OPERATING MANUAL

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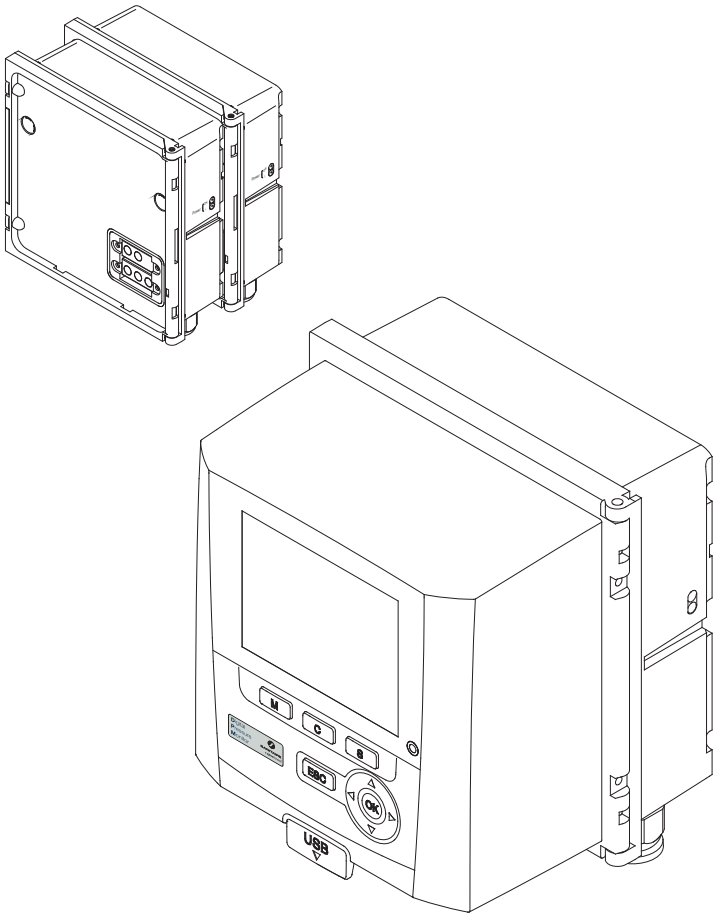


DPM

DIGITAL PRESSURE MONITOR

SANITAIRE

a xylem brand

DPM - Contents

1 Overview

This manual covers the installation and operation of the SANITAIRE® Pressure Monitoring System.

This manual can be used for both Ceramic and Membrane Fine Bubble Disc Diffusers. The format and text of this manual has not been edited for specific projects and specification requirements.

Standard transducers provided with DPM are suitable to 15 PSIG (103 kpa).

Prior to beginning the installation process, the installing contractor should have all erection, or “E”, drawings and shipping lists included with this manual in their possession. These items are essential for proper equipment installation.

Overview DPM

Line power	Supply voltage 100 ... 240 V
Basic functions	Terminal
	Controller
	Power supply module
	USB interface
Extended functions	Current outputs
Interfaces	Ethernet interface

DPM System Components	DPM Controller
	DPM Transducer Junction Box (DPM-IC2)
	Pressure Transducers
	Misc Support components

The DPM controller and DPM Junction Boxes are connected with one another via a common line. The line consists of two wires and a shield. It transports digital information between the Controller and the other modules. At the same time it is used for the power supply of all components.

Maximum extensibility of the system

The maximum cable length in the DPM net is 250 m.
Each DPM controller is capable of monitoring 9 aeration grids.

- 18 DPM transducer junction boxes (DPM-IC2)
- 27 Pressure transducers

A power supply (DPM/PS) is required for each DPM controller monitoring 4 grids or more. Should the need to monitor more than 9 grids exist, an additional DPM controller will be needed.

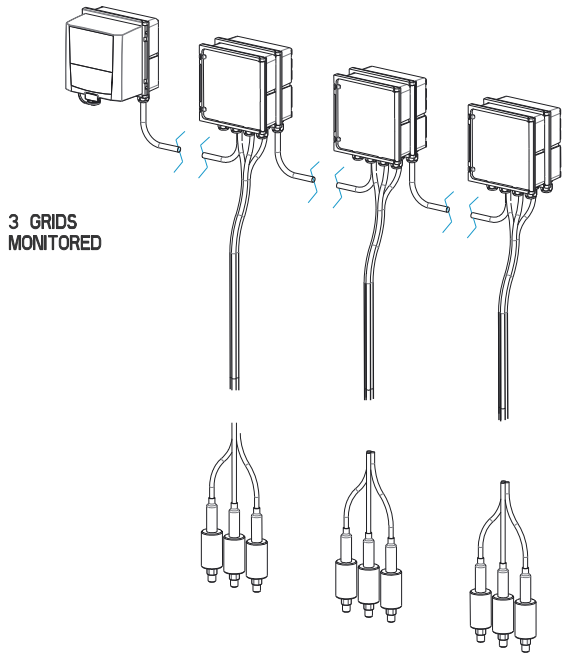


figure 1-1 Example of a simple system.

The modular components allow for various installation configurations.

Interfaces

USB interface

The USB interface of the DPM provides the following functions:

- Connection of a USB memory for the transfer of measured data (see section 5.7)
- Software update
- Connection of a USB hub for the reproduction of the USB interface.

NOTE:
The USB interface is designed for USB memory devices with a maximum power consumption of 1 watt. USB memory devices with a higher power consumption have to be supplied with power by an extra power supply. If these instructions are not complied with, the availability of the system can be adversely affected.

The USB interface is equipped with a protective cover.
Only remove the protective cover when you want to connect a USB device. Immediately close the USB connection again when you have removed the USB device.
When the USB connection is open, there is a danger of corrosion.

2 Safety

2.1 Safety information

2.1.1 Safety information in the operating manual

This operating manual provides important information on the safe operation of the product. Read this operating manual thoroughly and make yourself familiar with the product before putting it into operation or working with it. The operating manual must be kept in the vicinity of the product so you can always find the information you need.

Important safety instructions are highlighted in this operating manual. They are indicated by the warning symbol (triangle) in the left column. The signal word (e.g. "CAUTION") indicates the level of danger:

WARNING
indicates a possibly dangerous situation that can lead to serious (irreversible) injury or death if the safety instruction is not followed.

CAUTION
indicates a possibly dangerous situation that can lead to slight (reversible) injury if the safety instruction is not followed.

NOTE
indicates a situation where goods might be damaged if the actions mentioned are not taken.

2.1.2 Safety signs on the product

Note all labels, information signs and safety symbols on the product. A warning symbol (triangle) without text refers to safety information in this operating manual.

2.1.3 Further documents providing safety information

The following documents provide additional information, which you should observe for your safety when working with the measuring system:

- Operating manuals of other components of the DPM system (DPM-IC2 modules, accessories)

2.2 Safe operation

2.2.1 Authorized use

The authorized use of the DPM consists of its use in pressure monitoring. Only the operation and running according to the instructions and technical specifications given in this operating manual is authorized (see chapter 7 TECHNICAL DATA). Any other use is considered unauthorized.

2.2.2 Requirements for safe operation

Note the following points for safe operation:

- The product may only be operated according to the authorized use specified above.
- The product may only be operated under the environmental conditions mentioned in this operating manual.
- The product may only be supplied with power by the energy sources mentioned in this operating manual.
- The product may only be opened if this is explicitly described in this operating manual (example: connecting electrical lines to the terminal strip).

2.2.3 Unauthorized use

The product must not be put into operation if:

- it is visibly damaged (e.g. after being transported)
- it was stored under adverse conditions for a lengthy period of time (storing conditions, see chapter 7 TECHNICAL DATA).

2.3 User qualification

Special user qualifications

The following installation activities may only be performed by a qualified electrician:

- Connection of the DPM to the power supply.
- Connection of external, line voltage-carrying circuits to relay contacts (see module manual of the relay output module).

3 Installation

3.1 Scopes of delivery

The following parts are included in the scope of delivery:

- DPM Controller
- Accessory kit with:
  - Contact carrier with screws
  - ISO cap nuts with screws and ring washers
  - Cable glands with sealing gaskets
- Operating manual.

3.2 Installation

1 Review the erection drawings and Figures 1 thru 5 of this manual to understand the concept of the pressure monitoring system.

2 Locate all component parts associated with the pressure monitoring system.
The erection drawings and shipping lists will list all items.

3 Locate the tapped air distributor in the fine bubble aeration grid. The location of this distributor is shown on the erection drawings.

4 Using the mounting brackets, install the DPM Controller or DPM-IC2 on the handrail directly above the tapped air distributor (header) (See figure 3-1).

The SD/K 170 sun shield can be mounted directly on a wall, on a mounting stand or on a railing. The MR/SD 170 mounting kit is also required for mounting on a mounting stand or railing.

How to mount the sun shield at the installation location is described in the instructions for the sun shield or mounting kit.

Materials required

- SD/K 170 sun shield (see chapter 8 ACCESSORIES AND OPTIONS)
- The MR/SD 170 mounting kit is also required for mounting the sun shield on a mounting stand or railing (see chapter 8 ACCESSORIES AND OPTIONS).

Tools

- Phillips screwdriver.

Mounting the DPM with sun shield

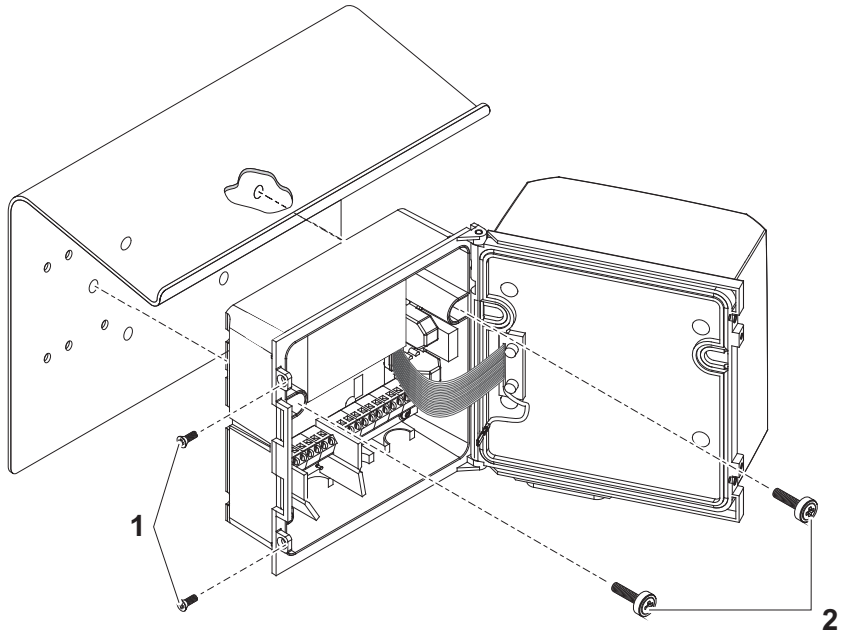


figure 3-1 Mounting the DPM with sun shield SD/K 170

5 Remove the two countersunk screws (pos. 1 in figure 3-1) and swing open the module lid.

6 Position the DPM on the sun shield and fix it into place with the two screws (pos. 2 in figure 3-1).

7 Close the lid and fix it with the two countersunk screws (pos. 1 in figure 3-1).

8 Install the carrier column as shown on the erection drawings (See Figure 2).

The configuration of the carrier column could vary from that shown on Figure figure 3-2. Use the erection drawings to determine the actual configuration of this equipment.

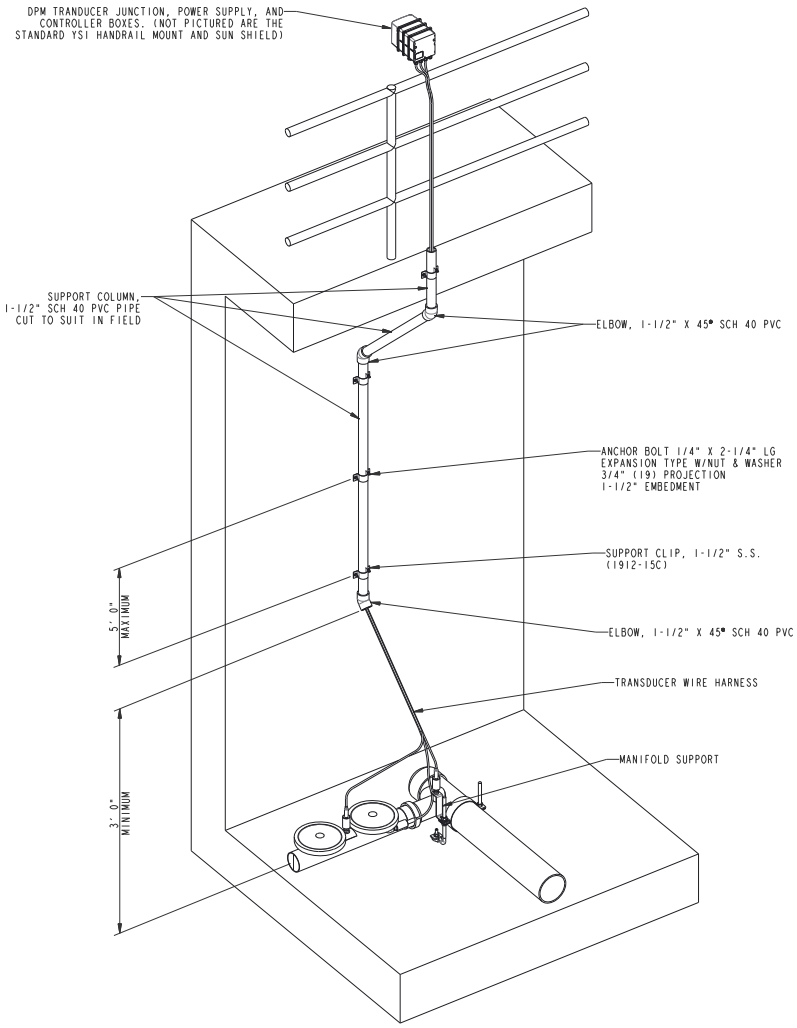


figure 3-2 Pressure Monitoring and Purge Sump Assembly Detail

The 45° PVC elbow on the bottom of the carrier column should be approximately 3 ft. (0.9 m) above the air distributor centerline.

9 Trim excess pipe at the top of the carrier column. The top of the carrier pipe should be 6 in. (150 mm) above the top of the walkway.

10 Using duct or electrical tape, loosely strap together the 3 pressure transducer cables.

11 Feed the wiring bundle up the carr ier column and pull the taped end out the exit port. Sufficient excess tube should be left on the bottom and top for connection to the DPM Controller or DPM-IC2, diffuser holder, tapped air distributor and static water column support bracket.

NOTE
DO NOT over-tighten the compression fitting nut. This may cut the tubing. To prevent the accumulation of condensate, the lines should remain slightly loose after installation but should not sag.

12 Thread 1/2" NPT transducers (5000 series) into aeration piping and holder (see figure 3-3)

The 1/2" NPT transducers (5000 series) are compatible with the acid cleaning methods used to reduce aeration equipment pressure. Do not install the smaller 3/8" NPT transducers (2600 series) onto the air distributor or air plenum.

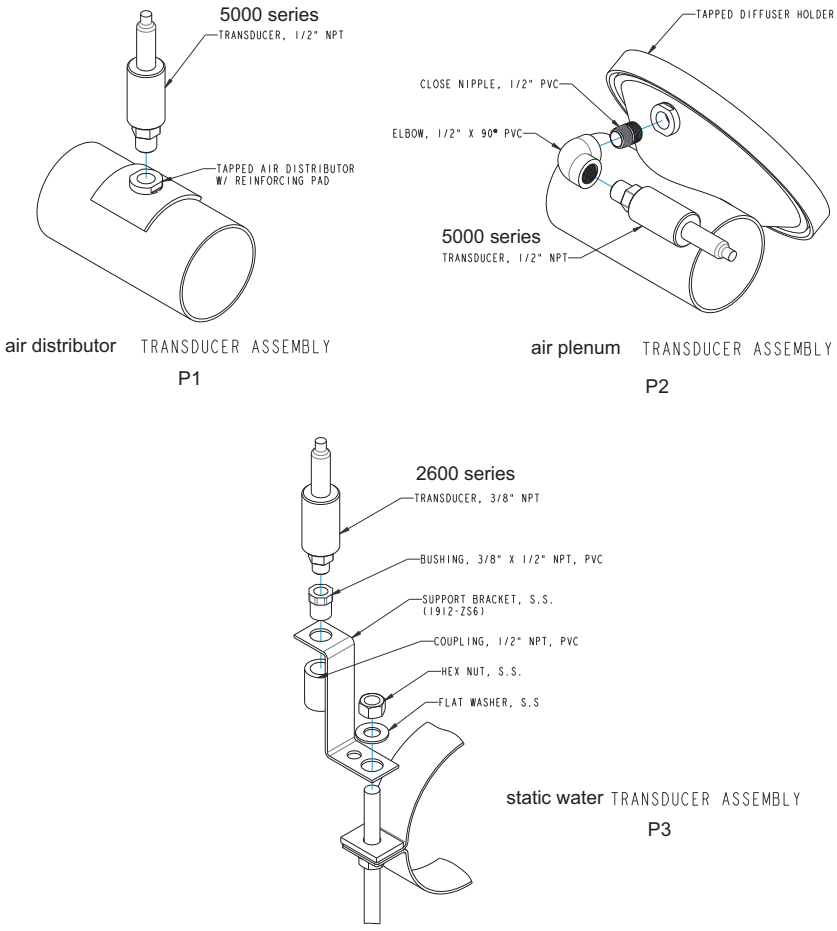


figure 3-3 Holder Tap Assembly Detail (Detail 2802 Series Diffuser)

13 Thread 3/8" x 1/2" NPT PVC bushing onto 3/8" NPT transducer (2600 series) (see figure 3-3)

14 Attach bushing and 3/8" transducer to static water support bracket and attach to nearest support assembly.

15 Wire transducers to DPM junction boxes (IC2). Refer to wiring diagrams below.

When making the transducer connections in the IC2 junction boxes, make a note of where you make the transducer landings. Use the serial numbers and landing location. This will make configuration simpler. For instance:

P1 = Air Distributor = DPM Junction Box 193802XX, REC1
P2 = Air Plenum (holder) = DPM Junction Box 193802XX, REC2
P3 = Static Water = DPM Junction Box 193802XY, REC1

Transducer Wire Landing Sheet

Grid Location / Desc	Junction 1 Box Ser #		Junction Box 2 Ser #	
	Rec1	Rec2	Rec1	Rec2
Train 1, Zone 1	*193802XX*		*193802XY*	
	P1	*P3*	*P2*	

3.3 Installation examples

The maximum cable length in the DPM net is 250 m.

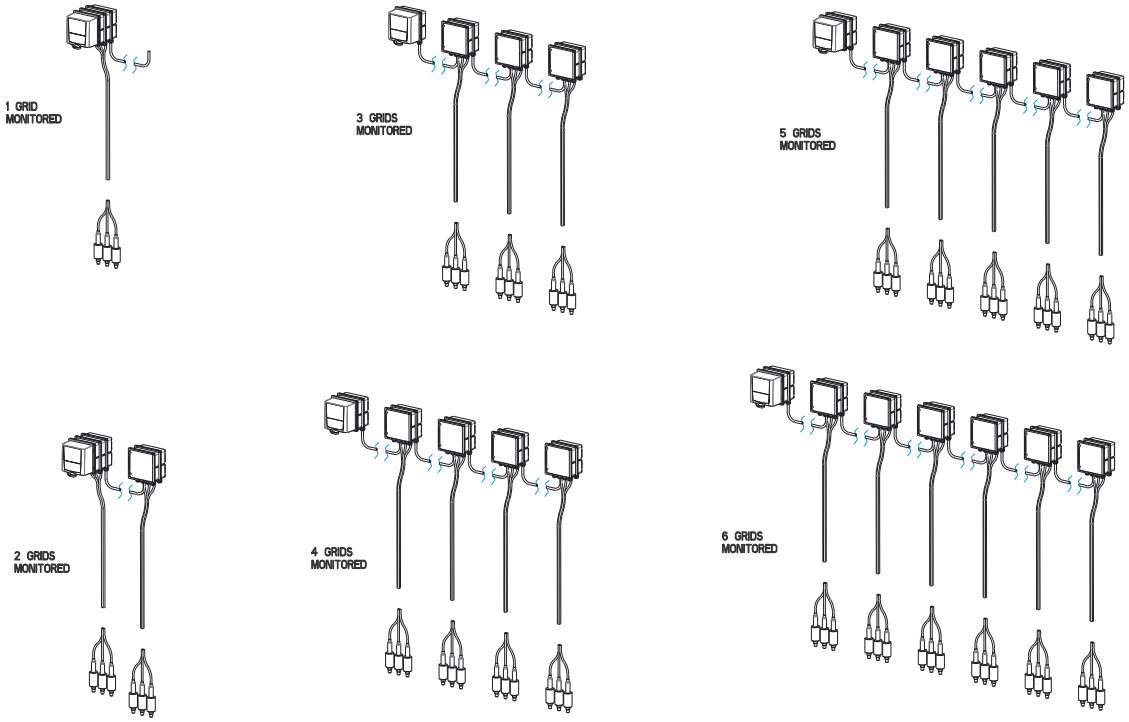


figure 3-4 Grid monitoring (examples)

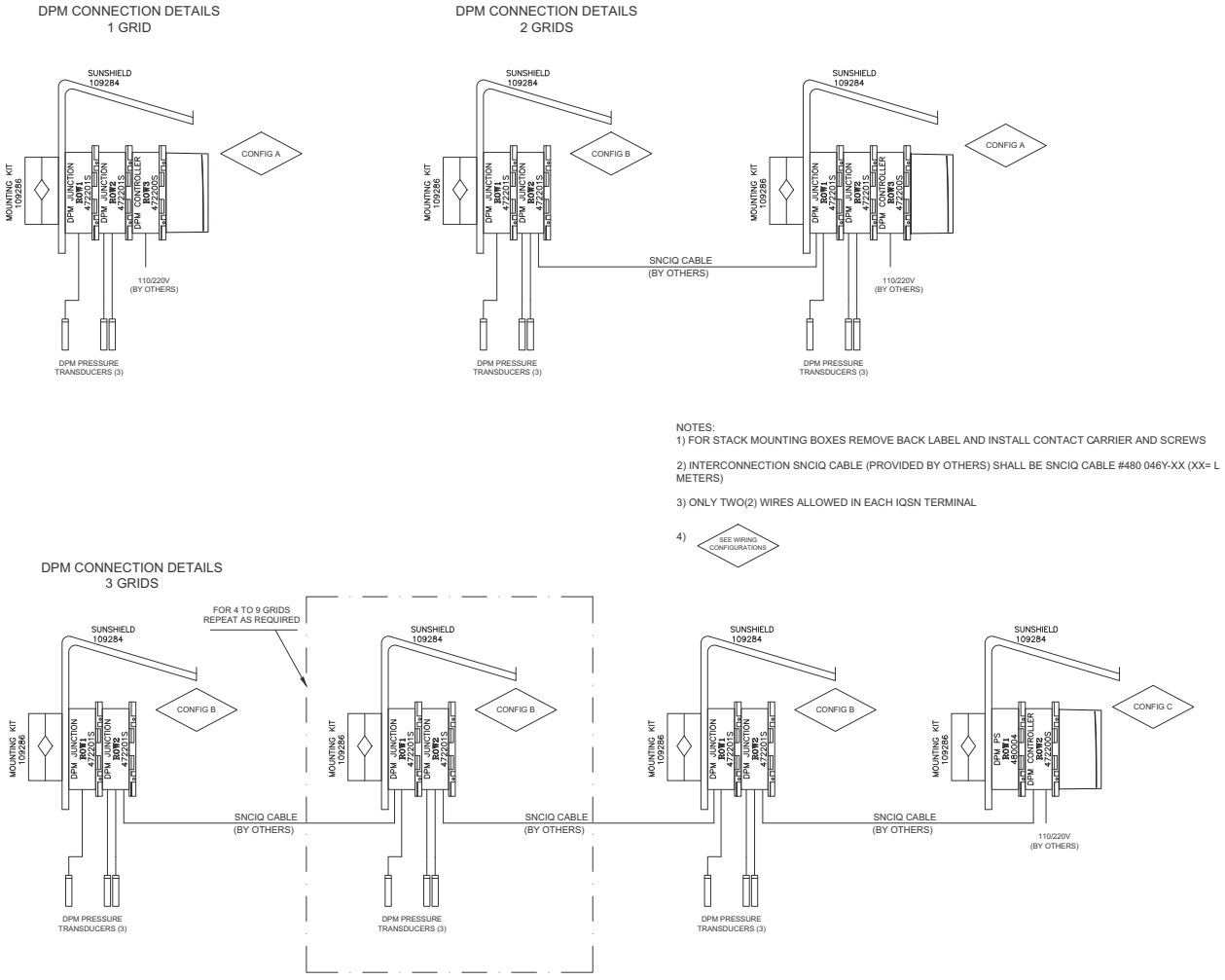


figure 3-5 Network layout and stack configurations

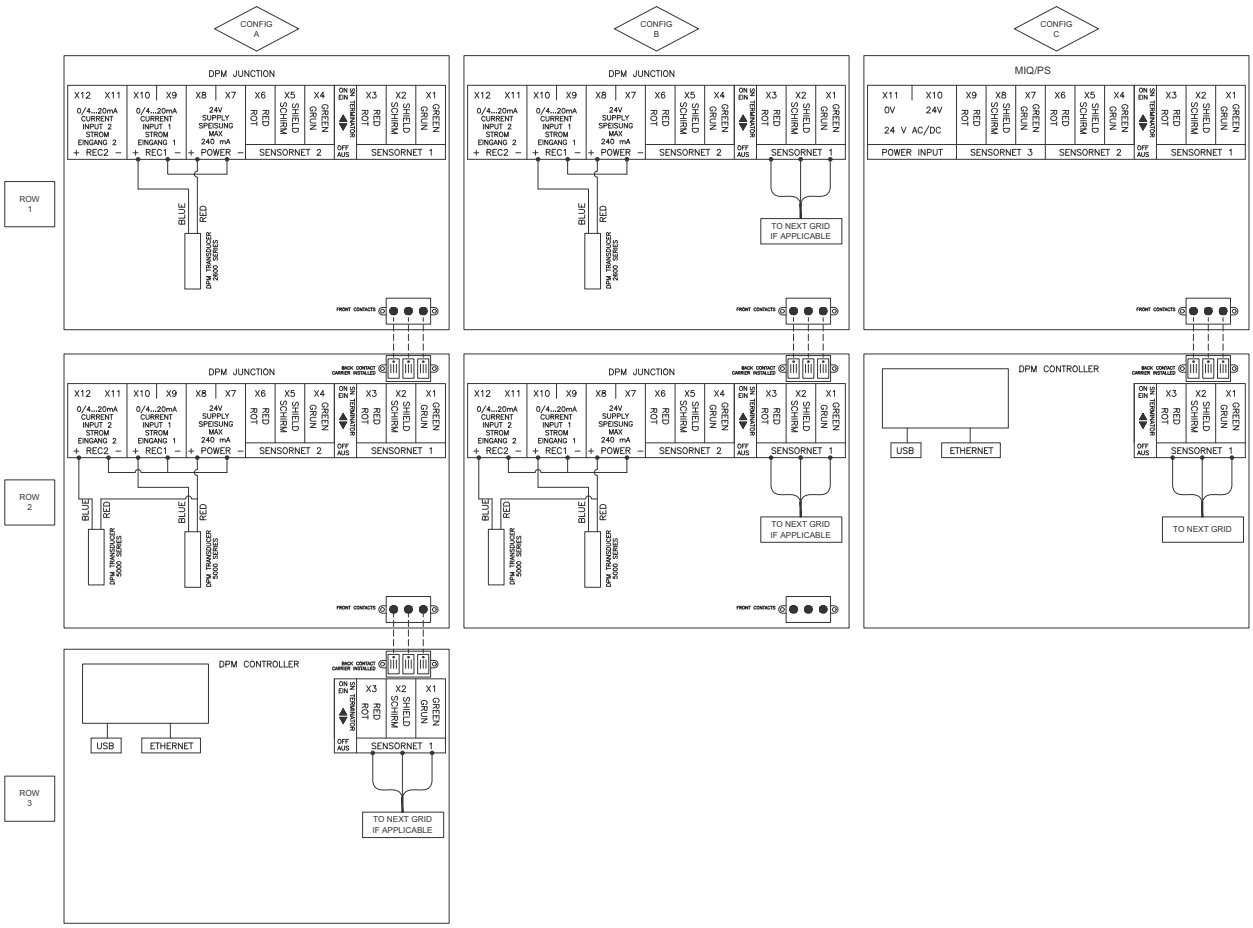


figure 3-6 Stack configurations

3.4 Basic principles of installation

Requirements of the measurement location

The measurement location must meet the environmental conditions specified in section 7.1 DPM.

Controlled environmental conditions

Work on the open instrument (e.g. during mounting, installation, maintenance) may only be carried out under controlled environmental conditions:

Temperature	+ 5 °C ... + 40 °C (+ 41 ... +104 °F)
Relative humidity	≤ 80 %

3.5 Safety requirements of the electrical installation

Electrical equipment (such as motors, contactors, cables, lines, relays,

switches, instruments) must meet the following requirements:

- Compliance with national regulations (e.g. NEC, VDE and IEC)
- Suitability for the electrical conditions at the place of installation
  - Maximum operational voltage
  - Maximum operational current
- Suitability for the ambient conditions at the place of installation
  - Temperature resistance (minimum and maximum temperature)
  - Stability against UV light in the case of outdoor usage
  - Protection against water and dust (IP type of protection).
- Suitable fuse protection of the electrical circuit
  - Overcurrent protection devices
    (according to the technical data of the instrument input or output)
  - Overvoltage limitations of overvoltage category II
- Suitable external separator (e.g. switch or circuit-breaker) for the power supply of permanently installed instruments with separate power connection
  - compliant with the following regulations
    - IEC 60947-1
    - IEC 60947-3
  - in the vicinity of the instruments (recommendation)
- Flame resistant (cable and lines),
  compliant with the following regulations
  - UL 2556 VW-1 (for USA, Canada)
  - IEC 60332-1-2 (outside the USA, Canada)

3.6 Installation guidelines for lightning protection

During the use of the DPM controller, particularly in outdoor areas, adequate protection against (electrical) surges must be provided. A surge is a summation phenomenon of surge voltage and surge current. It is generated through the indirect effect of a lightning event or switching operation in the mains, in the grounding system and in information technology lines.

To be adequately protected against the damaging effects of surges, an integrated concept of the following protective measures is required:

- internal device-related protective measures and
- external protective measures of the installation environment.

The internal device-related protective measures are already integrated in the Sanitaire online instrumentation as so-called 'lightning protection' (see chapter 7 TECHNICAL DATA).

The external protective measures of the installation environment can be carried

out with respect to the following guidelines:

1 All lines of systems must be
a) installed inside (or else close to) the grounded metallic mounting constructions, e.g. handrails, pipes and posts if possible
b) or, particularly in the case of longer lines, laid in the ground.
Background: The formation of highly lightning hazardous inductive loops between the cables and ground is avoided through the low clearance of the grounded metal construction or by installation in the ground.

2 Only SNCIQ cable material may be used. This cable material is an important prerequisite for the hazard-free discharging of the surge without inadmissibly high overvoltages developing along the line at the same time that could have a damaging effect on the individual components.

3 All metallic mounting constructions (handrails, pipes, posts etc.) on which DPM modules are installed must be connected to the local potential equalization system and the grounding system or must be individually sufficiently grounded locally according to the codes of practice.
For the individual grounding of the measuring point the mounting construction must be solidly connected by means of a large-area auxiliary electrode with the measuring medium.
Metallic control shafts/pipes and other large-area metallic bodies that reach into the measuring medium are, for example, ideal for use in the grounding of the mounting construction.
This creates a set path for the main surge. As a result it is possible to avoid the surge being discharged via the cable and via the valuable transducer in the measuring medium.

4 It is recommended to attach a metallic or nonmetallic sun shield to each outside location of the DPM modules. Sun shields protect the electric field lines in the area of the DPM module due to an advantageous development of the electrical field lines in the area of the DPM module and promote the dissipation of the surge via the mounting construction.

5 The line voltage for the supply of the DPM must comply with overvoltage category II. Generally this is ensured through the public operator of the power supply networks. In company-owned networks, e.g. in all power supply systems owned by wastewater treatment plants, this must be kept separate by a potential equalization and a surge protection system for the plant.

6 One part of the safety and lightning protection concept is based on high-grade protective insulation of the DPM. It does not have or require any protective ground conductor or earth terminal. Avoid any direct contact of any SENSORNET connections or the metallic sensor enclosures with the local grounding or potential equalization system and with metallic construction elements (see point 8).

7 Additional external lightning protection measures, e.g. the use of overvoltage surge arresters, are not necessary for protection against the indirect effects of lightning and could possibly result in malfunctions.

8 For the realization of the internal lightning protection of the system (e.g. wastewater treatment plant control stands) and for the protection of external

resources, cable entry points into buildings or distributions coming from the DPM must be carried out as follows:

– The shield of SNCIQ cables can be connected to the local potential equalization with a gas overvoltage arrester. Use shield clamps for the contacting of the shield. The shield of the cable must not be opened under any circumstances.
– 0/4-20 mA interfaces must be realized with shielded cables. The cable shield must be connected directly to the potential equalization(s) provided. If plant potential equalization systems are provided on both sides, the shield must also be connected on both sides. The inner conductors must have no contact with the potential equalization.
– Relay lines should be connected to the local potential equalization in order to provide general and consistent protection via gas overvoltage surge arresters.

3.7 On-site mounting of the DPM

3.7.1 General information

The DPM controller is designed for stationary installation. With the aid of mounting accessories, the setup can be adjusted to meet various requirements.

NOTE
Components installed outside must always be protected by a sun shield against the effects of the weather (snow, ice and direct solar radiation). Otherwise, malfunctions can result. Always mount the DPM controller in an upright position. Do not under any circumstances install the DPM controller without rain protection with the lid facing upwards (danger of retained humidity and penetration of moisture).

NOTE
No contact base may be mounted on the back of the module (danger of short-circuit!) if the module is mounted on a wall, a sun shield, or a top hat rail.

Installation options

The most important types of installation for the DPM controller are described in the following chapters:

- **Mounting to the sun shield SD/K 170**
  The sun shield SD/K 170 provides room for the DPM controller. The sun shield can be mounted to round or square section pipes (e.g. rails) with the aid of the MR/SD 170 mounting kit (section 3.7.2).

The following chapters describe the mounting of the DPM controller.

3.7.2 Mounting under the SD/K 170 sun shield

The SD/K 170 sun shield can be mounted directly on a wall, on a mounting stand

or on a railing. The MR/SD 170 mounting kit is also required for mounting on a mounting stand or railing.

How to mount the sun shield at the installation location is described in the instructions for the sun shield or mounting kit.

Materials required

- SD/K 170 sun shield (see chapter 8 ACCESSORIES AND OPTIONS)
- The MR/SD 170 mounting kit is also required for mounting the sun shield on a mounting stand or railing (see chapter 8 ACCESSORIES AND OPTIONS).

Tools

- Phillips screwdriver.

Mounting the DPM with sun shield

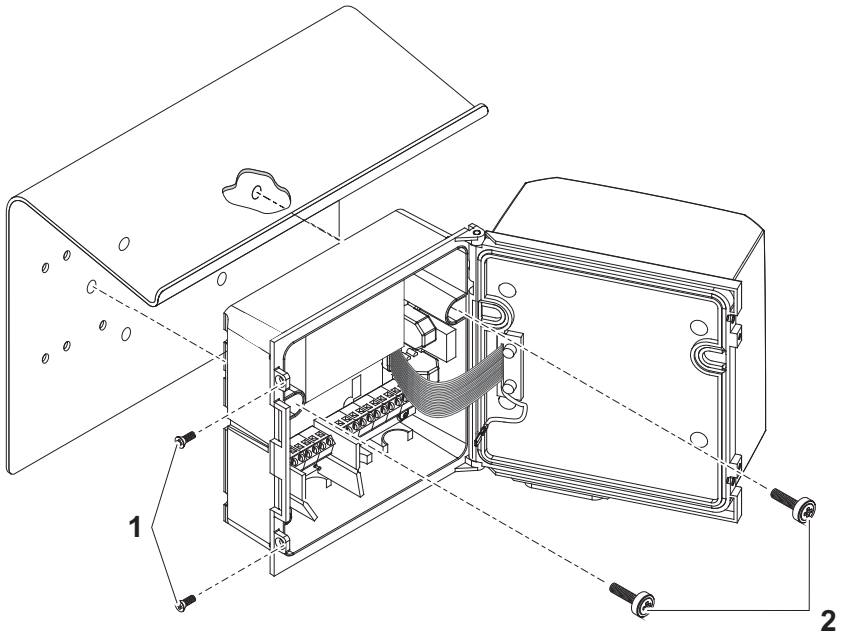


figure 3-7 Mounting the DPM with sun shield SD/K 170

1 Remove the two countersunk screws (pos. 1 in figure 3-7) and swing open the module lid.

2 Position the DPM controller on the sun shield and fix it into place with the two screws (pos. 2 in figure 3-7).

3 Close the lid and fix it with the two countersunk screws (pos. 1 in figure 3-7).

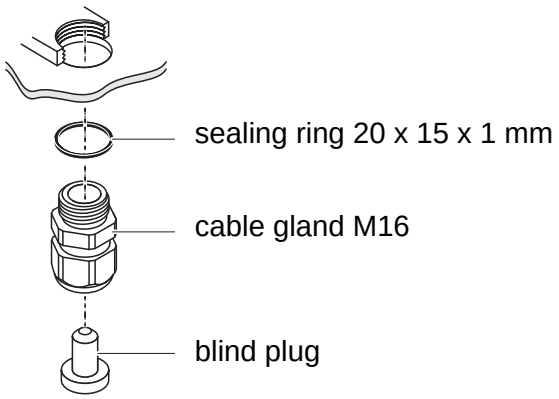
3.8 Electrical connections: General instructions

Cable glands

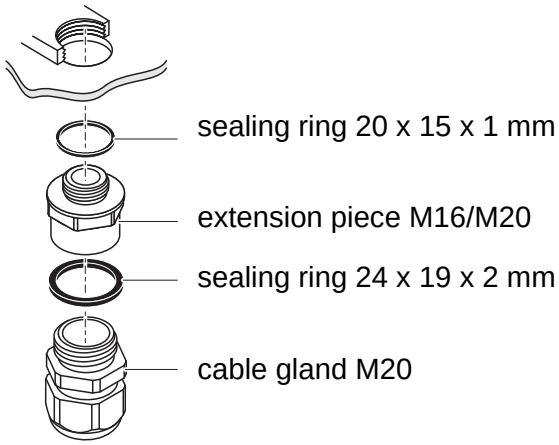
All electric cables are fed from below through openings prepared in the enclo-

sure of the DPM and the DPM modules. Cable glands with different clamping ranges are included with the DPM to provide sealing between the cable and enclosure as well as for strain relief. Select the suitable cable gland for the relevant cable type and cable diameter:

- **Small**, clamping range 4.5 to 10 mm.
  This cable gland is suitable for all cables (earth cable after stripping the outer insulation, see section 3.7) and SNCIQ cables.



- **Large**, clamping range 7 to 13 mm.
  This cable gland is required for cable sheaths with an outside diameter of more than 10 mm and is screwed into the enclosure via an extension piece.



If necessary, you can order more big cable glands (see chapter 8 ACCESSORIES AND OPTIONS).

General installation instructions

Observe the following points when attaching connecting wires to the terminal strip

- Shorten all wires to be used to the length required for the installation
- Always fit all the ends of the wires with wire end sleeves before connecting them to the terminal strip

- Any wires that are not used and project into the enclosure must be cut off as closely as possible to the cable gland.
- Screw a small cable gland with sealing ring into each remaining free opening and close it with a blind plug.

WARNING

No free wires are allowed to project into the housing. Otherwise, there is a danger that areas safe to contact could come into contact with dangerous voltages. Always cut off any wires that are not in use as closely as possible to the cable gland.

3.9 Connecting the voltage supply

The two following paragraphs describe how to connect both models of the DPM DPM controller to the voltage supply.

WARNING

If the power supply is connected incorrectly, it may represent a danger to life from electric shock. Pay attention to the following points during installation:

- **The DPM controller may only be connected by a trained electrician.**
- **The connection of the DPM controller to the power supply may only be carried out when it is not carrying any voltage.**
- **The power supply must fulfill the specifications given on the nameplate and in chapter 7 TECHNICAL DATA.**
- **When installed in a building, a switch or power switch must be provided as an interrupt facility for the DPM. The interrupt facility must**
  - **be installed in the vicinity of the DPM controller, easily accessible by the user, and**
  - **be labeled as the interrupt facility for the DPM controller.**
- **After the DPM controller has been installed, it may only be opened if the line voltage has been switched off beforehand.**

Materials required

- Wire end sleeves, suitable for the power line, with suitable crimping tool
- 1 x cable gland with sealing ring (included in scope of delivery of the DPM).

Tools

- Cable stripping knife
- Wire stripper
- Phillips screwdriver

- Small screwdriver.

Preparing the power cable

1 Cut off the cable to the required length.

2 Strip the cable insulation for approx. 45 mm.

3 Bare the wires of phases L and N and fit them with wire end sleeves.

4 If present, cut off the ground wire at the end of the cable sheath.

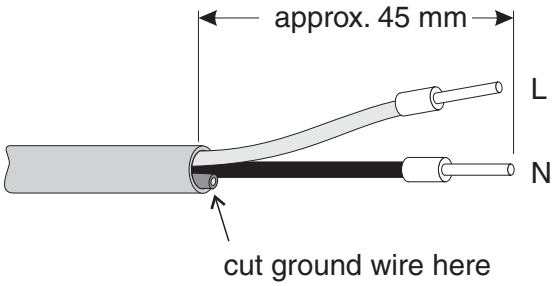


figure 3-8 Prepared power cable.

NOTE
The ground wire must not project into the enclosure. Otherwise, malfunctions could occur.

Connecting the power line

5 On the left-hand side of the DPM, remove the two countersunk screws and open the enclosure.

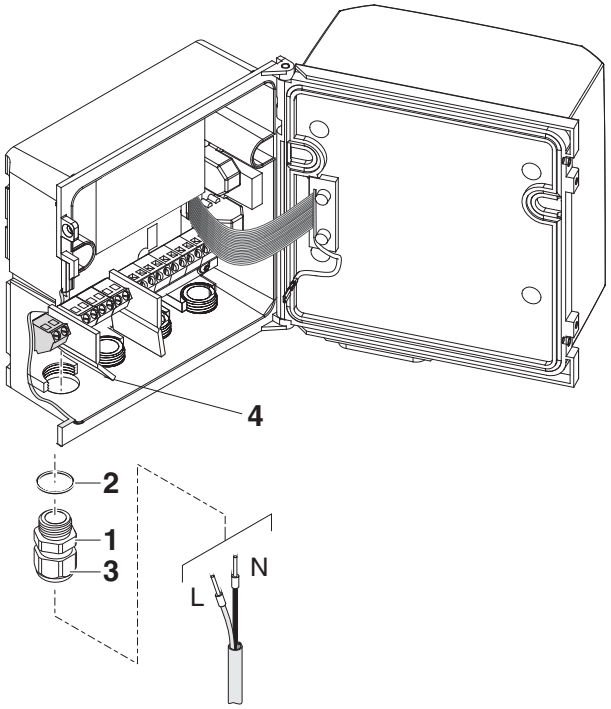


figure 3-9 Inserting the supply line

6 Screw a cable gland (pos. 1 in figure 3-9) with sealing ring (pos. 2) into the enclosure below the power supply connection.

7 Loosen the coupling ring (pos. 3).

8 Feed the power line through the cable gland into the enclosure. When doing so bend the flexible divider (pos. 4) to the right.

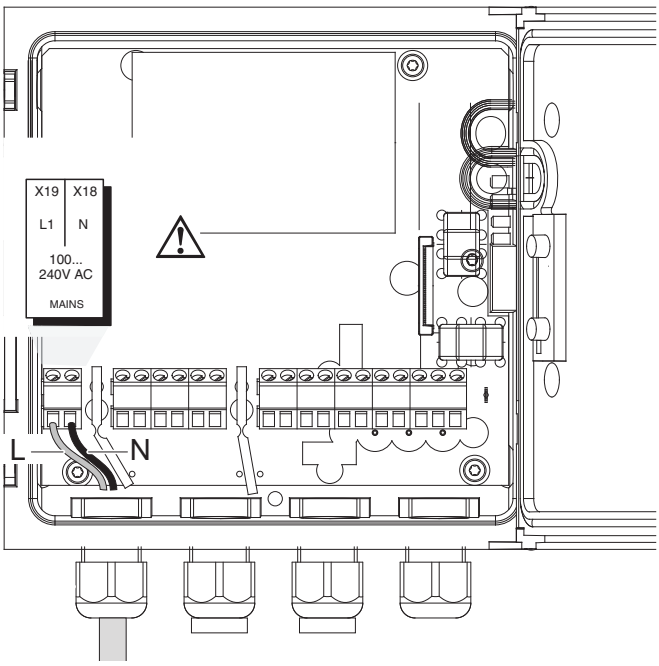


figure 3-10 Line power connection.

9 Connect phases L and N to the terminal strip. Make sure that the cable assignment agrees with the specification on the terminal label under the terminal strip.

10 Tighten the cap nut (pos. 3 in figure 3-9).

WARNING

No free wires are allowed to project into the housing. Otherwise, there is a danger that areas safe to contact could come into contact with dangerous voltages. Always cut off any wires that are not in use as closely as possible to the cable gland.

11 Close the enclosure of the DPM.

3.10 Distributed mounting of DPM modules

General information

Each DPM module has a row of terminal strips in the housing. The two 3-fold terminal strips on the right are always reserved for the connection of further DPM components (designation "SENSORNET 1" and "SENSORNET 2").

All termination switches for additional modules should be in “off” position.

The DPM cable may only be connected to the SENSORNET connections. No wire of the cable may be connected with an external electrical potential. Otherwise, malfunctions could occur.

Materials required

- 1 x DPM connection cable (SNCIQ)
  The cable is delivered as piece good. Please specify length when ordering! (see chapter 8 ACCESSORIES AND OPTIONS)
- Wire end sleeves for 0.75 mm^2 wire cross-section with matching crimping tool
- 1 x cable gland with seal (scope of delivery of DPM module).

Tools

- Cable stripping knife
- Wire stripper
- Phillips screwdriver
- Small screwdriver.

Preparing the cable ends

1. Cut off the cable to the required length.
2. Remove approx. 45 mm of cable insulation.
3. Shorten the exposed shielding braid up to the cable sheath.
4. Shorten the two fillers (plastic inlays) up to the cable sheath.
5. Bare the red and green wires and fit them with wire end sleeves.
6. Fit the filler stranded wire with a wire end sleeve.

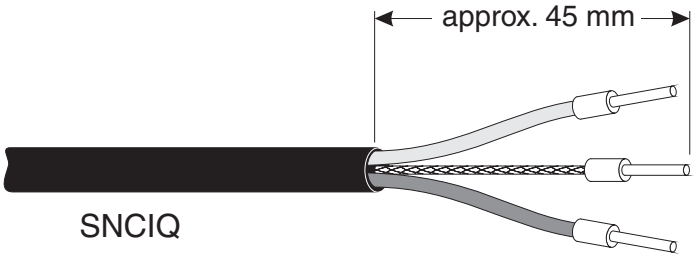


figure 3-11 Prepared cable end

Connecting the cables

1. Open the DPM module.
2. Select any SENSORNET connection. At the same time, look out for the SENSORNET designation.

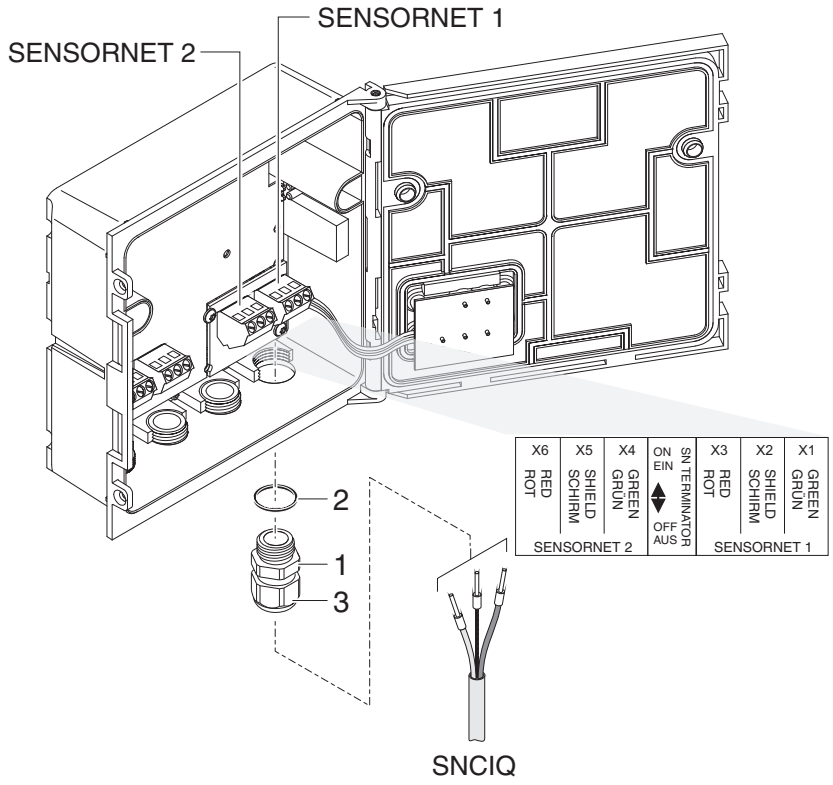


figure 3-12 Connecting cables to the DPM module

1 Cable gland
2 Seal
3 Coupling ring

3 Screw the cable gland (pos. 1 in figure 3-12) with the sealing ring (pos. 2) into the module housing.

4 Loosen the cap nut (pos. 3 in figure 3-12).

5 Feed the cable through the cable gland into the module housing.

6 Connect the cable ends to the terminal strip. At the same time, look out for the designations of the terminals (red / shield / green).

7 Tighten the cap nut (pos. 3 in figure 3-12).

8 Close the DPM module.

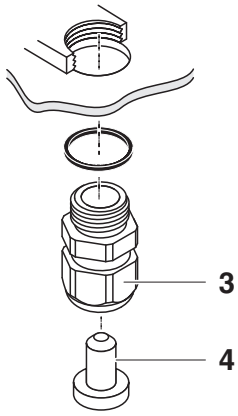


figure 3-13 Closing the cable opening

1 Coupling ring
2 Blind plug

9 Screw the remaining cable glands with the sealing rings into the remaining free openings and close them with the enclosed blind plugs (pos. 2 in figure 3-13) and tighten the cap nuts (pos. 1) if they are not used.

Installation with conduits

Cables in conduits can be connected with a conduit adapter available as an accessory (for details, see the operating manual of the flexible conduit adapter CC-Box).

3.11 Commissioning

Start checklist and system start

Before starting the system, carry out the system check using the following checklist. Always carry out the check:

- before the initial commissioning
- before any further commissioning if the system has been previously extended or modified.

Start checklist:

1 Is the DPM correctly connected to the power supply (see section 3.9)?

2 Do the line voltage and line frequency agree with the data on the name plate of the DPM controller?

3 Are the transducers ready for measuring?

Starting the system

1 Plug in the power supply of the DPM.
As soon as the system is successfully initialized, the *Date/Time* display appears. An item is selected, e.g. *Year*.

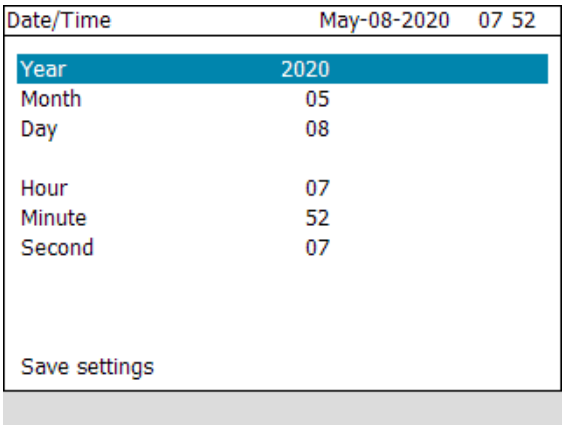


figure 3-14 Date/Time

2 Press **<OK>** to open the drop down list with available values for the selected item.

3 Press **<▲ ><▼ >** and **<OK>** to select and confirm a value.

4 Press **<▲ ><▼ >** and **<OK>** to select another item (e.g. *Month*) and open the drop down list with available values.

5 Complete the entries on the *Date/Time* display.

The clock in the DPM bridges periods of power failure of up to several hours. After a longer power failure, the clock starts precisely at the time of the failure. A message and an entry in the log book provide information on the power failure and the necessity for resetting the clock.

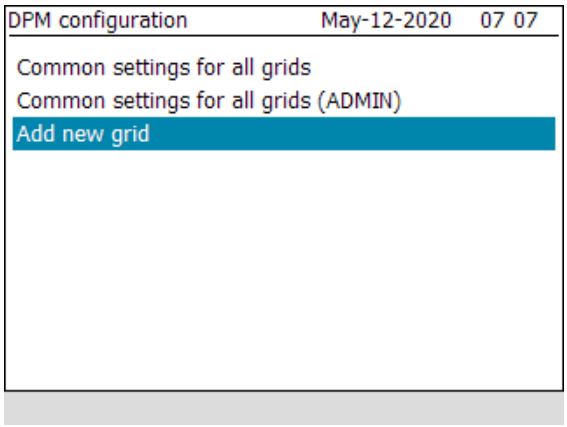


figure 3-15 DPM configuration

Select your system language during the first system start. The selected system language can be changed in the *System settings* menu at any time.

1 Add a new grid with **<OK>** (see section 5.3 ADDING A NEW GRID).
or:
Select your system language with **<S>** (see section 5.1.1 SELECTING THE LANGUAGE).

4 Operation

4.1 Operating elements

4.1.1 Overview of the operating elements

The DPM controller is equipped with a display, 5 keys **<M>**, **<C>**, **<S>**, **<ESC>**, **<OK>** and the arrow keys **<▲▼◀▶ >**.

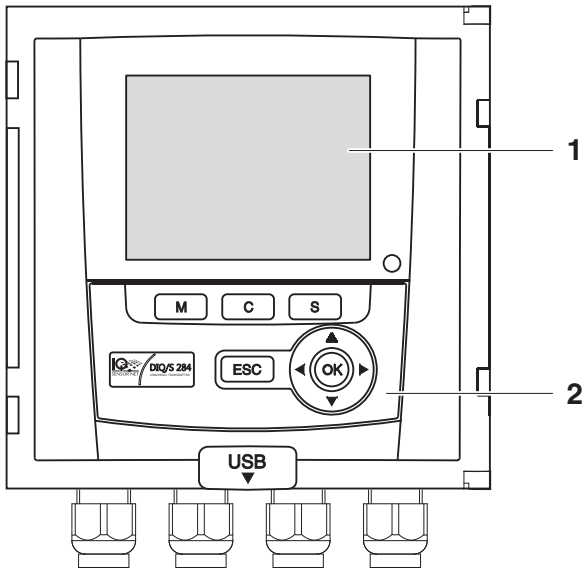


figure 4-1 Operating elements of the DPM

1 Display (see section 4.1.2 DISPLAY)

2 Keypad
Arrow keys and 5 keys **<M>**, **<C>**, **<S>**, **<ESC>**, **<OK>** (see section 4.1.3 KEYS)

4.1.2 Display

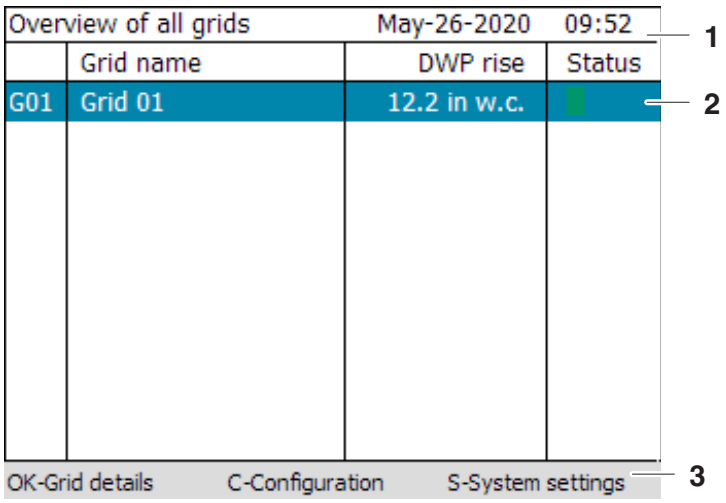


figure 4-2 Display

1 Name of the display indication, Date, time
2 Display range for grids, menus, lists, etc.
3 Help line with operating instructions

4.1.3 Keys

Key	Function
<M>	Open the *Overview of all grids* menu
<C>	Open the *DPM configuration* menu
<S>	Open the *System settings* menu
<ESC>	Change to the higher menu levels or abort entries without storing them
<OK>	Confirm selection
<▲▼◀▶ > (arrow keys)	Highlight and select: ● Menu items ● Entries ● Columns or fields ● Letters or numerals

The selection highlighted with the arrow keys is displayed as white text on a blue background (reverse video).

4.2 General operating principles

The operation of the DPM is standardized and user-friendly.

- Select an item with the arrow keys **<▲▼◀▶ >**
  - Highlight individual elements in menus, lists and tables, e.g. menu entries, list elements, columns or fields
  - Select a setting in selection fields
  - Select a character in text entry fields
- Confirm a selection with the **<OK>** key.
- Break off an action and change to the next higher level with the **<ESC>** key.
- Switch to the *DPM configuration* display with the **<C>** key.
- Switch to the *System settings* display with the **<S>** key.
- Switch to the *Overview of all grids* display and break off current actions with the **<M>** key.

Examples of the operating principles are given below:

- Navigation in menus, lists and tables (see chapter 4.2.1)
- Entering text and numerical values (see chapter 4.2.2)

4.2.1 Navigating in menus, lists and tables

1 Open the *DPM configuration* menu with **<C>**.
Menus appear in the form of a list on the display, e.g. the *DPM configuration* menu shown here.

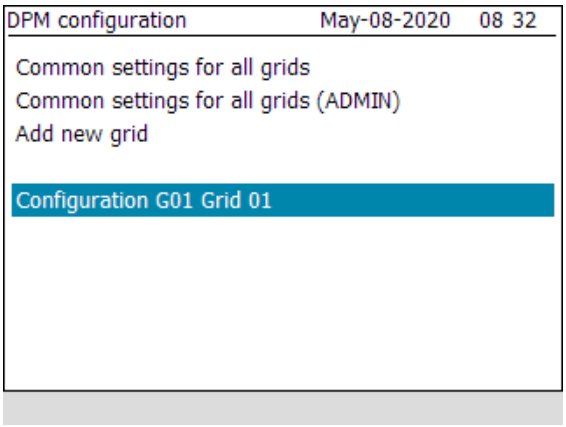


figure 4-3 DPM configuration

2 Select a menu item (e.g. *Common settings for all grids*) with **<▲ ><▼ >**.

3 Confirm the menu item (e.g. *Common settings for all grids*) with **<OK>**.
The display (e.g. *Common settings for all grids*) opens.

4 Return to a higher level with **<ESC>**.
or:
Switch to the *Overview of all grids* display with **<M>**.

4.2.2 Entering texts or numerals

1 Open the *DPM configuration* menu with **<C>**.
Menus appear in the form of a list on the display, e.g. the *DPM configuration* menu shown here.

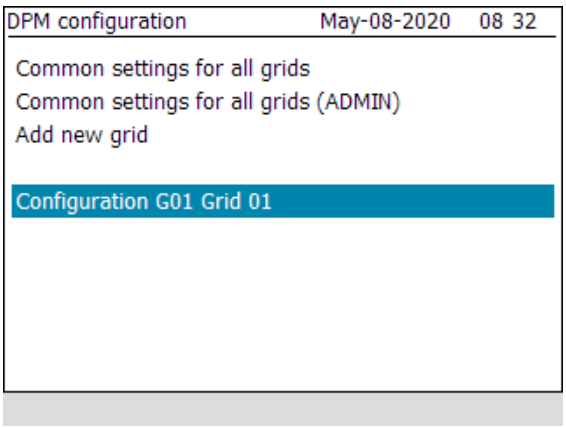


figure 4-4 DPM configuration

2 Select a menu item (e.g. *Configuration ...*) with **<▲ ><▼ >**.

3 Confirm the menu item (e.g. *Configuration ...*) with **<OK>**.
The display (e.g. *Configuration ...*) opens.

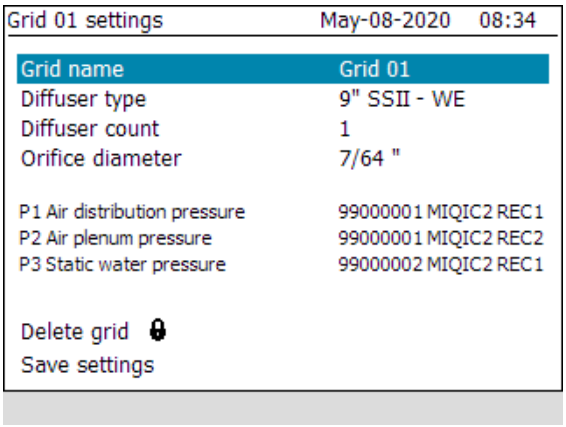


figure 4-5 Common settings for all grids

4 Select a menu item (e.g. *Grid name*) with **<▲ ><▼ >**.

5 Confirm the menu item (e.g. *Grid name*) with **<OK>**.
The display (e.g. *Grid name*) opens.

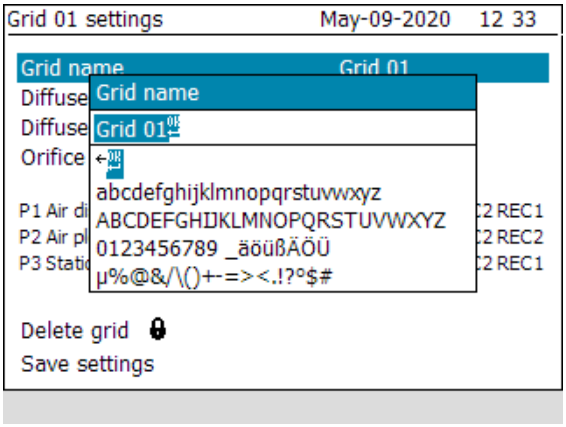


figure 4-6 Entering texts or numerals

The following letters, numerals and special characters can be entered: **AaBb..Zz0..9µ%&/()+-=><!?_ °**.

6 Select a letter or numeral with **<◀▶ >**.

7 Confirm the letter with **<OK>**.
The character p appears behind the last letter.

8 Add a new character:
Select the character to be added with **<◀▶ >** and confirm with **<OK>**.
or
Delete the last character
Select <- with **<◀▶ >** and confirm with **<OK>**.
or
Adopt the name
Select p with **<◀▶ >** and confirm with **<OK>**.

9 Repeat steps 6 to 8 until the whole name has been entered.

You can break off entering the name with **<ESC>**. The old name is retained.

10 Select *Save settings* with **<▲ ><▼ >** and confirm with **<OK>** to save the settings.
or:
Return to a higher level with **<ESC>**.
or:
Switch to the *Overview of all grids* display with **<M>**.

5 Settings/setup

5.1 *System settings*

1 Open the *Overview of all grids* screen with **<M>**.

2 Open the *System settings* menu with **<S>**.

Setting	Selection/ Values	Explanation
Language	● *English* ● *Deutsch*	Selecting the language (see section 5.1.1)
Date/Time	● *Year* ● *Month* ● *Day* ● *Hour* ● *Minute* ● *Second*	Access code required. Setting the date and time (see section 5.1.2)
Export logged values to USB drive		see section 5.7
Software update		Access code required. see section 5.8

5.1.1 Selecting the language

A list shows all the available system languages.

1 Open the *Overview of all grids* screen with **<M>**.

2 Open the *System settings* menu with **<S>**.

3 Using **<▲ ><▼ >** and **<OK>**, select and confirm the menu item *Language*.
The *Language* display opens.

4 Select a language from the list with **<▲ ><▼ >** and confirm with **<OK>**.
The language is set.

5 Switch to the higher menu level with **<ESC>**.
or:
Switch to the measured value display with **<M>**.

5.1.2 Setting the date and time

The real time clock is used for the display of date and time in the measured value display and in log book entries.

1 Open the *Overview of all grids* screen with **<M>**.

2 Open the *System settings* menu with **<S>**.

3 Using **<▲ ><▼ >** and **<OK>**, select and confirm the menu item, *Date/Time*.

4 Using **<◀▶ >** and **<OK>**, enter the access code (see section 4.2.2 ENTERING TEXTS OR NUMERALS).

5 Select p with **<◀▶ >** and confirm the access code with **<OK>**.
The *Date/Time* settings are open.
A field is highlighted, e.g. *Year*.

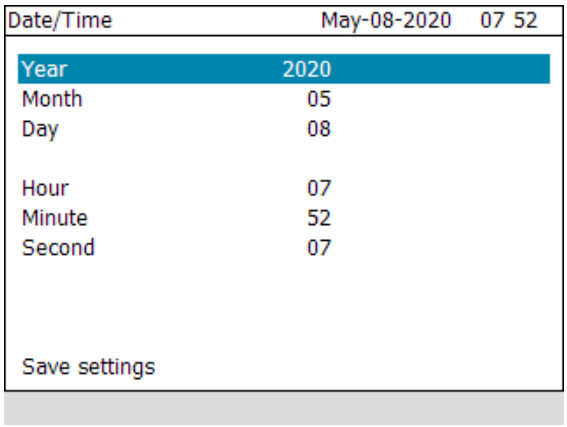


figure 5-1 Date/Time

6 Press **<OK>** to open the drop down list with available values for the selected item.

7 Press **<▲ ><▼ >** and **<OK>** to select and confirm a value.

8 Press **<▲ ><▼ >** and **<OK>** to select another item (e.g. *Month*) and open the drop down list with available values.

9 Complete the entries on the *Date/Time* display.

The clock in the DPM bridges periods of power failure of up to several hours. After a longer power failure, the clock starts precisely at the time of the failure. A message and an entry in the log book provide information on the power failure and the necessity for resetting the clock.

5.2 Configuring Settings

5.2.1 *Common settings for all grids*

1 Open the *Overview of all grids* screen with **<M>**.

2 Open the *DPM configuration* menu with **<C>**.

3 Open the *Global DPM settings* menu with **<▲ ><▼ >** and **<OK>**.

Setting	Selection/ Values	Explanation
Units	*Imperial*	● Temperature unit = Degrees F ● Flow unit = SCFM ● Height unit = Feet (ft) ● Pressure unit – *DWP rise* = inches or water column – *System pressure* = PSI – Individual Transducer readings = PSI
	Metric	● Temperature unit = Degrees C ● Flow unit = m Unit of air flow measurement (Note: this option appears only when Metric units are selected) – m^3/hr (Standard). Air flow rate normalized to 20 degrees C. – m^3/hr (Normal). Air flow rate normalized to 0 degrees C. ● Height unit = Meters (m) ● Pressure unit = kPa

Setting	Selection/ Values	Explanation
Process air temperature		User inputs estimated process air temperature at diffuser being monitored (°F or °C) Note: Default air temperature is 120 °F (48.9 °C). This temperature represents the majority of aeration equipment designs and does not need to be changed unless process air heat loss is known.
Site elevation	0 ... 9000 m 0 ... 29528 ft	User inputs wastewater treatment plant site elevation above sea level (m or ft)
Currency		User selects regional currency denomination.
Power cost (per kWh)		User inputs regional electricity costs, in units of currency / kilowatt hour.

5.2.2 *Common settings for all grids (ADMIN)*

1 Open the *Overview of all grids* screen with **<M>**.

2 Open the *DPM configuration* menu with **<C>**.

3 Open the *Common settings for all grids (ADMIN)* menu with **<▲ ><▼ >** and **<OK>**.

Setting	Selection/ Values	Explanation
Access code (ADMIN)		4 digit PIN, alpha-numeric. Used to protect the change ot the access code and other functions. Default ADMIN-PIN: 1111
Scaling factor (MEAS_SCAL)		Impacts scaling of internal calculations. Default is set to 16.575. Do not change unless directed to by Sanitaire.
Inflation (per year)		Impacts price of equipment replacement in payback period calculations. Inflation calculation utilizes price of diffuser, and the date in which the price was entered. (see *Price of diffuser* below). Default is set to 2.0%.

Setting	Selection/ Values	Explanation
Price of diffuser		Default prices are in US dollars. If another currency is used, the prices must be changed for diffuser replacment payback period calculations to be correct. Changing currency settings will not convert prices to current regional currencies. Used to tabulate diffuser prices and when the price was adjusted. Inflation calculations are used to adjust the price of equipment to close to current. Note: Price entered date utilizes the DPM system clock. Adjusting diffuser price ● User highlights diffuser type to adjust price using arrow buttons ● Select OK on diffuser type to change price ● Using sub-menu, enter current diffuser price, in local currency.

5.3 Adding a new grid

1 Open the *Overview of all grids* screen with **<M>**.

2 Open the *DPM configuration* menu with **<C>**.

3 Open the *Add new grid* menu with **<▲ ><▼ >** and **<OK>**.

Setting	Selection/ Values	Explanation
Grid name		Aeration grid identification Follow WWTP naming conventions.
Diffuser type	● 9” SSII – WE ● 9” SSII – LP ● 9” Ceramic ● 7” SSII ● 7” Ceramic	Diffuser type can be found on equipment drawings.

Setting	Selection/ Values	Explanation
Diffuser count		Diffuser quantity on grid being monitored. Depending on DPM system configuration, this number could be expanded to encompass other grids operating under similar conditions. Potential annual energy savings and diffuser replacement payback calculations are based on diffuser count.
Orifice diameter		When using metric units, orifice diameters are approximate. Orifice diameters are drilled to imperial dimensions in the factory. Orifice diameter can be found on equipment drawings. ● 7/64” (3.0 mm) ● 9/64” 3.5 mm) ● 13/64” (5.0 mm) ● 1/4” 6.0 mm) ● 5/16” (8.0 mm) ● 3/8” (10.0 mm)
P1 Air distribution pressure *P2 Air plenum pressure* *P3 Static water pressure*	*Input channel*	Select the input channel from the list and confirm with *Apply* (see section 5.4 ASSIGNING PRESSURE TRANSDUCERS TO GRID).
	Minimum pressure (4 mA)	Transducers supplied with DPM are minimum 0.00 psi. Default is 0.00, do not change unless directed by Sanitaire.
	Maximum pressure (20 mA)	Transducers supplied with DPM are maximum 15.00 psi. Default is 15.00 psi, do not change unless directed by Sanitaire.

4 Select *Save new grid* with **<▲ ><▼ >** and confirm with **<OK>** to save the settings.

5.4 Assigning pressure transducers to grid

In order for DPM to operate, a grid needs to have the three associated installed pressure transducers assigned via the HMI. The transducers will be assigned one at a time, using the Transducer Landing Assignment Table, completed during the installation. If a Transducer Wire Landing Table was not completed, see section 5.4.2 ASSIGNMENT WITH NO AVAILABLE TRANSDUCER LANDING TABLE’.

5.4.1 Assignment using Transducer Landing Table

1 Open the *Overview of all grids* screen with **<M>**.

2 Open the *DPM configuration* menu with **<C>**.

3 Using **<▲ ><▼ >** and **<OK>**, select and confirm a grid (Configuration xx Grid xx).
The *grid xx settings* screen opens.

4 Using **<▲ ><▼ >** and **<OK>**, select and confirm P1, P2 or P3.
The *Settings pressure transducer* screen opens.

5 Using **<▲ ><▼ >** and **<OK>**, select and confirm *Input channel*.
A table similar to the table below will appear.
All transducers connected to the DPM network will be listed in this table. Should a recorded transducer landing not appear in the table on the HMI, the wiring at the particular DPM junction box should be inspected.

Column 1	Col. 2	Col. 3	Col. 4
DPM Junc Ser #1	REC 1	<Assigned location>	<Pressure reading>
DPM Junc Ser #1	REC 2	<Assigned location>	<Pressure reading>
DPM Junc Ser #2	REC 1	<Assigned location>	<Pressure reading>
DPM Junc Ser #2	REC 2	<Assigned location>	<Pressure reading>

- **Column 1**: Serial numbers of all connected DPM juntion boxes are listed. Serial numbers are listed twice as each DPM junction box has two (2) transducer wire landings.
- **Column 2**: Transducer landings (REC1 or 2) associated with DPM junction box serial numbers in Column 1.
- **Column 3**: If transducers have been assigned to other grids, the assigned location will be listed.
  <Assigned location> column will be blank if transducer has not been assigned to a grid.
- **Column 4**: Live pressure readings of connected transducers will be listed.
  If no transducer is wired to a particular REC channel, the <Pressure reading> column will read n.c. (no connection).

Pressure readings units will be in psi, even when system units are set to metric.

6 Using **<▲ ><▼ >** and **<OK>**, select and confirm an input channel.

7 Using **<▲ ><▼ >** and **<OK>**, select and confirm *Minimum pressure (4 mA)* to set the minimum pressure.

8 Using **<▲ ><▼ >** and **<OK>**, select and confirm *Maximum pressure (20 mA)* to set the maximum pressure.

Setting	Selection/ Values	Explanation
P1 Air distribution pressure *P2 Air plenum pressure* *P3 Static water pressure*	*Minimum pressure (4 mA)*	Transducers supplied with DPM are minimum 0.00 psi. Default is 0.00, do not change unless directed by Sanitaire.
	Maximum pressure (20 mA)	Transducers supplied with DPM are maximum 15.00 psi. Default is 15.00 psi, do not change unless directed by Sanitaire.

9 Using **<▲ ><▼ >** and **<OK>**, select and confirm *Apply* to save the setting.
The *grid xx settings* screen opens.

10 Repeat for *P2 Air plenum pressure* and *P3 Static water pressure* transducers

Minimum and maximum pressure transducer settings will be in psi, even when system units are set to metric.

11 Using **<▲ ><▼ >** and **<OK>**, select and confirm *Save settings* to save the settings.

5.4.2 Assignment with no available Transducer Landing Table

The aeration system will need to be submerged and operational at an air rate of 2.0 SCFM per diffuser or greater or greater in order to identify transducer location without a completed Transducer Landing Table.

Should a Transducer Landing Table not be available, a survey of the DPM network will need to be performed. The table below will need to be completed in order to match Grid locations with associated DPM Junction Box serial numbers when using the HMI. Live pressure readings will be utilized when assigning the

proper transducer.

DPM Network Survey Table

Grid Location / Desc	Junction Box 1 Ser #	Junction Box 2 Ser #

1 Open the *Overview of all grids* screen with **<M>**.

2 Open the *DPM configuration* menu with **<C>**.

3 Using **<▲ ><▼ >** and **<OK>**, select and confirm a grid (Configuration xx Grid xx).
The *grid xx settings* screen opens.

4 Using **<▲ ><▼ >** and **<OK>**, select and confirm P1, P2 or P3.
The *Settings pressure transducer* screen opens.

5 Using **<▲ ><▼ >** and **<OK>**, select and confirm *Input channel*.
A table similar to the table below will appear.
All transducers connected to the DPM network will be listed in this table.
Should a recorded transducer landing not appear in the table on the HMI, the wiring at the particular DPM junction box should be inspected.

Column 1	**Col. 2**	**Col. 3**	**Col. 4**
DPM Junc Ser #1	REC 1	<Assigned location>	<Pressure reading>
DPM Junc Ser #1	REC 2	<Assigned location>	<Pressure reading>
DPM Junc Ser #2	REC 1	<Assigned location>	<Pressure reading>
DPM Junc Ser #2	REC 2	<Assigned location>	<Pressure reading>

- **Column 1**: Serial numbers of all connected DPM junction boxes are listed. Serial numbers are listed twice as each DPM junction box has two (2) transducer wire landings.
- **Column 2**: Transducer landings (REC1 or 2) associated with DPM junction box serial numbers in Column 1.
- **Column 3**: If transducers have been assigned to other grids, the assigned location will be listed.
  <Assigned location> colmn will be blank if transducer has not been assigned to a grid.
- **Column 4**: Live pressure readings of connected transducers will be listed.
  If no transducer is wired to a particular REC channel, the <Pressure reading> column will read n.c. (no connection).

<Pressure reading> units will be in psi, even when system units are set to metric.

6 Using the information listed in DPM Network Survey Table, use the **<▲ ><▼ >** buttons to locate the DPM junction box serial number associated with the grid being set up.

7 Identify the three (3) transducers associated with the grid location and junction box serial numbers. Installed location of the individual transducers can be determined by the live pressure readings.

Setting	Selection/ Values	Explanation
P1 Air distribution pressure *P2 Air plenum pressure* *P3 Static water pressure*		Using this known comparison statement **P1 > P2 > P3**, locations can be determined. Locate DPM Junction Box serial number and REC channel associated with P1 of the Grid name / description. Press **<OK>** to assign transducer.
	Minimum pressure (4 mA)	Transducers supplied with DPM are minimum 0.00 psi. Default is 0.00, do not change unless directed by Sanitaire.
	Maximum pressure (20 mA)	Transducers supplied with DPM are maximum 15.00 psi. Default is 15.00 psi, do not change unless directed by Sanitaire.

8 Using **<▲ ><▼ >** and **<OK>**, select and confirm *Apply* to save the setting.
The *grid xx settings* screen opens.

9 Repeat for *P2 Air plenum pressure* and *P3 Static water pressure* transducers

Minimum and maximum pressure transducer settings will be in psi, even when system units are set to metric.

10 Using **<▲ ><▼ >** and **<OK>**, select and confirm *Save settings* to save the settings.

5.5 Deleting a grid

1 Open the *Overview of all grids* screen with **<M>**.

2 Open the *DPM configuration* menu with **<C>**.

3 Using **<▲ ><▼ >** and **<OK>**, select and confirm a grid (Configuration xx Grid xx).
The *grid xx settings* screen opens.

4 Using **<▲ ><▼ >** and **<OK>**, select and confirm *Delete grid*.

5 Using **<▲ ><▼ >** and **<OK>**, select and confirm *OK* to delete the grid.
The access code input field opens.

6 Using **<◀▶ >** and **<OK>**, enter the access code (see section 4.2.2 ENTERING TEXTS OR NUMERALS).

7 Select p with **<◀▶ >** and confirm the access code with **<OK>**.
The grid is deleted.

5.6 Display Grid details

1 Open the *Overview of all grids* screen with **<M>**.

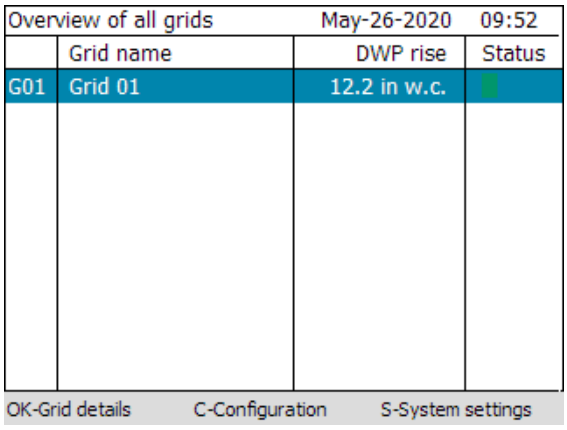


figure 5-2 Overview of all grids

2 Open the *DPM configuration* menu with **<C>**.

3 Using **<▲ ><▼ >** and **<OK>**, select and confirm a grid.
The *grid xx details* screen opens.

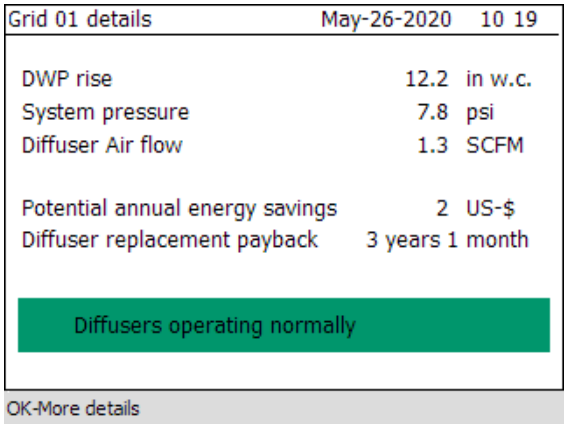


figure 5-3 Grid details

INFO	Explanation
System pressure	Approximate pressure at top of the dropleg of the grid being monitored

INFO	Explanation
Diffuser Air flow	Approximate diffuser air flow. Accuracy of the air flow measurement functionality decreases as air flow decreases. Field renames to "Approximate Diffuser Air Flow" when calculated air flow is between 0.5 and 1.0 scfm When calculated air flow is below 0.5 scfm, no air flow is displayed. Air flow field will display a message that states "Diffuser air flow rate too low to be accurately calculated".
Potential annual energy savings	DPM calculates energy savings potential based on system settings and individual grid configuration. Notes: assumptions based on adiabatic compression, 70% mechanical efficiency.
Diffuser replacement payback	Payback period calculation is based on Potential annual energy savings, system settings, and individual grid configuration.
More details	Press **<OK>** to open *More details* list.
Pressure readings	Actual pressure readings of the individual transducers assigned to the grid can be viewed by pressing **<OK>** when viewing the Grid details screen, highlight “Pressure readings”, press **<OK>**. Note: Minimum and maximum pressure transducer settings will be in psi, even when system units are set to metric.
DWP over time	History / Charting DWP vs. time data is saved to internal memory and can be viewed on the DPM HMI. Chart is viewed by pressing **<OK>** when viewing the Grid details screen, highlight *DWP over time*, press **<OK>**.

4 Open the *More details* menu with **<OK>**.

5 Select and confirm *Pressure readings* with **<▲ ><▼ >** and **<OK>**.
The *Pressure readings* display opens.

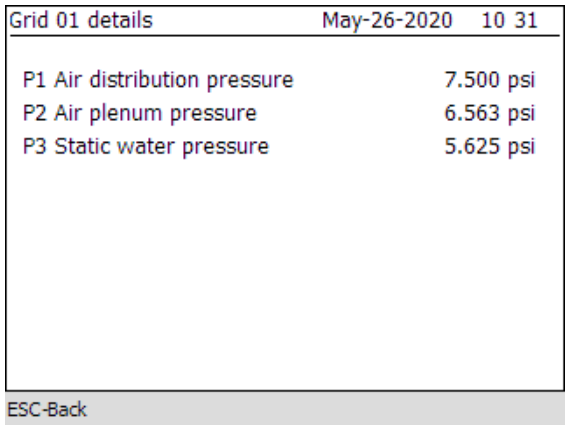


figure 5-4 Daily load of selected sensor (example)

6 Return to the *grid details* screen with **<ESC>**.

7 Open the *More details* menu with **<OK>**.

8 Select and confirm *DWP over time* with **<▲ ><▼ >** and **<OK>**.
The *DWP over time* display opens.

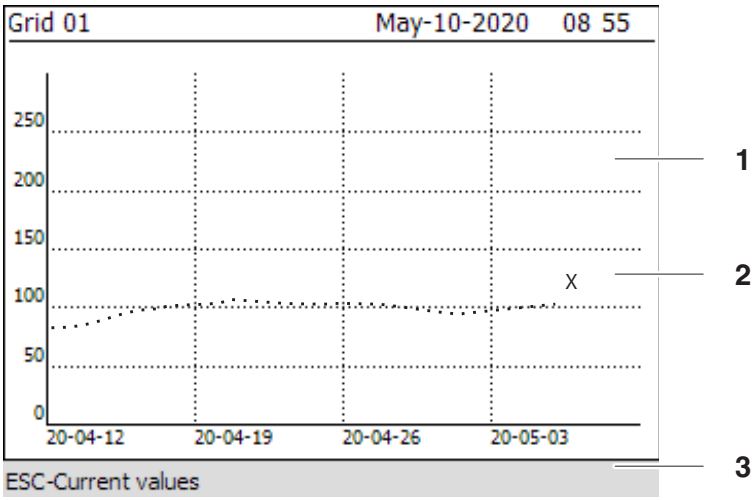


figure 5-5 Daily load of selected sensor (example)

1 Range of the graphical display
The time range (x-axis) 4 weeks).
The value range of the y-axis is automatically adjusted to min and max values

2 Recorded values

3 Navigation instructions

9 Return the *Overview of all grids* screen with **<M>**.

5.7 *Export logged values to USB drive*

1 Switch to the measured value display with **<M>**.

2 Insert USB flash drive into USB port

3 Open the *System settings* menu with **<S>**.

4 Using **<▲ ><▼ >** and **<OK>**, select and confirm the menu item *Export logged values to USB drive*.
The csv file will be transferred in the directory "USB:\BluX\DPM-{serial#}\DataTransfer".

Data fields in the csv file:
- *Diffuser type*
- *Orifice diameter*
- *Site elevation*
- *Process air temperature*
- *Timestamp*
- *Air flow*
- *DWP rise*
- *P1 Air distribution pressure*
- *P2 Air plenum pressure*
- *P3 Static water pressure*

5.8 *Software update*

For available updates, please contact the service.

1 Insert a USB flash drive with the update packet into USB port.

2 Open the *System settings* menu with **<S>**.

3 Using **<▲ ><▼ >** and **<OK>**, select and confirm the menu item *Software update*.

4 Using **<▲ ><▼ >** and **<OK>**, select and confirm *OK*.
The access code input field opens.

5 Using **<◀▶ >** and **<OK>**, enter the access code (see section 4.2.2 ENTERING TEXTS OR NUMERALS).

6 Select p with **<◀▶ >** and confirm the access code with **<OK>**.
The update starts.
When the update is done, the message: *Update done, please remove USB stick* appears.

7 Remove the USB memory stick.
The device will restart with the new software

5.9 Modbus TCP

5.9.1 Modbus TCP connection

With the Ethernet interface the instrument can be integrated into an Modbus TCP environment.
Details on this subject are given in the operating manual ("DPM fieldbus linking"). The current version can be found on the Internet at www.sanitaire.com.

If mounted at an open air test site

The RJ45 socket does not protect sufficiently against moisture. At an open test site, the moisture protection device (ADA/E) available as an accessory has to be mounted for safe Ethernet communication (see section 8).

5.9.2 Communication with Modbus TCP

Details on this subject are given in the operating manual ("DPM fieldbus linking"). The current version can be found on the Internet at www.sanitaire.com.

The registers used are listed in the "DPM fieldbus linking" manual, in chapter "Communication with Modbus TCP".

6 Maintenance and cleaning

6.1 Maintenance

Maintenance activities

Component	Maintenance
Transducers	No maintenance required
DPM	No maintenance required

6.2 Cleaning

DPM

Clean components mounted in the open of gross contamination as necessary. We recommend cleaning the worst of the dirt on the enclosure and the area directly around it each time before opening in order to prevent contamination from entering the open enclosure.

To clean the module, wipe the enclosure surfaces with a damp, lint-free cloth. If compressed air is available on site, blow off the worst of the dirt beforehand. Keep the enclosure closed while doing so.

NOTE
Do not use high-pressure water blasters for cleaning (danger of water penetration!). Also do not use aggressive cleaning agents such as alcohol, organic solvents or chemical detergents. These types of cleaning agent can attack the surface of the enclosure.

The enclosure and the window of the display are made of plastic. Thus, avoid contact with acetone and similar detergents. Remove any splashes immediately.

Transducers

Transducers should not require cleaning, however measuring ports can be cleaned should the aeration tanks be taken down for maintenance.

7 Technical data

7.1 DPM

Dimensions DPM

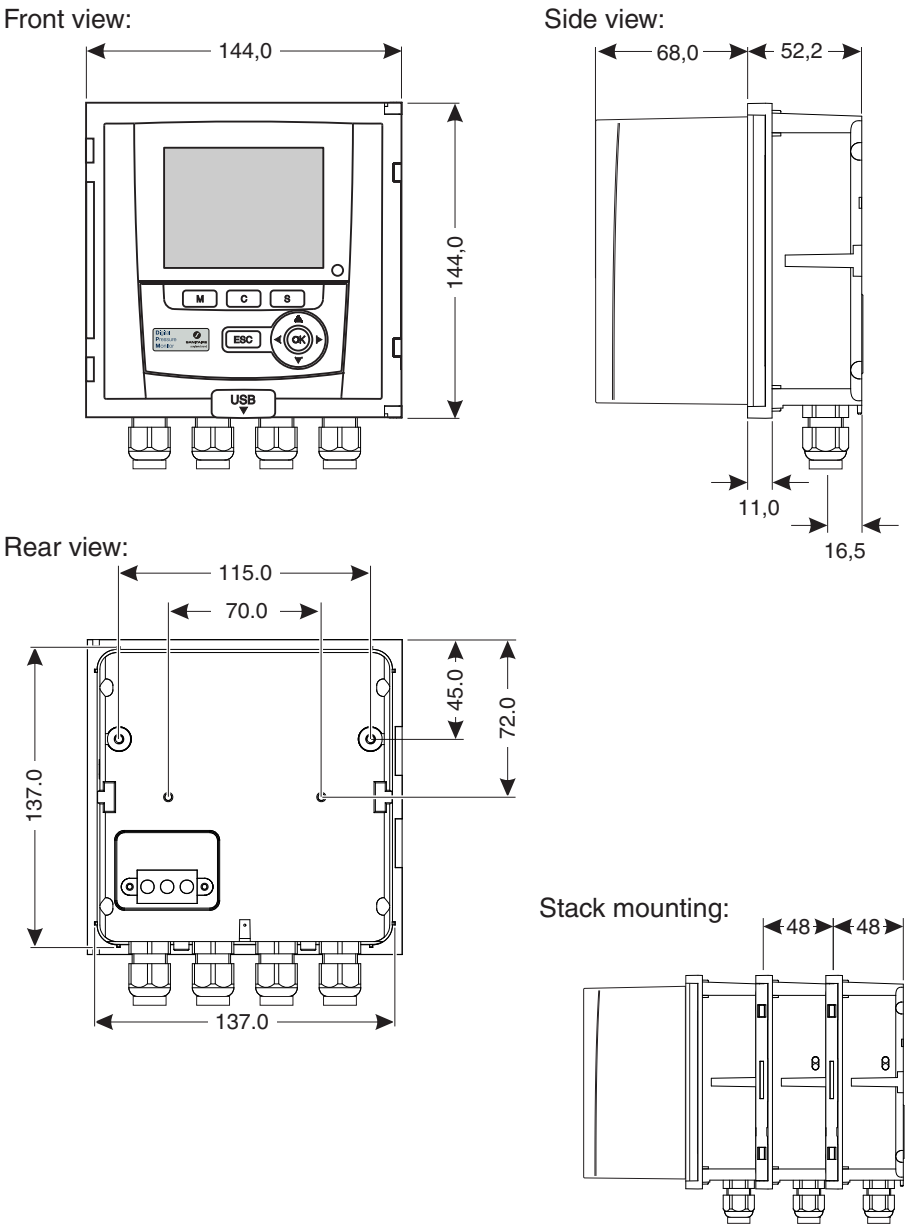


figure 7-1 Dimension drawing of the DPM (dimensions in mm)

Mechanical structure

Maximum number of DPM modules in a module stack	3
Enclosure material	Polycarbonate with 20 % glass fiber
Weight	Approx. 1.2 kg

Type of protection	IP 67 (not suitable for conduit connection).

Test certificates

CE

Ambient conditions

Temperature

Mounting/installation/ maintenance	+ 5 °C ... + 40 °C (+ 41 ... +104 °F)
Operation	- 20 °C ... + 55 °C (- 4 ... + 131 °F)
Storage	- 25 °C ... + 65 °C (- 13 ... + 149 °F)

Relative humidity

Mounting/installation/ maintenance	≤ 80 %
Yearly average	≤ 90 %
Dew formation	Possible

Site altitude	Max. 2000 m above sea level

Electrical data DPM (240 V AC/DC line power version)

Power supply	Nominal voltage: 100 ... 240 VAC ± 10 % Frequency:50/60 Hz according to DIN IEC 60038 Line power connection: 2 pin, N and L Line cross-section of mains connection: Europe:1.5 ... 4.0 mm^2 USA:AWG 14 ... 12 Fuse rating on the operator side: max. 16 A
Protective class	II
Overvoltage category	II
Power consumption	max. approx. 20 W

Electrical connections DPM[-...]

The electrical connections are inside the housing.

Connecting terminals

Terminal type	Screw-type terminal strip, accessible by raising the lid	
Terminal ranges	Solid wires:	0.2 ... 4.0 mm^2 AWG 24 ... 12
	Flexible wires:	0.2 ... 2.5 mm^2

Cable glands

Suitable for cable diameter	4.5 ... 10 mm or 7 ... 13 mm

EMC product and system characteristics

EN 61326	EMC requirements for electrical resources for control technology and laboratory use – Resources for industrial areas, intended for indispensable operation – Interference emission limits for resources of class A
System lightning protection	Extended protective characteristics as opposed to EN 61326
FCC, class A	

Any combination of the DPM with DPM modules in a user-specific system achieves the listed EMC characteristics.

Meter safety

Applicable norms	– EN 61010-1 – UL 61010-1 – CAN/CSA C22.2#61010-1

USB-A interface

Version	USB 2.0
Usage	Download of measurement data, software updates, electronic key

Immediately close the USB connection with the protective cover when you have removed the USB device.
When the USB connection is open, there is a danger of corrosion.

Ethernet connection RJ45 socket (can be retrofitted as a climate resistant RJ45 socket for operation at an open-air test site section 8).

7.2 General data of DPM-IC2 modules

Dimensions

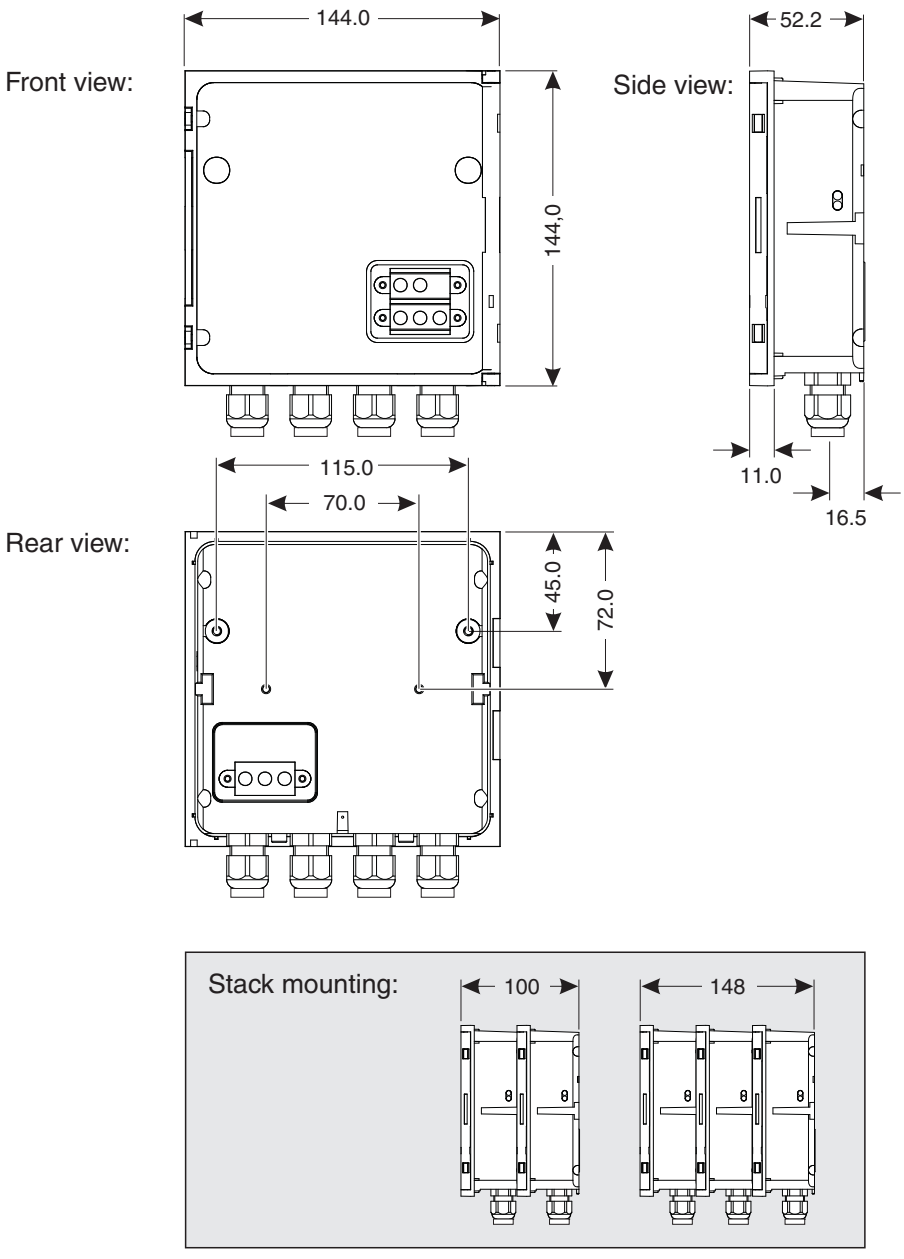


figure 7-2 Dimension drawing of DPM-IC2 module (dimensions in mm)

Mechanical structure	Maximum number of DPM modules in a module stack	3
	Enclosure material	Polycarbonate with 20 % glass fiber
	Weight	Approx. 0.5 kg
	Type of protection	IP 66 (not suitable for conduit connection).
Terminal connections	SENSORNET connections	At least two in each DPM module. Additional connectable SENSORNET terminator (terminating resistor)
	Further connections	Module-dependent
	Terminal type	Screw-type terminal strip, accessible by raising the lid
	Terminal ranges	Solid wires: 0.2 ... 4.0 mm^2 AWG 24 ... 12 Flexible wires: 0.2 ... 2.5 mm^2
	Cable feeds	4 cable glands M16 x 1.5 on the underside of the module
Cable glands	Suitable for cable sheath diameter	4.5 - 10 mm or 9.0 - 13 mm

7.3 Space required by mounted components

Wall mounting and top hat rail mounting

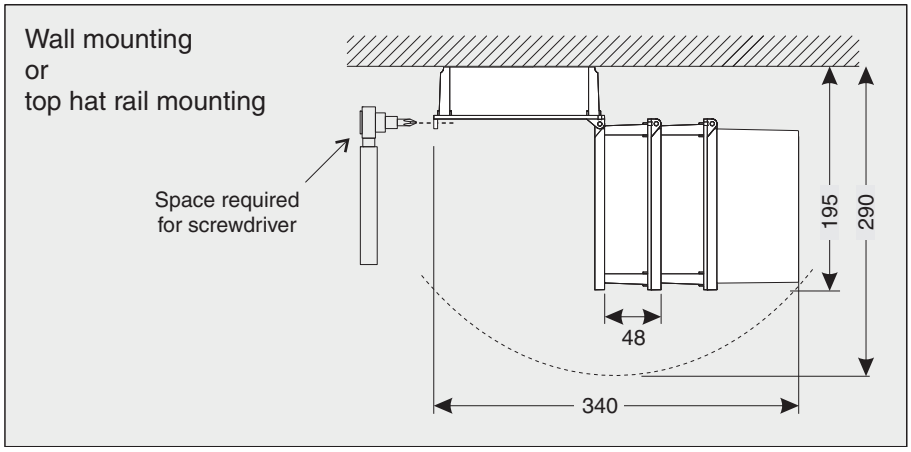


figure 7-3 Space required for wall and top hat rail mounting: (dimensions in mm)

8 Accessories and options

Description	Model	Order no.
DPM cable - please specify required length in m when ordering	SNCIQ	Please contact your local distributor
Sun shield for a single DPM module plus docked DPM	SD/K 170	109284
Mounting kit for fixing the SD/K 170 sun shield on horizontal or vertical pipes	MR/SD 170	109286

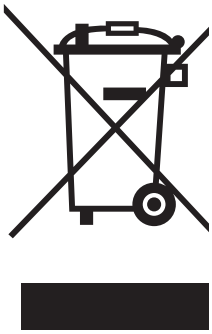
9 Glossary

Air Distributor	Pipes connecting to the manifold to which the diffusers are mounted. In the case of PVC systems, the diffuser holders are glued onto the crown or top of the air distribution header. For stainless steel systems, diffuser connectors are welded onto the invert of the pipe.
Air Plenum	The cavity of air between the aeration control orifice drilled into the air distributor and the underside of the diffuser.
Dropleg	Vertical pipe connecting air main at top of tank to the floor mounted aeration equipment.
Grid	A single unit of aeration equipment consisting of a dropleg, diffusers, and air distributors. Depending on the number of air distribution headers, the manifold may be omitted.
Static Water Pressure	The pressure exerted by a vertical column of water. In terms of DPM, the static water pressure is measured at the same elevation of the diffusers.

10 Disposal

Handle and dispose of all waste in compliance with local laws and regulations.

EU only: Correct disposal of this product — WEEE Directive on waste electrical and electronic equipment



This marking on the product, accessories or literature indicates that the product should not be disposed of with other waste at the end of its working life.

To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.

Waste from electrical and electronic equipment can be returned to the producer or distributor.

11 Index

What can Xylem do for you?

We're a global team unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

For more information on how Xylem can help you, go to xyleminc.com.

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