Version 1.7

SDWM002

Installation and operation instructions

Poolmatix intelligent switchgear for pool automation

www.poolmatix.com

Important information for users

Thank you for purchasing the SDWM002 Poolmatix intelligent switchgear. Please read the following installation and operating instructions carefully to ensure that the product will serve you to your satisfaction, last long, and not cause any issues. Please follow the instructions in this manual carefully. Incorrect use of the product may result in product damage, property damage or even damage to health. Use of the product not according to the manual will void the product's warranty.

1. Product characteristics

SDWM002 is an intelligent switchgear for the control of leisure pools with Internet connection. It includes a Linux-based control unit, a set of power outputs for pool technology control and a set of communication interfaces for sensors, controllers and expansion devices.

SDWM002 is supplied together with necessary installation accessories.

Settings and controls are made through a mobile app iXmanager and web application iXfield.

1.1 Controlled devices and interfaces

The following table contains a list of power outputs and interfaces for connecting the peripherals to the SDWM002.

Power outputs 230 V

Load	Number of phases	Maximum switching load	Location and connection type
Main pump	Single-phase	Asynchronous motor maximum 1200 W	230 VAC socket on front panel, IP66
Poolmatix	Single-phase	Maximum 300 VA	230 VAC bayonet socket on front panel, IP66
Disinfection	Single-phase	Maximum 300 VA	230 VAC socket on front panel, IP66
Counterflow pump	Single-phase / three-phase	Single-phase asynchronous motor max. 2.2 kW / Three-phase asynchronous motor max. 3.2 kW	Terminal block inside the switchgear, cable gland
Heating	Single-phase	Heat pump / direct electric heater max. 3.2 kW	Terminal block inside the switchgear, cable gland
Heating control	Single-phase	Relay / contactor max. 200 VA	Terminal block inside the switchgear, cable gland
Light	Single-phase	LED or halogen bulb lighting max. 600 W	Terminal block inside the switchgear, cable gland
Auxiliary output AUX1 (e.g. flood pump)	Single-phase	Transformator oder Asynchronmotor max. 250 W, Wirkleistung Nettolast max. 1,2 kW	Terminal block inside the switchgear, cable gland
Auxiliary output AUX2 (e.g. active ventilation)	Single-phase	Transformer or asynchronous motor max. 250 W, resistive load max. 1.2 kW	Terminal block inside the switchgear, cable gland
Auxiliary output AUX3 (e.g. UV lamp)	Single-phase	Transformer or asynchronous motor max. 250 W, resistive load max. 1.2 kW	Terminal block inside the switchgear, cable gland
Auxiliary output AUX4 (e.g. solenoid valve)	Single-phase	Transformer or asynchronous motor max. 250 W, resistive load max. 1.2 kW	Terminal block inside the switchgear, cable gland

Spannungseingang 12-230 V

Type	Characteristics	Purpose	Location and connection type
Universal voltage input	12 ÷ 230 VAC	General input signal	Terminal block inside the swit-chgear, cable gland

SELV interfaces

Type	Purpose	Position
Temperatutre into pool	Digital temperature sensor of water entering the pool from the filtration system and heater	Waterproof M12 connection on front panel
Temperature from pool	Digital temperature sensor of water going from the pool to the filtration system and the heater	Waterproof M12 connection on front panel
Buttons	Interface connection for pool control buttons (e.g. counterflow button)	Waterproof M12 connection on front panel
Heating RS-485	Heat pump control via RS-485	Waterproof M12 connection on front panel
Poolmatix	Control of Poolmatix devices via RS-485	Waterproof M12 connection on front panel
RS-485	Control of other 3rd party devices via RS-485	Waterproof M12 connection on front panel
Analog	Spare analog input 0 ÷ 5 V, 0 ÷ 20 mA	Waterproof M12 connection on front panel
Aux D1	Spare digital input	Waterproof M12 connection on front panel
Aux D2	Spare digital input	Waterproof M12 connection on front panel
Level sensor	Analog sensor monitoring water level	Waterproof M12 connection on front panel
Room temperature and humidity sensor	Room temperature and humidity sensor	Klemmenblock in der Schal-ttafel, durch eine Kabelver-schraubung herausgeführt
WiFi antenna	External WiFI antenna (depending on product version)	RP-SMA F connector on the side of the cabinet
3G / 4G antenna (LTE)	External mobile antenna (depending on product version)	SMA-F connector on the side of the cabinet
Ethernet connector	RJ45 Ethernet connector (depending on product version)	RJ45 connector on the side to the cabinet
USB 2.0	USB device port	USB-A port inside the cabinet

1.2 Product picture and main components

1. Installation devices on the DIN rail
2. LED indicators
3. SELV peripherals interfaces
4. 230 V bayonet socket for Poolmatix devices
5. 230 V socket for 3rd party disinfector
6. Main pump
7. Cable glands for power supply and appliances
8. RJ45 Ethernet connector
   (corresponding version of the switchgear)
9. Antenna for mobile connection
   (corresponding version of the switchgear)
   or WiFi antenna
   (corresponding version of the switchgear)
10. Manual control

1.3 Technical parameters and operating conditions

Design	Plastic switchgear for indoor use	
Rated voltage	230/400 VAC + 10% / -15%, 50 ÷ 60 Hz*	
Switchgear rated current	20 A	
Insulation voltage	4 kV	
Input power of control part	18 W	
Main circuit breaker	3 x C20A*	
Power supply wires cross section	Terminals 1 - 2	0,5 – 4,0 mm^2
Power indicator	Multifunction LED	
Protection class	IP66 (when using recommended power plug)	
Operating temperature	-15 ÷ +45 °C	
Storage temperature	-20 ÷ +50 °C	
Relative humidity	20 ÷ 90% no condensation	
Operating position	Vertical	
Mounting method	By mounting on the wall	
Overvoltage category	III	
Verschmutzungsgrad	2	
Dimensions	335 x 470 x 130 mm (W x H x D)	
Weight	4,2 kg	
Applicable standards	EN 61439-1 ed. 2, EN 61439-3, EN 60950-1 ed. 2, IEC 62368-1, EN 301489-1, EN 301489-17, EN 61000-3-2, EN 61000-3-3, EN 300328, EN 301511, EN 301908-1, EN 301908-2, EN 301908-13, IEEE 802.3-2015, RoHS	

Power outputs

Maximum switching capacity	See table in chapter 1.	
Relay life	> 10^5 cycles	
Ausgangsanzeige	Multifunction LED	
Accuracy of measurement of electrical quantities	Current	±2 % plus ±25 mA
	Voltage	±2 % plus ±400 mV
	Active power	±4 % plus ±500 mW
	Apparent power	±5 % plus ±1 VA

Voltage input 12-230 V

Maximum input voltage	380 V DC / 270 V AC	
Minimum detected voltage	12 V DC / 12 V AC	
Isolation voltage / polution degree / against	Mains supply	4 kV / reinforced isolation
	Power outputs	4 kV / reinforced isolation
	SELV interfaces	4 kV / reinforced isolation

1.4 Note

The switchgear must be installed in accordance with the standards and regulations of the respective country and in accordance with the specific technical conditions and requirements.

The switchgear may only be installed by a person adequately qualified to operate and work on electrical equipment and who has properly familiarized herself with these with these installation and operating instructions.

The control electronics of the switchgear contains protection against overvoltage surges and interference pulses in the network. However, it is necessary to avoid the interfering factors of switching power supplies (contactors, motors, inductive loads, etc.) according to the relevant standards.

The main power supply of the switchgear must be protected by a 30 mA RCD.

Do not install the switchgear in the environment with excessive pollution and electromagnetic interference.

When installing the switchgear ensure sufficient air circulation so that the maximum temperature of the device is not exceeded during continuous operation and that the maximum ambient temperatures is not exceeded.

Do not install or operate the switchgear if it shows signs of damage. In this case, return the product to the distributor.

The switchgear contains a CR1220 battery cell for the time clock. This battery can be replaced only by the same type (CR1220) that is suitable for an operating temperature range of at least -15 ÷ +65 °C.

The replacement requires removal of the front cover of the distribution cabinet and may only be performed by a qualified electrical engineer.

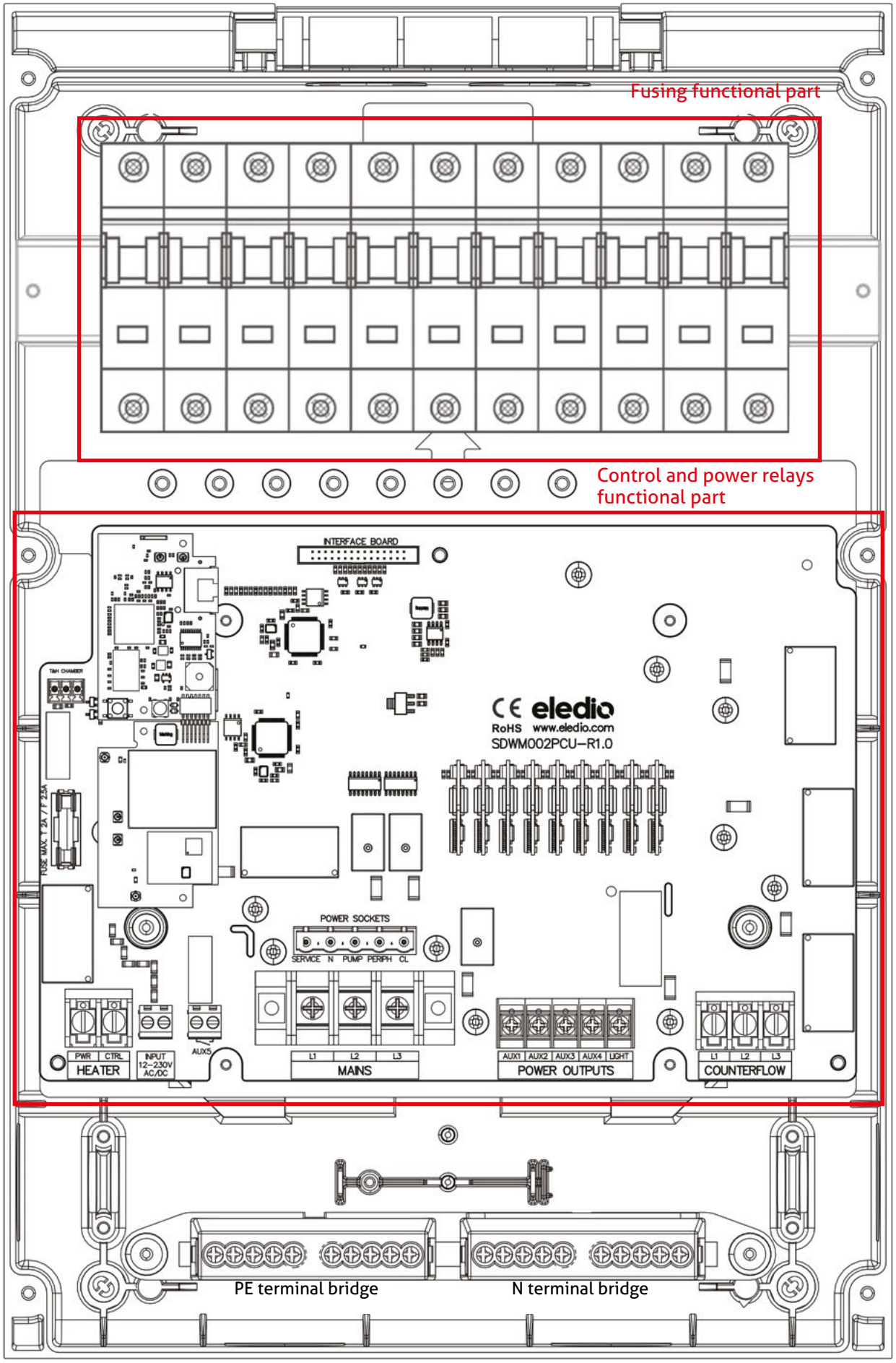
It is necessary to make earthing connection of all conductive external parts of the technology, including water, with the PE protective conductor.

2. Installation and commissioning

2.1 Installation process

1. Remove the switchgear front cover (removable part).
   a) Undo the 6 screws of the front cover.
   b) Remove the cover.
   c) Carefully disconnect the ribbon cable which connects the interface board on the front panel with the main board in the cabinet.
   d) Disconnect the cable harness with connector that connects the power sockets on the front panel to the main board in the cabinet.
   e) Disconnect the PE wire of the cable harness that connects the mains sockets on the front panel with the PE terminal bridge in the cabinet.
2. Fasten the main body of the switchgear to its desired place with screws.
3. Lead the cables of the pool technology through the cable glands and connect them to the electric terminals according to this table:

Verbindung	**Klemmblöcke**	**Klemmen, Verbindungsmethode**
Hauptversorgungsspannung	MAINS	L1, L2, L3, N terminal bridge, PE terminal bridge
Heating - heat pump	HEATER	PWR - Heat pump power supply CTRL - Coil of the heat pump control relay, if used N terminal bridge, PE terminal bridge
Heating - electric heater	HEATER	PWR - Heater power supply, N terminal bridge, PE terminal bridge
Heating - heat exchanger	HEATER	PWR - Heat exchanger circulating pump or solenoid, N-terminal bridge, PE-terminal bridge
Counterflow	CFLOW	L1, L2, L3, N terminal bridge, PE terminal bridge
Flood pump	POWER OUTPUTS	AUX1, N terminal bridge, PE terminal bridge
Lights	POWER OUTPUTS	LIGHT N terminal bridge, eventually PE terminal bridge
Optional devices	POWER OUTPUTS	AUX1, AUX2 oder AUX3, N terminal bridge, PE terminal bridge
12-230 V input	VDETECT	Connect voltage between both terminals


Fusing functional part
Control and power relays functional part
INTERFACE BOARD
eledio
RoHS www.eledio.com
SDWM002PCU–R1.0
POWER SOCKETS
SERVICE N PUMP PERIPH CL
PWR CTRL
HEATER
INPUT 12–230V AC/DC
AUX5
L1 L2 L3
MAINS
AUX1 AUX2 AUX3 AUX4 LIGHT
POWER OUTPUTS
L1 L2 L3
COUNTERFLOW
PE terminal bridge
N terminal bridge

4. Attach the room temperature and humidity sensor to the wall next to the switchgear. Make sure that no water can flow into the sensor.

5. Reattach the front plate of the switchgear.

a) Connect the PE wire (green-yellow) of the cable harness to the PE terminal jumper. Reattach the wiring harness connector that connects the sockets on the front panel to the main board in the cabinet.

b) Connect the ribbon cable connecting the signal board of the front to the main board in the cabinet. The ribbon cable must be folded in the cabinet so that it is that it is at a safe distance from power cables and terminals.

c) Place the panel back on the switchgear and screw it back on. When closing the cover, place the wiring harness of the mains sockets in the space over the PE and the N terminal bridges.

6. Connect the remaining devices into the sockets on the front panel.

a) Connect the power supply cable of the Poolmatix devices to the corresponding bayonet socket labeled Poolmatix.

b) Use compatible power plugs to ensure the IP66 protection degree.

c) Connect the devices to the matching sockets. Close unused sockets with seal covers.

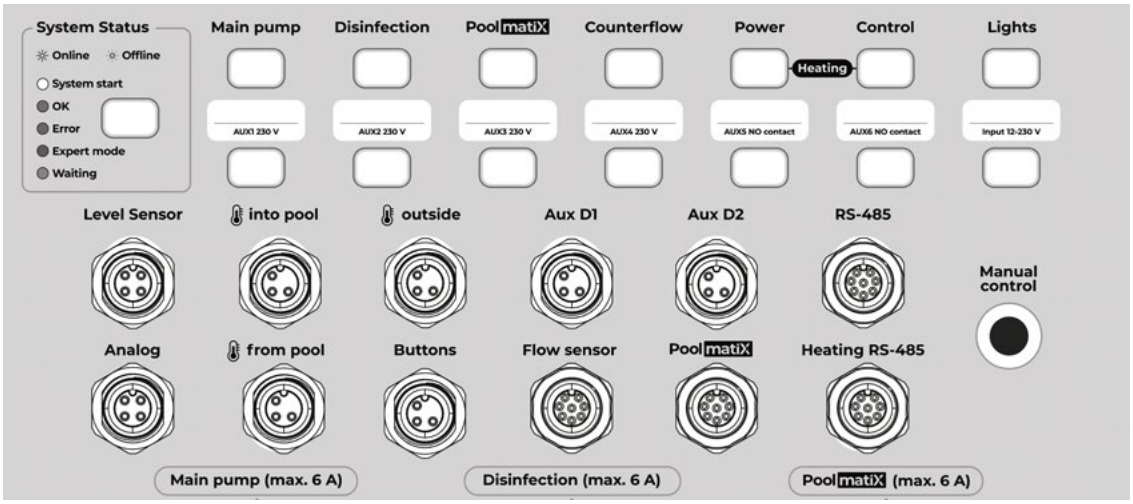
7. If you use a switchgear with Ethernet connection and a cable with RJ45 connector, connect this cable directly to the building's network and plug it into the connector on the side of the switchgear.

8. Connect the sensors to the connectors on the front panel.

a) Connect the matching water temperature sensors to the „Temperature from pool" „Temperature into pool" connectors.

b) Connect the flow sensor to the „Flow sensor" connector.

c) Connect the data cable of the Poolmatix devices to the „Poolmatix" connector.

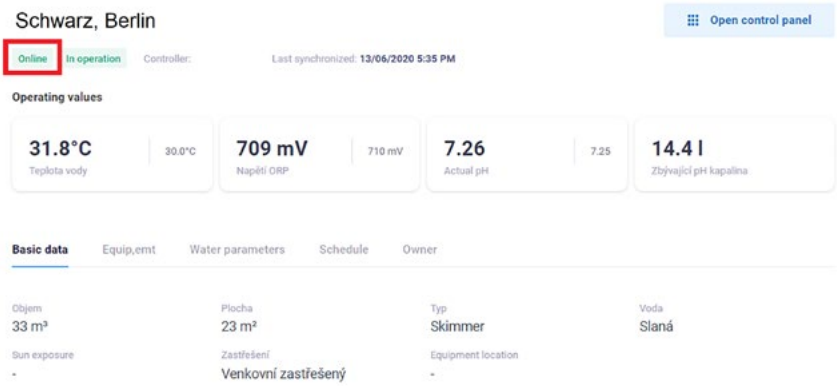


d) Connect other peripheral devices.

e) Cover unused connectors with waterproof caps.

2.2 Inbetriebnahme

1. Turn off all circuit breakers.
2. Switch on the power supply.
3. Switch on the main switch and the „Control" circuit breaker.
   a) The front panel LEDs will illuminate and a short beep will sound from the control unit.
   b) After approx. 1 minute after switching on, the second beep of the control unit sounds and signals the start of the pool control application signaling the start of the pool control application.
4. Switch on the remaining circuit breakers.
5. Find the switchgear serial number in the iXfield service application or connect to the switchgear with the cell phone application. Make sure that the switchgear is connected to the Internet.
6. In the iXfield service application, make sure that the pool parameters are set correctly.



7. If a countercurrent is installed, check if the motor rotates in the right direction (if the counterflow is pumping the water correctly).
8. Increase the target pool temperature above the current temperature. Wait until the main pump starts and the heater turns on. Reduce the target temperature to turn off the main pump and heater. If a heat pump is used for heating, set its thermostat to a temperature that is 1 to 2 °C higher than the maximum target pool temperature that the user requires. It is recommended to set the temperature to 32 °C.
9. Test the function of the lights and the counterflow from both the iXfield service application as well as from the control buttons and remote control, if this is installed.
10. Test the dosing module: Start the main pump. In the iXfield service application, press the „Dose 8 ml" key of the respective dosing pump and observe whether the liquid is dosed.
11. If the chlorinator is installed, perform this step. Start the main pump. Wait at least 15 minutes for the ORP reading to be taken. Set the target ORP value to a value higher than the current value. Make sure that the chlorinator turns on. Set the target ORP value to the desired value.
12. Testing other pool functions depends on your configuration. The process must be performed by a qualified technician.
13. Please refer to the separate document „Poolmatix user manual" for complete instructions for the operation of the pool.

3. Internet connection

To be able to use the advanced functions of the Poolmatix system, you must ensure a reliable Internet connection. The SDWM002 intelligent switchgear offers the following options for this connection:

- Mobile connection (relevant version of the switchgear).
- Direct connection to the Ethernet network via an external RJ45 connector (relevant version of the switchgear).
- WiFi with the possibility of connecting an external antenna (relevant version of the switchgear).

3.1 Connection via mobile network

The SDWM002 intelligent switchgear is can be supplied with a built-in mobile data modem. Please use a suitable antenna and follow the instructions for installing the mobile antenna according to the instructions in the „Poolmatix installation preparation" document.

The mobile communication module can be installed additionally to the switchgear. The installation must be performed by a specialist.

3.2 Direct connection to the Ethernet network

If Ethernet network is available in the room or vault where the pool technology is located, it is a simple and reliable way to connect the Poolmatix intelligent switchgear to the Internet.

To maintain the IP66 protection degree, the Ethernet cable must connected to the waterproof connector on the side of the switchgear.

Recommendations for installing the Ethernet cable from the main building to the underground pool technology shaft or room:

- To prevent possible electromagnetic interference, it is recommended to use a shielded cable (STP).
- We recommend laying the Ethernet cable and the power cables in separate protective ducts.

3.3 WiFI connection

If there is sufficient WLAN signal quality in the proximity of the SDWM002 intelligent switchgear, this type of connection can be used. is available, this type of connection can be used. To check the signal strength an ordinary smartphone with a suitable application can be used. When When selecting this connection and checking the signal strength, the following conditions must be considered:

1. It is recommended to install a separate WiFi AP for the pool to ensure a good signal at the location of the switchgear WiFi antenna.
2. A separate WiFi AP is also recommended to avoid possible loss of Poolmatix connectivity due to the home WiFi AP password change.
3. The signal in the garden or elsewhere outside the building in which the WiFi AP is located may fluctuate after closing the blinds or shutters. It is therefore necessary to test the test the signal quality in these situations.
4. With a WiFi antenna installed in the underground technology shaft, it is never possible to possible to ensure good signal from a source further outside the shaft.
   In such a such a case, you need to install a outside the antenna the shaft at a sufficient height above the ground (at least 20 cm). You can also use an external antenna that can be magnetically attached e.g. to the heat pump cabinet.

The length of the cable to the WiFi outdoor antenna is limited to 9 m. A longer cable will result in a loss of signal strength. It is recommended to lay the cable in a separate protection, i.e. separate from the power cables.

3.3.1 WiFi settings

The connection of the intelligent switchgear to the Internet via WiFi is set up via the switchgear's web configuration interface.

To access this web interface, you need to connect to the switchgear's own WiFi network. This network is visible after about 30 seconds after the switchgear is switched on and is only visible if the switchgear is not connected to another IP network (either via the Ethernet interface or via a previously set up WiFi network).

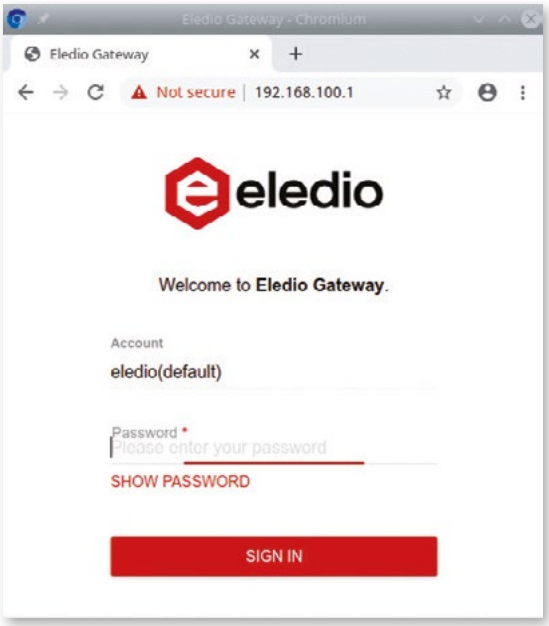
If you want to connect the switchgear to a new WiFi network while it has previously been connected to an existing WiFi, the switchgear must be prevented from from connecting to the previous network. This can be done, for example, by temporarily switching off the WiFi AP of the previously connected WiFi network.

If the switchgear cannot connect to the previously connected WiFi, you can connect to its own WiFi using your computer or a smartphone.

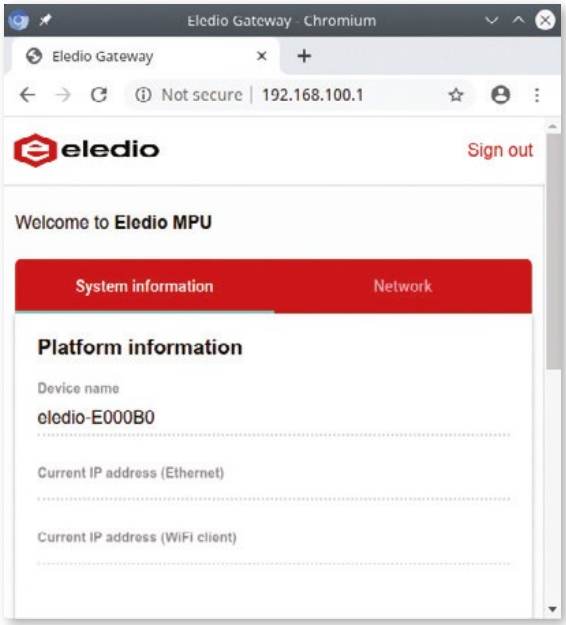
If no device is connected to the switchgear's own WiFi network for five minutes, the network disappears. To turn on the WiFi network again, the switchgear must be restarted. To connect to the switchgear's WiFi network, you must know the know its network name and password. Please follow these steps:

1. Connect to the eledio-xxxxxx WLAN network via a computer or smartphone, where xxxxxx is the name of the network (last 6 characters of the WLAN MAC address, without the dots). To create a connection, you must enter the so-called Eledio password, which is printed on the label of the device.

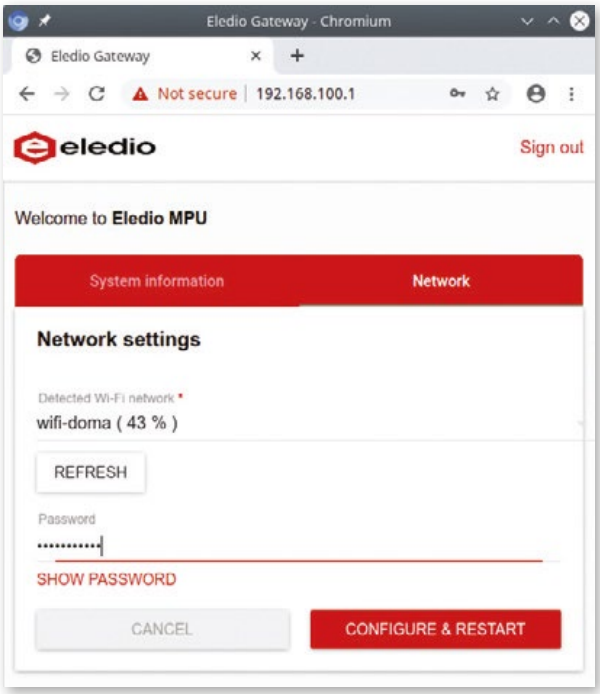
2. Connect to the switchgear web interface by typing this web address in your browser: http://192.168.100.1.



3. Log in to the interface using the Eledio password.

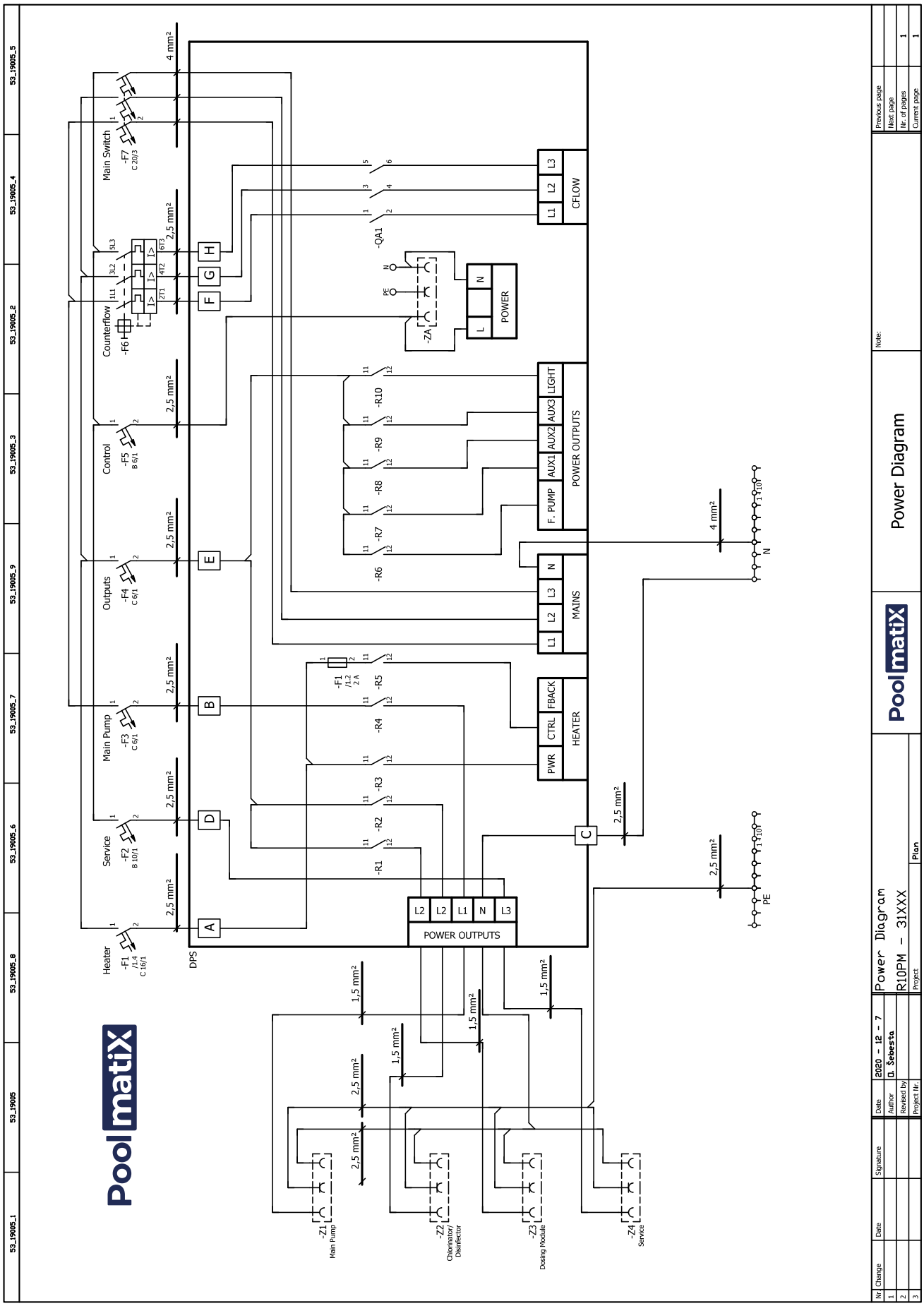


4. Click „Network“ on this page.

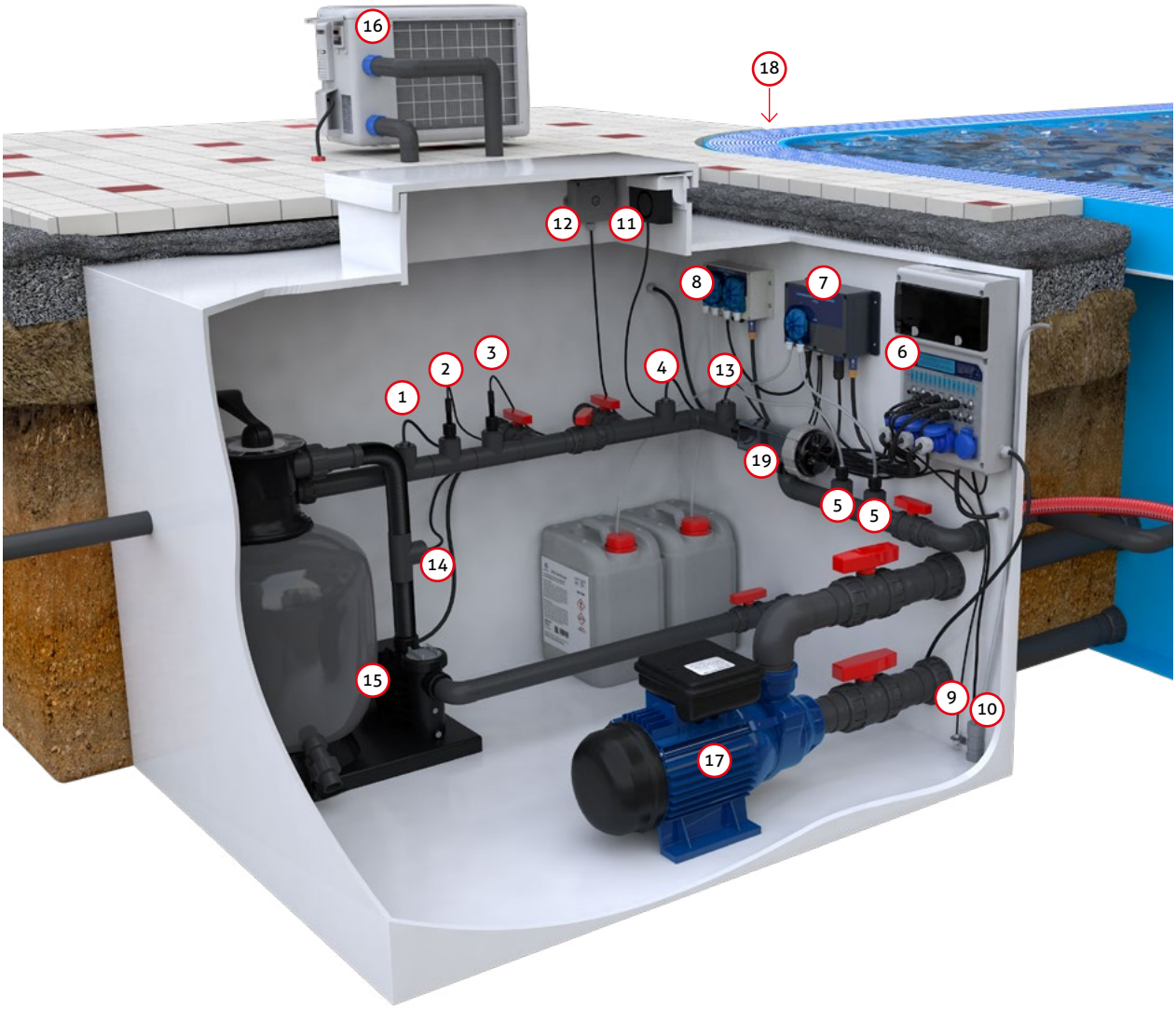


5. The switchgear searches for available WLAN networks and displays a list of them. You can refresh the list by clicking the „Refresh“. Select the WiFi network you want the switchgear to connect to and enter the WiFi password. Click the „Configure & Restart“ button. The device will restart in approx. 30 seconds.

Switchgear connection diagram



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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