

System Description

Version 2.0



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Welcome to Poolmatix

Thank you for your interest in Poolmatix. The purpose of the document is to provide you with an overview of Poolmatix's functionalities and to explain how this advanced pool management solution benefits both users and pool companies.

1.1. What is Poolmatix?

Poolmatix is a digital smart pool control system that revolutionizes pool installation, use, and maintenance, ensuring maximum comfort and convenience. It provides automated control and pool care, along with enhanced energy efficiency, for pool owners.



Poolmatix manages all pool technologies and functions, offering remote monitoring and control functionalities. It also enables proactive management and maintenance of the pool.

1.2. Poolmatix Pool Central Control System



The core of the Poolmatix pool automation system comprises a main control unit and water treatment units. This central control system, typically installed in the pool equipment room, manages all aspects of pool technology and water treatment.

The Poolmatix central control unit combines control, switching, communication, and fusing functions, and facilitates Internet connectivity. The Poolmatix water treatment units, pool sensors, and other pool technology are connected to this central control unit.

1.3. End User Mobile App

iX manager

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The iXmanager mobile app provides easy and intuitive access to your pool control, enabling you to manage and monitor the pool from anywhere.

The app also notifies you when your pool needs attention and provides tools to guide you through routine maintenance tasks.

The installation and setup take less than a minute.

1.4. Advanced Pool Management Application

iX field



The iXfield web app is utilized for advanced pool management. This app offers a broader range of functionalities than the iXmanager mobile app.

The iXfield app is used for pool configuration and advanced settings. The app also provides pool operating history data and sophisticated diagnostics and maintenance functions.

Pool professionals can use the iXfield app for remote monitoring and maintenance of a large number of pools.

1.5. Poolmatix Installation Process

Step 1

Create your pool configuration and set its parameters in advance.

Define all the components of the pool technology that the pool will use.

Step 2

Install the Poolmatix central control system at the site.

The control unit automatically downloads its configuration and settings. Check the correct functions of the pool technology.

Step 3

The functions of the central control system and the user interface of the applications are automatically adjusted according to the individual pool configuration.

All pool parameters can be changed remotely at any time. You can also remotely control and diagnose pool functions.



Poolmatix Components

2.1. Poolmatix Central Control Unit



The Poolmatix central control unit serves as the "brain" of the system, interacting with users through applications, processing sensor data, controlling all pool technologies in real-time, and managing chemical water treatment and overall pool health. It coordinates the operation of all components, synchronizing their operations and extending their lifespan.

The Poolmatix main control unit replaces many parts, components and devices that would otherwise be necessary to build a conventional pool switchgear.

The Poolmatix central unit is the "brain" of the system installed at the pool. It controls the entire swimming pool technology, the Poolmatix water treatment systems, and is connected to the internet via Ethernet, Wi-Fi, or LTE.

The Poolmatix central control unit is available in two versions:

Poolmatix



The Poolmatix central unit is a compact appliance suitable for most common pools. It can control the pool circulation pump plus two other 230 VAC appliances:

- Light (including RGB light)
- UV Lamp

Heating

Generic Salt Chlorinator (a 3rd-party salt chlorinator)

It also provides connections for additional sensors and controls the chemical treatment units of the Poolmatix system. The Poolmatix central unit is suitable for self-installation by the user.

PoolmatixPro



The PoolmatixPro replaces traditional pool switchgear and is an integrated low-voltage switchgear with advanced functionalities. It combines fusing components, sensor interface, control, and communication components.

In addition to Poolmatix, PoolmatixPro offers more connections and more functionalities:

- Connection of External Pushbuttons
- Higher Power Rating of Appliances
- Counterflow Control
- Circulation Pump Speed Control
- Balancing Tank Management
- Active Room Ventilation
- Flood Detection
- Water Features

It also provides connections for additional sensors and controls the chemical treatment units of the Poolmatix system.

The PoolmatixPro central control unit is intended for professional installation.

👍 A Single Control Unit Configurable for any Pool

A single type of Poolmatix central control unit can be configured for different pool types and water treatment methods. Pool parameters, configuration, and functions are set remotely in the iXfield service application. The control logic and functions of all power outputs and other interfaces automatically adapt to the set configuration.

2.2. Poolmatix Water Treatment Units

Poolmatix offers various water treatment methods for freshwater and saltwater pools. These include pH control and ORP control or free chlorine level control.

Poolmatix can also provide dosing of additional pool agents.

Poolmatix Precision Dosing Units



The Poolmatix Precision Dosing Units feature one or two long-life peristaltic dosing pumps that accurately measure liquid amounts, ensuring precise dosing of the required chemicals. The dosing speed is variable according to the agent application method.

The dosing units also provide inputs for pH, ORP, and free chlorine measurement electrodes.

The electrode measurement interfaces are equipped with high-precision Texas Instruments[®] amplifiers with galvanic isolation. This ensures accurate and reliable measurement of water chemistry.

Poolmatix Intelligent Salt Chlorinator and Dosing Unit



The Poolmatix intelligent salt chlorinator / dosing unit is specifically designed for saltwater pools. Its chlorine output is variable and adjusts as determined by the system control logic. The chlorinator provides information about water salinity, the presence of air in the cell, and other operating conditions.

The dosing units are equipped with one or two long-life peristaltic dosing pumps that accurately measure the volume of liquids and ensure precise dosing of pool chemicals. The dosing rate is adjustable according to the agent application method.

The chlorinator has inputs for connecting electrodes for pH, ORP and free chlorine measurements. The electrode measurement interfaces are equipped with Texas Instruments[®] high precision amplifiers with galvanic isolation. This ensures accurate and reliable measurement of water chemistry.

To enhance the system monitoring capabilities, the chlorinator sends information regarding water salinity, air in the cell, and other conditions that may occur during the operation.

2.3. Pool Sensors and Peripherals

Poolmatix offers a selection of additional sensors and accessories to extend system functionality and enhance your pool experience.



pH, ORP and Free Chlorine Electrodes

Poolmatix utilizes high-quality electrodes to measure water pH, ORP, and free chlorine concentration. The electrodes undergo individual factory calibration, so no initial calibration is required.

The ORP saltwater electrode is equipped with gold-plated contacts, ensuring a prolonged lifespan and high measurement accuracy.

To enhance user convenience, Poolmatix offers user-friendly in-app service sequences for the easy verification and calibration of electrodes. This feature enhances the overall user experience, ensuring continuous precise, and reliable measurements of water chemical properties.



Water Temperature Sensors

Digital sensors installed in the pool piping offer real-time and accurate information about the water temperature flowing to and from the pool, enabling precise control of the pool temperature.

These sensors are conveniently fitted into a 1/2" threaded clamp saddle.



Balancing Tank Level Sensor

This sensor continuously monitors the water level in the balancing tank, responding to changes in real-time. The system detects pool activity and initiates circulation automatically. Additionally, it facilitates automatic refilling and notifies the user in case of refill malfunctions or low water levels.

If the water level drops below a critical point, Poolmatix takes preventive action by deactivating equipment to avoid damage and promptly notifies the user.

The sensor is placed at the bottom of the balancing tank.



Outdoor Temperature Sensor

This sensor measures the outdoor temperature at the pool, and the system displays it in the applications. The data can be utilized for advanced functionalities, such as antifreeze protection for the water circulation circuit or to optimize the heat pump operation.



Pushbutton Interfaces

If you wish to control the counterflow or lights using buttons situated in the pool, you will need to connect this small interface box.

Versions for magnetic, piezoelectric, and pneumatic buttons are available.

Pipe Water Pressure Sensor

This sensor monitors the water pressure between the circulation pump and the filter. The data can be utilized to estimate the filter contamination level.

Active Equipment Room Venting

High humidity and temperature in the equipment room can damage pool equipment. We recommend the use of active venting, where the fan is switched on depending on the operational conditions in the room, effectively keeping the room dry.

The system can control any 230 VAC fan.

External Antennas and Feeders:

For optimal Wi-Fi or mobile connection quality, we recommend installing a suitable antenna, holder, and feeder cable.



3 Functionalities

3.1. Chemical Water Treatment

Poolmatix ensures the proper chemical balance in the water by maintaining the pH and disinfectant levels in the pool. The disinfectant dosage is controlled based on the measured ORP potential or the free chlorine level, or based on a time schedule.

Poolmatix can manage the dosing of the pH agent, disinfectant, and other pool agents, such as algaecide or flocculant.

Precise pH Control

Poolmatix precisely maintains water pH using an adaptive control algorithm that adjusts the dosage of chemicals based on the response to previous doses. This reduces pH fluctuation and minimizes consumption of pool chemical agents.

After each dose, the pool water is thoroughly mixed, and the response to the dose is recorded and evaluated.

Intelligent Salt Chlorinator

The Poolmatix intelligent chlorinators feature continuous chlorine output variation based on chlorine demand.

Information regarding salinity, the potential presence of air pockets in the cell, or chlorinator malfunctions can be displayed in the user applications.

Generic Salt Chlorinator

Poolmatix can also control any 3rd party salt chlorinator; however, this comes at the expense of safety and diagnostic features.

Automatic Dosing of Pool Agents

Poolmatix enables precise dosing of up to four chemical agents of your choice, including pH agent, sodium hypochlorite, flocculant, algicide, etc.

Dosing is done either based on measured water parameters or according to a time schedule set in the iXfield service app.

Measurement of Pool Agent Consumption

Poolmatix measures the consumption of pool chemicals and displays the remaining volume in the applications. It also notifies the user in advance about the need for any refills.

3.2. Management of All Pool Technology

A swimming pool is a complex mechanism, and all its components and functions need to be managed in perfect harmony. Poolmatix manages all pool functions and technologies from a single point, which is the Poolmatix central control unit.

This control mechanism ensures perfect synchronization of all pool processes and technologies.

Adaptive Circulation Pump Control

Poolmatix adjusts the circulation pump operation to accommodate other system functions. The pump is switched on to ensure proper filtration, and when necessary for dosing, heating, or chlorination. It remains in operation for a certain time after dosing to ensure the proper mixing of pool water (pump run-on).

The user can create a weekly time schedule for the main filtering cycles. Additionally, the circulation pump is switched on automatically at regular intervals to measure and adjust the water chemical properties and temperature.

Poolmatix can control a variable speed pump to reduce noise and power consumption. The circulation pump is switched on automatically if activity is detected in an overflow pool.

Heating Control

Poolmatix can control a heat pump, heat exchanger, or a direct electric heater. You set the temperature in the iXmanager application or in the iXfield application. You can also utilize the cooling option if the heat pump supports this function and is connected via a data bus.

You can significantly improve the efficiency of the heat pump by setting the right time schedules for heating. Set preferred times for heating or select times when heating is not required in the user applications.

Lighting, Counterflow, Other Pool Features

Poolmatix can directly manage pool counterflow, lighting, and other pool features. These functions can also be controlled using the mobile application. You can set the auto off times in the iXfield service application.

Poolmatix can also control color RGB lights.

Balancing Tank and Auto Refill

Poolmatix can measure the balancing tank water level and control its auto refill. If the level drops below critical levels, the system automatically switches off circulation, chemical treatment, and heating to prevent damage to costly equipment (dry run protection), and it notifies the user.

Poolmatix also detects rapid water level changes in the pool caused by activity in the pool and automatically switches on the circulation pump in such cases. The system reliably differentiates between normal pool use and other water level changes, like rain.

UV Sterilizer

Poolmatix can control a pool sterilization UV lamp. The switching of the UV lamp is synchronized with the circulation pump. The system also monitors the power consumption of the lamp.

Automatic Filter Backwash

Poolmatix can perform automatic filter backwash. It can be triggered remotely by the user, or triggered according to a time schedule set in the iXfield service application.

3.3. Protection and Safety Functions

It's important to know in advance before things go wrong, or at least when they do. Early action can prevent unpleasant situations or damage to expensive equipment.

Poolmatix incorporates a range of features that facilitate the early detection of potential problems, recommend corrective measures, and promptly notify the user.

Low Agent Volumes

Poolmatix keeps track of the remaining amount of pool agents and immediately informs the user if they are about to run out. The user does not need to check the canisters regularly.

Chlorinator Operation Status and Malfunctions

The Poolmatix chlorinator measures and reports various operating parameters, including water salinity.

If the system detects improper water salinity or other incorrect operating conditions, it automatically stops chlorination and alerts the user.

Low Water Level

Poolmatix monitors the water level in the balancing tank and the operating status of the circulation pump. If the water level is low, it notifies the user or initiates an automatic refill.

The user is also informed if the automatic refill function fails.

If the water level drops below a critical level, the system deactivates the circulation pump, chemical treatment, and other functions to prevent equipment damage (dry run protection), and it notifies the user.

Circulation Pump or Water Flow Malfunctions

Poolmatix monitors both the input power of the circulation pump and the correct water flow. If Poolmatix detects any operational anomalies, it notifies the user and automatically shuts off the circulation pump, as well as the heating and water treatment processes. This is done to prevent damage to the equipment and to maintain water quality.

Water Treatment Errors

If the system detects an unexpected response to pool agent dosing, it evaluates the situation for possible errors and promptly notifies the user.

Additionally, the system reports water parameters and pool agent consumption outside the normal range.

Malfunctions of Other Appliances

If the system detects unexpected input power, it interprets this as a potential malfunction. Additionally, incorrect supply voltage is identified and reported as a malfunction.

Equipment Room Flooding and Automatic Drainage

If Poolmatix detects water leakage into the equipment room, it activates the flood pump and promptly notifies the user.

Simultaneously, it shuts off the pool equipment to prevent its damage.

Anti-Frost Protection

Has frosty winter weather arrived before you could winterize your pool?

The anti-frost protection functionality will continue flushing the pool piping to prevent it from freezing.

3.4. Service and Maintenance Functionalities

Poolmatix completely transforms the way swimming pools are installed, used and maintained.

The service functionalities of the system provide users with timely notifications about any issues and the necessary actions to take. Diagnostics and many service interventions can be performed remotely.

These functionalities help save costs on pool care and maintenance and reduce the risks of potential damage to pool technology.

Poolmatix opens up entirely new opportunities in pool maintenance and care services.

Remote Configuration and Control

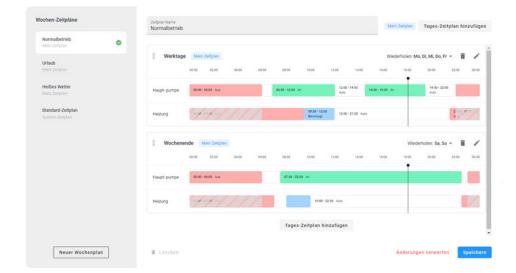
The entire pool configuration is set up in the iXfield service application using a simple user interface.

The control logic automatically adapts to the individual pool configuration. Changes to the settings and configuration can be made remotely.

User applications automatically update to reflect the pool configuration and available functions. All pool functions and settings can be controlled through the user applications.

This enables the pool professional to check and adjust pool functions without the need to travel to the site.

Time Schedules



The user applications include time schedules for heating, filtration, and chemical water treatment.

For example, users can set preferred and undesired running times, dosing times, or agent dosing quantities.

Error Notifications

The user applications notify the user about pool malfunctions and necessary interventions. This enables the user to take the necessary actions promptly before the problem causes damage to the pool or poor water quality.

Remote Diagnostics and Operating History

The iXfield application stores and displays a detailed history of pool operation. Along with the ability to control the pool remotely, this gives them a powerful tool for remote diagnostics and setup.

Pool Operating Modes

One of several operating modes, such as Winterized or Maintenance, can be selected for each pool. The selection of the operating mode adjusts the operation of both the pool equipment and user applications. Only functions required for the selected operating mode remain operational.

By selecting the right operating mode, you can for example ensure that a specific pool appliance or function remains disabled until maintenance is performed.

Service Sequences



The user applications offer a number of predefined service sequences, allowing users to perform specific maintenance tasks using a simple "wizard" that takes them though the process.

For example, users can use the service sequences for electrode calibration, filter backwash, or testing of the pool technology.

Some service sequences can be executed remotely, without the need for access to the pool.

Complete Pool Information

The iXfield service application stores the history of pool events and service activities.

All settings, configurations, including photo documentation, are saved in a single place, helping pool professionals in servicing the pool.



Poolmatix Automatic Problem Detection Features

Examples of the Detected Problems and Malfunctions:

Water Flow

Water Flow	 Circulation pump input power out of range Circulation pump input power fluctuation Low water flow Unexpected water flow
Balancing Tank	 Tank level low Tank empty Automatic refill error
Heater	 Heater input power out of range Heater power supply error Heater communication error
Chlorinator	 Low water salinity Low water temperature Cell aeration detected Low chlorinator output Faulty electrolytic electrodes
Equipment Room	 Room flooding Room temperature too high
Agent Dosing	 Agent low Agent empty No response to dose pH too high pH too low ORP too high ORP too low Dosing limit reached

Installation of Pool Technology Components

5.1. Overview of Components

We recommend that you plan and prepare the entire pool technology and piping system in advance, depending on the configuration of your pool.

The following diagrams show typical components of your pool technology, Poolmatix components, and their locations.

Please follow these diagrams carefully when preparing the pool technology for the installation of the Poolmatix system.

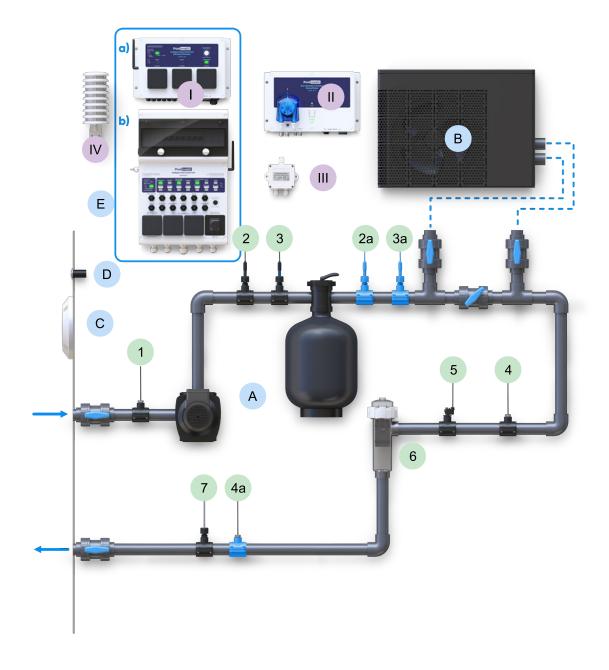
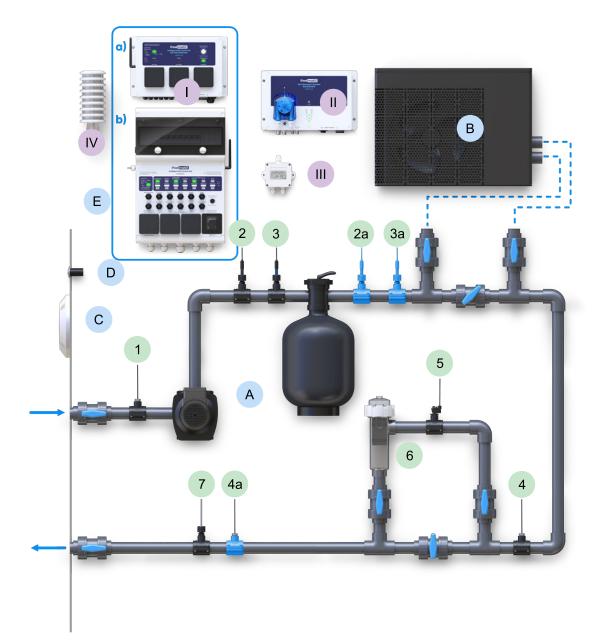


Fig. 1 Saltwater Pool Installation

Fig. 2 Saltwater Pool Installation with Bypass for the Electrolytic Cell. The Water Flow Sensor Must be Installed in the Bypass.





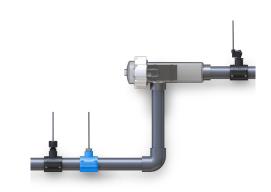


Fig. 3 Alternative Mounting Position of the Electrolytic Cell

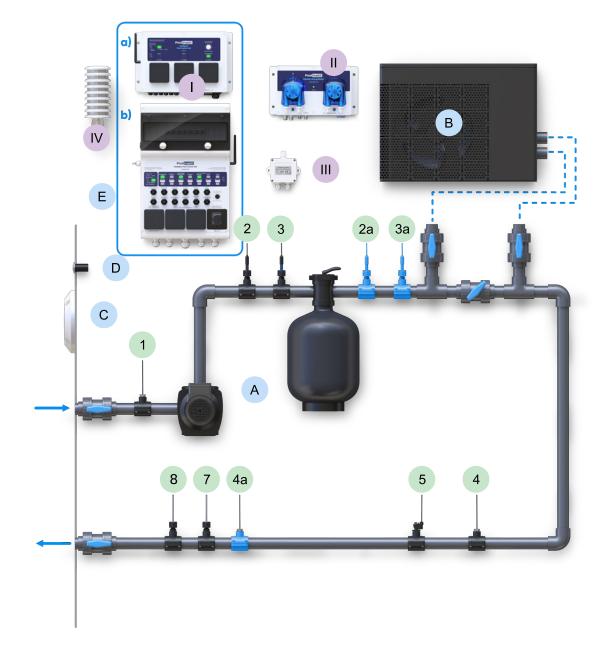


Fig. 4 Freshwater Pool Installation

Poolmatix Components:

 A Circulation Pump and Filter
 I Intelligent Control Unit
 Heat Pump (or other type of heating)
 Poolmatix Salt Chlorinator
 Pool Lighting
 Poolmatix Pushbutton Interface

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Pool Pushbuttons D Poolmatix Outside Temperature Sensor IV Counterflow Ε Alternative Mounting Position of the 1 Water Temperature Sensor (from Pool) 4a Water Temperature Sensor (into Pool) 2 5 pH Electrode Water Flow Sensor Alternative Mounting Position of the pH Electrolytic Cell (Saltwater Pool) 2a 6 Electrode 7 3 **ORP or Free CI Electrode** pH Agent Injection Dosing Valve Alternative Mounting Position of the ORP Chlorine Agent Injection Dosing valve 3a 8 Electrode (Freshwater Pool) Water Temperature Sensor (into Pool) 4



Poolmatix System Components

Main Control Units

	 PoolmatixPro main control unit (Integrated switchgear version) 9 x 1-phase 230 VAC 1 x 1-phase 230 VAC control output 3x potential-free control output 1 x 1-phase / 3-phase power output for counterflow (depending on product variant) 12 low-voltage sensor and peripheral interfaces Ethernet connectors, Wi-Fi antenna connector 	SDWM002 Choose 1-phase or 3-phase version.
	 Poolmatix main control unit (Compact version) 4 x 1-phase 230 VAC power output 6 low-voltage sensor and peripheral interfaces Ethernet connectors, Wi-Fi antenna connector 	CPCI
	 Poolmatix main control unit (Compact version) "Combo" version with in-built 10 g/ hour salt chlorinator 4 x 1-phase 230 VAC power output 6 low-voltage sensor and peripheral interfaces Ethernet connectors, Wi-Fi antenna connector 	CPC1C-10
Main Control Unit Accessories		

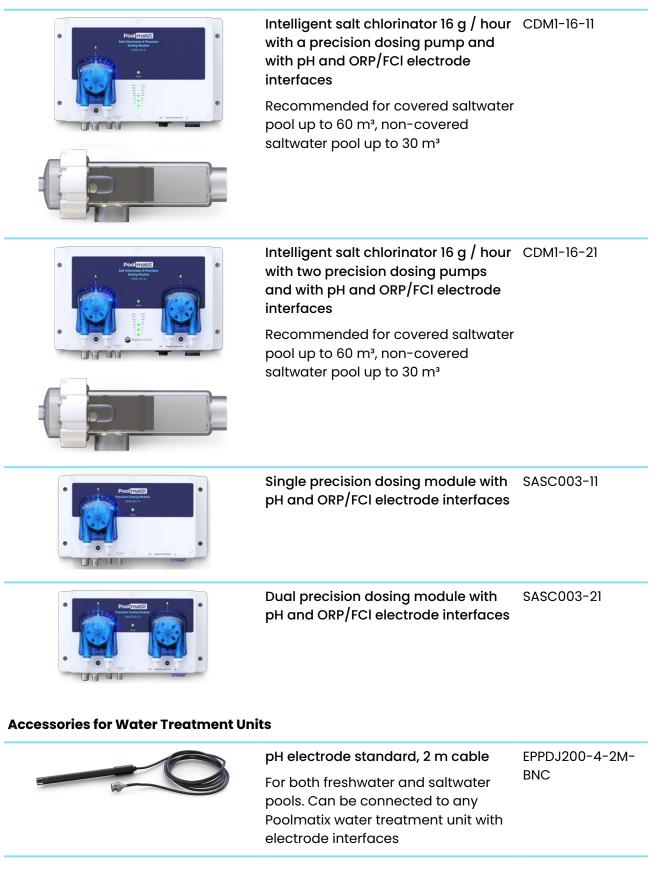


LTE connectivity set Includes M2M data SIM card 4G-CON-SET01

Main Control Unit Accessories

	Inline water temperature sensor, 1/2" thread, with cable and M12 connector One piece required for temperature control; one piece required for saltwater pools with salt chlorinator	DTSP01
Water Treatment Units	Inline flow sensor, 1/2" thread, with cable and M12 connector Recommended accessory	PFS-RID
	Intelligent salt chlorinator 10 g/hour with a precision dosing pump and with pH and ORP/FCI electrode interfaces Recommended for covered saltwater pool up to 40 m ³ , non-covered saltwater pool up to 20 m ³	CDM1-10-11
	Intelligent salt chlorinator 10 g / hour with two precision dosing pumps and with pH and ORP/FCI electrode interfaces Recommended for covered saltwater pool up to 40 m ³ , non-covered saltwater pool up to 20 m ³	CDM1-10-21

Water Treatment Units



Accessories for Water Treatment Units

	ORP electrode standard, 2 m cable For freshwater pools. Can be connected to any Poolmatix water treatment unit with electrode interfaces	EPRS2503-4-2M- BNC
	ORP electrode gold, 2 m cable For saltwater pools. Can be connected to any Poolmatix water treatment unit with electrode interfaces	EPRS2603-4-2M- BNC
- CO	Free chlorine electrode, 2 m cable For both freshwater and saltwater pools. Can be connected to any Poolmatix water treatment unit with electrode interfaces	EFCL265-4-2M- BNC
*	Inline electrode holder, ½" thread For 12 mm outside diameter electrodes	DP-PH01
	Inline injection valve, ½" thread For 6*4 mm dosing tube	DP-IF01
i	Barrel weight For 6*4 mm dosing tube	DP-BW01
	Dosing tube 4 m For all Poolmatix dosing pumps	PT-00-4M
	Saddle clamp for 50 mm pool pipes, ½" thread Used for the installation inline temperature sensors, flow sensor, electrode holders, injection valves	CS01-50

Accessories for Water Treatment Units



External / outdoor cylinder Wi-Fi / LTE antenna, SMA-N connector

ANT03-4G/W

For LTE or Wi-Fi signal improvement. Order a matching Wi-fi or LTE antenna extension cable



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:h ∕IA−
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:h P-SMA-
h P-SMA-
C

Accessories for Water Treatment Units

Accessories for Water Treatment Units				
	Pushbutton interface, for 2 pneumatic pushbuttons	PBIF02-2PN		
	Used to connect up to 2 pool pushbuttons with pneumatic pressure port			
	Compatible with PoolmatixPro only			
	Hydrostatic level sensor balancing tank with long sensor cable, junction box and M12 connector and cable	1.5 m depth, 8 m sensor cable SLS02-15-08M		
	Used to measure water level in the balancing tank Compatible with PoolmatixPro only	1.5 m depth, 2 m sensor cable SLS02-15-02M		
		0.5 m depth, 8 m sensor cable SLS02-05-08M		
		0.5 m depth, 2 m sensor cable SLS02-05-02M		
	Outdoor temperature sensor, 4 m cable	DTSO01		
	Used to measure outside temperature. Weather shield.			
	IPS / Fairland heat pump RS-485 connection set - 10 m cable, M12 plug, internal heat connection cable	HPC03-8P- M12-10M		
	Flood Sensor	FS01		
	Used to detect room flooding.			