PoolmatiX

Version 2.3

Poolmatix installation preparation

Interactive. Proactive.

www.poolmatix.com

1. Installation preparation for Poolmatix

1.1 Basics and recommendations

Congratulations for choosing the Poolmatix. The system is designed designed to make the installation and use as simple as possible. This pool control system requires, however, certain steps to install your pool. However, it is not too difficult.

Careful preparation of the installation of the Poolmatix pays off. The system will work reliably for many years. Please read carefully the following principles and recommendations.

1.2 Before you start

In the following chapters you will find useful hints for the installation:

· Connection to the Internet

· Type of heating control

· How to prepare pipes

· Selection of accessories

· What to consider when ordering the main switchgear

2. A stable Internet connection is key

Poolmatix is an online system. Your pool with Poolmatix will, of course, work without the Internet.

However, in order for you to enjoy all the benefits of the system, as well as to be able to access the pool via the mobile application, you need a reliable Internet connection.

2.1 How can I connect the Poolmatix switchgear to the Internet?

Poolmatix offers several options for connection. Before installing the system it is necessary, select the best option for your application.

Later, you can check the mobile or WiFi signal level in the iXfield service application.

Option 1 – Mobile connection

If you want to make your installation as easy and quick as possible, use the mobile data connection. Mobile data allows for a high-quality and reliable connection. If there is a good mobile signal at the place where the switchgear antenna can be placed, the mobile connection is mobile connection is secure. You can easily check the quality of the mobile signal using your cell If you want to make your installation as easy and quick as possible, use the mobile data connection. Mobile data allows for a high-quality and reliable connection. If there is a good mobile signal at the place where the switchgear antenna can be placed, the mobile connection is mobile connection will be reliable. You can easily check the quality of the mobile signal using your cell phone.

2.1.1 Mobile signal quality test before installation

Poolmatix uses a special M2M SIM card enabling mobile connection to multiple mobile networks.

For signal quality check, place your cell phone with 3G/4G services in the location where the switchgear mobile antenna will be located and open the network connection. Check if the network data transmission is fast enough and sufficiently stable. For example, we recommend connection and speed test using https://www.speedcheck.org/de/. The download speed should be at least 2Mb/s and the upload speed should be at least 0.5 Mb/s. The ping (latency) should not exceed 100 ms.

To check the quality of the signal 3G / 4G (LTE), we recommend using a suitable smartphone help that can measure RSRP (LTE). For Android, for example, LTE Discovery. On iPhone, connection quality information is available upon dialing * 3001 # 12345 # *. Turn off WiFi before dialing the code. We recommend setting the RSRP higher than -100 dBm. The critical RSRP value is -110 dBm. Below this level, reliable operation cannot be guaranteed.

Before completing the installation, check the RSRP signal quality in the iXfield service application.

2.1.2 Using an additional antenna holder and cable

If you install the Poolmatix in an underground shaft, it is necessary to place the antenna as close as possible to the manhole opening to ensure the best possible conditions for the propagation of the radio signal. In this case, use an additional antenna holder and an extension cable. Place the antenna as high as possible, e.g. directly under the manhole cover.

2.1.3 Using an outdoor mobile antenna

If the use of an additional antenna holder and an extension cable does not ensure a sufficient signal, you must use an external antenna. You can order it separately. You can place the antenna in the place with the best reception conditions. It is supplied with a magnetic holder (for example, for easy attachment to the housing of a heat pump) or with a screw holder for wall mounting.

< Mobile antenna
  with magnetic base

Note

The maximum cable length of the external mobile antenna is 9 meters. During the preparation or during the pool installation please take into account this limit.

There is almost never sufficient mobile signal in an underground shaft. In this case, if you want to connect Poolmatix with mobile connection, you must use a mobile antenna located as high as possible in the entry to the shaft or, even better, the external mobile antenna.

The earth is an excellent absorber of the mobile signal. If you install the system before completing the groundworks, it is also necessary to check the quality of the connection after completion.

Option 2 – WiFi

All Poolmatix switchgear versions support WiFi2.4 GHz connection. The versions without mobile connection are supplied with a small WiFi antenna located directly on the side of the switchgear. If you have chosen to connect via WiFi, make sure that there is sufficient signal coverage at the location where the switchgear or WiFi antenna will be placed. The best way to find out is with the help of a smartphone.

We recommend the WiFi connection only in case there is a sufficient signal for the WiFi connection at the location where the WiFi antenna is placed.

2.1.4 WiFi signal quality test before installation

Connect to the network, for example through your cell phone. Check whether the data transmission via WiFi is fast enough and stable. For example, we recommend performing the speed connection test using https://www.speedcheck.org/de/. The download speed should be at least 2Mb/s and the upload speed at least 0,5 Mb/s. The ping (echo time) should not exceed 80 ms.

For signal quality check of the WiFi network, we also recommend using suitable smartphone applications that can measure WiFi RSSI. For Android, for example, the WiFi Data Signal Analyser, for iPhone, for example, the Airport Utility. We recommend RSSI higher than -65 dBm.

The critical minimum value of RSSI is -75 dBm. Reliable operation is not guaranteed below this level.

Check the RSRP signal quality value in the iXfield service application before finishing the installation.

2.1.5 Using a WiFi outdoor antenna

For a reliable WiFi connection, we recommend using an antenna with higher sensitivity, which you can order separately. You can place the antenna at the location with the best reception conditions. It is supplied with a magnetic holder (for example for easy attachment to the housing of a heat pump) or with a screw mount for wall mounting.

< External WiFi antenna with magnetic base

Note

The maximum cable length of the external WiFi antenna is 9 meters. During the preparation or during the pool installation please take into account this limit.

There is almost never sufficient WiFi signal in an underground shaft. In this case, if you want to connect Poolmatix with mobile connection, you must use a mobile antenna located as high as possible in the entry to the shaft or, even better, the external mobile antenna. The earth is an excellent absorber of the mobile signal. If you install the system before completing the groundworks, it is also necessary to check the quality of the connection after completion.

Be aware of moving obstacles. If you connect to a wireless access point located in inside a building, be aware that moving obstacles such as lids, flaps, window blinds, shutters, garage doors or the pool cover can significantly degrade the wireless signal connection. Therefore, we recommend you to place a dedicated WiFi access point for the Poolmatix in the place where the signal reception cannot be degraded by moving barriers. Therefore, we recommend you to locate a dedicated WiFi access point for the Poolmatix in the place where the signal reception cannot be degraded by moving obstacles.

Be careful about password change for your WiFi access point. If someone changes the password for the access point, you will lose the connection with Poolmatix. Also for this reason we recommend to use a dedicated WiFi access point.

Pay attention to the firewall of the home network. Some home routers use a network firewall. They may partially or completely block Poolmatix communication. The Internet access can also be blocked only after for some time after a problem operation. Make sure before the installation make sure that neither your router nor your ISP restrict communication on any network ports.

Option 3 – Ethernet cable

A reliable way to connect Poolmatix to the Internet is via Ethernet network. All versions of Poolmatix switchgear without cellular mobiler are equipped with waterproof RJ45 socket. If there is a RJ45 socket with stable internet connection in the range of the switchgear, just use a conventional Ethernet cable to connect to the Internet.

If you are building a new pool, the ideal solution would be to install an Ethernet cable in the technical room or in the shaft. If you lay the cable under the ground, we recommend laying it in a separate protective duct.

Pay attention to the firewall of the home network. Some home routers use a network firewall. They may partially or completely block Poolmatix communication. The Internet access can also be blocked only after for some time after a problem operation. Make sure before the installation make sure that neither your router nor your ISP restrict communication on any network ports.

3. Preparation of pool piping

3.1 What will be installed in the pool piping?

Poolmatix continuously measures and evaluates many parameters of the pool water and of the technology and maintains the chemical balance of the water. Compared to conventional installations, this one needs a few saddle clamps or ½" threaded inserts, depending on your preference.

Connection point	Standard / optional	Function	Location
Water temperature from pool	always installed	Temperature of the water, flowing from the pool to the technology	T-piece or a saddle clamp with a ½" thread installed between the main pump and the heater. It can also be placed before the main pump.
Water temperature into pool	always installed	Temperature of the water, flowing back to the pool from the technology	T-piece or drilled-in part ½" after the outlet of the heating system.
pH electrode	always installed	Socket for pH electrode Measurement of the pH value	T-piece or a saddle clamp with ½" thread before the inlet to the heating system.*
ORP electrode	always installed	Socket for ORP electrode Measurement of the ORP value	T-piece or a saddle clamp with ½" thread before the inlet to the heating system.*
Injection valves	always installed	Injection valve(s) for pool agents	T-piece or saddle clamp wit ½"-thread before of the valve for the water return to the pool. This is always the last connection in the pipeline.
Pressure before filter	optional	Measures the pressure between the main pump outlet and filter.	T-piece or a saddle clamp with ½"-thread between the main pump outlet and filter
Flow sensor	always installed	Monitors whether there is sufficient water flow.	T-piece or a saddle clamp with ½" thread before entering the main pump.

*We recommend installing the electrodes in a bypass outside the main flow in the pipe. This will reduce the risk of mechanical damage caused by solid particles that are carried by the water flow.

1. Water temperature sensor from pool
2. pH electrode
3. ORP electrode
4. Water temperature sensor into pool
5. Injection valves
6. Flow sensor
7. Water pressure sensor before filter
8. Main pump with filter
9. Intelligent chlorinator / dosing module
10. Chlorinator cell

Note

Never extend the cables of the electrodes. It may impact the measurement accuracy.

Always switch on the system only after its complete installation and connection of the measuring electrodes.

Otherwise, the regulation of the water would start according to wrong chemical parameters.

Always install the measuring electrodes at a sufficient distance from the chlorinator cell. The pH electrode must be placed in a tube at least 40 cm away from the chlorinator. The ORP electrode must be placed at least 30 cm away from the chlorinator.

4. Flow sensor for pool piping

The flow sensor is a recommended accessory for all Poolmatix installations. If insufficient water flow through the pipe is detected, the system automatically turns off main pump, chemical water treatment and alerts the user. This prevents the system from system from damaging the equipment.

4.1 Installation process

The PFS-R1D flow switch is installed in the a saddle clamp over a plastic pipe with an external diameter of 50 or 63 mm. The thread of the saddle clamp is BSPP 1/2". The height above the drilled part must be 25 mm ± 3 mm. The sensitivity of the sensor is adjusted by setting the paddle length.

4.1.1 Installation process:

1. First shorten the paddle to the correct length,according to the nominal flow rate of the pump used and the diameter of the pool piping. Use a sheet metal cutter of a snap off knife to shorten the paddle.

| Paddle length	Pump nominal flow m³/h	
	Pipe ⌀ 50 mm	Pipe ⌀ 63 mm
1-2	18.1-25.0	29.0-40
1-3	12.1-18.0	21.1-29.0
1-4	8.1-12.0	15.1-21.0
1-5	5.5-8.0	11.1-15.0
1-6	-	8.0-11.0
1-7	-	-
1-8	-	-
1-9	-	-

2. We recommend the use of Teflon sealing tape to seal the switch in the saddle clamp.
3. Screw the flow switch into the saddle clamp so that it is correctly aligned with the direction of water flow in the pipe. Insert the sensor connector into the connector „Floe sensor" of the Poolmatix switchgear.
5. Make the appropriate settings in the iXfield service application.
6. This completes the installation.

Saddle clamp

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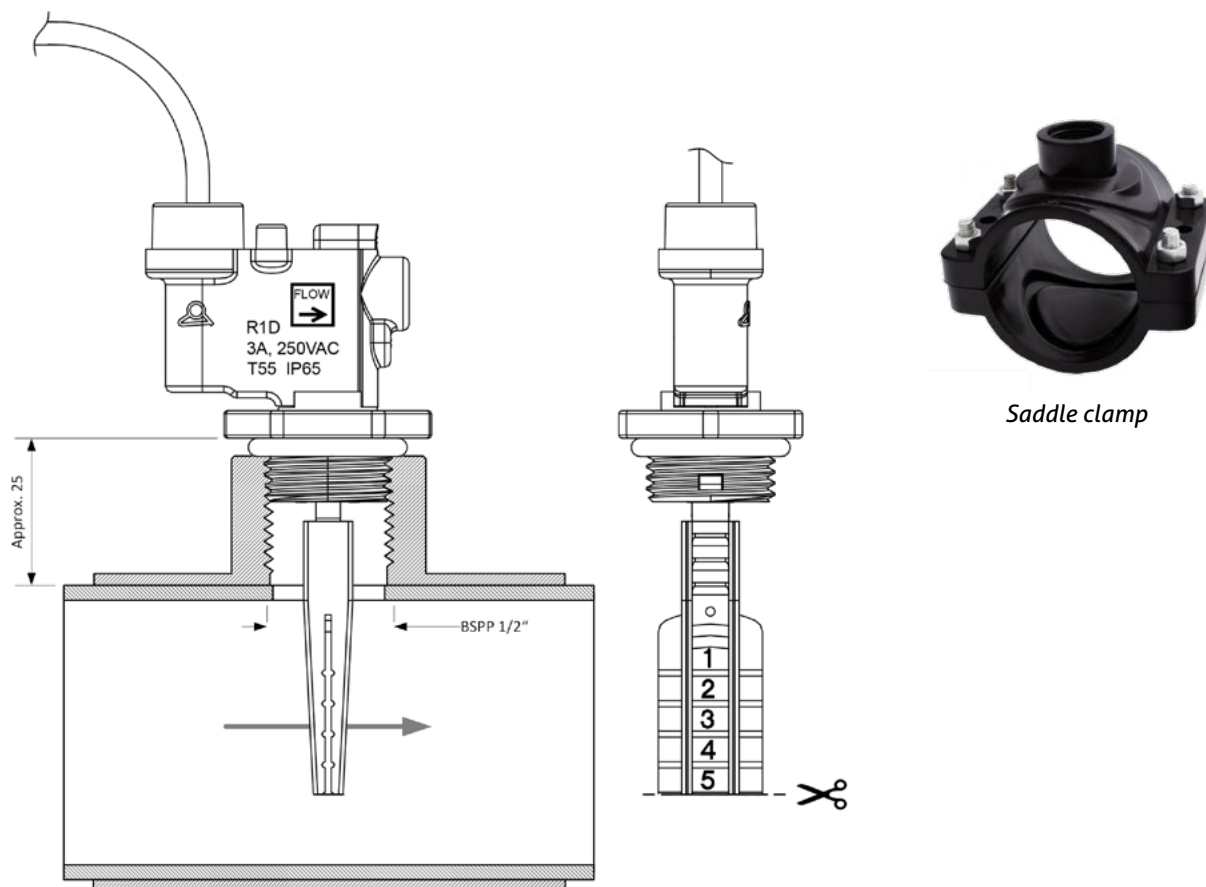
Note

If a main pump with speed control is used, the flow sensor must be must be adjusted to the minimum expected flow rate of the pump.

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5. Correct installation of the chlorinator cell
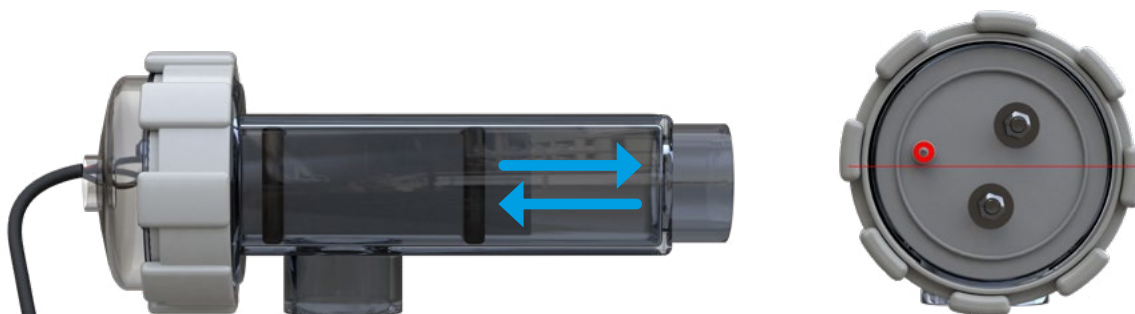
If you are using the Poolmatix smart chlorinator always install the chlorination cell in this position. The direction of the water flow in the pipe is not important.

Correct position of the measuring electrode
The measuring electrode (red on the picture) must be that it is above the level of the horizontal axis of the cell. This guarantees proper function of the air detection.

6. Heating control

Poolmatix controls the water temperature and thus also the heat pump, heat exchanger or another type of heating. For the connection of the heater and its control is necessary to prepare the wiring in advance. For the control you can use several options:

6.1 Control via power output (230V)

In this case, the power connection is switched directly. The supply voltage of the whole device (for example heat pump) is switched on or off, depending on whether the heating is required. If the heater is equipped with a thermostat, it is necessary to set it to a temperature higher than the highest expected temperature to which you want to heat your pool. The current output is also used for the control of solar systems or heat exchanger.
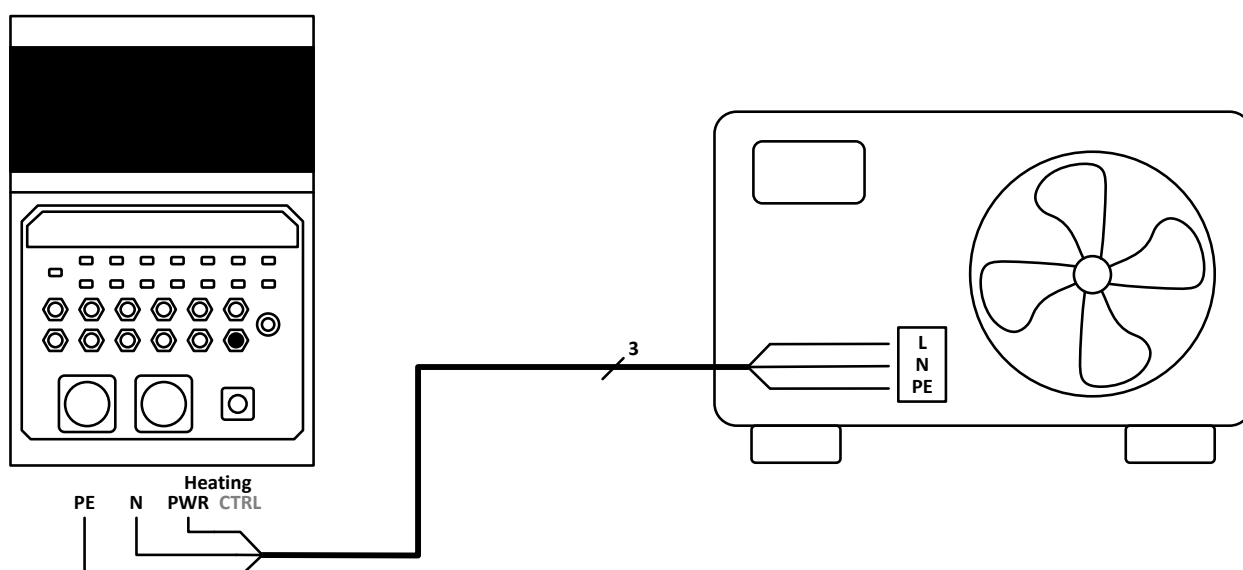
6.2 Control via potential-free contact

Most heat pumps and other types of heating are equipped with contacts for external control. These contacts is usually accessible on the printed circuit board after opening the cover of the heat pump. In this case, the power connection of the device remains constantly on. Into the unit is installed a control relay (optional accessory) and the unit is controlled by this relay. This type of connection prevents current surges that would otherwise occur when switching the mains voltage of the device. If the heater is equipped with a thermostat, it is necessary to set it to a higher temperature than the highest expected temperature you want to heat your pool to.
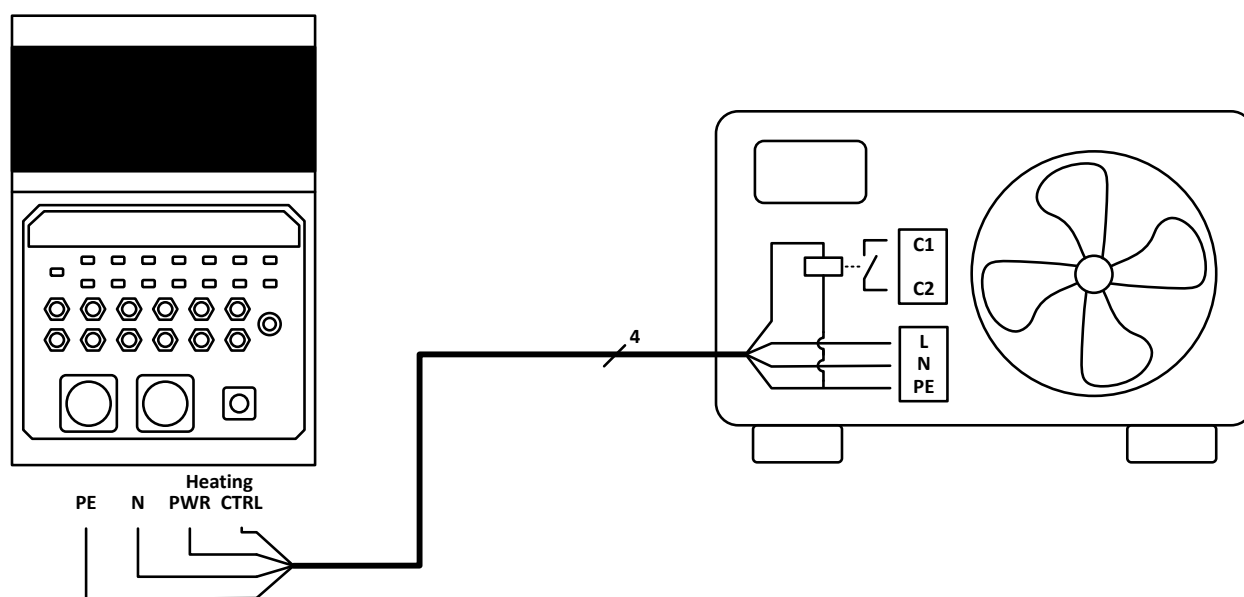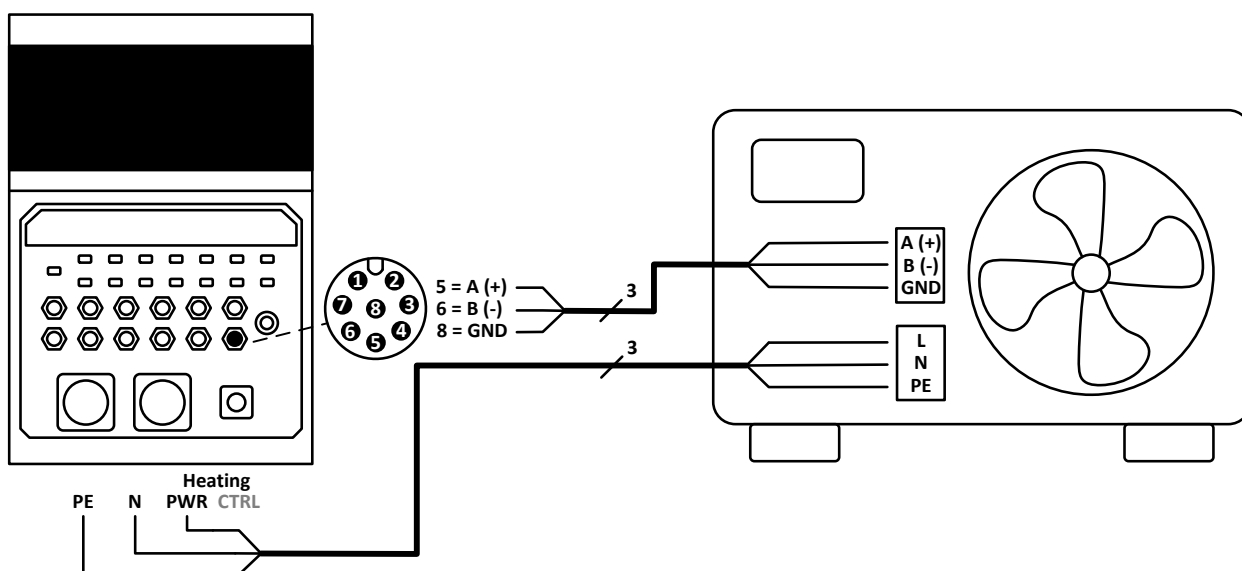

In this case it is necessary to add a cable with an additional wire to the device. This wire can combined with other wires in the joint cable.

6.3 Control via RS-485 communication interface

Most heat pumps are equipped with the option of the control via RS-485 and Modbus interface. The connection is usually accessible after removing the cover of the heat pump on the printed circuit board. Depending on the type of the heat pump, this interface may be used for the connection to the front panel with display and buttons or the WiFi module. In this case, it is possible to disconnect this board and simulate its function by connecting it to the Poolmatix switchgear. Also in this case the power supply of the device remains remains permanently on. The device is controlled by commands sent through the interface. If you want to use this type of connection, please contact us in advance with the exact model name of the heat pump.

The connector for the heat pump communication bus on the Poolmatix control cabinet is marked „Heating".

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In this case it is necessary to lead a three-wire data cable to the heat pump. We recommend that this cable in a separate coble conduct, separate from the power conductors.

If it is not possible to use a separate cable for the RS-485 interface, you can use two separate wires in a multi-core power cable. The cable must have a test voltage of at least 2500 V. In this case, the GND signal of the RS-485 interface must be connected with the PE terminal on the side of the heat pump.
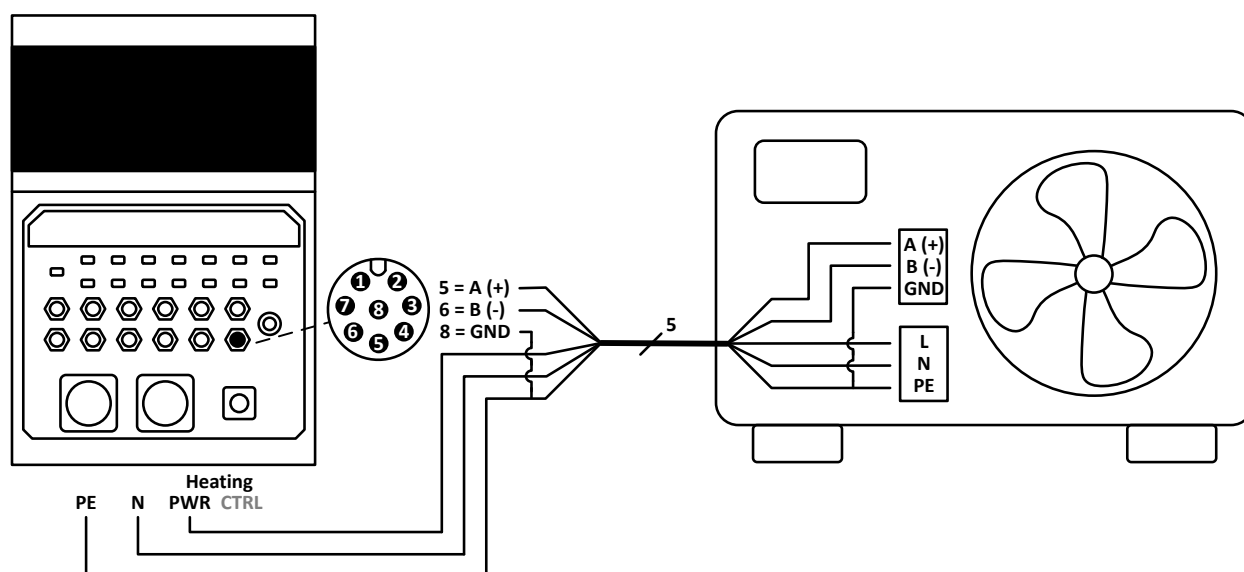
7. Connection of the other Poolmatix devices

When preparing the installation of the Poolmatix system, it is important to prepare the connections of other devices and peripherals.
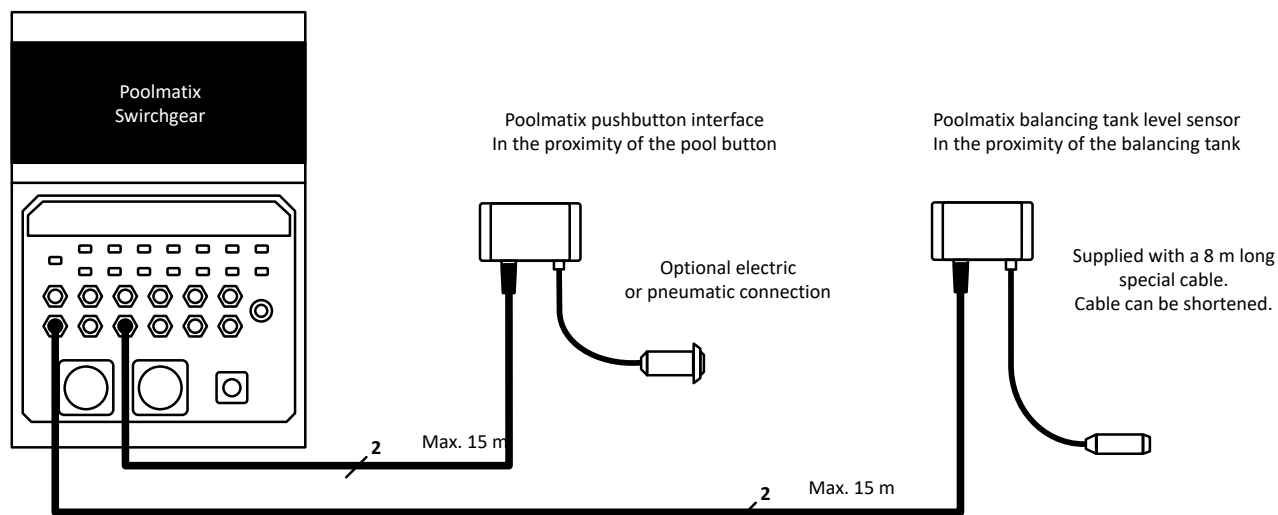
7.1 Connection of temperature and water flow sensors

The temperature sensors are connected to the connectors marked „Temperature into pool" and „Temperature from pool". The water flow sensor is connected to the „Flow sensor" connector.

7.2 Connection of analog Poolmatix devices

The analog pushbutton interface should be located near the pool pushbutton. It is connected to the „Buttons" connector on the front panel.
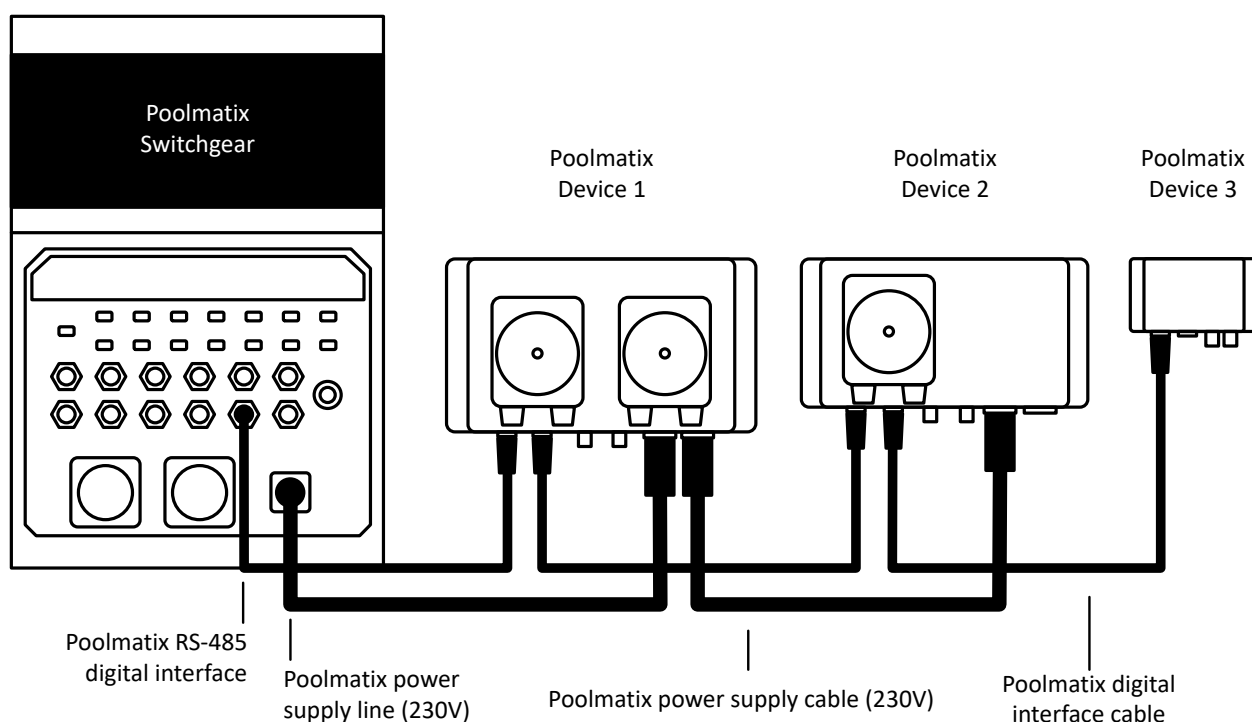
The connection box of the analog water level sensor is located within reach of the balancing tank. It is connected to the free analog interface of the switchgear.

Poolmatix
Swirchgear

Poolmatix pushbutton interface
In the proximity of the pool button

Poolmatix balancing tank level sensor
In the proximity of the balancing tank

Optional electric
or pneumatic connection

Supplied with a 8 m long
special cable.
Cable can be shortened.

2 Max. 15 m

2 Max. 15 m

7.3 Connection of Poolmatix devices equipped with the digital Poolmatix interface

Poolmatix devices that are equipped with the digital Poolmatix interface (8-pin M12 connector) are connected to the Poolmatix data interface of a Poolmatix switchgear with the designation „Poolmatix". The individual devices are interconnected by a „Daisy Chain" system. connected to each other. If these devices are equipped with a 230 V power input, the power input is connected to the power output of the device labeled „Poolmatix". The power output of the switchgear marked „Poolmatix". The connection of the other devices to the power supply is made by connecting the power inputs and outputs of the devices.

The connection is shown in the following figure.

Poolmatix RS-485 digital interface

Poolmatix power supply line (230V)

Poolmatix power supply cable (230V)

Poolmatix digital interface cable

8. Poolmatix accessories you should consider

Flood sensor and flood pump

We recommend installing a flood sensor and flood pump. If the pool's equipment is placed in an underground vault.
In the event of flooding, the pool's equipment is automatically switched off, the pump removes the water from the shaft, and the user is notified.
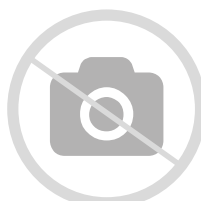
Image not available

Active vault ventilation

High humidity in the underground area damages the pool harmful to the pool equipment.
We recommend the use of active room ventilation, in which the fan is switched on depending on the operating conditions in the room and keeps the room dry.

Pushbutton interfaces

If you want to control the counterflow or lights using buttons located in the pool, you will need to connect an interface box. Versions for magnetic, piezoelectric, and pneumatic buttons are available.

Underwater magnetic buttons

Underwater magnetic buttons are a reliable alternative to failure-prone pneumatic buttons. They can only be used with the Poolmatix system.

Pipe pressure sensor

This sensor monitors water pressure between the main pump and the filter, and the user receives information about the filter contamination level.

Balancing tank level sensor

This sensor monitors the water level in the balancing tank and reacts to changes. The system can detect activity in the pool and automatically start circulation. It also enables automatic refilling and notifies the user in the event of the refill malfunction and low water levels.
If the level drops below the critical level, Poolmatix switches off equipment to prevent damage and notifies the user.

RF remote control and RF receiver

This remote control is used to turn the pool lights and counterflow on and off.

External antennas, holders, and feeders

We recommend installing a suitable antenna, holder, and a feeder cable for a quality WiFi and mobile connection.

Hilfsrelais der Wärmepumpe

This auxiliary relay The relay is placed inside the heat pump enclosure. controls the heat pump through its control input. The relay is placed inside the heat pump enclosure.

9. What I need to know before ordering the Poolmatix switchgear

The Poolmatix switchgear comes in several versions to make sure everything fits your installation exactly. Please use the Poolmatix configuration guide to select the correct model.

9.1 Mobile or WiFi / Ethernet connection

If you have decided to use the mobile connection, please order the corresponding switchgear version. This is equipped with a module for cellular communication and with an activated SIM card. If you have the possibility to connect the switchgear reliably via Ethernet or WiFi, please order the corresponding switchgear version.

9.2 Socket types

There are the following sockets on the Poolmatix switchgear:

· Connection for chlorinator or other disinfection

· Connection for main pump

The switchgear is equipped with Schuko sockets as a standard. If you plan to install it in another country, order, please order the corresponding socket type.

9.3 Language of the front panel

Depending where you are planning to install the switchgear, please order the corresponding language of the front panel of the switchgear.

Typical Poolmatix installation
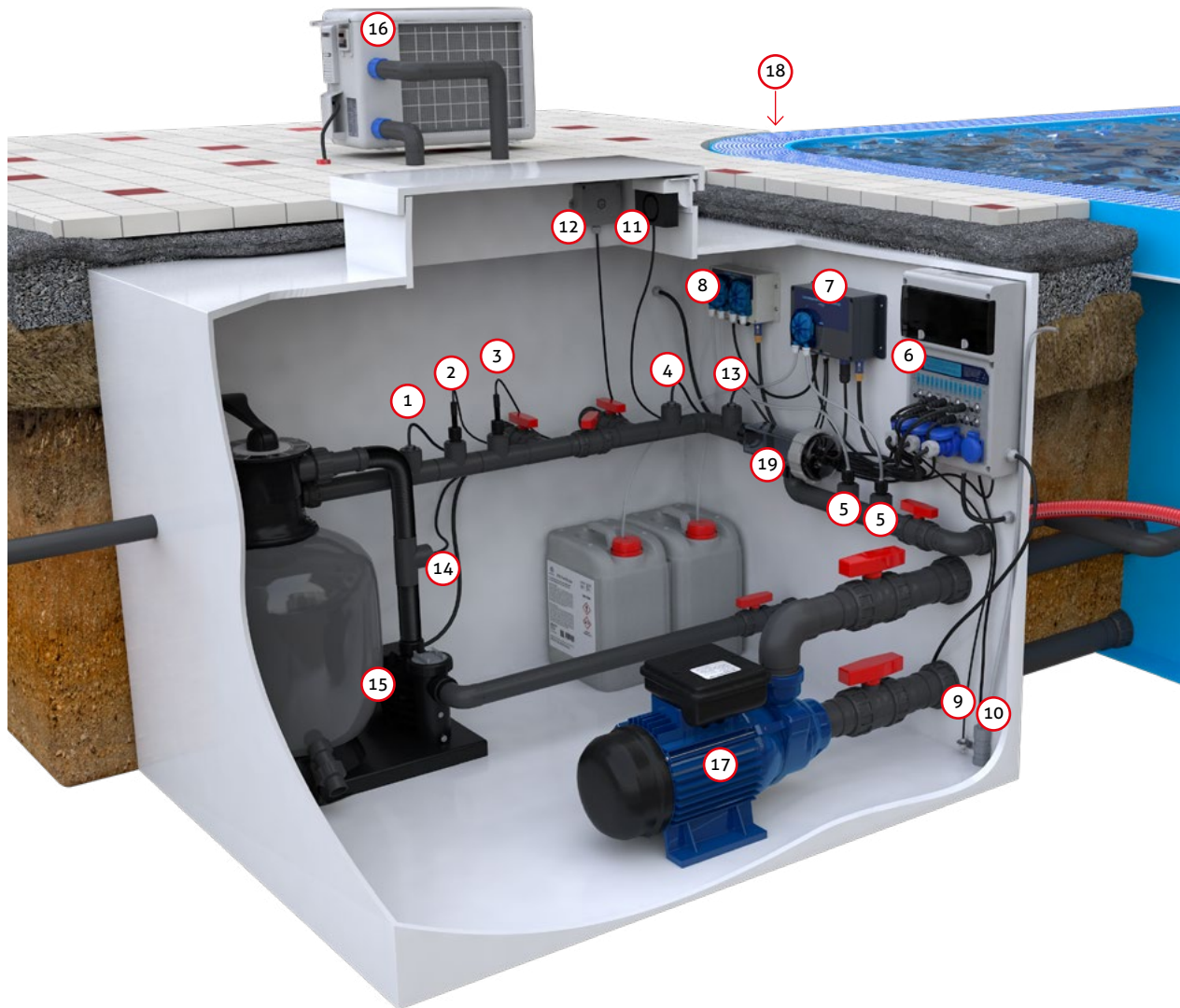
1. Poolmatix water temperature sensor - from pool
2. Poolmatix pH electrode
3. Poolmatix ORP electrode
4. Poolmatix water temperature sensor - into pool
5. Injection valves
6. Poolmatix intelligent switchgear
7. Poolmatix intelligent chlorinator and dosing unit
8. Poolmatix dosing module
9. Poolmatix flood sensor
10. Flood pump
11. Active vault ventilation
12. Poolmatix RF receiver
13. Poolmatix pipe water flow sensor
14. Poolmatix pipe water pressure sensor
15. Main pump with filter
16. Heat pump
17. Counterflow
18. Poolmatix balancing tank or skimmer level sensor
19. Chlorinator cell

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