

Manual

micro::station / nano::station

March 2023 Release



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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 s::can product itself as well as information regarding transport and storage of the product. In further chapters the installation (chapter 4) and the initial startup (chapter 5) are explained. Furthermore information regarding how to perform a function check (chapter 6) and maintenance (chapter 7) can be found in this manual. Information regarding troubleshooting (chapter 8), the available accessories (chapter 9) and the technical specifications (chapter 10) complete the document.

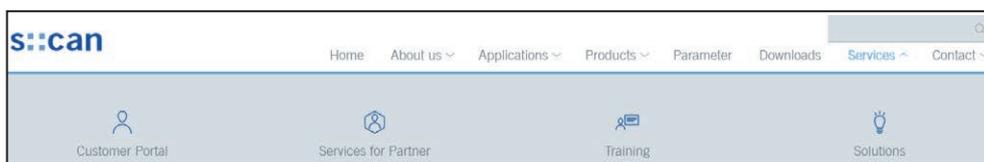
Each term in this document that is marked *italic and underlined*, can be found on the display of your controller for operation or as lettering on your s::can product.

In spite of careful elaboration this manual may contain errors or incompleteness. s::can 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 s::can. This original manual serves as the reference in case discrepancies occur in versions of the manual after translation into third languages.

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This manual, at the time of its publication (see release date printed on the top of this document), concerns the s::can products listed in chapter 3. Information and technical specifications regarding these items in s::can manuals from earlier release dates are herewith replaced by this manual.

The electronic version (pdf-document) of this manual is available on the s::can Customer Portal (Services for Customer) of the s::can website (www.s-can.at).



2 Safety Guidelines

Installation, electrical connection, initial startup, operation and maintenance of any s::can product as well as complete s::can measuring systems must only be performed by qualified personnel. This qualified personnel has to be trained and authorised by the plant operator or by s::can for these activities. The qualified personnel must have read and understood this manual and have to follow the instructions contained in this manual.



For proper initial startup of complete s::can measuring systems, the manuals for the controller and software used for operation (e.g. con::lyte, con::cube, con::nect, moni::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 s::can 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 instrument 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.

2.1 Declaration of Conformity

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

2.2 Special Hazard Warning

 Because the s::can measuring systems are frequently installed in industrial and communal 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 s::can 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 required flow cells, mounting fittings and pipework on a compact panel. The 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 s::can manuals, have to be observed. All applications falling outside of these limits, and which are not authorised by s::can GmbH in written form, do not fall under the manufacturer's liability.

The device must only be used for the purpose described in this manual. Use in applications not described in this s::can manual, or modification of the device without written agreement from s::can, is not allowed. s::can 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 s::can stations are equipped with an inlet and outlet and designed for continuous discharge of the water through the different flow cells. 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.

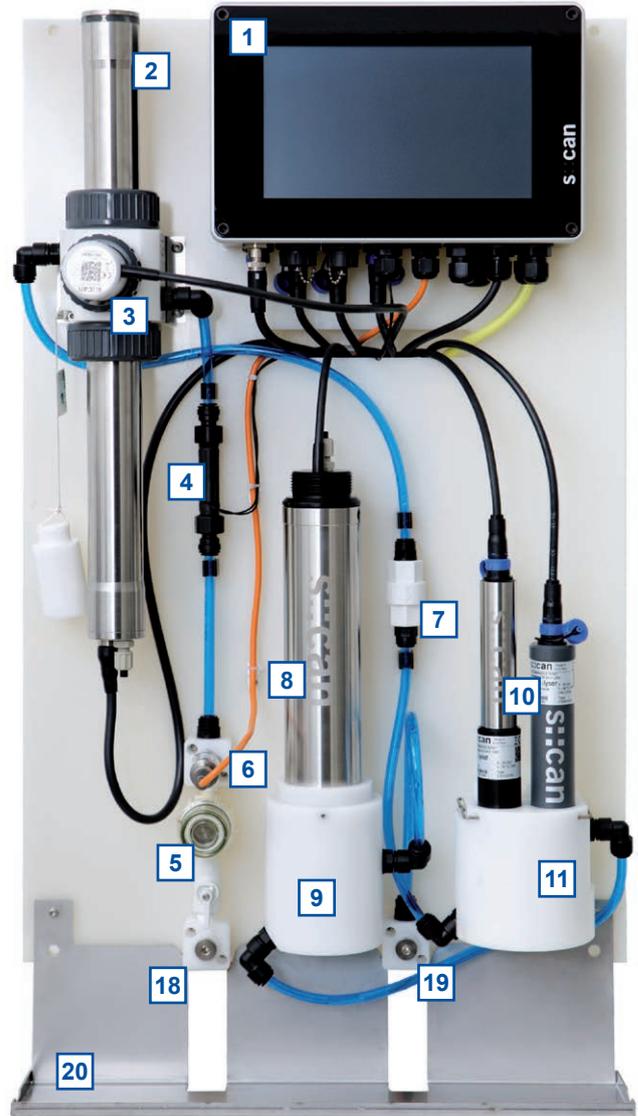
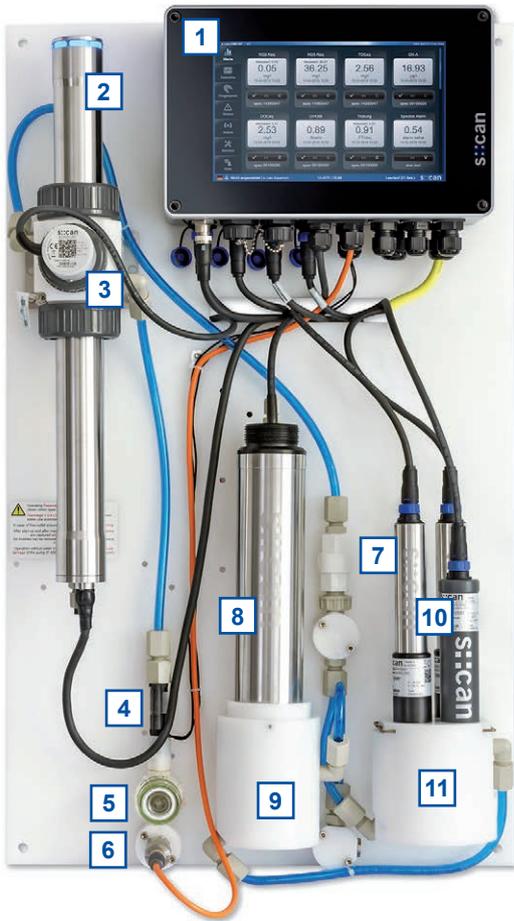
Optional the station can be equipped with an analog pressure sensor and a separate feed pump.

3.3 Product

The following variants of completely assembled monitoring stations as well as single 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.

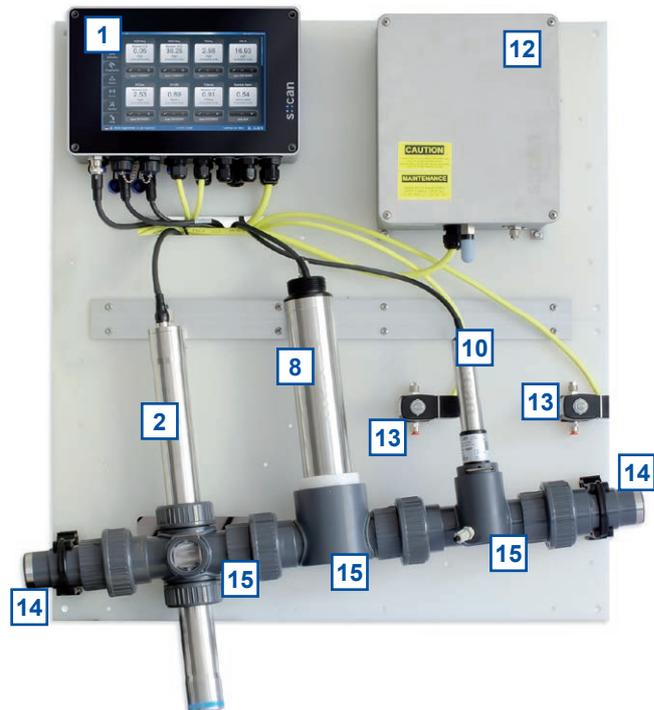
Type	Specification
M-100-MICRO-S	Turbidity, NO ₃ , TOC, DOC, pH, EC, Temp, Alarms, mounted on panel with 2 flow cells, autobrush, flow detector and con::cube operator terminal; event detection software included.
M-100-MICRO-M	Turbidity, NO ₃ , TOC, DOC, NH ₄ -N, pH, Temp, Alarms, mounted on panel with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

Type	Specification
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-3, 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 (push/pull)
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

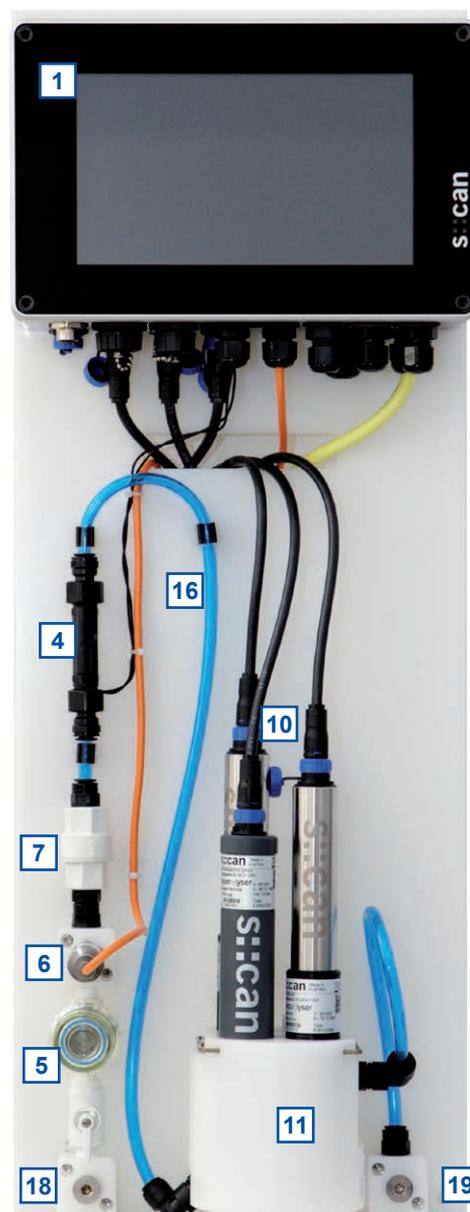


micro::station clean water (version until end 2022 figure above and version since 2023 figure on the right)

 In 2023 the design of s::can stations has been optimized. Modified dimensions or similar are marked with the note *version since 2023*.

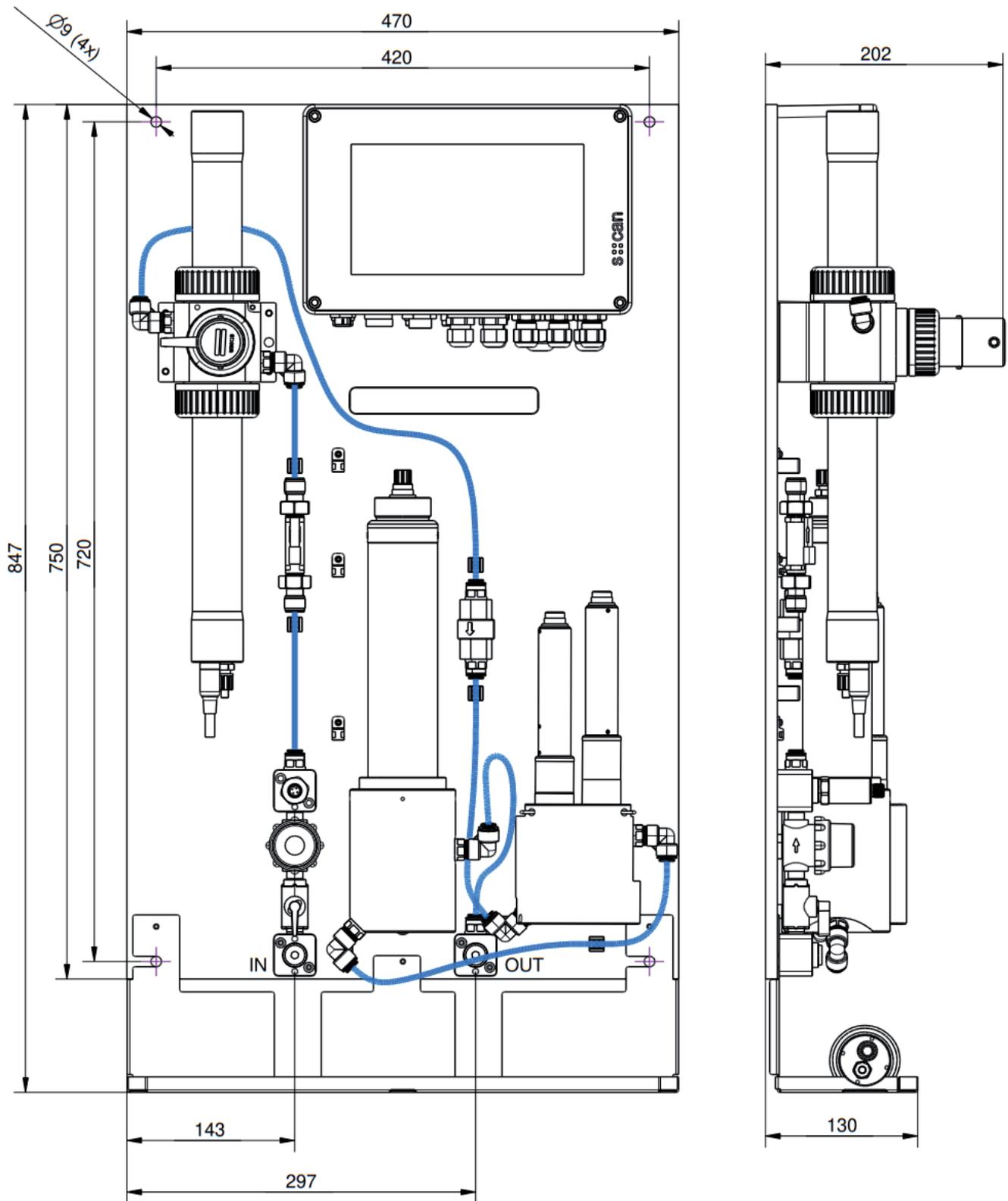


micro::station waster water (figure on the right)



nano::station N-103-NANO-X (version until the end of 2022 figure above and version since 2023 figure on the right)

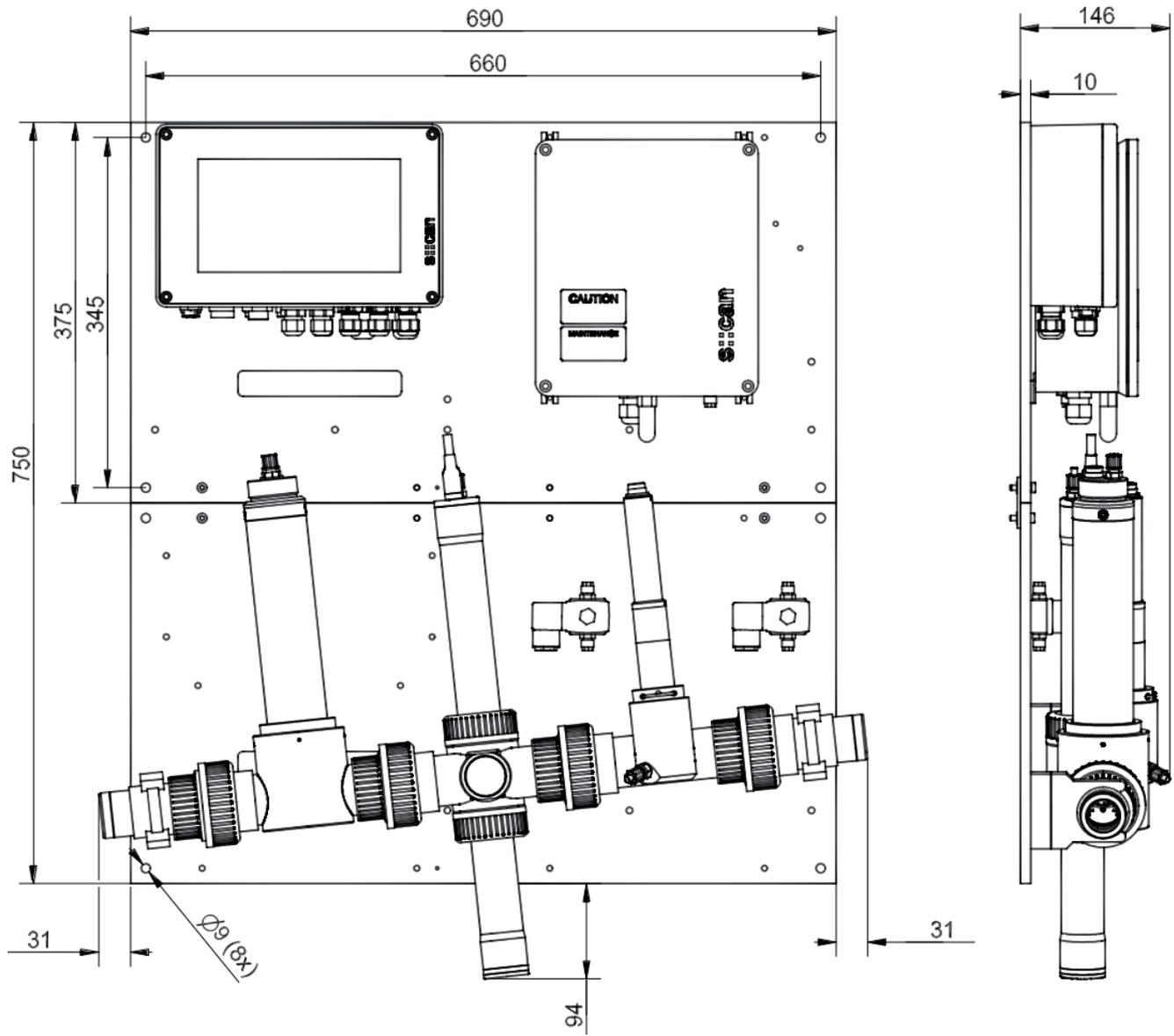
- | | |
|--|--|
| <ul style="list-style-type: none"> 1 Operator terminal (con::cube or con::lyte) 2 Spectrometer probe 3 Flow cell for spectrometer probe with auto-brush 4 Flow detector (digital) 5 Inlet strainer 6 Pressure sensor (analog) 7 Flow restrictor 8 ISE probe 9 Flow cell for ISE probe 10 Sensors | <ul style="list-style-type: none"> 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 Flow cell for i::scan with autobrush and 2 sensors incl. flow restrictor 18 Inlet 18 Outlet 20 Storage board for maintenance work (new since version 2023) |
|--|--|



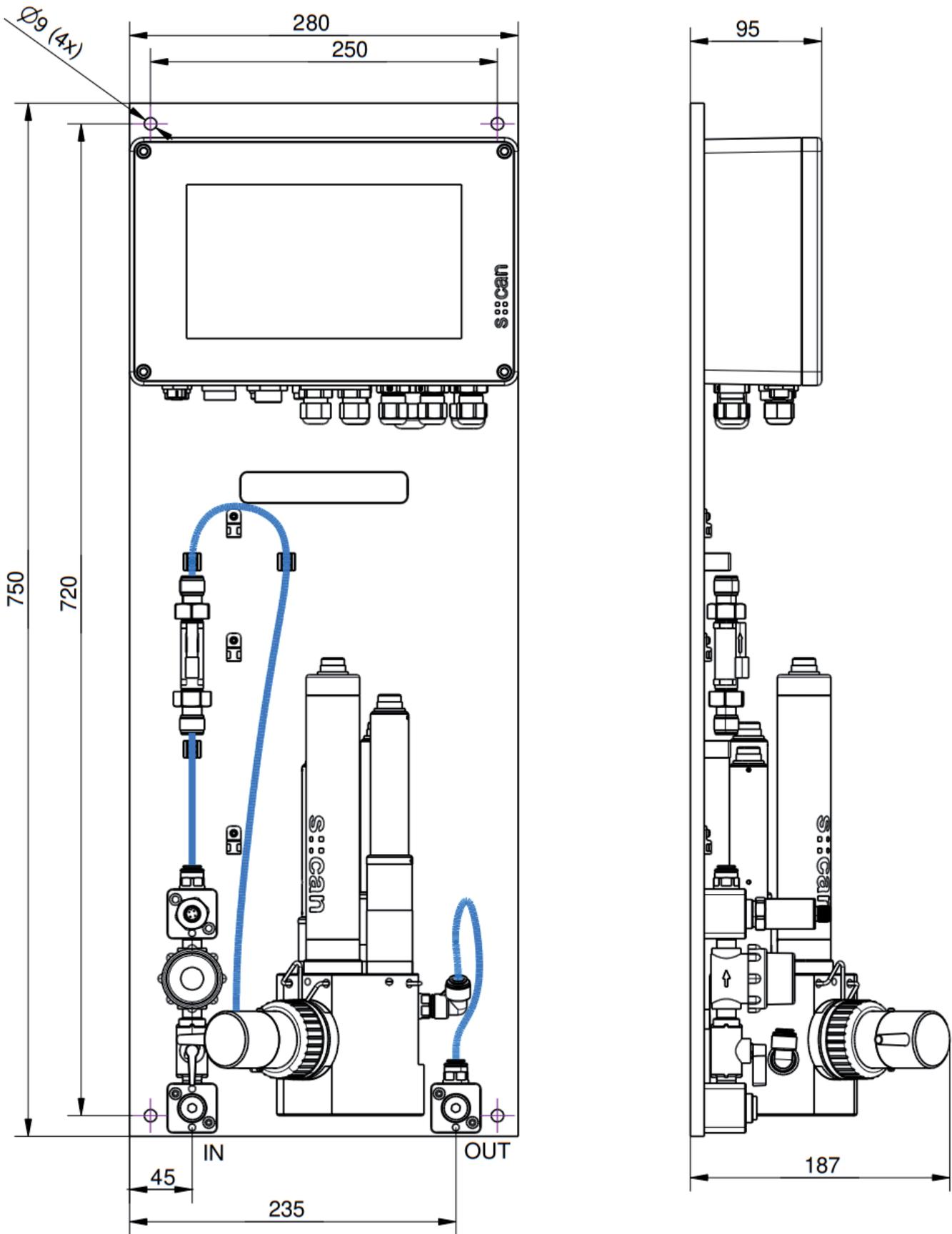
Dimensions of micro::station clean water in mm



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 limiting values for device storage and transport, which are described in the section technical specifications, have to be observed at all times. The device shall not be exposed to strong impacts, mechanical loads or vibrations. The device should be kept free of corrosive or organic solvent vapours, nuclear radiation as well as 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 or protective covering 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 environment

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 s::can immediately in case of any damages in transit.

The following parts should be included in the delivery:

- s::can micro::station or nano::station
- Storage board for micro::station
- s::can manual micro::station / nano::station (Artikelnr. S-36-M)

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 s::can sales partner immediately!

3.6 Product Updates, Other

The manufacturer reserves the rights to implement, without prior notice, technical developments and modifications in the light of continuous product care.

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 s::can monitoring system to operate properly.

Installation site:

- Best possible weather and splash water proof protection
- Avoid direct exposure to sunlight (see note on the panel)
- 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.)
- Easy accessibility and availability of sufficient space (mounting, sampling, function check, demounting)
- Adherence to limit values (see technical specifications located at the end of this manual)



Infrastructure:

- Power supply for controller for operation (operational reliability, voltage, power, peak free)
- Correct dimensioning, mounting and protection of all cables and lines (non-buckling, no risk of stumbling, no damage etc.)

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

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

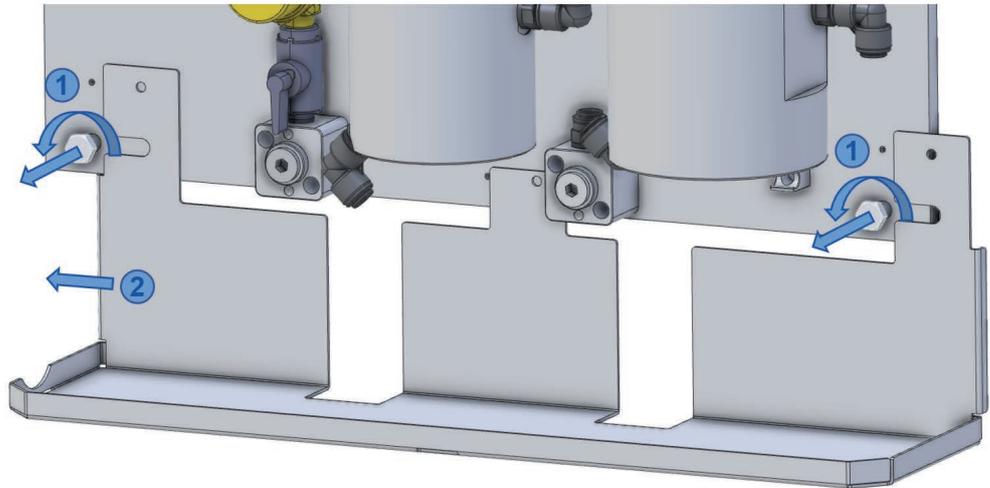
- 4 screws (M8) for fastening the micro / nano::station on the wall
- Tools to open the operator terminal
- Screw driver (3 mm) for wiring on cable terminals
- Strap wrench to unscrew the sensor adapter of the flow cell for ISE-probe or oxi::lyser
- Power supply cable (C-31-xx, if required)
- Stripping tool for power supply line
- Cable end sleeves and crimper
- Connection fittings for inlet and outlet of micro / nano::station



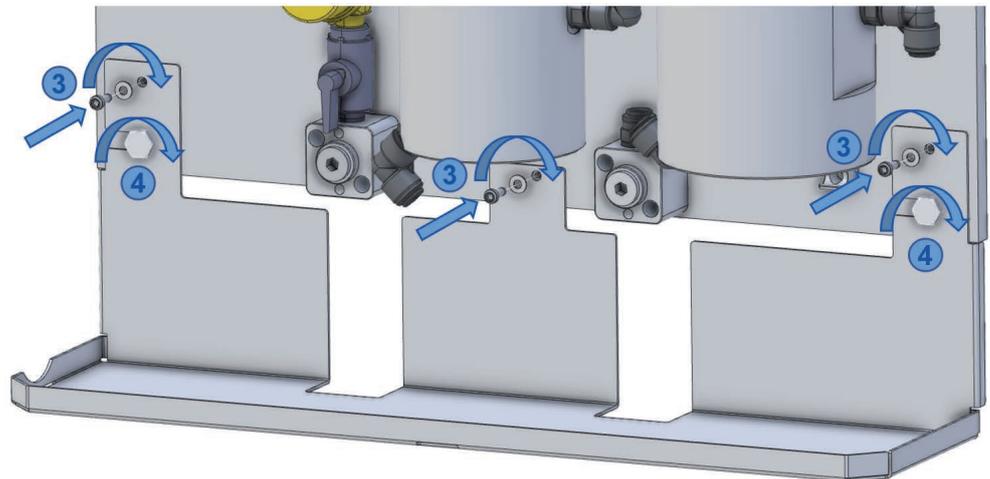
The panels of the clean water stations are equipped with an elongated opening so that the wiring of the sensors can also be arranged at the back of the panel. The delivery also includes 4 spacers (3 cm). From version 2023, the back of the panel is flat.

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 on the right). The screws required for this are included in the scope of delivery.



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 assembling, mounting and installation of the micro::station / nano::station have been completed and checked (see chapter 4) the initial startup of the s::can monitoring system 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 of the i::scan 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) is to be made properly and is required for AC and DC operation. Proper grounding implies suitable wiring for grounding which includes proper wire size (see technical specification) and a suitable equipment ground. 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.



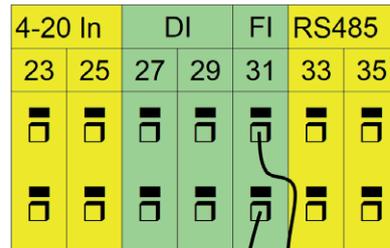
For further detail (e.g. the detailed connection plan) please refer to the manual of the used devices.

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).



Flow detector F-45-ALARM

```

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

```

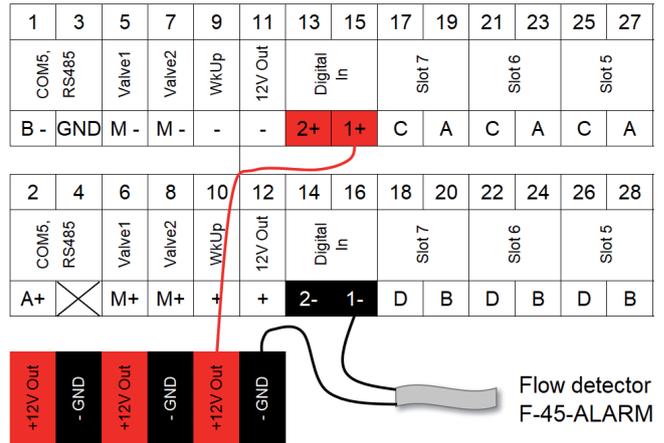
Add para.  OK!
Add Flow
    
```

5.2.2 Connection of flow detector F-45-ALARM to con::cube

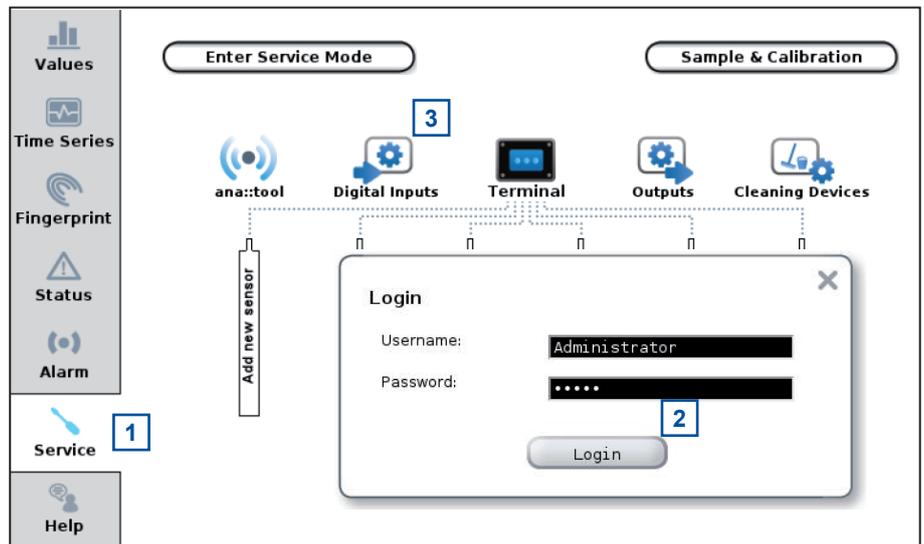
- Disconnect the con::cube from power supply and open the cover to the terminal compartment.
- Connect the two black wires of the flow detector as follows.

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. In addition, 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.



- 1 Click the Service tab on the moni::tool screen.
- 2 Login as Administrator with Password admin1 or your individual user-name.
- 3 Click on the icon Digital Inputs.
- 4 Click on the button Parameters.
- 5 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				5 +
[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
9

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

Flow

no flow

10-05-2022 16:15:19

Time Series

✓ (0) C

Digital Input

Fingerprint

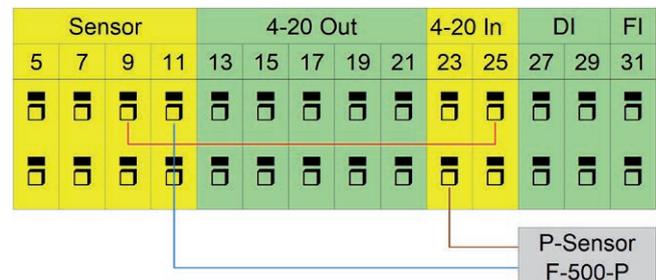
Status

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 9 (*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

```

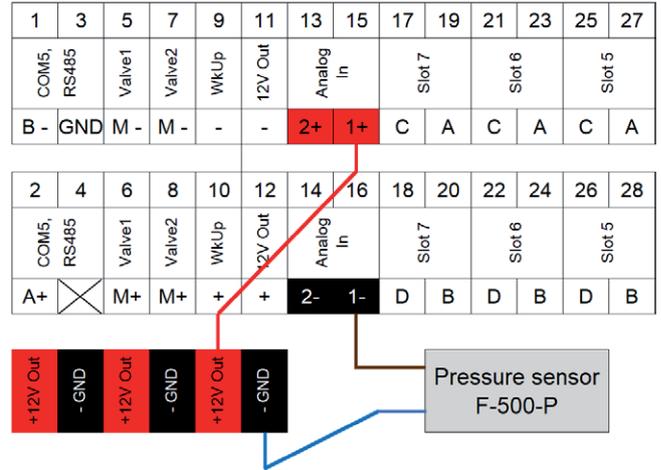
```

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

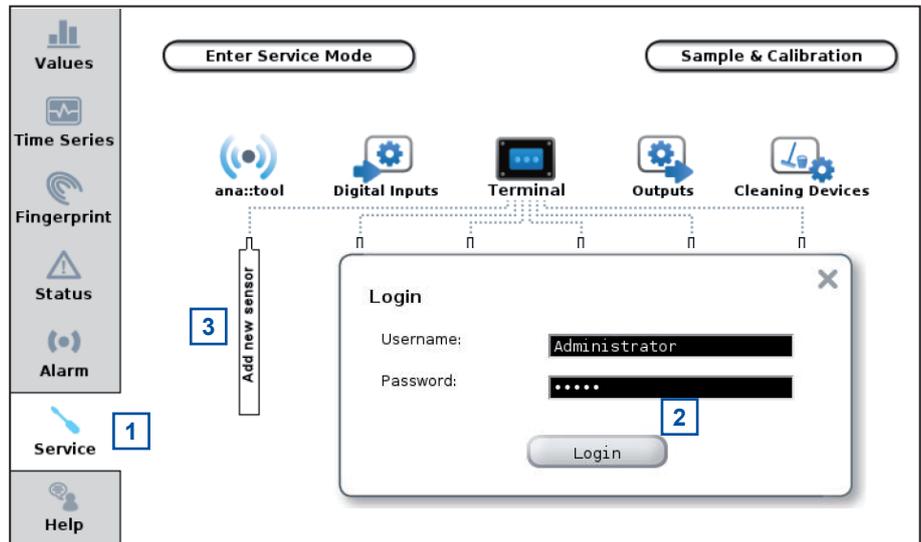
```

5.3.2 Connection of Pressure Sensor F-500-P to con::cube

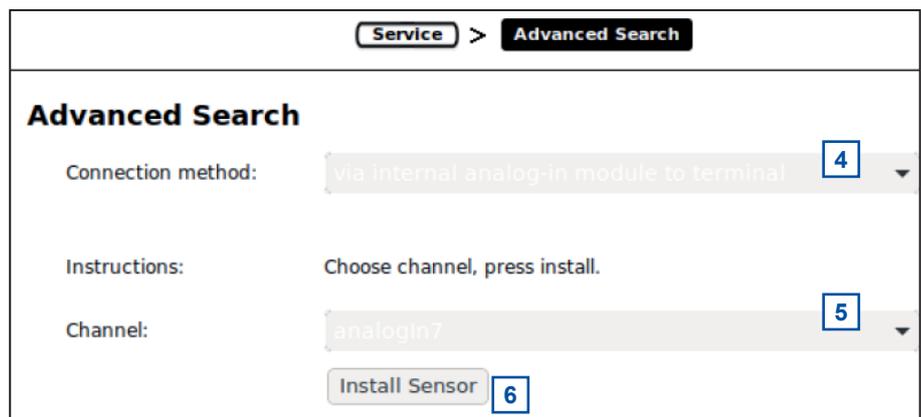
- Disconnect the con::cube from power supply and open the cover to the terminal compartment.
- Connect the brown wire of the pressur sensor to the negative input (e.g. 1-) of the used analog input (*Analog In*).
- Connect the blue wire of the pressur sensor to GND of the 12 V power supply of the con::cube (black terminals at the cottom of the con::cube).
- Connect the +12V Out power supply of the con::cube (red terminals at the cottom of the con::cube) with the positiv 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 user-name.
- 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.

Service > Advanced Search > Install Sensor

Cancel Save 8

Install new Sensor

<< GENERAL SETTINGS >>

Address: constai://3/23

Sensor name (Internal): New... Sensor_2

Sensor name: Pressure sensor 7

Vendor: [Redacted]

Model: intern-mA-IN

Serial number: [Redacted]

Parameter count: 1

- 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.

Service > Pressure sensor > Parameters > Install Parameter

Cancel Save 13

Install Parameter [Parameter_1] [1 / 1]

<< GENERAL SETTINGS >>

Address: constai://3/23/1

Sensor name: Pressure sensor

Parameter name (Internal): Parameter_1 [Curre...]

Parameter name: Pressure 9

Unit: bar 11

Resolution: 2 10

Upper limit: 10 11

Lower limit: 0.0 11

<< CUSTOM STATUS MAPPING >>

<< ADDITIONAL PARAMETERS >>

Mode: 4...20mA 12

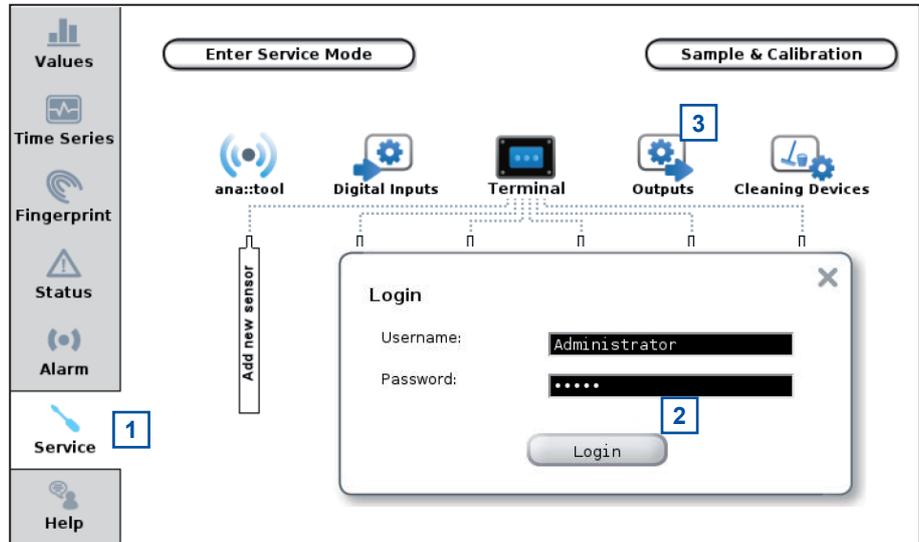
Error Mode: Limit 12

<< HISTORY INFORMATION >>

5.4 Connection of Pump F-500-PUMP to con::cube

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 user-name.
- 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 >>

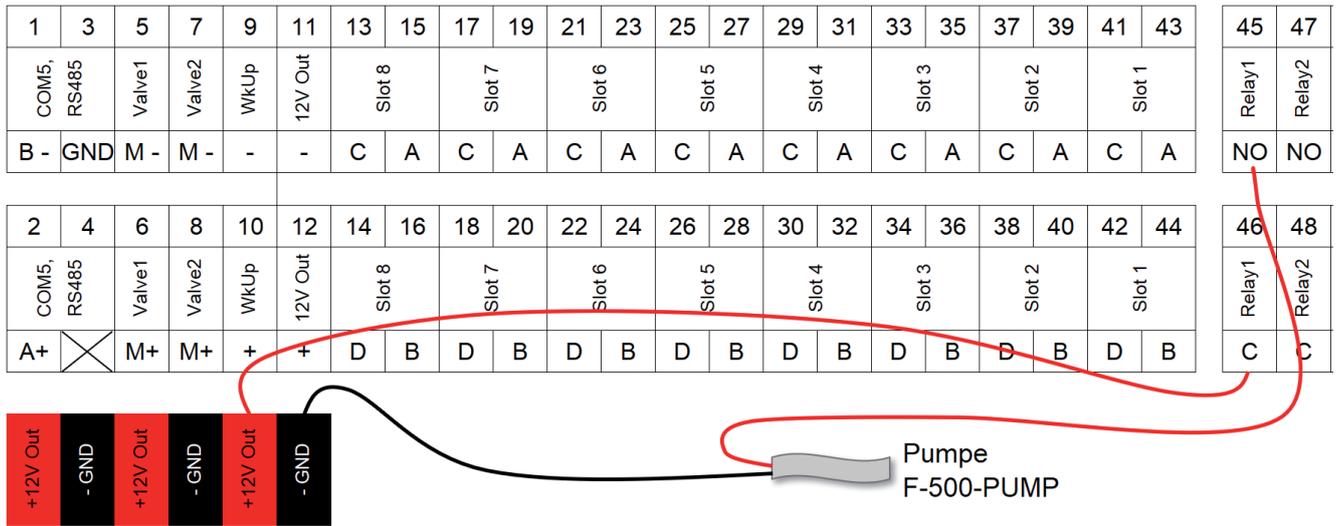
Description: [Redacted]

Mode: Service 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.



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.

Information on the function check of the connected probes and sensors can be found in the respective manuals. 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.
- 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).
- 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.

7 Maintenance

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.

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

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
- Check the filter sieve for any damage
- Insert the filter sieve
- Screw the cover 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.

8 Troubleshooting

8.1 Typical Error Pattern

Pattern	Reason	Removal
No or low discharge at the outlet	<ul style="list-style-type: none"> ■ Inlet valve closed ■ Inlet strainer clogged ■ External medium supply interrupted 	<ul style="list-style-type: none"> ■ Open inlet strainer ■ Clean inlet strainer ■ Check external medium supply
Air bubbles within the monitoring system	<ul style="list-style-type: none"> ■ Poor ventilation after maintenance activities ■ Inlet not free of air bubbles ■ Degassing of the measured medium 	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Waiting time after compressed air cleaning too short 	<ul style="list-style-type: none"> ■ Extend the waiting time after compressed air cleaning ■ Extend discharge

8.2 Return Consignment (RMA - Return Material Authorization)

Return consignments of the s::can 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, you have to contact your s::can sales partner or s::can customer support (support@s-can.at). A RMA number will be assigned for each device, independent if the reason of the return consignment is service, repair or demo equipment.

RMA numbers can be requested from the s::can Customer Portal available on the s::can website directly. Return consignments without an RMA number will not be accepted. The customer always has to bear the costs for return consignment.

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	
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.

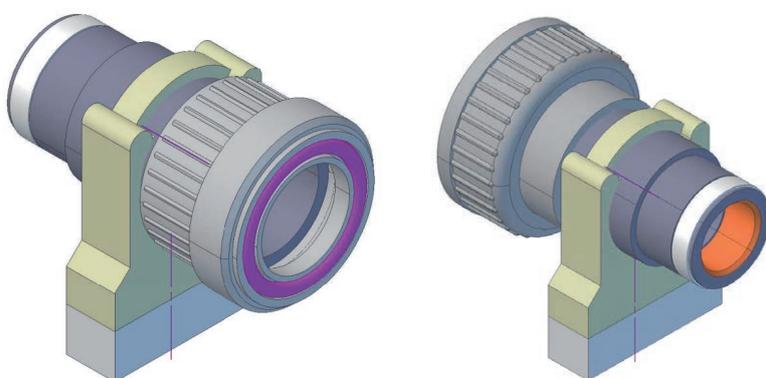
Name	Specification	Remark
Part-no.	F-45-VALVE	
Material	Polypropylene white	
Operating Temperature	max. 60°C (140 °F)	
Operating Pressure	max. 8.6 bar (125 psi)	
Process connection	1/4" G	



9.3 Process Connection

For connecting the inlet or outlet of the complete monitoring station or individual flow cells, a set of fittings for the clean water station (F-46-PROCESS, see figure on the right) and the waste water station (F-48-PROCESS, see figure below) are available.

Name	Specification	Remark
Part-no.	F-46-PROCESS F-48-PROCESS	clean water waste water
Scope of delivery F-46-PROCESS	R 1/4" external thread to tube ID 8 mm	2 fittings straight and 2 fittings 90°
Scope of delivery F-48-PROCESS	F-48 fitting to G 1"	
Material	Nylon PA PVC	F-46-PROCESS F-48-PROCESS



9.4 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)	
Flow direction	arrow symbol on housing	
Process connection	3/8" BSP external thread	



9.5 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.

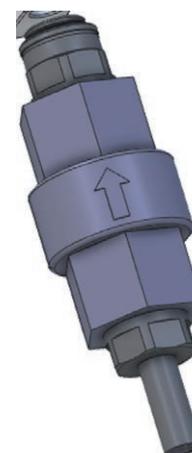
Name	Specification	Remark
Part-no.	F-45-STRAIN	
Filter	80 mesh = 0.2 mm	
Dimensions	75 / 25 mm 17 mm	Length / Height Diameter
Material	Nylon (white and transparent)	
Operating Temperature	max. 50 °C (125 °F)	
Operating Pressure	max. 10.34 bar (150 psi) max. 6.9 bar (100 psi)	at 21 °C (70 °F) at 52 °C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



9.6 Flow Restrictor

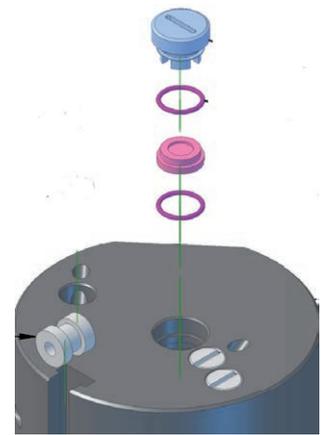
To limit the discharge to max. 1 l/min and at the same time protect the sensors from excessive pressure, a flow restrictor is installed in the station after the optical measurement (spectrometer probe or i::scan).

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
Discharge	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).



9.7 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	



9.8 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	



9.9 Service Set

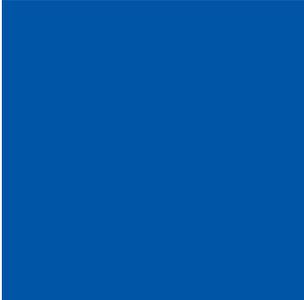
For maintenance and servicing of the clean water station a suitable service set (Part-no. F-500-SERVICE-SET) is available, which contains all needed maintenance parts as listed below.

- 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** Replacement brush for autobrush spectromer probe (2 pieces) incl. screws
- 12** Replacement brush for autobrush i::scan (2 pieces) 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

Name	Specification	Remark
Part-no.	F-501-ECO-xx F-502-ECO-xx F-506-PANEL-xx F-508-PANEL xx = EU or US	System panel micro::station Add-on modul micro::station System panel nano::station System panel (two-part) for waste water micro::station
Dimensions (W / H / D)	750 / 450 / 10 mm 750 / 470 / 10 mm 750 / 150 / 10 mm 750 / 280 / 10 mm 375 / 690 / 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 14.76 / 27.17 / 0.39 inch	F-501-ECO-xx (version until 2022) F-501-ECO-xx (vers. since 2023) F-502-ECO-xx F-506-PANEL-xx F-508-PANEL per part F-501-ECO-xx (version until 2022) F-501-ECO-xx (vers. since 2023) F-502-ECO-xx F-506-PANEL-xx F-508-PANEL per part
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	-10 to 45 °C (14 to 113 °F)	
Operating pressure	0 to 45 °C (32 to 113 °F)	
Operation cycle	0.5 to 6 bar max. 6 bar at inlet	depending on used sensors
Process connection	1/4 Zoll NPT (US) or G 1/4 Zoll (EU) internal thread G 1 inch connection via F-48-PROCESS or G 1 1/4 inch / ID 40 mm via flow cell direct	F-xxx-ECO, F-506-PANEL-xx F-508-PANEL
Discharge	> 0.4 l/min < 40 l/min recommended	F-xxx-ECO, F-506-PANEL-xx F-508-PANEL



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