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EL-FLOW[®] *Prestige*

Mass Flow Meters/Controllers

Quick Installation Guide

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Starting up the EL-FLOW[®] *Prestige* in 10 steps

SCOPE OF THIS GUIDE

EL-FLOW® Prestige is the next generation of Bronkhorst® Mass Flow Meters/ Controllers, using the latest, highly accurate, thermal bypass sensor technology and featuring excellent control characteristics. Thanks to the advanced sensor technology in combination with a state-of-the-art printed circuit board, the instruments feature improved long term stability as well as an unsurpassed temperature stability. The optional Pressure Insensitive functionality offers real-time pressure compensation ensuring additional accuracy and reliability under varying inlet pressure conditions. Furthermore, due to a power efficient microprocessor, the power consumption of the instrument is reduced.

This Quick Installation Guide will help you start up your **EL-FLOW® Prestige** in only 10 steps, covering the following subjects:

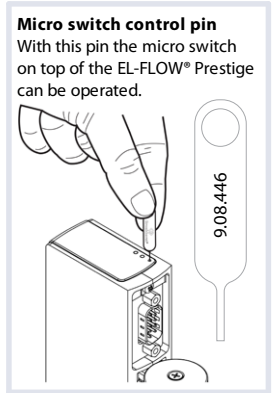
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|--------------------------------|---------------------------|
| 1. Check functional properties | 6. Electrical connection |
| 2. Check pressure | 7. Operational interface |
| 3. Check piping | 8. Multifunctional switch |
| 4. Mounting/installation | 9. Purging |
| 5. Leak check | 10. Zeroing |

Other applicable documents:

- | | |
|---------------------------------------|----------|
| • Manual for EL-FLOW® Prestige series | 9.17.084 |
| • FlowPlot manual | 9.17.030 |

Fieldbus/interface manuals

- | | Manual | Hook-up diagram |
|--|----------|-----------------------------------|
| • RS232 interface with FLOW-BUS protocol | 9.17.027 | 9.16.119 (incl. analog interface) |
| • FLOW-BUS interface | 9.17.024 | 9.16.120 |
| • PROFIBUS DP interface | 9.17.025 | 9.16.121 |
| • DeviceNet™ interface | 9.17.026 | 9.16.122 |
| • Modbus interface | 9.17.035 | 9.16.123 |
| • PROFINET interface | 9.17.095 | 9.16.147 |
| • EtherCAT® interface | 9.17.063 | 9.16.124 |
| • Custom bus & IO configuration | | 9.16.118 |



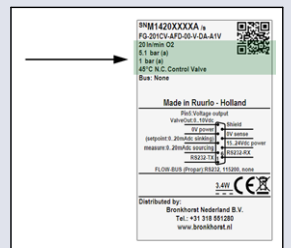
These documents can be downloaded from www.bronkhorst.com/downloads or can be sent by email on request.

Starting up

1 Check functional properties

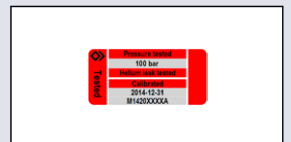
Before installing the instrument, check if the properties stated on the instrument label match your requirements:

- Flow rate
- Fluid to be measured
- Up- and downstream pressures
- Input/output signals (see also step 6)
- Temperature
- Valve type (N.C. - Normally Closed / N.O. - Normally Opened)



2 a. Check test-pressure

The tested pressure is stated on the instrument with a red sticker. Before installation, make sure that the tested pressure is in accordance with normal safety factors for your application. If a pressure test sticker is missing, or if the tested pressure is insufficient, the instrument must **not** be mounted in the process line and should be returned to the factory.



b. Sealings

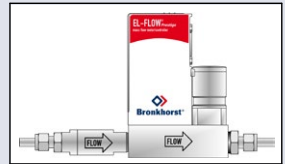
EL-FLOW® Prestige instruments are equipped from factory with sealings compatible with the requested gas type. However the instruments have Multi Gas / Multi Range functionality on board. If another gas or mixture is used, always make sure that the gas/mixture is compatible with the installed sealing materials. Refer to the EL-FLOW® Prestige manual (document no. 9.17.084) for a compatibility list.

c. Ambient conditions

EL-FLOW® Prestige instruments are suitable for use in conditions between $-10...+70^{\circ}\text{C}$ and relative humidity of $10...90\% \text{RH}$, unless specified otherwise. Please note that **EL-FLOW® Prestige** instruments have an ingress protection rating of IP40, implying that the electronics housing and electrical connection do not offer any protection against moist environments.

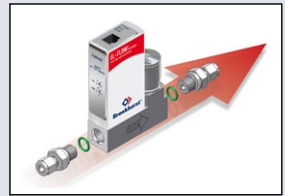
3 Check if system piping is clean

For reliable measurement, always make sure the fluid stream is clean. Use filters to assure a moisture, oil and particle free gas stream (recommended pore-size: $5\ \mu\text{m}$). If back flow can occur, installing a downstream filter and a check valve is recommended too. For high flow rates, select a suitable filter size, to avoid a too high pressure drop.



4 Mount/install instrument properly

Mount the instrument in the line in accordance with the flow arrow in the instrument body. Tighten fittings according to the instructions of their supplier. The use of Swagelok RS-type stainless steel adapters is advised.



Avoid installation in close proximity of mechanic vibration and/or heat sources.

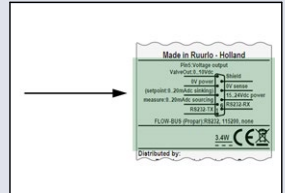
5 Leak check



Check the system for leaks before applying (fluid) pressure, especially when using hazardous media (e.g. toxic or flammable).

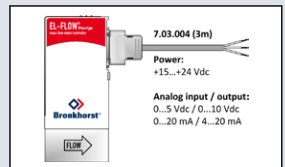
6 Electrical connection

Electrical connections must be made with a standard cable or according to the applicable hook-up diagram (see page 2). The factory installed 9-pin sub-D settings are indicated on the instrument label. Make sure that the power supply is suitable for the indicated power ratings, indicated on the instrument label, and that double or reinforced insulation is used for the power supply.



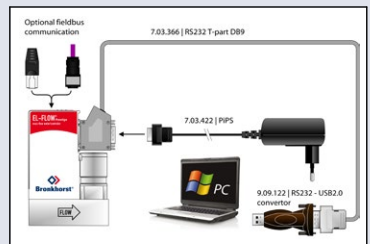
7 a. Analog/local operation

Connect the **EL-FLOW® Prestige** to the power supply/readout unit using a cable with 9-pin sub-D connector.



b. Digital RS232 operation

Digital operation over RS232 can be established when using the following setup. Connecting the instrument with a RS232 cable or an RS232 cable with a USB to RS232 converter to a PC enables use of the (free) Bronkhorst® software for Windows, such as FlowDDE and FlowPlot. Make sure that the instrument label indicates RS232 settings and apply the proper baud rate settings. If the instrument is not set for RS232 communication, please refer to the EL-FLOW® Prestige manual (document no. 9.17.084) for switching to RS232 communication settings.





Do not power the instrument simultaneously from two different power sources (e.g. bus connection and PiPS). Doing so will blow the fuse on the printed circuit board, requiring the return of the instrument for repair.



A PiPS (Plug-in Power Supply, art.nr.: 7.03.422) is available to power a single instrument and can be used instead of the DB9 loose-end cable as shown in the example above. Detailed information can be found in the manual PiPS (9.17.055) which can be downloaded from www.bronkhorst.com/downloads.

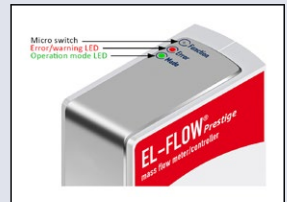
c. Fieldbus operation

With digital operation over RS485 or Ethernet a bus-system with multiple instruments can be set up. If a separate fieldbus connection (e.g. DeviceNet™, EtherCAT®) is present (instrument top side), refer to the specific fieldbus manual. For RS485 operation over the 9-pin Sub-D connector (if installed) refer to the EL-FLOW® Prestige manual (document no. 9.17.084).

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Multifunctional micro switch operation

Using the 2 colored LEDs and the micro switch on top of the **EL-FLOW® Prestige**, several actions can be monitored and started. The ● green LED is used for status indication. The ● red LED for errors/warnings/messages. The switch can be used to start several actions, such as autozero, restoring factory settings and bus initialization actions, if applicable. See zeroing procedure below (step 10) or check the EL-FLOW® Prestige manual (document no. 9.17.084) for more details.



The micro switch can be operated with a thin, metal or hard plastic pin (for example the end of a paperclip).

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Purging

Prior to operating the instrument with either corrosive or reactive fluids, it is absolutely necessary to purge the instrument with a dry, inert gas (e.g. nitrogen or argon) for at least 30 minutes. Complete purging is also necessary after use with a corrosive or reactive fluid, before exposing the instrument to air.



Warm-up time

For accurate measurement, it is recommended to warm up the instrument for at least 30 minutes. This can also be done while purging.

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Zeroing

The zero point of each Bronkhorst® flow meter is factory adjusted. If required the zero point can be re-adjusted over RS232 or with the multifunctional switch. Procedure for zeroing by multifunctional switch:

- Warm up and pressurize the system and fill the instrument according to the process conditions.
- Make sure no flow is going through the instrument, by closing valves near the instrument.
- The setpoint must be zero.
- Press the multifunctional switch and hold it. After a short time, the ● red LED will go ON and OFF, then the ● green LED will turn ON. At that moment, release the switch.
- The zeroing procedure will start at that moment and the ● green LED will blink fast. The zeroing procedure waits for a stable signal and saves the zero. If the signal is not stable, zeroing will take long and the nearest point to zero is accepted. The procedure will take approximately 5 seconds.
- When the indication is showing 0% signal and the ● green indication LED is glowing continuously again, then the zeroing action was successful.

Your **EL-FLOW® Prestige** is now ready for operation.

