# ECOSAN PDC L

## DHW instant production for HEAT PUMPS

### DESCRIPTION

**ECOSAN PDC L** is a hydraulic unit for the instantaneous production of domestic hot water dedicated to collective systems (apartment blocks, sports centres, hotels, shopping centres, etc.) equipped with sanitary recirculation and designed to work with low primary flow temperatures. **ECOSAN PDC L** can be combined with heat pump-heated puffers thanks to the possibility of keeping the stored technical water at a temperature of 50°C or lower. The flow temperature to the domestic hot water distribution line is regulated by means of a DIAMIX L electronic mixing valve (with the possibility of performing the thermal anti-legionella disinfection cycle of the recirculation loop if required). Circulation on the primary circuit is ensured by a latest-generation smart pump capable of maintaining a constant temperature differential between flow and return by modulating the flow rate. Using the keypad and the display on the mixing valve, it is possible to change the temperature of the hot domestic water supply and to access all the parameters and control functions.

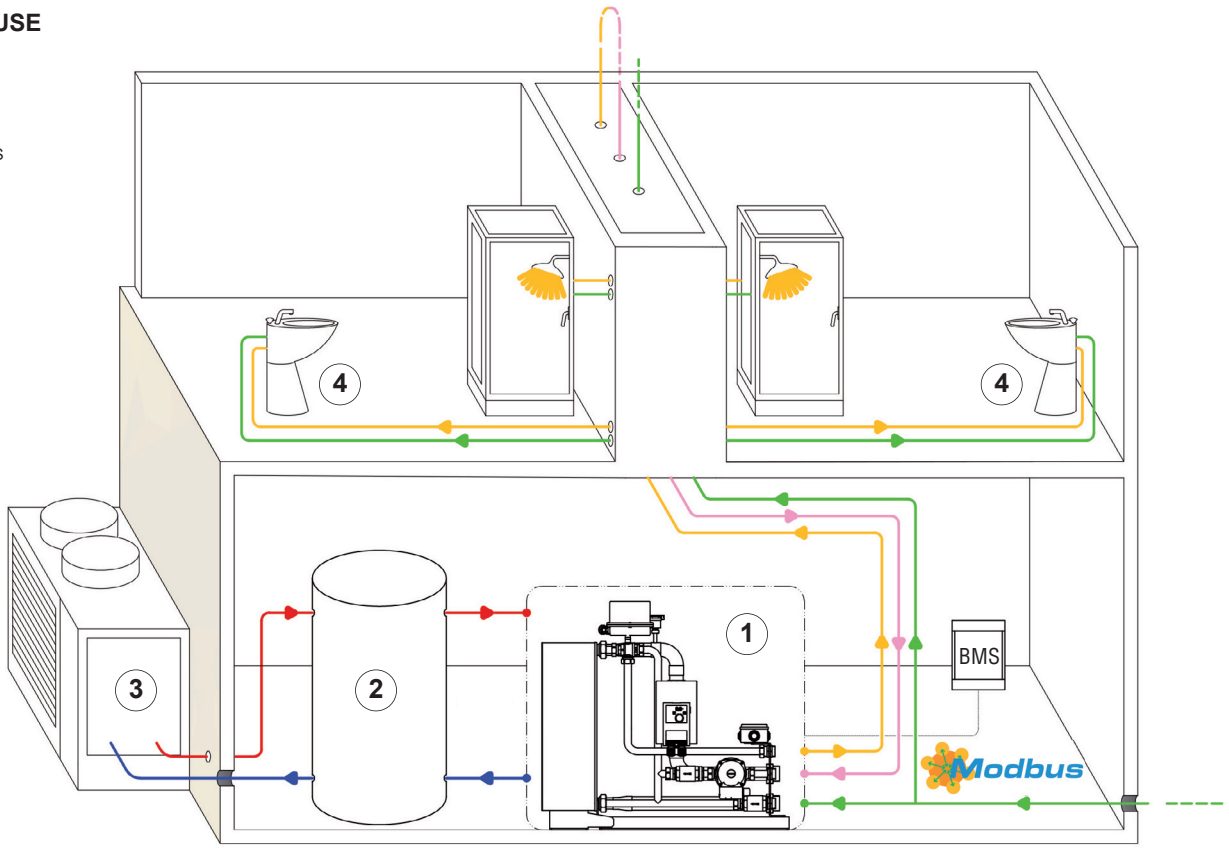
- **Puffer temperature ≤ 50°C**
- **Nominal power 100 kW or 150 kW**
- **Electronic mixer for DHW temperature control**
- **Domestic recirculation line with programmable anti-legionella thermal disinfection**
- **Recirculation return temperature control with PWM modulation of the pump**
- **Bedplate installation**
- **Comparato's LegioTool software for communication between PC and mixing valve with data downloading**
- **Remote management with Modbus-RTU protocol**

Modbus

**ECOSAN PDC L** is equipped with a Modbus-RTU interface for remote device management and connection to modern Building Management Systems (BMS) The Modbus address table can be downloaded from www.comparato.com.

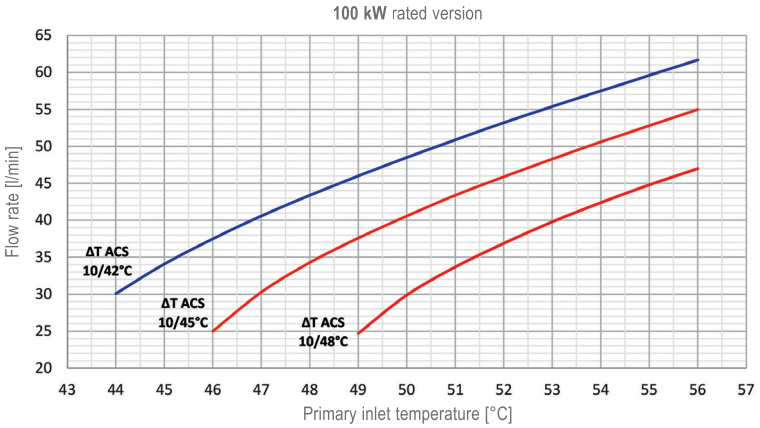
### EXAMPLE OF USE

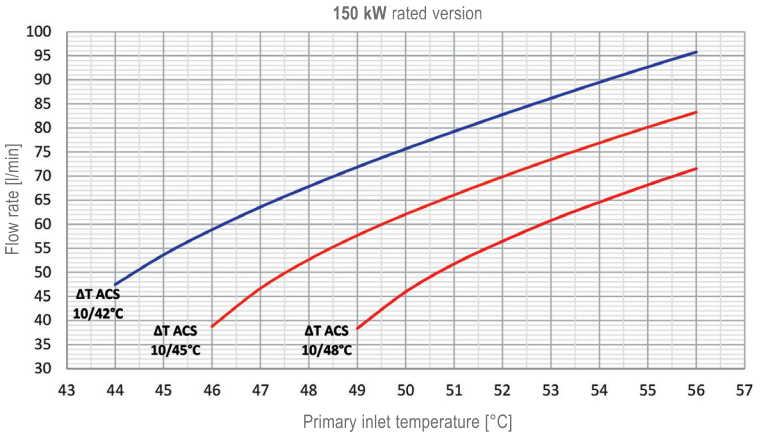
1. ECOSAN PDC L
2. PUFFER
3. HEAT PUMP
4. DOMESTIC UNITS



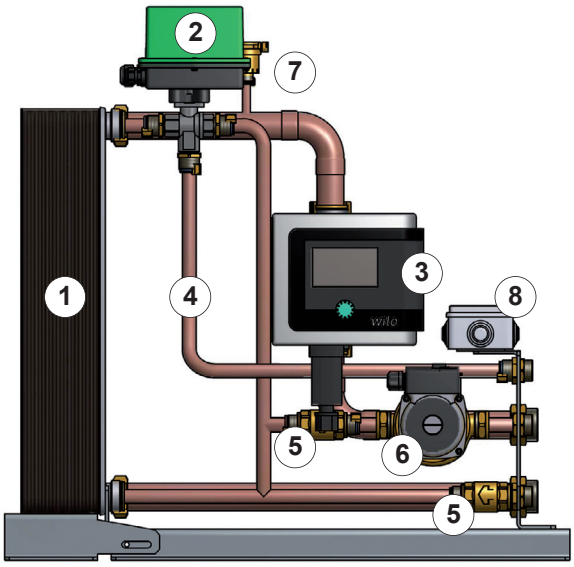
# ECOSAN PDC L

## DOMESTIC HOT WATER PRODUCTION

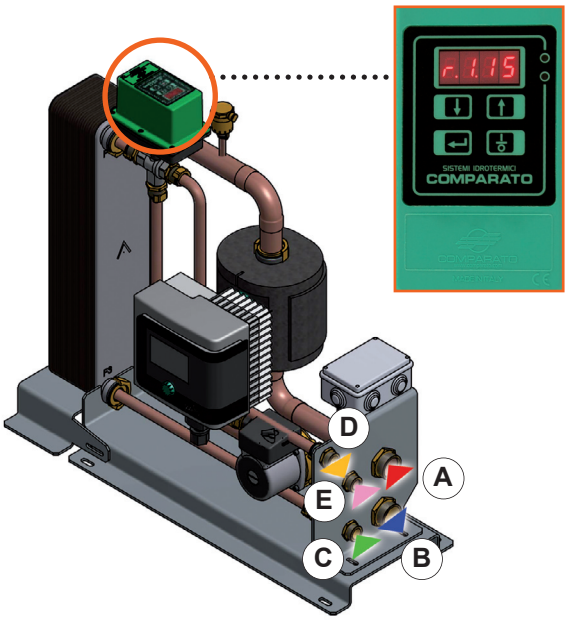



## COMPONENTS AND FLOWS




KEYBOARD AND DISPLAY

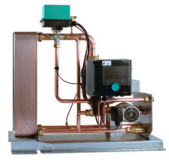



**1** : Braze welded plate exchanger
**2** : Electronic mixing valve DIAMIX L
**3** : Smart electronic pump
**4** : Temperature probe for domestic hot water
**5** : Non-return valve
**6** : Domestic hot water recirculation pump
**7** : Automatic venting
**8** : Electrical box

**A** : Technical water flow from puffer
**B** : Return technical water to puffer
**C** : Domestic cold water inlet
**D** : Domestic hot water outlet
**E** : Recirculation input

# ECOSAN PDC L

## VERSIONS AND CODES

| Version | Rated power with primary 50°C | Code |
|---|---|---|
|  | 100 kW | ECOSL100 |
| | 150 kW | ECOSL150 |

## ACCESSORIES

| ACCESSORY | DESCRIPTION | CODE |
|---|---|---|
|  | Modulating domestic hot water recirculation pump with PWM control | **CIRPDC** |
|  | RS485 – USB interface | **USBMOD** |

## OPERATION

- **Domestic hot water regulation**

  The delivery temperature of domestic hot water is controlled by the PID regulator integrated in the mixing valve: by means of the special probe, it detects the temperature of the water at the outlet of the valve and modifies the position of the ball inside the 3-way valve, appropriately mixing the hot inlet with the cold inlet and thus maintaining the setpoint temperature.

- **Programming according to operating time slots**

  It is possible to set time slots in which **ECOSAN PDC L** is active.

  Programming can be done daily or weekly.

  - Daily programming: up to 7 programmable time slots that repeat each day.
  - Weekly schedule: 1 time slot per day that can be programmed differently for 7 days.

- **Temperature differential control between primary flow and return**

  This function, managed by the smart electronic pump, measures the temperature difference between the flow of technical water from the puffer and its return, in order to keep the calculated value constant by modulating the flow rate on the primary circuit of the plated heat exchanger. In this way, the heat exchange is regulated according to the load required for instantaneous domestic hot water production and the stratification within the puffer is optimised, thus improving the efficiency of the system.

- **Domestic recirculation management with programmable anti-legionella thermal disinfection**

  Once the time for the disinfection cycle has been programmed, it is possible to set a daily repeat or choose a day of the week. The mixing temperature control is disabled and the 3-way valve rotates fully on the hot water inlet from the plated heat exchanger, sending it directly to the system. The temperature is measured by the probe located on the return of the circulation loop.

| TEMPERATURE | CYCLE TIME |
|---|---|
| Over 70°C | 30 minutes |
| Between 65°C and 70°C | 1 hour |
| Between 60°C and 65°C | 2 hours |
| Between 57,5°C and 60°C | 3 hours |
| Between 55°C and 57,5°C | 4 hours |

**WARNING: The thermal anti-legionella disinfection function can only be activated if the temperature of the technical water stored in the puffer is above 60°C.**

Disinfection times are automatically determined according to the characteristics of the system: the duration of the cycle depends on the temperature detected by the probe on the return of the recirculation loop following the table above. This makes it possible to optimise the realisation of the cycle with important benefits in terms of energy savings.

ANTI-LEGIONELLA DISINFECTION DATA STORAGE

This function allows sensitive data on disinfection cycles to be stored. Each time the cycle is started, the following are stored:

• the date [day/month/year] that the cycle was started

• cycle time [hours/minutes]

• maximum temperature [°C] detected by the anti-legionella probe

• minimum temperature [°C] detected by the anti-legionella probe

• average temperature [°C] detected by the anti-legionella probe

• status at end of cycle

The memory can hold the information for 52 disinfection cycles, after which the data is overwritten starting with the oldest. The data remains in memory even if the card is not powered thanks to the included buffer battery. All stored data can be downloaded from the memory of the mixing valve via RS485 serial with Modbus-RTU communication protocol.

- **Recirculation return temperature regulation** - it requires PWM pump accessory cod. CIRPDC

  This function regulates the pump flow rate by modulating the PWM signal (defined by DIN IEC 60469-1) to keep the temperature difference between the flow and return of the circulation loop constant. In this way, it is possible to increase efficiency in the management of the sanitary recirculation network while minimising energy losses due to heat losses. The return temperature of the recirculation is detected by the same probe used to manage the disinfection cycle. The value of the temperature differential ΔT that the system must maintain between the flow and return of the recirculation is programmable.

- **Remote management – Modbus RTU**

  **ECOSAN PDC L** is equipped with a Modbus-RTU interface and it is possible, using the RS485 serial connection, to send commands, receive operating status information and download data from stored thermal disinfection cycles. Using the RS485-USB interface device (accessory) and the Comparato LegioTool software, it is possible to connect locally via PC.

  **Management Software – LegioTool**

  Comparato's LegioTool management software (downloadable from www.comparato.com) has a simple, complete and intuitive interface with all functions of the mixing valve.




The information stored for each disinfection cycle can be displayed in tabular, graphical form or saved in .xls or csv format.

# ECOSAN PDC L

## TECHNICAL FEATURES

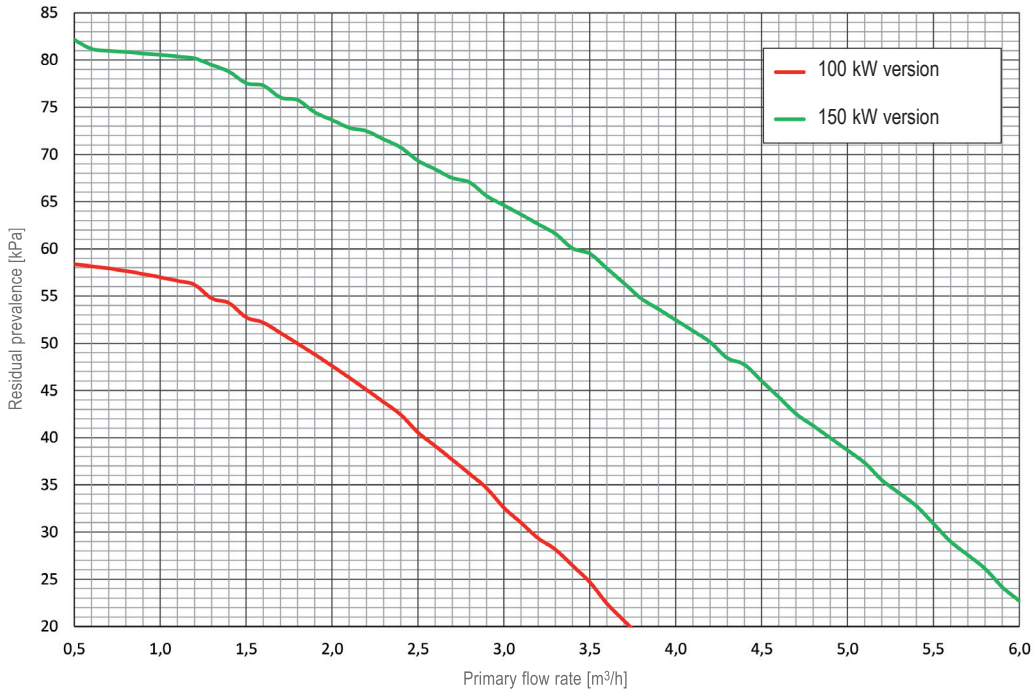
| PRIMARY CIRCUIT | 100 kW VERSION | 150 kW VERSION |
|---|---|---|
| Type of fluid | water VDI 2035 | water VDI 2035 |
| Nominal temperature | 50°C | 50°C |
| Maximum temperature | 90°C | 90°C |
| Maximum pressure | 6 bar | 6 bar |
| Nominal rate | 3,2 m³/h | 4,5 m³/h |
| Maximum flow | 4,0 m³/h | 6,0 m³/h |
| **DOMESTIC HOT WATER LINE** | | |
| Type of fluid | water | water |
| Maximum temperature | 80°C | 80°C |
| Maximum pressure | 6 bar | 6 bar |
| Minimum flow | 6 l/min | 9 l/min |
| Nominal rate | 40 l/min | 60 l/min |
| Maximum flow (1) | 64 l/min | 110 l/min |
| **PIPELINES** | | |
| Material | copper | copper |
| Primary side | Ø 35 mm | Ø 42 mm |
| Secondary side | Ø 18 mm | Ø 22 mm |
| **HYDRAULIC CONNECTIONS** | | |
| Material | brass | brass |
| Primary side | G 1"1/4 | G 1"1/2 |
| Secondary side | G 3/4" | G 1" |
| **INSULATION** | | |
| Heat exchanger | expanded polyethylene | expanded polyethylene |
| **POWER SUPPLY** | | |
| Voltage | 230V ± 10% | 230V ± 10% |
| Frequency | 50 Hz | 50 Hz |
| Maximum power consumption | 230W | 230W |
| **MIXING VALVE** | | |
| Operating time | 12s | 12s |
| Temperature probes | contact-type NTC 10kΩ | contact-type NTC 10kΩ |
| Electronic adjuster | PID | PID |
| Adjustment range | 30°C ÷ 65°C | 30°C ÷ 65°C |
| Precision | ± 1°C | ± 1°C |
| Type | ball valve | ball valve |
| Nominal diameter | DN15 | DN20 |
| **USAGE** | | |
| Installation | indoor environments | indoor environments |
| Room temperature | 5°C ÷ 55°C | 5°C ÷ 55°C |
| Relative humidity | 25% ÷ 85% | 25% ÷ 85% |
| **WEIGHT** | | |
| Dry weight | 45 Kg | 55 Kg |

1 flow rate corresponding to a pressure drop of 1,5 bar

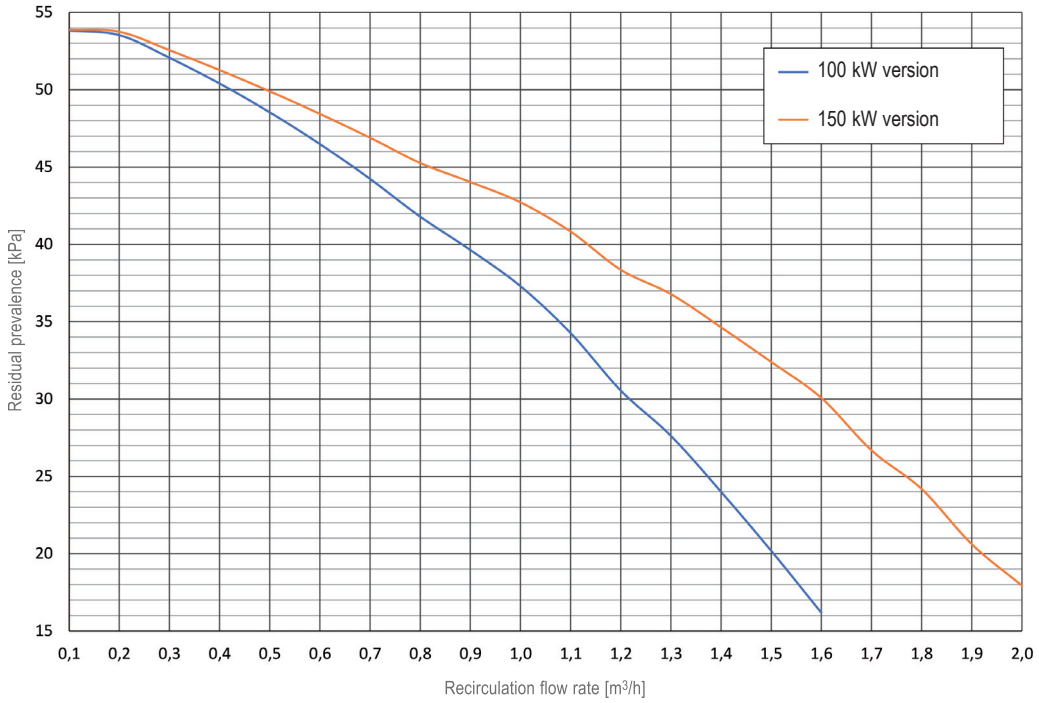
ECOSAN PDC L

## TECHNICAL FEATURES

- **Primary circuit residual prevalence**




- **Residual prevalence of domestic hot water recirculation**



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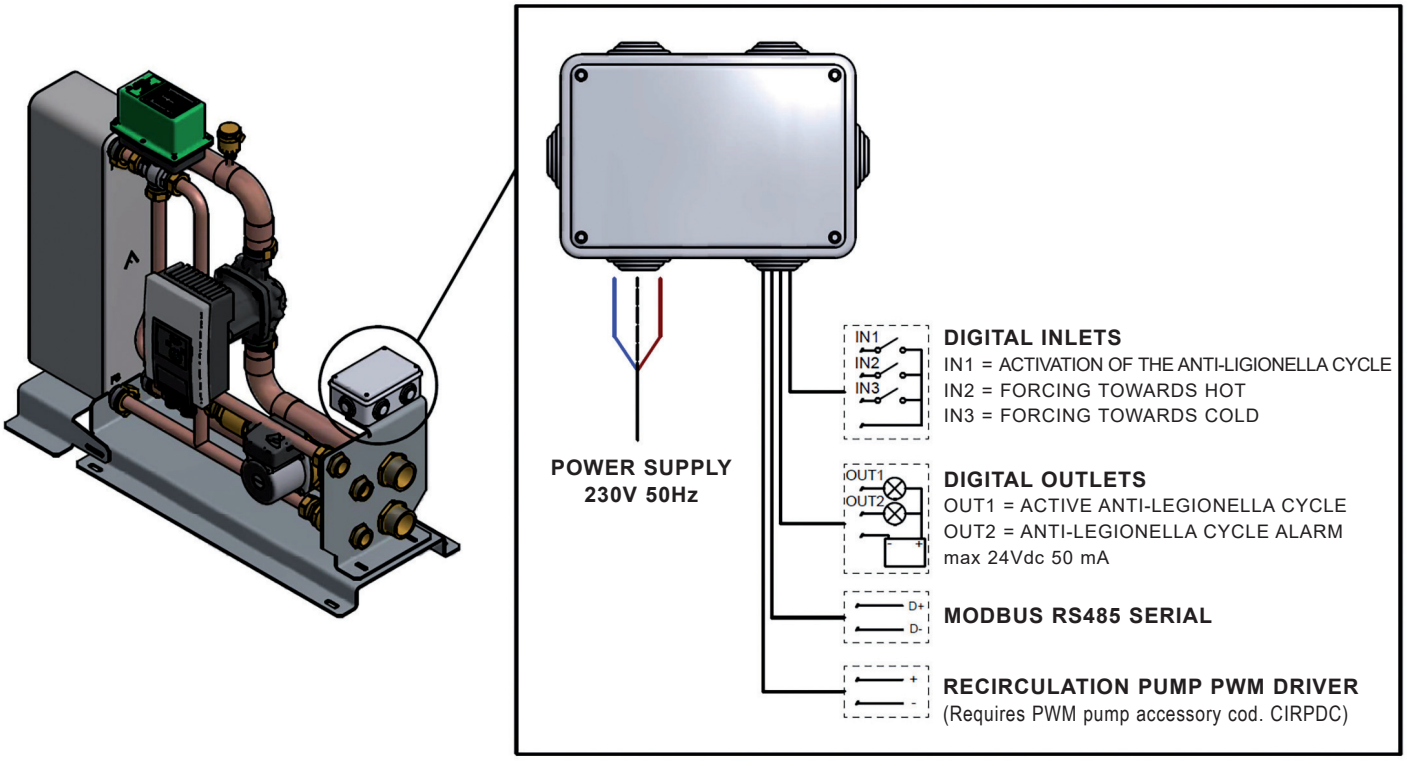
## ELECTRICAL CONNECTIONS



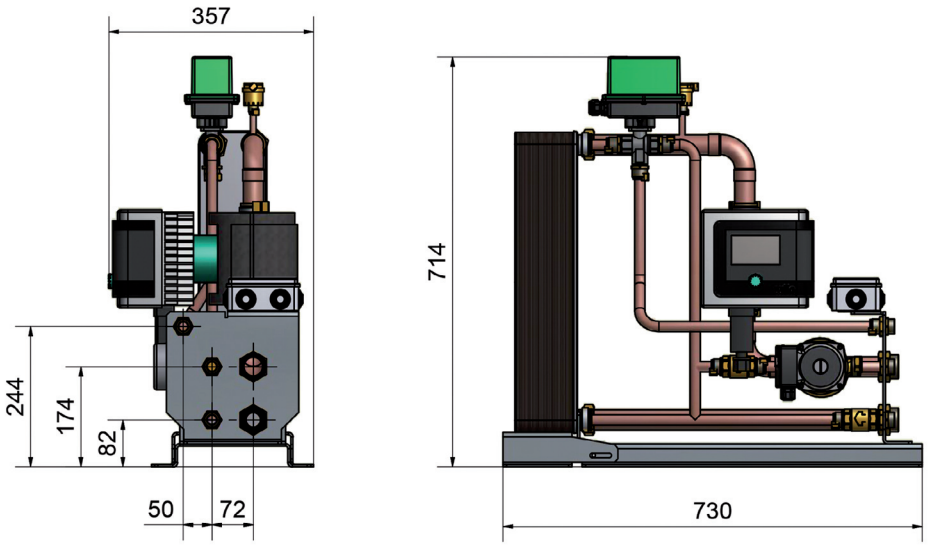

## CERTIFICATIONS

**EC Machinery Directive**
2006/42/EC.
**EC Low Voltage Directive**
2006/95/EC of 12 December 2006.
**EC Electromagnetic Compatibility Directive**
04/108CEE: 2004, 92/31/CEE: 1992 93/68/CEE: 1993 93/97/CEE: 1993.

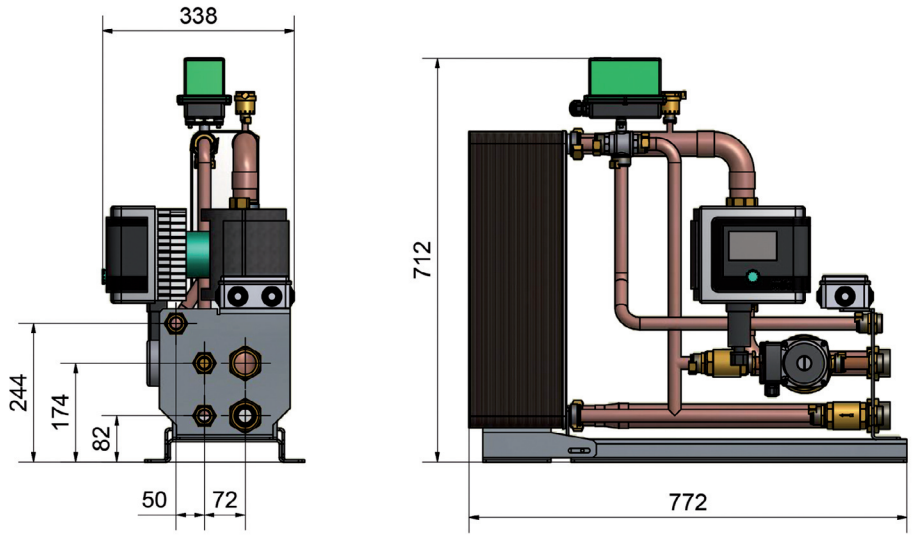
# ECOSAN PDC L

## OVERALL SIZE

• **ECOSAN PDC L • 100 kW version**




• **ECOSAN PDC L • 150 kW version**




## EXAMPLE OF SPECIFICATIONS

**ECOSAN PDC L HYDRAULIC UNIT** for instantaneous domestic hot water production for collective systems with domestic hot water recirculation and heat pump generator. Nominal output 150 kW, anti-legionella thermal cycle function, basement installation, complete with: • brazed plate exchanger • electronic mixing valve • electronic smart primary pump • DHW temperature probe • recirculation temperature probe • non-return valves • electrical box. Primary and DHW copper piping Ø42mm Ø22mm respectively, maximum operating pressure 6 bar, maximum temperature 90°C, primary hydraulic connections G1"1/2 M, DHW and recirculation G1", power supply 230V 50Hz, maximum power consumption 230W, size 772x712x338mm

Brand: **COMPARATO**

Code: **ECOSL150**

**UPDATED DATA SHEETS AVAILABLE AT www.comparato.com**