

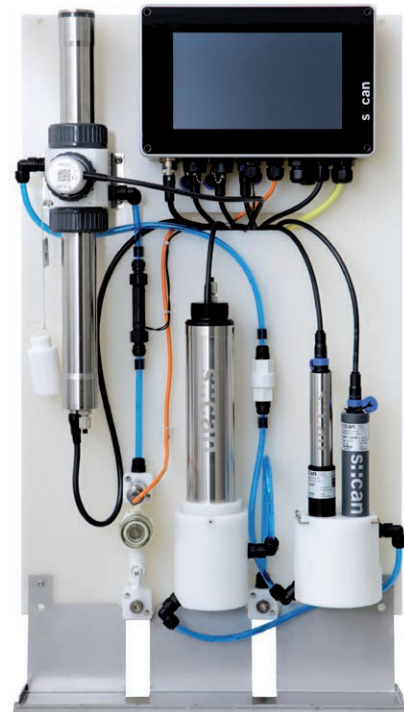


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1 GENERAL

This manual contains, firstly, general information (chapter 1) and safety guidelines (chapter 2). The next chapter (chapter 3) provides a technical description of the product itself as well as information regarding transportation, scope of delivery and correct storage and disposal. The following chapters explain the installation (chapter 4) and the initial start-up (chapter 5). This manual also contains information how to perform a function check (chapter 6) and maintenance (chapter 7). Information on troubleshooting (chapter 8), the available accessories (chapter 9) and the technical specifications (chapter 10) complete the document.

Each term in this document that is marked *italic and underlined*, can be found on the display of your controller for operation or as lettering on your Badger Meter product.

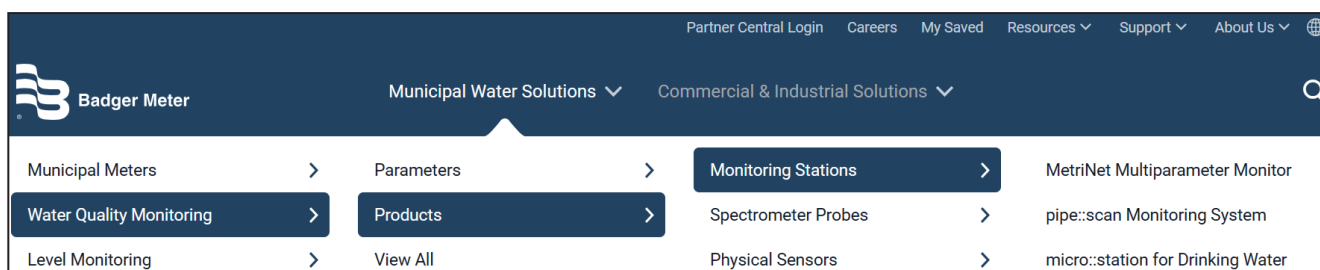
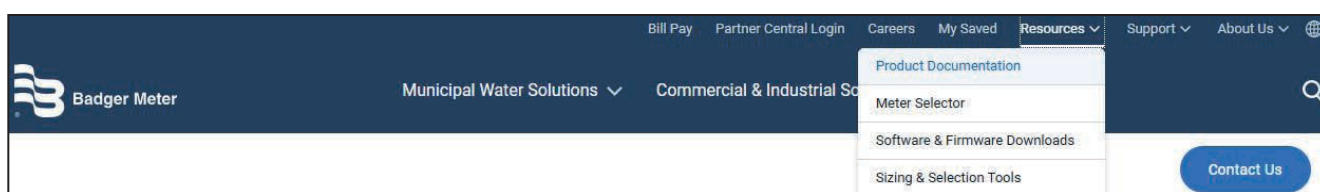
In spite of careful elaboration this manual may contain errors or incompleteness. Badger Meter Austria does not assume liability for errors or loss of data due to such faults in the manual. The original manual is published in English and German by Badger Meter Austria. This original manual serves as the reference in case discrepancies occur in versions of the manual after translation into other languages.

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This manual refers to the Badger Meter products listed in chapter 3 at the time of publication (see version date in the footer). Information and technical specifications from Badger Meter manuals of earlier publication dates are replaced by this manual.

The electronic version (PDF-document) of this manual is available on the Badger Meter Website at:

- [Resources > Product Documentation](https://www.badgermeter.com/en-gb/product-documentation/) (<https://www.badgermeter.com/en-gb/product-documentation/>)
Documents filtered by: Brand = *micro::station* or *nano::station*
- [Water Quality Monitoring Stations](https://www.badgermeter.com/en-gb/products/water-quality-monitoring/monitoring-stations/) (<https://www.badgermeter.com/en-gb/products/water-quality-monitoring/monitoring-stations/>)
- Download-Link: <https://badgermeter.widen.net/content/s7pfxqboye/original?download=false&x.app=api>



2 SAFETY GUIDELINES

Installation, electrical connection, initial startup, operation and maintenance of any Badger Meter product as well as complete Badger Meter measuring systems must only be performed by qualified personnel. This specialist personnel must be trained and authorised for these activities by the plant operator or by Badger Meter Austria. The specialist personnel must have read and understood this user manual and follow the instructions contained therein.



For the proper initial startup of complete Badger Meter measuring systems, the user manuals for the controller and software used for operation (con::lyte, con::cube, con::line, moni::tool, lo::Tool), the connected probes and sensors as well as the used additional devices (e.g. compressor) have to be consulted.

 The operator has to obtain the local operating permits and has to comply with the joint constraints associated with these. Additionally, the local legal requirements have to be observed (e.g. regarding safety of personnel and means of labour, disposal of products and materials, cleaning, environmental constraints). Before putting the measuring device into operation, the operator has to ensure that during mounting and initial startup - in case they are executed by the operator himself - the local legislation and requirements (e.g. regarding electrical connection) are observed.

 All Badger Meter products are leaving our factory in immaculate technical and safety conditions. Inappropriate or not intended use of the product, however, can cause danger! The manufacturer is not responsible for damage caused by incorrect or unauthorised use. Any kind of manipulation of the device is strictly prohibited - except for the activities described in this document. Conversions and changes to the device must not be made, otherwise all certifications and guarantee / warranty become invalid. For details regarding guarantee and warranty please refer to our general conditions of business (GTC).

2.1 Declaration of Conformity

This Badger Meter product has been developed, tested and manufactured for electromagnetic compatibility (EMC) and according to applicable European standards, as defined in the declaration of conformity.

For further details about certifications related to this product please refer to the technical specifications located at the end of this manual.

2.2 Special Hazard Warning

 Because the Badger Meter measuring systems are frequently installed in industrial and municipal waste water applications, one has to take care during mounting and demounting of the system, as parts of the device can be contaminated with dangerous chemicals or pathogenic germs. All necessary precautions should be taken to prevent endangering of one's health during work with the measuring device.

3 TECHNICAL DESCRIPTION

3.1 Intended Use

The micro::station and nano::station are designed for online monitoring of water quality parameters. The required components (probes, sensors and operator terminal) are mounted with the used flow cells, mounting fittings and pipework on a compact panel. Both stations can be used for raw water, drinking water, tap water and clean surface water. For waste water and water with high amount of particles a specific micro::station with larger pipework and flow cells for waste water is available.

In all types of applications, the respective acceptable limits, which are provided in the technical specifications in the respective user manuals, have to be observed. All applications falling outside of these limits, and which are not authorised by Badger Meter Austria GmbH in written form, do not fall under the manufacturer's liability.

The device must only be used for the purpose described in this user manual. Use in applications not described in this manual, or modification of the device without written agreement from Badger Meter, is not allowed. Badger Meter is not liable for claims following from such unauthorised use. In such a case, the risks are the sole responsibility of the operator.

3.2 Functional Principle

All micro::stations and nano::stations are designed for continuous discharge of the water through the different flow cells. Provided the system is installed correctly, the formation of air bubbles is virtually impossible. In the event of intermittent flow (e.g. during pump operation), a bubble-free flow must be ensured..

All micro::stations and nano::stations for clean water are equipped with an inlet and outlet. An inlet strainer will prevent particles from entering the station and a flow restrictor ensures correct pressure and discharge. A flow detector alarms when the flow is too low. The water leaves the station pressure-free (free atmosphere). With the help of a shut-off valve after the inlet, the flow can be completely shut off in case of service activities.

The micro::station for waste water consists of flow cells joined together individually and is fitted with an inlet and an outlet. When using more than three flow cells an additional panel is needed. This station can also be installed directly into a pipe.

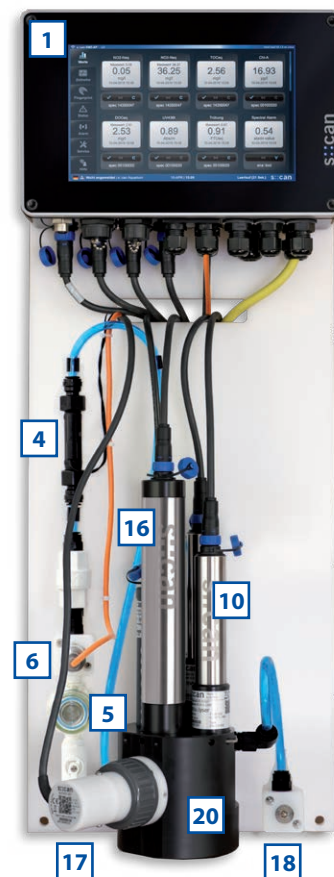
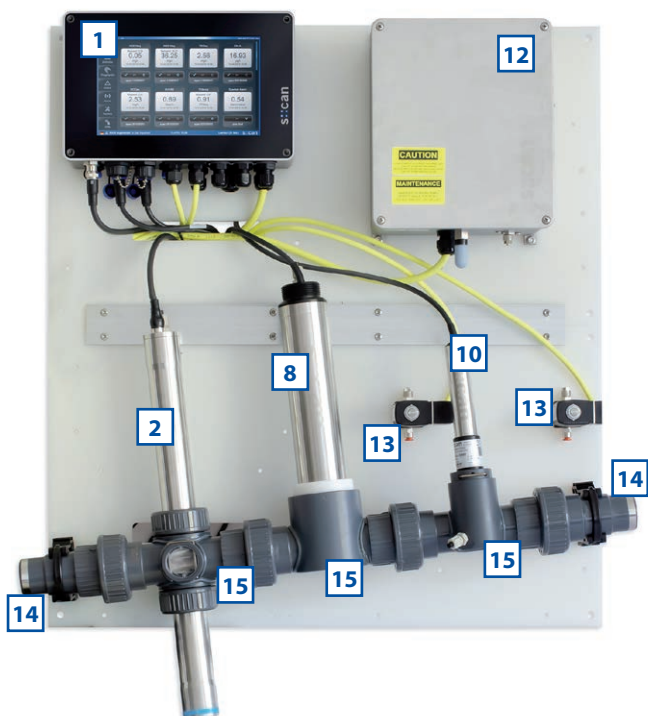
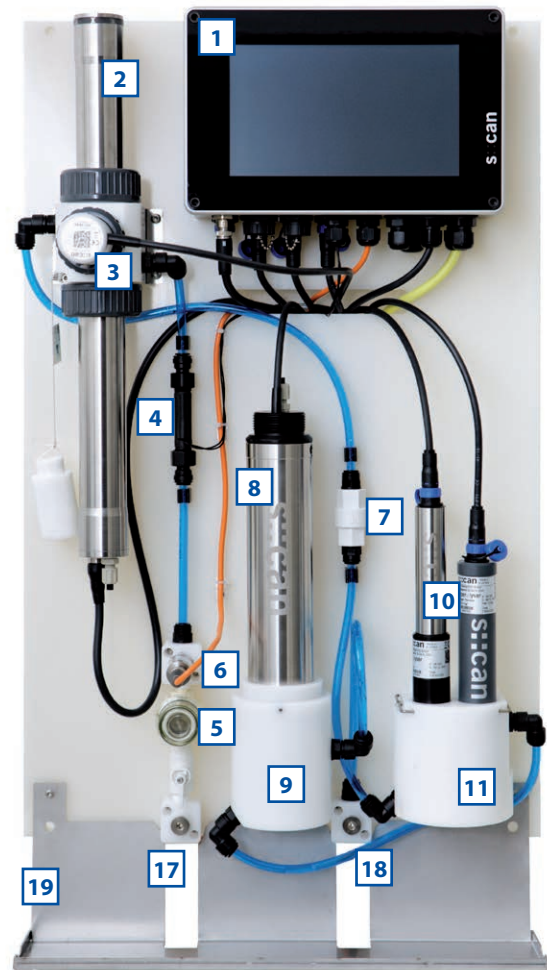
3.3 Product

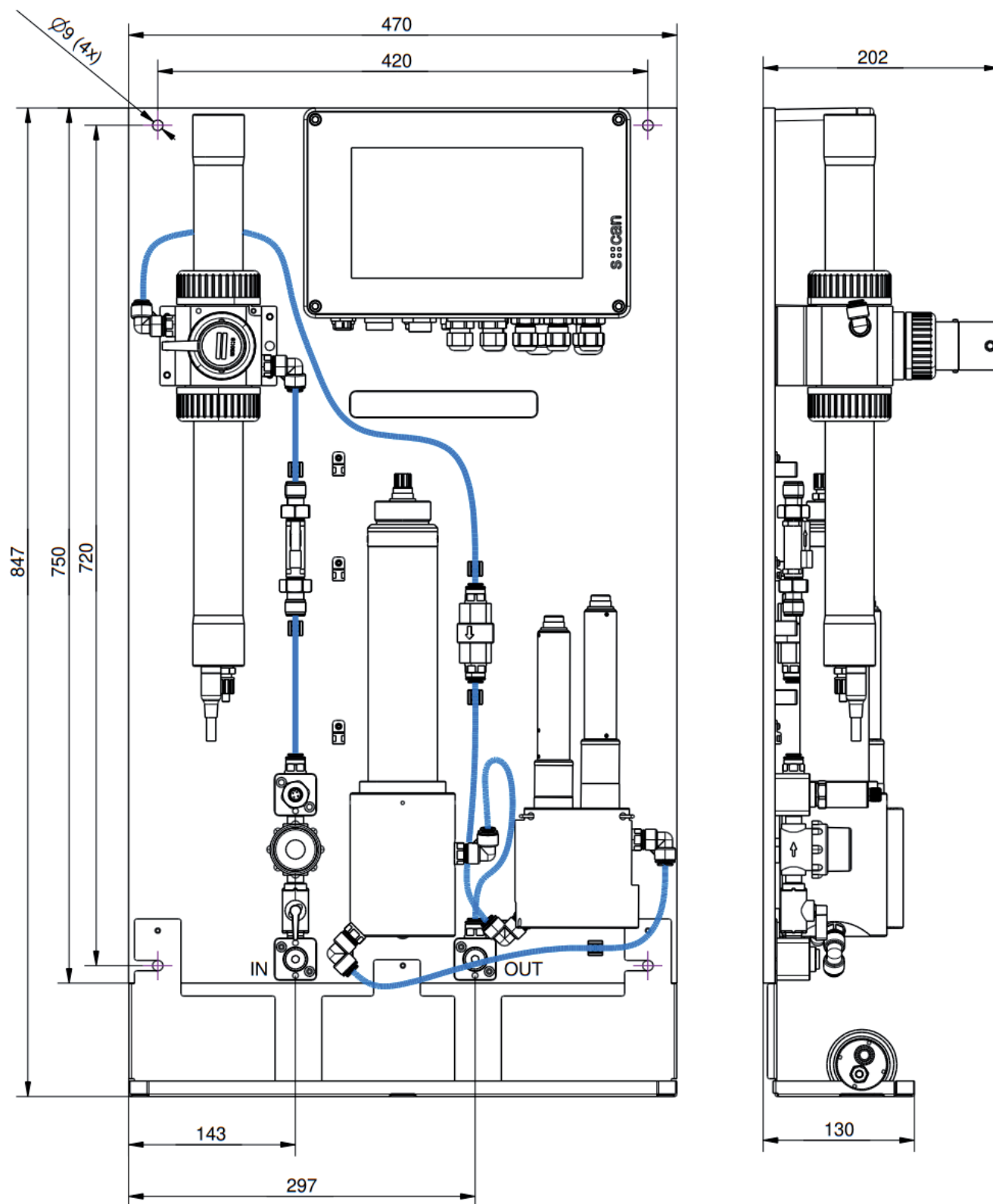
The following variants of completely assembled monitoring stations as well as singel components of monitoring stations are available. Regarding detailed information of the stations please refer to section 9 (accessories) as well as the technical specifications located at the end of this manual. If needed, the monitoring stations can be configured customer specific also.

Type	Specification
M-100-MICRO-S	Turbidity, NO ₃ , TOC, DOC, pH, EC, Temp, Alarms, mounted on panel with 2 flow cells, autobrush, flow detector and con::cube operator terminal; event detection software included.
M-100-MICRO-M	Turbidity, NO ₃ , TOC, DOC, NH ₄ -N, pH, Temp, Alarms, mounted on panel with 2 flow cells, autobrush, flow detector and con::cube operator terminal; event detection software included.
M-100-MICRO-L	Turbidity, NO ₃ , TOC, DOC, pH, EC, Temp, one disinfection parameter, Alarms, mounted on panel with 2 flow cells, autobrush, flow detector, and con::cube operator terminal; event detection software included.

Type	Specification
M-100-MICRO-XL	Turbidity, NO ₃ , NO ₂ , TOC, DOC, pH, EC, 2 disinfection parameters, Temp., Alarms, mounted on panel with 2 flow cells, autobrush, flow detector, and con::cube operator terminal; event detection software included.
M-100-MICRO-XXL	Turbidity, NO ₃ , NO ₂ , TOC, DOC, NH ₄ , pH, EC, 2 disinfection parameters, Temp., Alarms, mounted on panel with 3 flow cells, autobrush, flow detector, and con::cube operator terminal; event detection software included.
N-101-SNO-1	1 disinfection parameter, mounted on panel with single flow cell, con::lyte-eco operator terminal
N-101-SNO-3	EC, pH and 1 disinfection parameter, mounted on panel with flow cell, con::lyte-pro1 operator terminal
N-102-INO-2	Turbidity, color, mounted on panel with flow cell, autobrush, con::lyte-pro1 operator terminal
N-102-INO-3	Turbidity, color, UV254, mounted on panel with flow cell, autobrush, con::lyte-pro1 operator terminal
N-103-NANO-3	Choose 3 parameters of: Turbidity, UV254, colour, EC, pH, 1 disinfection parameter; mounted on panel with flow cell, autobrush, con::lyte-pro1 operator terminal
N-103-NANO-4	Choose 4 parameters of: Turbidity, UV254, color, EC, pH, 1 disinfection parameter; mounted on panel with flow cell, autobrush, con::lyte-pro1 operator terminal
N-103-NANO-6	Choose 6 parameters of: Turbidity, UV254, color, EC, pH, 1 or 2 disinfection parameters; mounted on panel with flow cell, autobrush, con::lyte-pro1 operator terminal
N-103-NANO-8	8 parameters: Turbidity, TOC, UV254, color, EC, pH, 2 disinfection parameters, alarm, mounted on panel with flow cell, autobrush, flow detector and con::cube operator terminal; event detection software included.
F-45-FLOW-1-MICRO	Automatic flow restrictor unit for micro::station (push/pull)
F-45-FLOW-1-NANO	Automatic flow restrictor unit for nano::station (push/pull)
F-45-FLOW-1	Automatic flow restrictor unit (Version bis Ende 2022)
F-45-ALARM	Flow detector unit (digital input on operator terminal required)
F-45-STRAIN	Inlet strainer
F-45-PROCESS	Process connection (4 fittings G 1/4 inch)
F-500-P	Pressure sensor for micro-/nano::station (mA input on operator terminal required)
F-500-PUMP	Drinking water pump for mico::station
F-500-HOSE	Adapter kit from F-45-FLOW-1 to F-45-ALARM (for the renovation of old stations to new design). Scope of delivery: 2 push/pull fittings and 50 cm hose
F-500-SERVICE-SET	Service set for micro::station / nano::station
F-501-ECO-EU	System panel micro::station EU (G 1/4 inch connection)
F-501-ECO-US	System panel micro::station US (NPT 1/4 inch connection)
F-502-ECO-EU	Extension panel micro::station EU (G 1/4 inch connection)
F-502-ECO-US	Extension panel micro::station US (NPT 1/4 inch connection)
F-506-ECO-EU	System panel nano::station EU (G 1/4 inch connection)
F-506-ECO-US	System panel nano::station US (NPT 1/4 inch connection)
F-508-PANEL	System panel waste water micro::station

- 1 Operator terminal (con::cube or con::lyte)
- 2 Spectrometer probe
- 3 Flow cell for spectrometer probe with auto-brush
- 4 Flow detector (digital)
- 5 Inlet strainer
- 6 Pressure sensor (analog)
- 7 Flow restrictor
- 8 ammo::lyser (ISE probe)
- 9 Flow cell for ammo::lyser (ISE probe)
- 10 Sensors
- 11 Flow cell for up to 4 sensors
- 12 Compressor for compressed air cleaning
- 13 Cleaning valve
- 14 Process connection
- 15 Flow cells for waste water
- 16 i::scan
- 17 Inlet
- 18 Outlet
- 19 Storage board for maintenance work (since 2023)
- 20 Flow cell for i::scan with auto-brush and 3 sensors

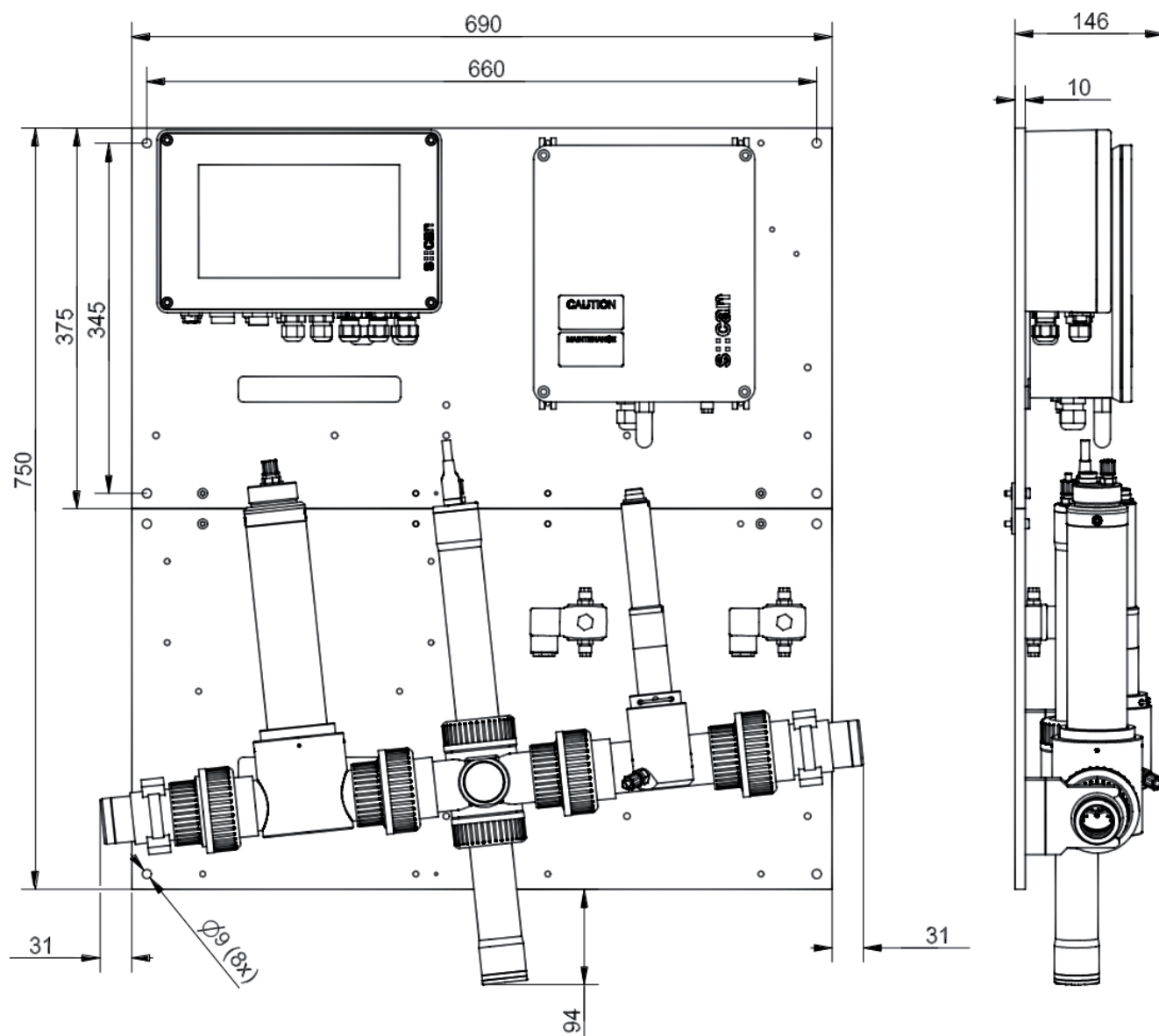




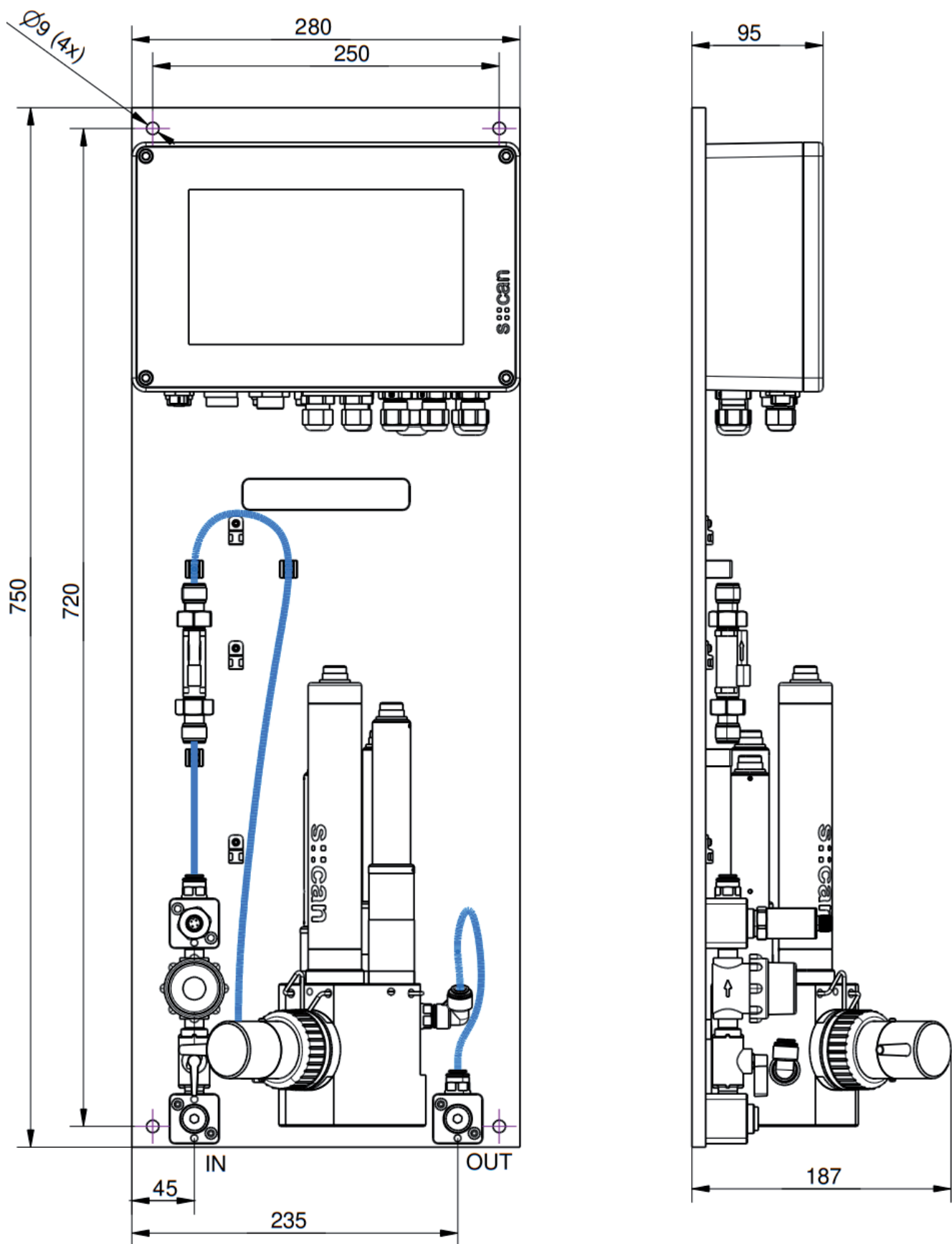
Dimensions of micro::station clean water in mm



For the version until the end of 2022, the total width of the panel is 450 mm. The inlet is 135 mm and the outlet 290 mm from the left edge.



Dimensions of micro::station waste water in mm



Dimensions of nano::station in mm



For the version until the end of 2022, the vertical spacing of the mounting holes is 730 mm. The outlet was via the floor outlet of the flow cell.

3.4 Storage, Transport and Disposal

The permissible limit values for operation, storage and transportation of the device are specified in the last chapter of this manual (Technical Specifications) and must be observed. In addition, the device should not be exposed to strong impacts and vibrations. The device must be stored away from solvent vapors, radioactive and strong electromagnetic radiation.

Damage to the device caused by wrong storage will not be covered by warranty.

Transport should be done in a packaging that protects the device (original packaging if possible). For transport, the probes and sensors must be removed from the flow cells and packed separately.



This product is marked with the WEEE symbol to comply with the European Union's Waste Electrical & Electronic Equipment (WEEE) Directive 2012/19/EC. The symbol indicates that this product should not be treated as household waste. It must be disposed and recycled as electronic waste. Please assist to keep our environmen

3.5 Scope of Delivery



Immediately upon receipt, please check the received consignment for completeness on the basis of the delivery note and check for any possible damage incurred during shipping. Please inform the delivering dispatcher and Badger Meter Austria immediately in case of any damages in transit.

The following parts should be included in the delivery:

- *micro::station* or *nano::station*
- Storage board for *micro::station*
- User manual *micro::station / nano::station* (part-no. S-36-M-EN)

The following parts could be included in the delivery if ordered as an option:

- Cable for power supply (part-no. C-31-xx)
- Service set (part-no. F-500-SERVICE-SET)

In case of incompleteness please contact your Badger Meter sales partner immediately!

4 INSTALLATION

4.1 Environment

The correct installation of measuring instruments is an important prerequisite for satisfactory operation. Therefore the following checklist for the installation can be used to ensure that all sources for potential operational problems can be ruled out to the greatest possible extent during the installation, allowing the monitoring system to operate properly.



For information on environmental limitations (e.g. temperature), also refer to the Technical Specifications at the end of the manual.

- Easy accessibility and availability of sufficient space (mounting, sampling, function check, demounting)
- Best possible weather and splash water proof set-up
- Avoid direct exposure to sunlight (see note on the panel)
- Power supply for controller for operation (operational reliability, voltage, power, peak free)
- Oil- and particle free compressed-air supply (optional for micro::station waste water)
- Correct dimensioning, mounting and protection of all cables and lines (non-buckling, no risk of stumbling, no damage etc.)
- Good connection to cellular network (optional for data transfer and remote operation via 4G Modem)
- Unadulterated, representative measuring medium
- Measuring medium is in equilibrium state (no gas release, no precipitation, etc.)
- No external interferences (no electric and electro-magnetic interferences by leakage current, earth fault of pumps, electric motors, electric power lines, etc.)

4.2 Mounting of micro::station / nano::station

For mounting and electrical installation the following tools and materials are necessary:

- 4 screws (M8) for fastening the micro / nano::station on the wall
- Tools to open the operator terminal
- Screw driver (2.5 mm) for wiring on cable terminals
- Strap wrench to unscrew the sensor adapter of the flow cell for ISE-probe or oxi::lyser
- Power supply cable (C-31-xx, if required)
- Stripping tool for power supply line
- Cable end sleeves and crimper
- Connection fittings for inlet and outlet of micro / nano::station

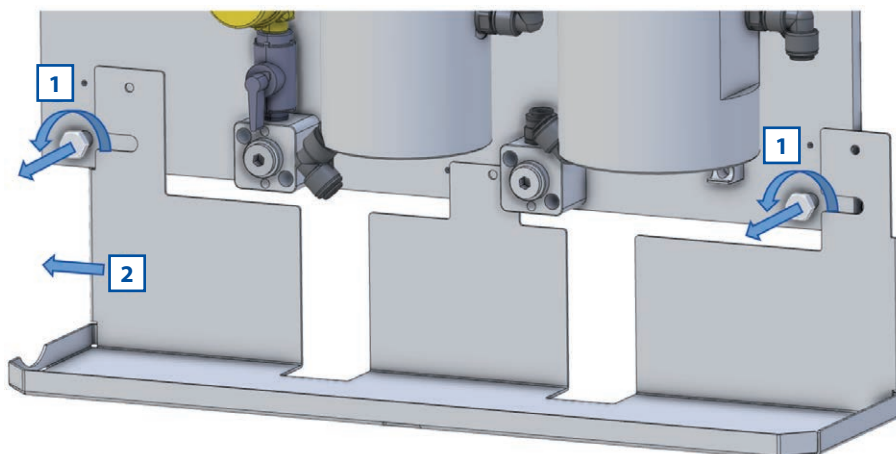


The panels of the clean water stations are equipped with an elongated opening so that the wiring of the sensors can also be arranged at the back of the panel. The delivery also includes 4 spacers (3 cm). From version 2023, the back of the panel is flat.

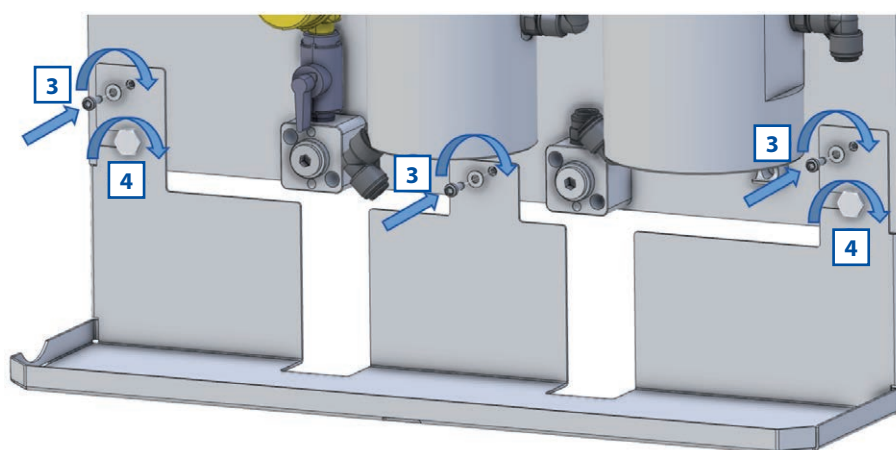
Die single parts of the micro::station / nano::station are pre-assembled on the panel. The complete panel will be mounted onto a flat surface (wall, control cabinet, etc.) vertically. 4 holes with a hole diameter of 9 mm are provided for this purpose.

Before mounting a micro::station for clean water, the supplied storage board must be screwed onto the panel (see figures below).

- 1** Loosen the two holding screws on the panel slightly.
- 2** Slide the storage board from the side behind the holding screws.
- 3** Fix the storage board with the 3 screws included in the scope of delivery.
- 4** Fasten the two holding screws again.



The correct dimensions and the space required for mounting can be found in the figures in section 3.3.



4.3 Mounting of Sensors and Cleaning Devices

To protect the sensitive measuring sensors during transport, they are specially packed and not yet pre-assembled. All probes and sensors are to be installed in the flow cells provided, which are already mounted on the panel. This is done according to the mounting instructions (chapter 4) of the respective manuals of the sensors.

When using automatic cleaning devices (e.g. autobrush), these are already electrically connected to the operator terminal and installed in the flow cell for transport. According to the mounting instructions, the autobrush must be removed before installing the probes (spectrometer probe or i::scan).



Immediately after completion of the installation, the flow of the monitoring station should be established and the initial start up should take place. If these activities are planned for a later time, the existing protective caps should be left on the sensors to avoid damage to the sensitive measuring elements of the sensors.

5 INITIAL STARTUP

Once the assembly, mounting and installation of the sensors have been completed and checked (see chapter 4) the initial startup of the micro::station / nano::station will require the following actions, in the order presented below:

- Ensure that all protective caps are removed from the sensors and the sensors are ready for use.
- Check the tube connections from the compressor to the cleaning valves and from the cleaning valves to the probes / sensors when using a waste water station with compressed air cleaning.
- Connect the spectrometer probe and all sensors to the controller used for operation (see manual of the used controller).
- If a compressor is used, establish power supply to the compressor.
- Establish power supply to the controller for operation (see section 5.1 and manual of the controller for operation) and wait until the operation software has started up.
- The spectrometer probe and all sensors are already installed on the controller for operation, so readings of the single parameters will be displayed immediately.
- Open the valve on the inlet to fill micro::station / nano::station with water.
- Check if water outlet from the station is continuous and as expected (see section 8.1).
- Check if no air bubbles are present within the monitoring station (see section 8.1).
- Configure the measurement and automatic cleaning settings (please refer to the manual of the controller for operation).
- Check the proper functioning of the cleaning system
- Connection and parameterisation of data transfer when desired (please refer to the manual of the controller for operation).
- Check the plausibility of the readings obtained after sufficient running-in time (at least 15 minutes).
- If necessary calibrate the readings to the local water matrix when the readings are stable (see chapter 6 in the manual of the sensor).

5.2 Connection of Power Supply



This type of work must be performed by authorised persons only! (see section 2).

Depending on the device type, the controller for operation and if necessary the compressor have to be connected to the appropriate power supply. The connection of power supply (AC or DC, respectively), must be done with an earthed conductor wire (PE - „protective earth“)!

The power supply earth (PE) has to be done properly according to the corresponding norms / standards with a max. resistance between earth grounding of power supply and site's earth grounding of 0.1 Ohm.

Process medium (e.g. waste water) must be connected to the same earth ground with less than 0.5 Ohm.



The power supply cable must be rated for an ambient temperature of min. 85°C.



A switch or circuit-breaker must be included in the power supply. It must be suitable located and easily reachable. It must be marked as a disconnecting device for the monitoring equipment.



The power supply terminals of con::cube or con::lyte shall not be used to forward main power supply to the compressor. Especially when the compressor starts up high electrical disturbances are induced. If the power cable of the compressor is connected inside the con::cube or con::lyte the disturbances are directly led into the con::cube or con::lyte with sensitive digital and analogue components.



For further detail (e.g. the detailed connection plan) please refer to the manual of the used devices.

5.2 Connection of flow detector F-45-ALARM

The flow detector of the micro::station / nano::station is pre-installed ex works. In the following sections the electrical connection and the configuration is explained in detail, in case of retrofitting.

5.2.1 Connection of flow detector F-45-ALARM to con::lyte D-320

- Disconnect the con::lyte from power supply and open the cover to the terminal compartment.
- Connect the two black wires of the flow detector to terminals 31 and 32 (see figure on the right).
- Reconnect the con::lyte to the power supply and wait until the operating software has started up.
- Use the Left- or Right button to switch to the Status display.
- Push the Function button.
- Select the menu Manage sensors... and confirm with OK.
- Select the menu Add sensor... and confirm with OK.
- Select the menu Add digital in... and confirm with OK.
- Select the menu Add flow switch and confirm with OK. The successful installation is confirmed with ADDED! in the top line.
- Push the Back button twice to return to the menu Manage sensors.
- Select the menu flow switch and confirm with OK.
- Select the menu Add parameters... and confirm with OK.
- Select the menu Add Flow and confirm with OK. The successful installation is confirmed with OK! in the top line.
- Push the Back button several times to return to the Status display.
- Now the parameter will be displayed (1 = Flow and 0 = no Flow).

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23	25	27	29	31	33	35

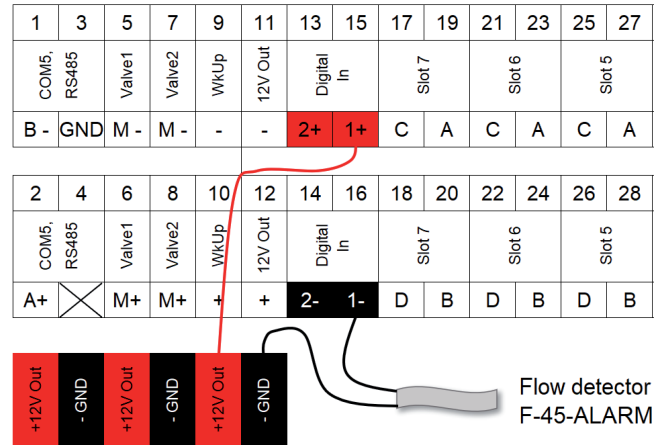
Flow detector
F-45-ALARM

Add digital	ADDED!
Add flow switch	
Add digital in #1	
Add digital in #2	

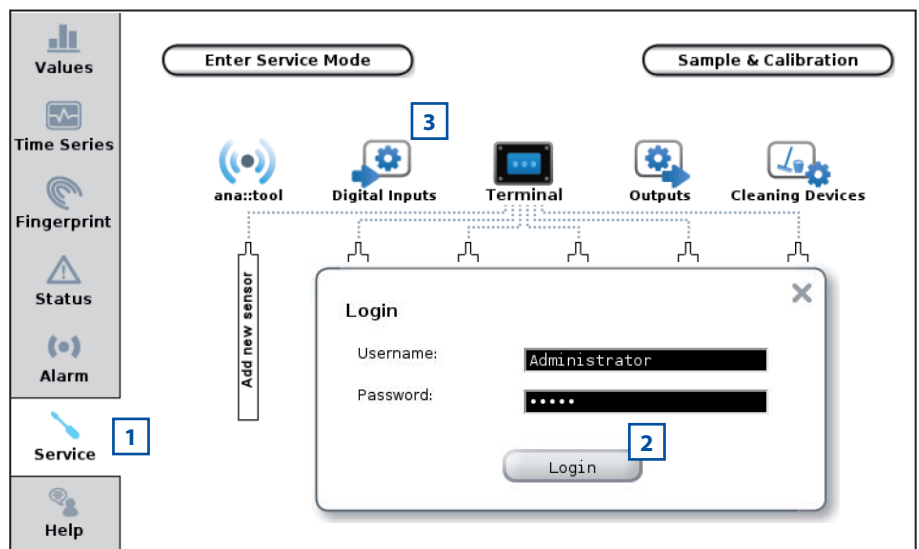
Add para.	OK!
Add Flow	

5.2.2 Connection of flow detector F-45-ALARM to con::cube (moni::tool)

- Disconnect the con::cube from power supply and open the cover to the terminal compartment.
- Connect the first black wire to **GND** of 12 V power supply from con::cube (black terminals at the bottom of the con::cube).
- Connect the second black wire with the digital input.
- Create a cable bridge between + 12 VDC (red terminal at the bottom of the con::cube) and the digital input (see figure on the right).
- Reconnect the con::cube to the power supply and wait until moni::tool has started up.



- Click the **Service** tab on the moni::tool screen.
- Login as **Administrator** with Password **admin1** or your individual username.
- Click on the icon **Digital Inputs**.
- Click on the button **Parameters**.
- Click on the **±** icon beside the input, to which the flow detector is connected.



Service > Digital Inputs			
Add digital input Remove digital input Parameters			
Name	Address	Status	Edit
digitalIn15	constat_di://3/47/0	LOW	
digitalIn16	constat_di://3/48/0	LOW	

Service > Digital Inputs > Parameters				
Remove Parameter				
Parameter name	Unit	Edit	Config	Alarm
<< UNINSTALLED PARAMETERS >>				
[constat_di://3/47/0] - digitalIn15				
[constat_di://3/48/0] - digitalIn16				

- 6 Enter the *Parametername* (e.g. Flow).
- 7 Enter the *Text for value = 0* (e.g. no flow).
- 8 Enter the *Text for value = 1* (e.g. flow OK).
- 9 Push the button *Save* to store the configuration.

Service > Digital Inputs > Parameters > Install digitalIn15

Cancel Save

Install Parameter [digitalIn15]

<< GENERAL SETTINGS >>

Address: constan_di://3/47/0

Sensor name: moni::tool

Parameter name (Internal): digitalIn15 [Current ▼]

Parameter name: 6 Flow

<< DIGITAL INPUT SETTINGS >>

Text for value = 0: 7 no flow

Text for value = 1: 8 flow OK

Service > Digital Inputs > Parameters

Remove Parameter

Parameter has been installed successfully.

Parameter name	Unit	Edit	Config	Alarm
Flow		⚙️		

<< UNINSTALLED PARAMETERS >>

[constan_di://3/48/0] - digitalIn16 +

Values

Time Series

Fingerprint

Status

Flow

no flow

10-05-2022 16:15:19

✓ ⌂ C

Digital Input



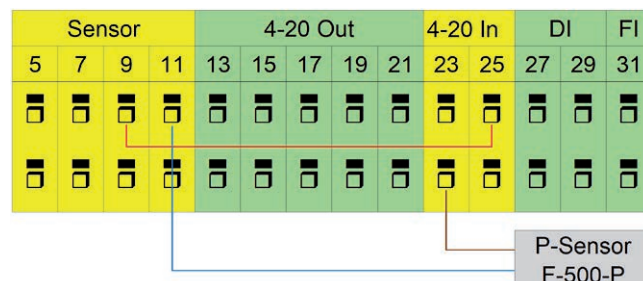
Ensure that the flow detector is installed vertically with flow direction from bottom to top.

5.3 Connection of Pressure Sensor F-500-P

The pressure sensor of the micro::station / nano::station is pre-installed ex works. In the following sections the electrical connection and the configuration is explained in detail, in case of retrofitting.

5.3.1 Connection of Pressure Sensor F-500-P to con::lyte D-320

- Disconnect the con::lyte from power supply and open the cover to the terminal compartment.
- Connect the brown wire of the pressure sensor to terminal 24 (*4/20 In #1*) and the blue wire to terminal 11 (*GND*) (see figure on the right).
- Connect terminal 9 (*12V Out*) and terminal 25 (*4/20 In #1*) with a wire (see figure on the right).
- Reconnect the con::lyte to the power supply and wait until the operating software has started up.
- Use the *Left-* or *Right* button to switch to the Status display.
- Push the *Function* button.
- Select the menu *Manage sensors...* and confirm with *OK*.
- Select the menu *Add sensor...* and confirm with *OK*.
- Select the menu *Add 0/4-20mA...* and confirm with *OK*.
- Select the menu *Add 0/4-20mA #1* and confirm with *OK*. The successful installation is confirmed with *ADDED!* in the top line.
- Push the *Back* button twice to return to the menu *Manage sensors*.
- Select the menu *0/4-20mA #1* and confirm with *OK*.
- Select the menu *Add parameters...* and confirm with *OK*.
- Select the menu *Add mA-In* and confirm with *OK*. The successful installation is confirmed with *ADDED!* in the top line.
- Push the *Back* button to return to the menu *Sensor configuration*.
- Select the menu *Configure...* and confirm with *OK*.
- Select the entry *Type* and change it from *0-20mA* to *4-20mA*.
- Push the *Back* button several times until Status display is reached. Use the *Right* button to switch from the Status display to the Value display.
- Select the parameter *mA-In* and push the *Function* button.
- Select the menu *Calibrate expert...* and confirm with *OK*.
- Select the entry *Mode* and change it to *Linear*.
- Select the entry *Lab 1:* and change it from *4.0* to *0.0*.
- Select the entry *Lab 2:* and change it from *20.0* to *10.0*.
- Check if *Sample 1* is set to *4.0* and *Sample 2* is set to *20.0*.
- Select the menu entry *Perform Calibration* and confirm with *OK* to execute the calibration.
- Push the *Back* button.
- Select the entry menu *Display settings...* and confirm with *OK*.
- Select the entry *Name* and change the name of the parameter from *mA-In* to *Pressure*.
- Select the entry *Unit* and change the unit of the parameter from *mA* to *bar*.
- Push the *Back* button twice to return to the Value display.



Add new sensor
Add 0/4-20mA...
Add digital in...
Add s::can Sensor...

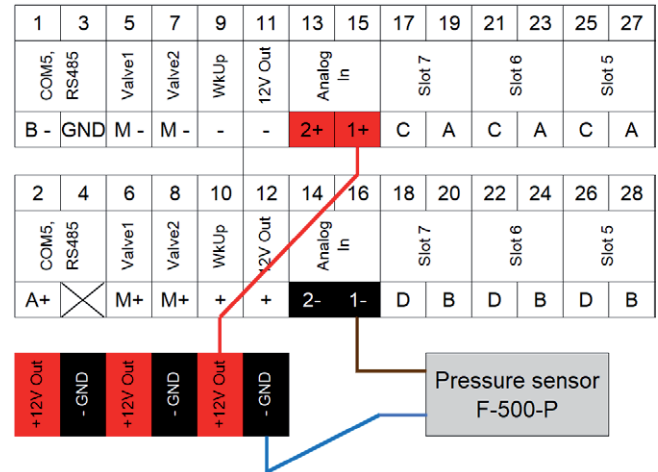
Add 0/4-20 ADDED!
Add 0/4-20mA #1

Sensor configuration
Configure...
Add parameters...
Remove sensor

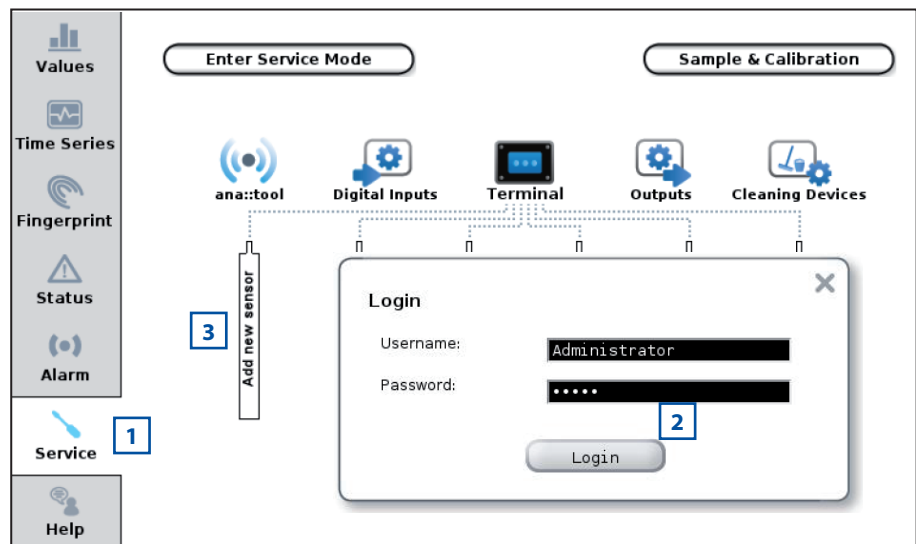
P1 / mA-In	
Mode:	Linear
Perform Calibration	
Value:	4.00
Private:	0.00
Lab 1:	0.00
Sample 1:	4.00
Lab 2:	10.00
Sample 2:	20.00
Offset:	-2.500
Slope:	0.625

5.3.2 Connection of Pressure Sensor F-500-P to con::cube (moni::tool)

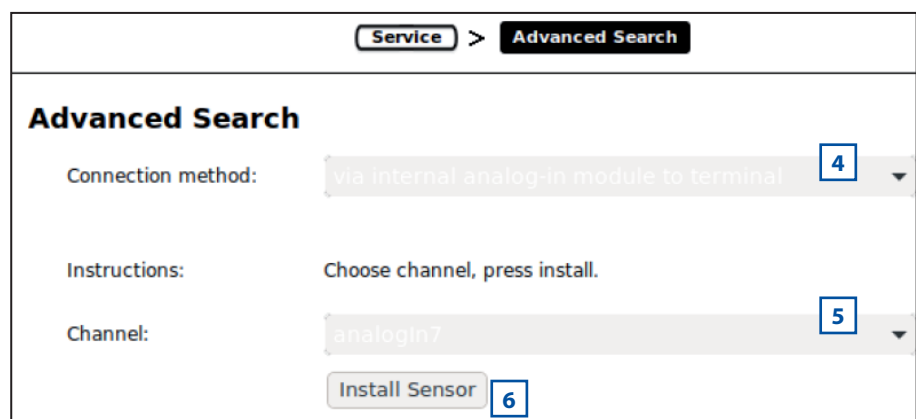
- Disconnect the con::cube from power supply and open the cover to the terminal compartment.
- Connect the brown wire of the pressure sensor to the negative input (e.g. 1-) of the used analog input (*Analog In*).
- Connect the blue wire of the pressure sensor to *GND* of the 12 V power supply of the con::cube (black terminals at the bottom of the con::cube).
- Connect the +12V Out power supply of the con::cube (red terminals at the bottom of the con::cube) with the positive input (e.g. 1+) of the used analog input (*Analog In*) with a cable bridge.
- Reconnect the con::cube to the power supply and wait until moni::tool has started up.



- 1 Click the *Service* tab on the moni::tool screen.
- 2 Login as *Administrator* with Password *admin1* or your individual username.
- 3 Click on an empty sensor icon (*Add new Sensor*) to initiate the initialisation process.



- 4 As *Connection method* select the entry *via internal analog-in module to terminal*.
- 5 Select the *Channel*, to which the pressure sensor is wired.
- 6 Push the button *Install Sensor*.



7 Enter the Sensor name (e.g. Pressure sensor).

8 Push the button Save.

9 Enter the Parameter name (e.g. Pressure) and the Unit (bar).

10 Set the number of decimal places (Resolution) to 2.

11 Set the Upper limit to 10 and the Lower limit to 0.

12 Check if the Mode is set to 4...20mA and the Error Mode is set to Limit.

13 Push the button Save to store the settings.

5.3.3 Connection of Pressure Sensor F-500-P to the unipolar Input of the con::line (lo::Tool)

The pressure sensor should preferably be connected to the unipolar input of the con::line. The wiring is performed by the following steps:

- Disconnect the con::line from power supply
- Open the cover of the C-500-IO-BOX
- Connect the brown wire of the pressure sensor to one of the four 12V outputs of the C-500-IO-BOX (i.e. terminal 5, 6, 7 or 8).
- Connect the blue wire to the unipolar input of the C-500-IO-BOX (i.e. terminal 3, *Unip-In+*).
- Close the cover of the C-500-IO BOX
- Reconnect the con::line to the power supply and wait until lo::Tool has started up.

1	2	3	4	5	6	7	8	9	10	11
Bip-In+	Bip-In-	Unip-In+	Out 5V	Out1	Out2	Out3	Out4	BRS485(-)	ARS485(+)	GND
		blue		brown #1	brown #2	brown #3	brown #4			

Once the pressure sensor is wired correctly to the unipolar input, the configuration is performed in the lo::Tool software by the following steps:

- 1 Ensure you are logged in as user *expert* (password *scan*).
- 2 Open the menu *Service \ Sensors and Outputs*.
- 3 Push the button *Enter Service Mode*.
- 4 Below the entry *Sensors* both Inputs of the con::line are listed. Pushing on the blue tool icon on the left side of *Input 2* with *Type unipolar* will open a window for configuration of the pressure sensor (*Sensor Settings* - see next page).

⚠ Ensure that the *Output*, to which the pressure sensor is wired, is set to *Sensor Supply* or *Permanent On*.

The screenshot shows the 'Service' menu in the lo::Tool software. The 'Sensors and Outputs' option is selected, opening a configuration window. The 'Outputs' section lists six outputs: 12-Pin 12V Output 1, 12-Pin 12V Output 2, 12-Pin 12V Output 3, 12-Pin 12V Output 4, 6-Pin 12V Output, and 12-Pin 5V Output. The 'Sensors' section lists two inputs: Input 1 (bipolar voltage) and Input 2 (unipolar current). Input 2 is highlighted with a blue tool icon, and a 'Leave Service Mode (1762)' button is visible at the bottom right.

Output Name	Us	On-Current
12-Pin 12V Output 1	Se	0 mA
12-Pin 12V Output 2	Di	0 mA
12-Pin 12V Output 3	Di	0 mA
12-Pin 12V Output 4	Di	0 mA
6-Pin 12V Output	Se	0 mA
12-Pin 5V Output	Dis	46 mA

Sensor Name	Type	Serial Number	Status
Input 1	bipolar voltage	221138400203	Unknown
Input 2	unipolar current	221138400203	OK

Leave Service Mode (1762)

- 5 Enter a Name for the pressure sensor (e.g. F-500-Pressure).
- 6 Select the output to which the pressure sensor is wired (Powered by Output).
- 7 Select Current as Usage for the mA pressure sensor F-500-P.
- 8 The default Warmup time of 1s can be kept unchanged.
- 9 Push the button Save to store the modifications permanently or the button Cancel to avoid any changes.
- 10 Now open the menu Service \ Measurement Settings and scroll down to the section Inactive Parameters.
- 11 When using the unipolar input the parameter Pressure is already preconfigured. Simply push the blue $\pm$ icon to activate the parameter.
- 12 Finally push the button Leave Service Mode to start the automatic measurement again.

Sensor Settings

Here you can change the settings of this sensor item.

Name:

F-500-Pressure

Connection:

pin

Serial:

221138400203

Powered by Output:

12-Pin 12V Output 1

Type:

unipolar

Usage:

Current

Warmup Time:

1

s

Hardware Version:

01.02

Software Version:

0x1a

Last Measurement:

4/14/2026 9:21 AM

Status:

OK

Cancel

Save

ValuesTime SeriesCalibrationService

Sensors and Outputs

Measurement Settings

Spectral References

Device Settings

Licenses and Updates

Data Export

Status

Input 1

Parameter Name

Parameter Name

⊕ Voltage from Input 0

⊕ Voltage Input 1

F-500-Pressure

⊕ Pressure

⊕ Current Input 2

Sensor

F-500-Pressure

F-500-Pressure

Range

0 bar - 10 bar

4 mA - 20 mA

vali::tool

Leave Service Mode (1668)

5.3.4 Connection of Pressure Sensor F-500-P to the bipolar Input of the con::line (lo::Tool)

The pressure sensor can be wired to the bipolar input of the con::line also. The wiring is performed by the following steps:

- Disconnect the con::line from power supply
- Open the cover of the C-500-IO-BOX
- Connect the brown wire of the pressure sensor to one of the four 12V outputs of the C-500-IO-BOX (i.e. terminal 5, 6, 7 or 8).
- Connect the blue wire to the plus of the bipolar input of the C-500-IO-BOX (i.e. terminal 1, *Bip-In+*).
- Connect the minus of the bipolar input of the C-500-IO-BOX (i.e. terminal 2) with ground *GND* (i.e. terminal 11) using a cable bridge.
- Close the cover of the C-500-IO BOX
- Reconnect the con::line to the power supply and wait until lo::Tool has started up.

1	2	3	4	5	6	7	8	9	10	11
Bip-In+	Bip-In-	Unip-In+	Out 5V	Out1	Out2	Out3	Out4	BRS485(-)	ARS485(+)	GND
blue	wiring to GND			brown #1	brown #2	brown #3	brown #4			
										wiring to Bip-In-

Once the pressure sensor is wired correctly to the bipolar input, the configuration is performed in the lo::Tool software by the following steps:

- 1 Ensure you are logged in as user *expert* (password *scan*).
- 2 Open the menu *Service \ Sensors and Outputs*.
- 3 Push the button *Enter Service Mode*.
- 4 Below the entry *Sensors* both Inputs of the con::line are listed. Pushing on the blue tool icon on the left side of *Input 1* with *Type bipolar* will open a window for configuration of the pressure sensor (Please refer to the previous page of section 5.3.3 *Sensor Settings* from step [5] to step [9]).

The screenshot shows the 'Service' menu in lo::Tool. A dropdown menu is open for 'Sensors and Outputs'. Below it, the 'Outputs' section lists several 12V and 5V outputs. The 'Sensors' section shows two inputs: 'Input 1' (bipolar voltage, serial number 221138400203, status Unknown) and 'Input 2' (unipolar current, serial number 221138400203, status OK). A blue button at the bottom says 'Leave Service Mode (1762)'.



Ensure that the *Output*, to which the pressure sensor is wired, is set to *Sensor Supply* or *Permanent On*.

5 Now open the menu Service \ Measurement Settings and scroll down to the section Inactive Parameters.

6 Push the blue + sign on the left side of Input 1 to open the parameter configuration window.

Values Time Series Calibration Service ▾

Sensors and Outputs

Measurement Settings 5

Device Settings

Licenses and Updates

Data Export

Status

F-500-Pressure

Parameter Name	Sensor	Range	vali::tool
6 + Current Input 1	F-500-Pressure	4 mA - 20 mA	

Input 2

Parameter Name	Sensor	Range	vali::tool
+ Voltage Input 2	Input 2	-12 V - 12 V	

Leave Service Mode (817)

7 Enter a Name for the parameter (e.g. Pressure).

8 Enter bar as Unit.

9 The further parameter settings (e.g. Decimals, Averaging, Value clipping, Ignore Error) can be configured on demand.

Parameter Scaling

Name: Pressure 7

Original name: Current Input 1

Description: Current from Input 1

Sensor: F-500-Pressure

Unit: bar 8

Original unit: mA

Decimals: 2

Averaging: 1 9

Limits: 4 bar - 20 bar

Error Limits: 2 bar - 22 bar

Value clipping: Minimum: / Maximum:

Ignore Error:

Application: General

Id: LPT_INPUT1_CURRENT_MA_SCAN_000

Creation Date: 3/24/2023

User level: guest 9

Active Parameter Remove Parameter

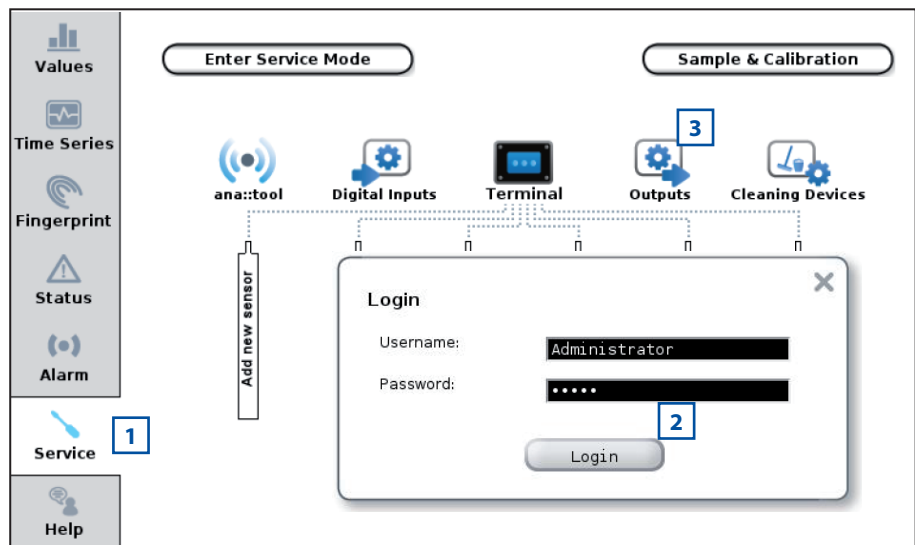
Data modified. Cancel Save

- 10** In the register card Scaling the conversion from mA to bar needs to be entered.
- 11** Activate the option Input by Measurement Values.
- 12** For Point 1, the value 0 bar is entered at 4 mA.
- 13** For Point 2, the value 10 bar is entered at 20 mA.
- 14** Offset and Slope will be calculated automatically.
- 15** Push the button Save to store the modifications permanently or the button Cancel to avoid any changes.

5.4 Connection of Pump F-500-PUMP to con::cube (moni::tool)

The pump of the micro::station is pre-installed ex works. In the following sections the electrical connection and the configuration is explained in detail, in case of retrofitting.

- 1** Click the Service tab on the moni::tool screen.
- 2** Login as Administrator with Password admin1 or your individual username.
- 3** Click on the icon Outputs and click on the menu entry Digital Outputs in the new window.



- 4 Click on the icon *Edit* for the 1. digital output (*digitalOut1*).

Service > Outputs > Digital Outputs				
Delete assignment				
Name	Assignment	Status	Edit	Test
digitalOut1	System error	LOW	 4	
digitalOut2	System error	LOW		
digitalOut3	System error	LOW		
digitalOut4	System error	LOW		
digitalOut5	System error	LOW		

- 5 Push the button beside *Mode* and set the digital output 1 to *Service mode*.

- 6 Push the button *Save*.

Service > Outputs > Digital Outputs > Assignment of digitalOut1

Cancel Save 6

Edit Assignment [digitalOut1]

<< GENERAL SETTINGS >>

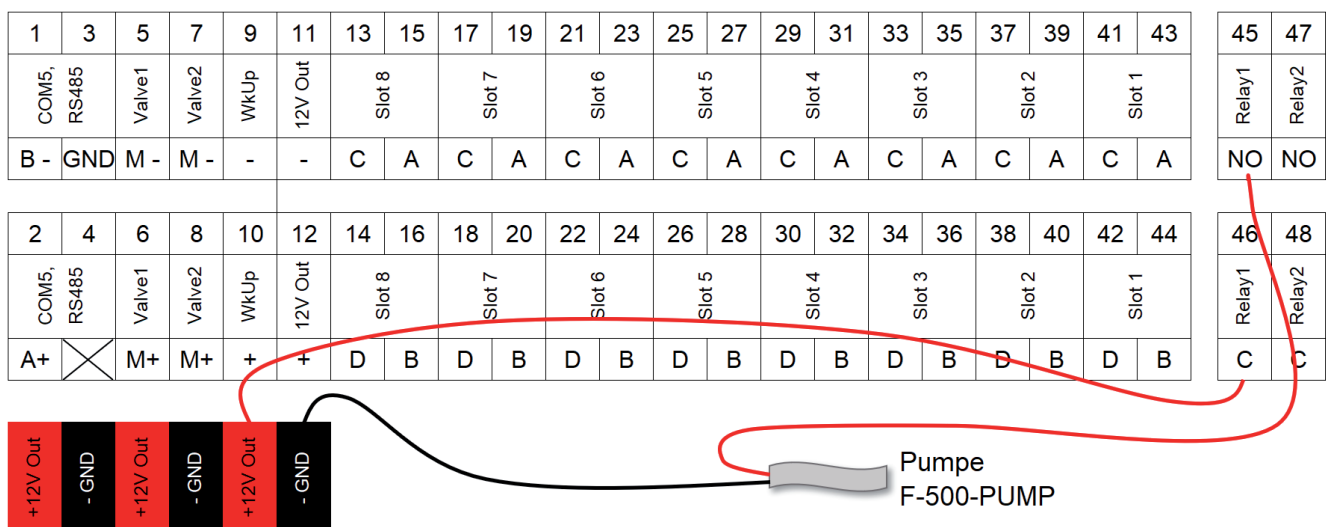
Description: 

Mode:  5

Information: When the measurements are suspended (service mode) the output is 'LOW', otherwise the output is 'HIGH' (measurements are running).

 This configuration ensures that the pump is switched off during maintenance activities (service mode is active).

- Disconnect the con::cube from power supply and open the cover to the terminal compartment.
- Connect the black wire of the pump to GND of the 12 V power supply of the con::cube (black terminals at the bottom of the con::cube).
- Connect the red wire of the pump to the input of the digital relay (e.g. *45 Relay 1 NO*).
- Connect the 12 V power supply of the con::cube (red terminals at the bottom of the con::cube) with a cable bridge to the other input (e.g. *46 Relay 1 C*) of the used digital relay.
- Check if the pump is set to step 3 to ensure the correct power consumption (see section 9.8).
- Reconnect the con::cube to the power supply and wait until moni::tool has started up.



 Please note that the pump must not run dry.

6 FUNCTION CHECK

A function check might be required for one of the following reasons:

- Initial startup
- Routine function check
- Suspicion of monitoring system malfunction
- Modification of monitoring system (e.g. integration of additional sensor or device)
- Change of measuring point / location

Depending on the application (water composition), the sensors connected and the environmental conditions a regular function check (weekly to monthly) is recommended.

The function check of the monitoring station itself includes the following steps (see also section 8 for typical error patterns):

- Check if any leakage is visible on the flow cells or hose connections (screw fittings, push pull).
- Check and clean the strainer of the inlet filter (see chapter 7.2).
- Check the flow rate at the outlet of the station (> 0.4 l/min or > 24 l/h for clean water and > 4 l/min for waste water).
- Check the correct function of the flow detector display on the operator terminal. To do this, interrupt the flow and check whether the display changes to error.
- Check for possible air bubbles inside the monitoring station.
- Check whether the flow is constant.
- If a pressure sensor is used, check if the display on the operator terminal is correct and that the display shows 0 bar when the inlet valve is closed.

To check the plausibility of the displayed and collected readings and the integrity of a single probe or sensor, please refer to the according manuals of the connected probes and sensors.

7 MAINTENANCE

Please always ensure that all tubes are fixed carefully after any maintenance activity.

7.1 Cleaning

The *micro::station / nano::station* is made of plastics. Only use a wet cloth tissue and drinking water with mild detergents (e.g. dish washing soap) for cleaning.

Information on manual cleaning of the connected probes and sensors can be found in the respective manuals.

7.2 Cleaning Inlet Strainer

Cleaning of the inlet strainer is recommended as follows:

- Activate the service mode on the operator terminal
- Close the inlet valve
- Unscrew the transparent cover of the inlet strainer
- Remove the filter sieve
- Clean all parts of the inlet strainer with tap water
- A soft brush can be used, if needed
- Check the filter sieve for any damage
- Insert the filter sieve
- Screw the cover hand tight
- Open the inlet valve

7.3 Cleaning Flow Detector

The flow detector can be back washed. Also soft cleaning agents can be used. Removing the flow detector completely from the panel should be done by trained service staff only.

7.4 Replacing Cleaning Brushes *auto::brush*

The rotating brushes of the *auto::brush*, which are used for the automatic cleaning of spectrometer probe and the *i::scan*, shall be replaced once per year. The relevant replacement brushes are available in the service kit (see section 9.10) or as individual spare part.

8 TROUBLESHOOTING

8.1 Typical Error Pattern

Pattern	Reason	Removal
No or low discharge at the outlet	▪ Inlet vavle closed ▪ Inlet strainer clogged ▪ External medium supply interrupted	▪ Open inlet strainer ▪ Clean inlet strainer ▪ Check external medium supply
Air bubbles within the monitoring system	▪ Poor ventilation after maintenance activities ▪ Inlet not free of air bubbles ▪ Degassing of the measured medium	▪ Increase discharge for short time to remove air bubbles ▪ Improve inlet. Check if inlet valve is fully open. Perform autobrush cleaning before every measurement.
Incorrect readings after compressed air cleaning	▪ Waiting time after compressed air cleaning too short	▪ Extend the waiting time after compressed air cleaning ▪ Extend discharge

8.2 Return Consignment (RMA - Return Material Authorization)

Return consignments of the Badger Meter monitoring system, or parts of the system, shall be done in a packaging that protects the device (original packaging or protective covering if possible). Before returning a consignment, please contact your local Badgner Meter sales partner or Badger Meter Austria customer services (austriasupport@badgermeter.com). A RMA number will be assigned for each device, independent if the reason of the return consignment is service, repair, exchange or demo equipment.

The online RMA form to request your RMA number is available on the Badger Meter Website (<https://badgermeter.my.site.com/partnercentral/s/submit-rma>). Return consignments without an RMA number will not be accepted. The customer always has to bear the costs for return consignment.

Further details on return can be found in the RMA confirmation!

9 ACCESSORIES

9.1 Power Supply Cord

For connection of the operator terminal to the power supply a power supply cable is available.

Name	Specification	Remark
Part-no.	C-31-EU or C-31-US	
Cable length	2 m / 3G 1.5 mm ²	
Weight	approx. 300 g	
Material	PU	jacket
Process connection	CEE-7 shockproof plug NEMA 5-15 plug	C-31-EU C-31-US
Environment rating (IP)	IP44 IP55	C-31-EU C-31-US



9.2 Inlet Valve

Each monitoring station for clean water is permanently equipped with a 2-way ball valve. This allows the inlet to the monitoring station to be completely shut off for service work.

Name	Specification	Remark
Part-no.	F-45-VALVE	
Material	Polypropylene white	
Operating Temperature	max. 60 °C (140 °F)	
Operating Pressure	max. 8.6 bar (125 psi)	
Process connection	1/4" G	



9.3 Process Connection Clean Water

For connecting the inlet or outlet of the complete monitoring station for clean water or individual flow cells, a set of fittings is available.

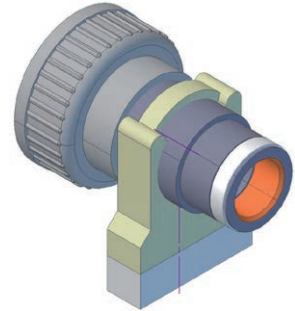
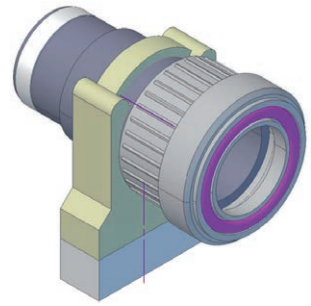
Name	Specification	Remark
Part-no.	F-46-PROCESS	
Scope of delivery	R 1/4" external thread to tube ID 8 mm	2 fittings straight and 2 fittings 90°
Material	Nylon PA	



9.4 Process Connection Waste Water

For connecting the inlet or outlet of the complete monitoring station for waste water or individual flow cells, a set of fittings is available.

Name	Specification	Remark
Part-no.	F-48-PROCESS	
Scope of delivery	F-48 fitting to G 1 "	
Material	PVC	



9.5 Flow Detector

To monitor the minimum flow rate, a digital flow detector is installed after the inlet in the micro::stations for clean water.

Name	Specification	Remark
Part-no.	F-45-ALARM	
Cable length	0.5 m	
Assembling	ex works	
Dimensions	75 / 25 mm 17 mm	Length / Height Diameter
Material	Polyphenylene ether	
Switching point	< 0.5 l/min	
Operating Temperature	-30 to 85 °C (-22 to 185 °F)	
Operating Pressure	max. 10 bar (20 °C) max. 145 psi (68 °F)	
Installation	vertical	
Flow direction	from bottom to top	arrow symbol on housing
Process connection	$\frac{3}{8}$ " BSP external thread	



9.6 Inlet Strainer

To protect the station from heavy contamination, each clean water station is equipped with an inlet strainer. If necessary, the filter sieve must be cleaned.

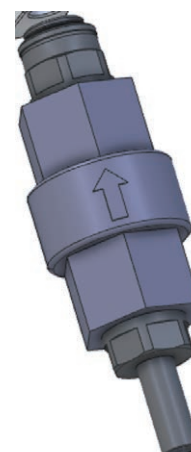
Name	Specification	Remark
Part-no.	F-45-STRAIN	
Filter	80 mesh = 0.2 mm	
Dimensions	75 / 25 mm 17 mm	Length / Height Diameter
Material	Nylon (white and transparent)	
Operating Temperature	max. 50 °C (125 °F)	
Operating Pressure	max. 10.34 bar (150 psi) max. 6.9 bar (100 psi)	at 21 °C (70 °F) at 52 °C (125 °F)
Process connection	1/4" NPT external thread	



9.7 Flow Restrictor

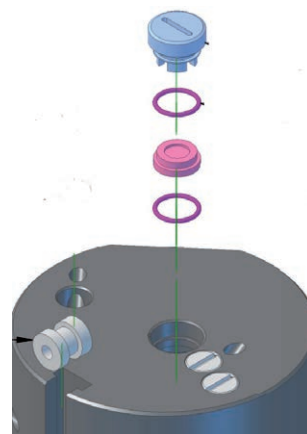
To limit the discharge to max. 1 l/min and at the same time protect the sensors from excessive pressure, a flow restrictor is installed in the station after the optical measurement (spectrometer probe or i::scan).

Name	Specification	Remark
Part-no.	F-45-FLOW-1 F-45-FLOW-MICRO F-45-FLOW-NANO	Version until end 2022 (Figure at the top) for micro::station (Figure centre) for nano::station (Figure at the bottom)
Dimensions	50 / 31 mm 1.98 / 1.23 inch	L / D only F-45-FLOW-1 without fittings
Material	Polypropylene white	
Operating Temperature	max. 60 °C (max. 140 °F)	
Operating Pressure	max. 8.6 bar (125 psi) min. 1.0 bar (14.5 psi)	Reaching the measured flow rate
Flow rate	0.26 to 15 l/min 0.07 to 3.96 GPM	
Process connection	1/4" NPT internal thread	





When using a flow cell F-46-FOUR-ISCAN, this flow restrictor is already installed directly in the flow cell (see figure on the right).



9.8 Pressure Sensor

Optionally, the station can be equipped with a pressure sensor. This analogue sensor measures the line pressure immediately after entering the station..

Name	Specification	Remark
Part-no.	F-500-P	
Measuring range	0 - 10 bar (4 - 20 mA)	
Dimensions	57 mm	Length
Mounting	Wrench SW 27	
Material	stainless steel, EPDM	
Operating Temperature	-20 to 85 °C (-4 to 185 °F)	
Power supply	10 to 30 VDC	
max. power consumption	ca. 25 mA	
Process connection	1/4" G external thread	



9.9 Water Pump

Optionally, the station can be equipped with a feed pump to ensure sufficient flow. If the power is supplied via the con::cube, the power requirement of the entire system must be taken into account (max. 40 watts).

Name	Specification	Remark
Part-no.	F-500-PUMP	
Max. headroom	0.38 kPa to 24 VDC	adustable step 1-5
Dimensions	65 / 82 mm 80 mm	Length / Depth Diameter
Material	brass	
Operating Temperature	max. 95 °C (203 °F)	
Power supply	8 - 24 VDC	
Power consumption	8 Watt / 0.12 bar (1.74 psi) 12 Watt / 0.24 bar (3.5 psi)	Step 3 (recommended) Step 4 (for higher pressure loss)
Flow direction	Arrow symbol on housing	
Process connection	1/2" internal thread	



9.10 Service Set

For maintenance and servicing of the clean water station a suitable service set (Part-no. F-500-SERVICE-SET) is available, which contains all needed maintenance parts as listed below.

- 1** Push-pull fittings (2 pieces), see upper figure on the right
- 2** Push-pull fittings with 90° bend (2 pieces), see middle figure on the right
- 3** Fitting for transition thread to push-pull (2 pieces), see lower figure on the right
- 4** Blue connection tube AD 8 mm (1 m)
- 5** Inlet strainer complete (F-45-STRAIN)
- 6** Flow restrictor (F-45-FLOW-1)
- 7** Dummy plug for flow cell sensor (1 piece)
- 8** Dummy plug for flow cell autobrush incl. connecting nut (je 2 pieces)
- 9** Safety bracket for sensor (2 pieces)
- 10** Mounting holder for flow cell
- 11** 2 pcs. replacement brush for autobrush spectrometer probe (F-446-BRUSH) incl. screws
- 12** 2 pcs. replacement brush for autobrush i::scan (F-446-BRUSH-ISCAN-DW) incl. screws
- 13** Set with following O-rings:
 - 1 piece 9 x 3 FKM for flow detector
 - 4 pieces 28 x 2 FKM for sensors or dummy plug
 - 2 pieces 44 x 3 FKM for flow cell F-446 (spectro::lyser)
 - 2 pieces 33 x 2 FKM for motor autobrush F-446-M
 - 2 pieces 60 x 2.5 FKM for flow cell F-45-AMMO, F-45-OXI
- 14** PTFE sealing tape 12 x 0.075 (1 piece)
- 15** Cable tie 100 x 2.5 (5 pieces)



10 TECHNICAL SPECIFICATIONS

10.1 Technical Specifications for Cleanwater - Stations (F-501-ECO-xx, F-502-ECO-xx, F-506-PANEL-xx)

Name	Specification	Remark
Part-no.	F-501-ECO-xx F-502-ECO-xx F-506-PANEL-xx xx = EU or US	System panel micro::station Add-on modul micro::station System panel nano::station
Dimensions (W / H / D)	750 / 450 / 10 mm 750 / 470 / 10 mm 750 / 150 / 10 mm 750 / 280 / 10 mm 29.53 / 17.72 / 0.39 inch 29.53 / 18.50 / 0.39 inch 29.53 / 5.91 / 0.39 inch 29.53 / 11.02 / 0.39 inch	F-501-ECO-xx (version until 2022) F-501-ECO-xx (version since 2023) F-502-ECO-xx F-506-PANEL-xx F-501-ECO-xx (version until 2022) F-501-ECO-xx (version since 2023) F-502-ECO-xx F-506-PANEL-xx
Required space	min. 210 mm (min. 8.27 inch)	Installation depth
Mounting	4 mounting holes 9 mm per panel	
Material	PE-HD white PP grey	F-xxx-ECO, F-506-PANEL-xx F-508-PANEL
Material other	PUN-tube 8x6 blue LE Flow cells PVC	F-xxx-ECO, F-506-PANEL-xx F-508-PANEL
Environmental conditions	no direct sunlight	see section 4.1
Operating temperature	0 to 45 °C (32 to 113 °F)	
Operating pressure	0.5 to 6 bar max. 6 bar at inlet	depending on used sensors (see section 10.3)
Flow rate	min. 0.4 l/min (24 l/h) min. 0.106 gal/min	
Process connection	1/4 Zoll NPT (US) or G 1/4 Zoll (EU) Tube ID 8 mm	via internal thread direct via F-46-PROCESS

10.2 Technical Specifications for Wastewater - Station (F-508-PANEL)

Name	Specification	Remark
Part-no.	F-508-PANEL	System panel (two-part) for waste water micro::station
Dimensions (W / H / D)	375 / 690 / 10 mm 14.76 / 27.17 / 0.39 inch	per part
Required space	min. 140 mm (min. 5.51 inch)	Installation depth
Mounting	4 mounting holes 9 mm per panel	
Material	PP grey	
Material other	Flow cells PVC	
Environmental conditions	no direct sunlight	see section 4.1
Operating temperature	0 to 45 °C (32 to 113 °F)	
Operating pressure	max. 3 bar	max. 1 bar für ammo::lyser, chlodi-lyser, hyper::lyser, peroxi::lyser
Flow rate	min. 4 l/min (1.06 gal/min) max. 40 l/min (10.57 gal/min)	recommended
Process connection	G 1 inch connection G 1 ¹ / ₄ inch / ID 40 mm	via F-48-PROCESS via flow cell direct

10.3 Operating Pressure for different Sensors

The following table provides an overview of the max. specified operating pressure of the different sensors which can be used in the nano::station or micro::station.

Name	Part-no.	max. Operating Pressure
ammo::lyser	E-532	1 bar (14.5 psi)
chlodri::lyser	E-528	1 bar (14.5 psi)
hyper::lyser	E-509	1 bar (14.5 psi)
peroxi::lyser	E-515	1 bar (14.5 psi)
chlori::lyser	E-520, E-525 E-520-S, E-525-S	3 bar (43.5 psi) 10 bar (145 psi)
s::can spectrometer V3	SP3, N2, U5, O2, C2, C3, M4	5 bar (72.5 psi)
oxi::lyser	E-501	6.8 bar (100 psi)
soli::lyser	E-505	6.8 bar (100 psi)
i::scan	Yxx, YxxS	8 bar (116.0 psi)
redo::lyser	E-513	10 bar (145 psi)
pH::lyser	E-514	10 bar (145 psi)
condu::lyser	E-511	20 bar (290 psi)

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