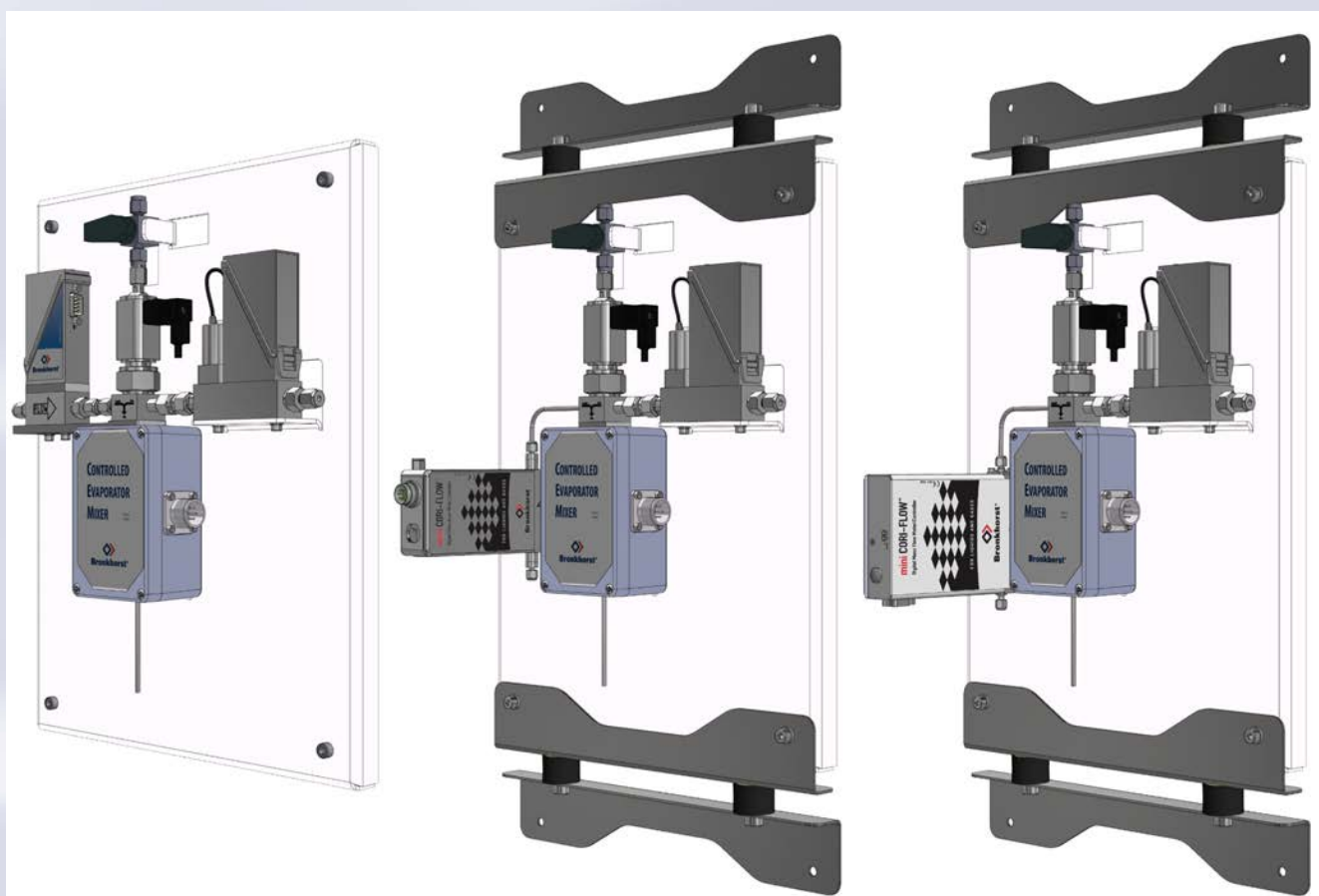


CEM Panel

Controlled Evaporation & Mixing

Quick Installation Guide

Doc. no.: 9.17.130 rev. B Date: 07-10-2019



Installing your CEM Panel in 7 steps

SCOPE OF THIS GUIDE

The CEM Panel provides an all-in-one solution for the implementation of a complete Bronkhorst® CEM system for accurate and reproducible vapour delivery. It combines instruments whose specifications are aligned to each other with appropriate tubing in an optimized configuration.

Depending on the ordered configuration, your CEM Panel is equipped with the following Bronkhorst® instruments:

- Gas mass flow controller (MFC) : 1x EL-FLOW® Select or Prestige
- Liquid mass flow meter (MFM) : 1x µ-FLOW L01, LIQUI-FLOW™ L13/L13 or mini CORI-FLOW™ M13/ML120
- CEM module : 1x CEM W-10x or W-20x

This Quick Installation Guide will help you prepare your CEM Panel for first use, covering the following subjects:

1. Check conditions

2. Mount panel

3. Install fluid connections

4. Check for leaks
5. Electrical connections

6. Purging

7. Adjusting zero points

This document is supplemental to the **CEM manual** (document no. 9.17.126) and can by no means replace the documentation of the incorporated instruments. Depending on the specific instruments mounted on the CEM Panel, you will also need the following manuals:

Component	Document no.	Document name
Gas MFC	9.17.099	Manual EL-FLOW Select
	9.17.084	Manual EL-FLOW Prestige
Liquid MFM	9.17.023	Operational instructions for digital instruments
	9.17.050	Manual mini CORI-FLOW™ M1x series
	9.17.097	Manual mini CORI-FLOW™ ML120
CEM module	9.17.126	Manual CEM

For technical information regarding sizes, required mounting space, etc., see the dimensional drawing for your specific CEM Panel configuration (specified by the type of liquid flow meter):

Configuration	Document no.
µ-FLOW / LIQUI-FLOW™	7.14.019
mini CORI-FLOW™ M1x	7.14.020
mini CORI-FLOW™ ML120	7.14.021



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

Starting up

1

Check pressure rating
Before installation, make sure that the pressure rating of the assembly is in accordance with the safety factor of your application.

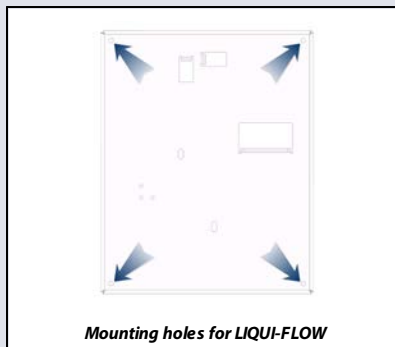
The tested pressure is stated **on the CEM Panel** with a red label (the labels on the individual instruments should be disregarded). If this label is missing, or if the pressure rating is insufficient, the CEM Panel must **not** be mounted in the process line and should be returned to the factory.

Disassembling (parts of) the CEM Panel will invalidate the pressure rating.

2

Mount panel

Use mounting materials (screws, plugs, bolts, etc.) that are suitable to carry the combined weight of the panel and the instruments. Together with mounted instruments, the CEM Panel weighs approximately 8.5 kg. Prevent weight gain by adequately supporting inlet and outlet piping.



Use the mounting holes in the corners of the panel to attach it to a stable and rigid construction (e.g. a wall). Consult the dimensional drawing for the exact size and positions of the mounting holes (see page 2).



Follow local regulations and instructions for safe mounting of equipment if applicable.



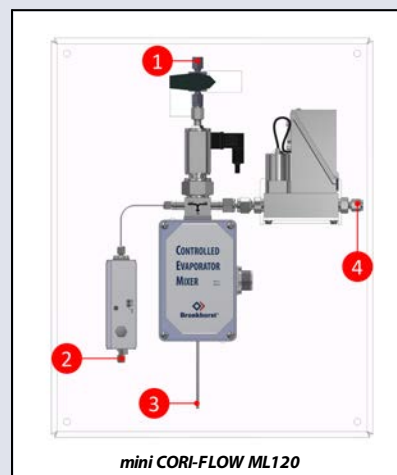
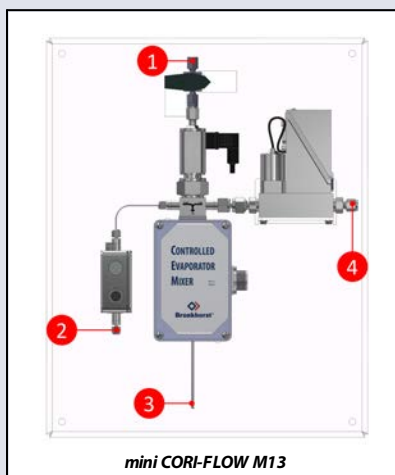
Avoid installation in close proximity of mechanic vibration and/or heat sources.

3

a. Install fluid connections

All required fluid connections between the CEM instrumentation are already made. Only the media inlets, the vapour outlet and the bleed outlet have to be connected.

- Connect the liquid and carrier gas supply lines to the instrumentation according to the overview images below.
- Connect the vapour outlet to the process/reactor/chamber.
- Tighten the fluid connections according to the instructions of the supplier of the fittings.

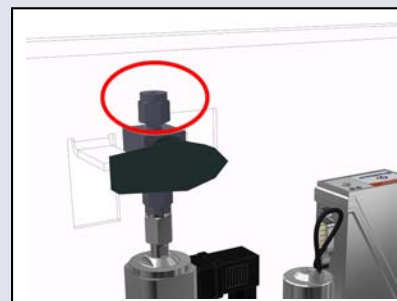


Fluid connectors:





1. Bleed outlet
2. Liquid inlet
3. Vapour outlet
4. Carrier gas inlet

b. Install bleed line

- For applications with a maximum operating pressure up to 8 bar, use the supplied transparent tube to act as a bleed line.
- Connect the bleed line to the bleed valve outlet.
- Connect the bleed line outlet to an appropriate draining facility, especially if the CEM system will be used with hazardous media.



The supplied transparent bleed tube is suitable for operating pressures up to 8 bar (g).

<p>4</p> 	<p>Check for leaks</p> <ul style="list-style-type: none"> • Check the fluid system for leaks before applying pressure, especially if toxic, explosive or other dangerous fluids are used. • Do not apply fluid pressure until all required electrical connections are made.
<p>5</p>	<p>Electrical connections</p> <ul style="list-style-type: none"> • The actuator connection between the liquid flow meter and the mixing valve is already made. • Connect the instruments to the power supply and master device (analog/RS232/fieldbus, whatever is applicable) according to the instructions in their respective manuals (see page 2).
	<p>CEM Panels equipped with a μ-FLOW or a LIQUI-FLOW™ liquid flow meter are supplied with a standard extension cable (analog/RS232/power, as applicable) already plugged into the 9-pin D-sub connector on the side of the instrument.</p>
	<p>Preferably use a Bronkhorst® E-8000 CEM controller for temperature control of the heat exchanger. It has a fused temperature control circuit and an integrated readout and control unit (with optional r/c units for both flow meters/controllers).</p>
<p>6</p> 	<p>Purging</p> <p>If the CEM Panel will be used with corrosive or reactive media, purging with an inert gas (e.g. Nitrogen or Argon) for at least 30 minutes is absolutely necessary before use. After use with such media, complete purging is also required before exposing the system to air.</p>
	<p>Purge the CEM system according to the purging instructions in the CEM manual (see page 2).</p>
<p>7</p>	<p>Adjust zero points</p> <p>The zero point of each Bronkhorst® flow meter/controller is factory adjusted at approximately 20 °C and atmospheric pressure. If the ambient conditions are significantly different, zeroing both flow meters is recommended before using the CEM Panel for the first time.</p>
	<p>The quickest way to adjust the zero point is by using the multifunctional switch and the indication LEDs:</p> <ol style="list-style-type: none"> 1. Fill the instrument homogeneously with the operational media and pressurize it according to the process conditions. 2. Change the setpoint of the instrument to 0% (zero). 3. Press and hold the multifunctional switch. After 4 seconds, the red LED ● starts glowing for 4 seconds, after which the green LED ● starts glowing. 4. At that moment (which is after 8 to 12 seconds), release the switch. <p>The green LED starts to blink fast, indicating that the autozero function is being performed. On (successful) completion, the green LED starts to glow continuously, while the output signal is 0% (parameter <i>Measure</i> = 0).</p>
	<p>Your CEM Panel is ready to use.</p>