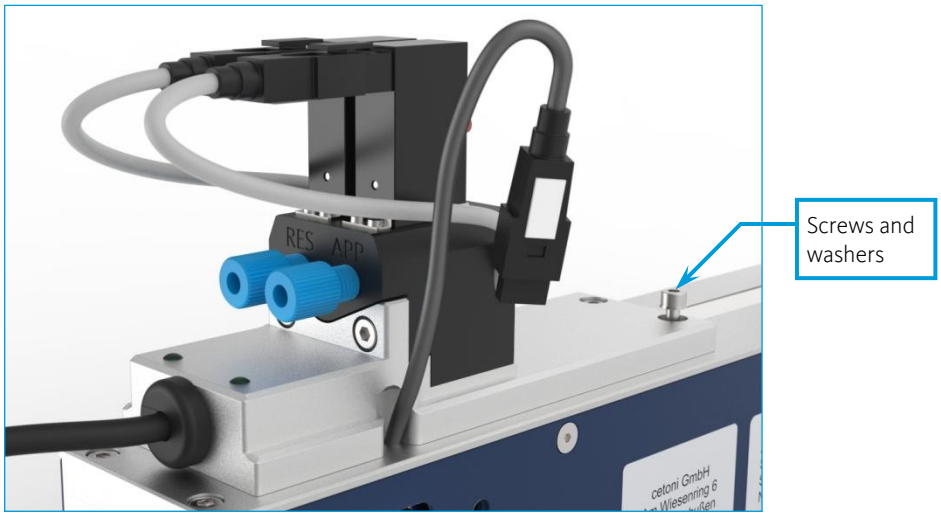
If installed, remove the valve and unscrew the pin marked in the following picture. This probably requires the use of pliers.



Remove the syringe holder by unscrewing the fixing screws. To remove the socket, it may be helpful to attach the clamping bracket and then remove the socket by gently wiggling.

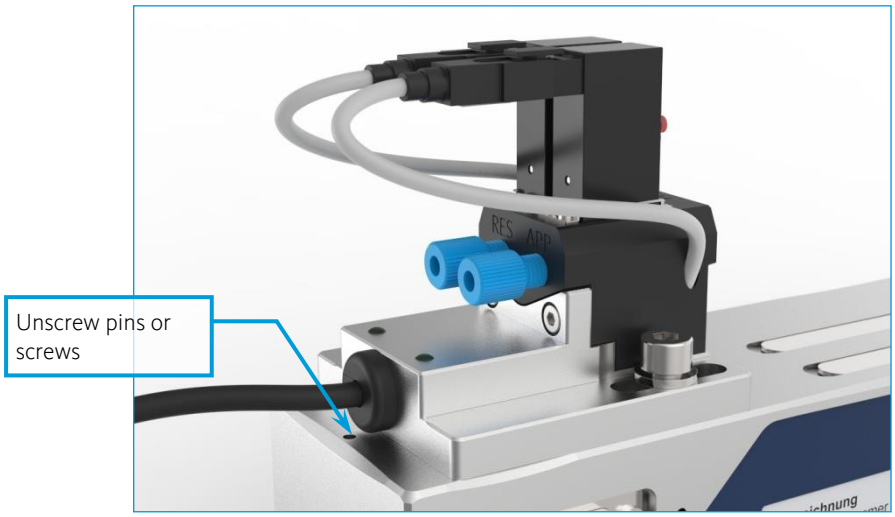


Mount the Contiflow valve using the supplied M3x8 Allen screws (2.5 mm Allen wrench) and washers as shown in the picture below.



4.2.2 Mid Pressure Syringe Pump

Remove the existing syringe holder using a 5 mm Allen key. Also unscrew the two small pins or screws on the front of the unit. Then mount the Contiflow valve using the existing screws.



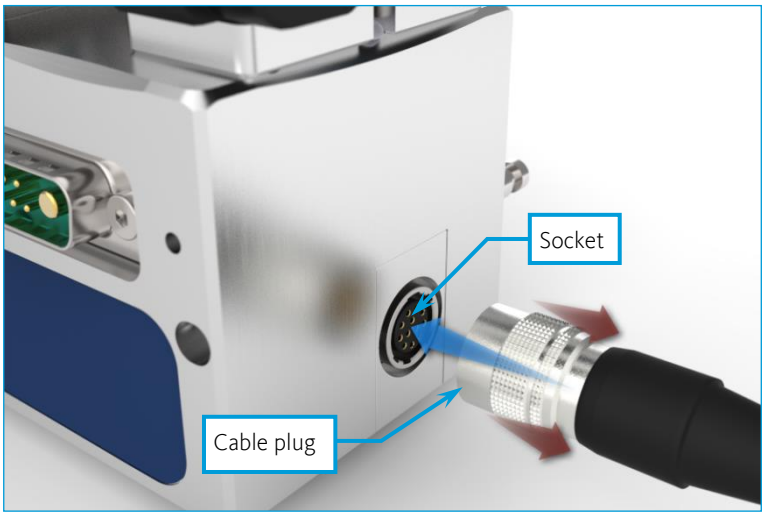
4.3 Electrical Connection

IMPORTANT. Please read and observe the respective section of the associated software manual before connecting the device.

CAUTION. Danger of stumbling due to connecting cables! Place cables and tubing in such way as to avoid any danger of stumbling!

4.3.1 Connection to neMESYS I/O-interface

The Contiflow Valve with the 12-pin Hirose cable plug can be connected to all neMESYS devices that are equipped with the corresponding 12-pin Hirose connection socket. Plug the cable plug of the Contiflow Valve into the socket of the module until it engages (blue arrow). Note that the plug can only be mounted in one orientation! To remove, pull on the metal sleeve of the plug. This releases the lock and the plug can be easily removed. (red arrows)

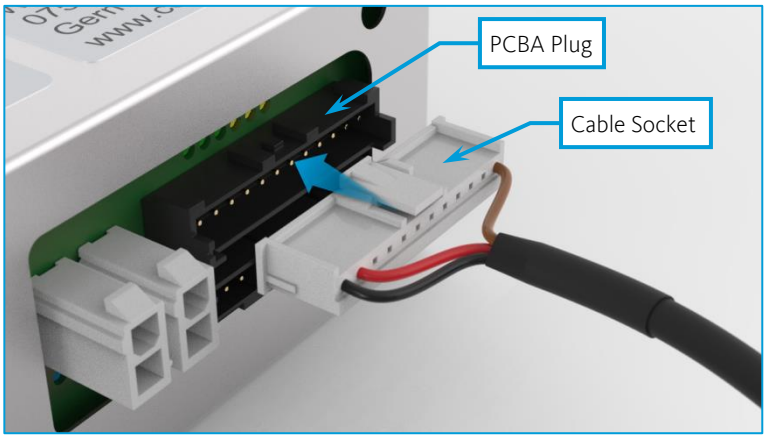


4.3.2 Connection to neMESYS OEM I/O-interface

The Contiflow Valve with the 12-pin JST cable socket can be connected to all neMESYS devices that are fitted with the corresponding 12-pin JST PCBA plug.

Plug the cable socket of the Contiflow Valve into the plug of the module until it snaps noticeable into place. Please note that the connection will fit only one way!

To remove it, pull on the snap-fit rocker of the cable socket. Thus, the lock is released and the cable can be removed easily.

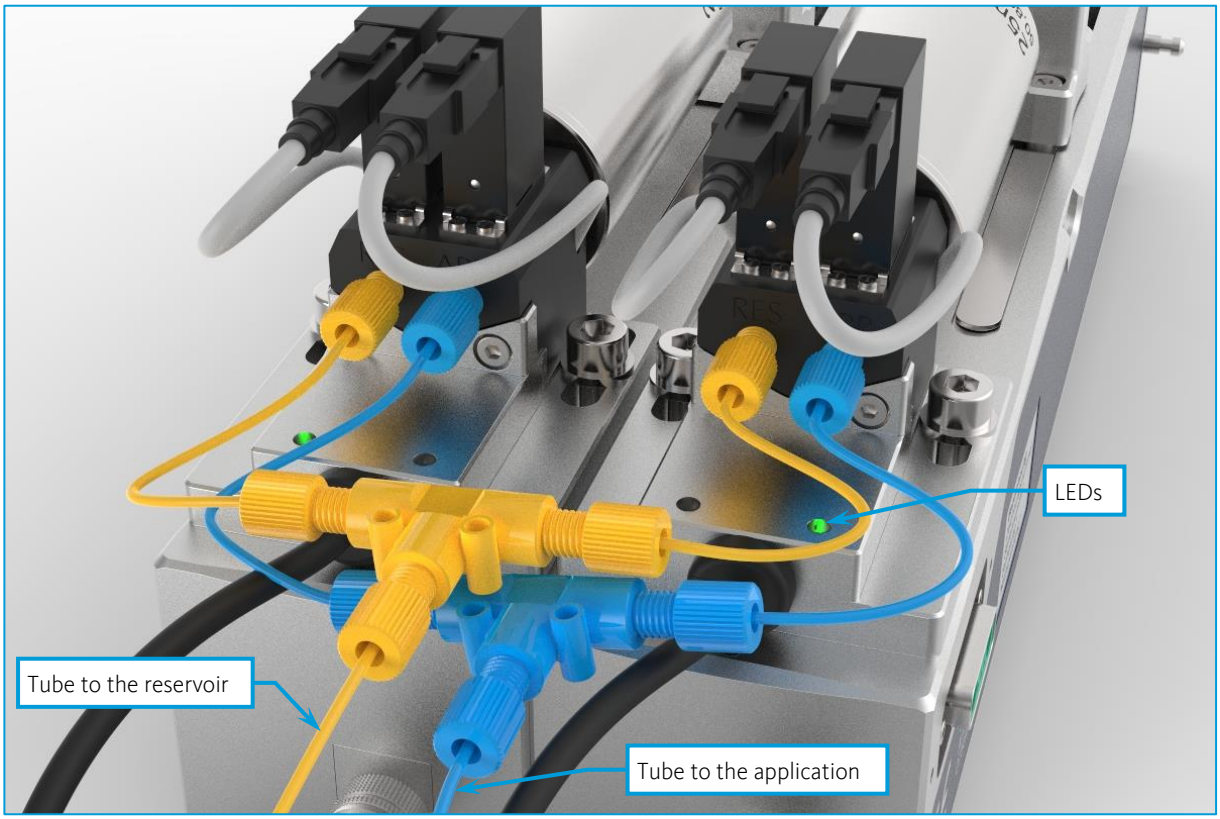


4.4 Fluidics

Two syringe pumps equipped with Contiflow valves are required for uninterrupted fluid dispensing. A Contiflow valve has three connections with ¼"-28 UNF thread. The connection for the syringe is on one side and is not labeled. The syringe is screwed directly into this connection.

The connections for application and reservoir are on the opposite side and are labeled RES and APP. For continuous operation, connect the APP connections of both devices, for example via a T-piece, with your application (blue in the picture) and both RES connections to your reservoir (orange in the picture).

An LED under the respective port lights up to indicate the current switching position. If the LED lights green, then this port is connected to the syringe. Tube to the reservoir

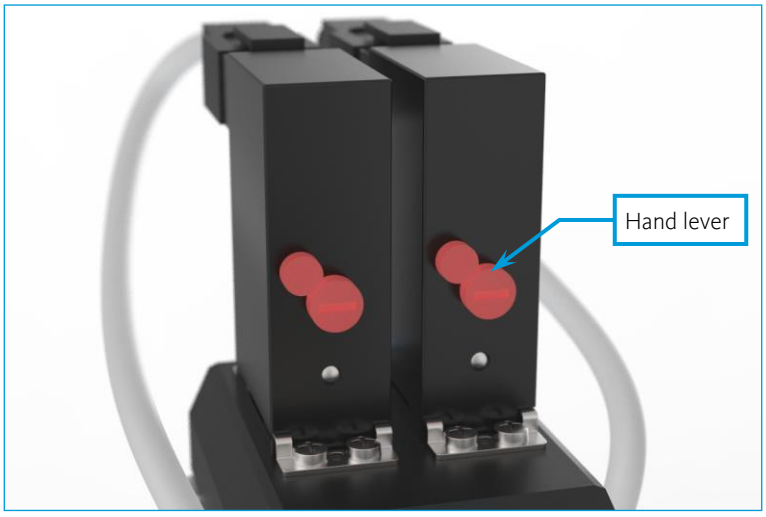


For information on how to configure the Continuous Flow in QmixElements, please refer to the software manual.

ATTENTION. Only use fittings and capillaries specified for the anticipated pressure levels.

ATTENTION. After connecting, check the tightness of all fluidic connections on a regular basis.

IMPORTANT. Some valve types have a hand lever for manual actuation. Please leave this in the normal position shown. Otherwise the proper functioning of the Contiflow Valve cannot be guaranteed.



5 Transport and Storage

For transport and storage, observe the information given in Section 3.1.

ATTENTION. Transport and storage of the device below 0°C with water in the fluid passages may cause damage to the device.

6 Maintenance and Care

If used in accordance with intended purpose, the device is maintenance-free. Should there be a failure despite this, which you cannot eliminate yourself, or which requires opening the device, please contact CETONI GmbH to coordinate further actions. The device may only be opened by CETONI GmbH or thereby authorized service staff. Otherwise the warranty claims are void.

Software-related troubles are dealt with in the Software Manual.

After use with aggressive fluids please thoroughly cleanse the device with water, in order to avoid any deposits on the inside.

For cleaning it please rub the surface gently with a soft, damp cloth. The cloth must not be wet, so that no fluency can trickle into the device. In case of a heavier soiling you can also use a little bit of detergent or alcohol.

7 Disposal

Please send your old devices back to CETONI GmbH. We will take care of proper disposal.

If necessary, please decontaminate the device before sending it back and attach a completed decontamination declaration with your shipment.