TECHNICAL SPECIFICATIONS

# OPE 25/32-10-180

OPE 10 high-efficiency pump




MODEL NAME

## OPE 25/32-10-180

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Cable length and terminals can be modified on request.

IDENTIFICATION AND APPLICATION

# Product overview

The OPE series circulation pumps with intelligent frequency converters (hereafter referred to as electric pumps) comply with standard Q/SG 602.

The motor stator is fully shielded, and the rotating parts are immersed in clean water, which provides cooling and lubrication during operation. The pump shielding sleeve has a thin-wall structure that completely shields and isolates the iron core inside the motor from the water, eliminating the conventional mechanical seal and resolving the water leakage problem associated with conventional pump seals.

The rotating parts use wear-resistant ceramic bearings and shafts, lubricated by clean water, which cools the motor and reduces noise. Full-load operation is generally maintenance-free when the pump is used correctly.

## 1.1 Model description

| OPE 25-10-180A | |
|---|---|
| OPE | Intelligent variable-frequency circulation pump |
| 25 | The nominal diameter of the suction inlet and discharge outlet is 25 mm |
| 10 | Maximum head: 10 m (head at a flow rate of 0 m³/h) |
| 180 | Pump body length from inlet to outlet: 180 mm |
| UN | Power display |

## 1.2 Product application

This product series is designed for heating or cooling systems and can be used in domestic hot-water circulation systems, heating, ventilation and air conditioning (HVAC) systems, and other systems, such as:

- Underfloor heating water mixing system
- Hot-water circulation system for air heating
- Heating, ventilation and air conditioning (HVAC)
- Boiler system
- Heat pump
- Micro combined heat and power (CHP)

FEATURES AND APPLICATION

# Operating conditions

**1.3 Main features**

• Energy efficiency index EEI ≤ 0.23

• Permanent-magnet motor with intelligent frequency conversion control
• The controller and motor form one unit; the complete pump has a compact structure and small installation dimensions.

• Optional quick-connect cable structure for convenient installation and maintenance

• Low noise, no leakage

## 1.4 Operating conditions

• Fluid temperature: -20 °C to +95 °C
• Ambient temperature: -20 °C to +60 °C

• Comparison of fluid and ambient temperatures

| Maximum ambient temperature (°C) | Maximum liquid temperature (°C) |
|---|---|
| 55 | 70 |

• Maximum system pressure: 1.0 MPa (10 bar)

• Protection rating: IP44

• Rated voltage/frequency: 230 V, 50/60 Hz

• Temperature resistance class: F

• Fluid characteristics: clean, free from solids and mineral oils, non-toxic, chemically neutral, with properties similar to water.

• To prevent cavitation noise and damage to the pump bearings, maintain the following pressure at the pump inlet.

| Liquid temperature (°C) | 85 | 90 | 110 |
|---|---|---|---|
| Inlet pressure | ≥ 0.5 m head | ≥ 2.8 m head | ≥ 11 m head |
| | ≥ 0.05 bar | ≥ 0.27 bar | ≥ 1.08 bar |

## 1.5 Pumped fluid

• Heating or cooling water

• Ethylene glycol solution with solubility ≤ 50%

• Fluid pH value: 6.5 to 8.5

• Solid particle volume content must not exceed 0.1 per unit volume; particle size must not exceed 0.2 mm

• Filter mesh count must be at least 55

INSTALLATION AND FUNCTIONS

# Technical parameters

### 1.6 Pump installation requirements

• Install the pump with the motor shaft parallel to the horizontal plane.
• Do not run the pump without water.
• Before installation, ensure the pipework is in good condition and clean: impurities such as welding slag and dirt could damage the pump.
• Install the pump where maintenance and replacement can be carried out conveniently.

## 1.7 Technical parameters

| Parameters | Specification description |
|---|---|
| **Electric pump type** | Centrifugal circulation pump (non-self-priming) |
| **Power supply (AC/DC)** | Alternating current |
| **Voltage** | 230V(-10%~+10%) |
| **Frequency** | 50/60 Hz |
| **Input power** | 25~180W |
| **Speed range** | 2700-5000 |
| **IP protection rating** | IP44 |
| **Insulation class** | Class F |
| **EEI** | ≤0.23 |
| **Noise** | ≤45dB |
| **Maximum head** | 10 metres |
| **Maximum flow rate** | 8 m³/h (DN25) |
| **Corresponding pipe diameter (thread)** | DN25(G1.5)/DN32(G2) |
| **Rotor rotation direction** | Clockwise from the control box towards the pump body |

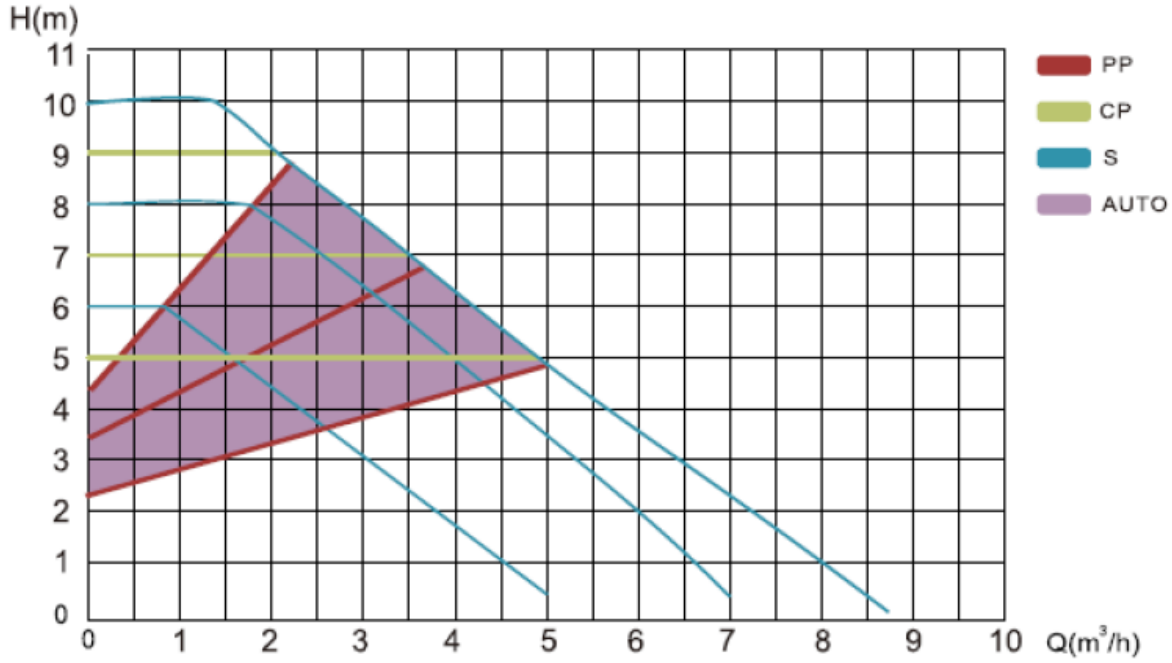
**2 Product features**

| NO. | Function | Function description |
|---|---|---|
| 1 | Operating/control mode | PP1-3/CP1-3/S1-3/AUTO |
| 2 | Start-up | Maximum torque at start-up |
| 3 | Display | LED digital display, error-code display |
| 4 | Protection function | Overcurrent, overvoltage/undervoltage, phase loss, locked rotor and overtemperature protection |

PERFORMANCE

# Hydraulic performance curve

## 2.1 OPE 25/32-10-180




| Parameter | OPE 25-10-180 | OPE 32-10-180 |
|---|---|---|
| DN (mm) | DN25 | DN32 |
| Thread / | G 1.5 | G2 |
| Maximum head (M) | 10 | 10 |
| Maximum flow rate (m³/h) | 9 | 9 |
| Rated flow rate (m³/h) | 4 | 4 |
| Rated head (M) | 6 | 6 |
| Maximum power (O) | 140 | 140 |
| Efficiency (%) | 46 | 46 |

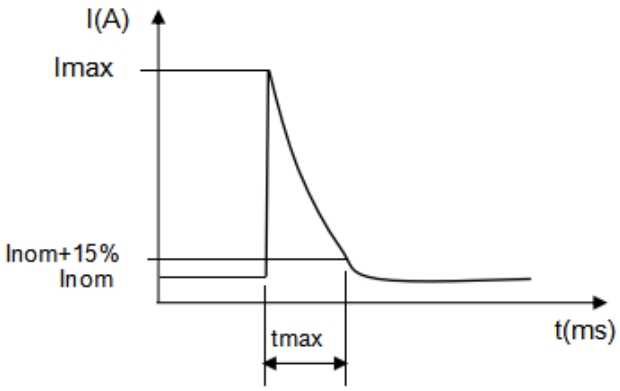
ELECTRICAL BEHAVIOUR

# Inrush current and panel

## 2.2 Power-on inrush current

| Model | Input voltage | Imax | Tmax |
|---|---|---|---|
| OPE 25-10-180 | 180, 230, 265 V | < 6 A | < 25 ms |

To avoid the effect of self-heating, the interval between two measurements must be at least 20 seconds.




**Peak current diagram**

## 2.3 Panel operation and display

### 2.3.1 Overview of operation and panels

Press the button to select the corresponding operating curve. The left LED digital display shows the current power in real time; the right display shows the current mode. The separate button cycles through the settings.

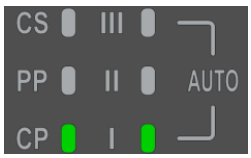
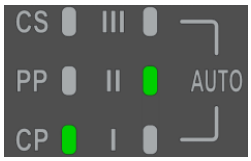
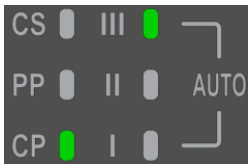


CONTROL PANEL

# Operating modes

### 2.3.2 Mode display

After switching on the power supply, all green LEDs are displayed as shown in the following table: S

| Short-press function | | | |
|---|---|---|---|
| **Settings and button** | LED status | Settings and button | LED status |
| S3<br>Initial setting |  | PP1<br>Short presses: 5 |  |
| AUTO<br>Short presses: 1 |  | PP2<br>Short presses: 6 |  |
| CP1<br>Short presses: 2 |  | PP3<br>Short presses: 7 |  |
| CP2<br>Short presses: 3 |  | S1<br>Short presses: 8 |  |
| CP3<br>Short presses: 4 |  | S2<br>Short presses: 9<br>(Press again to select S3) |  |

CONTROL PANEL

# Press-and-hold functions

## Automatic air venting

After holding the button, a total of 3 power indicator segments light up in the order 1, 2 and 3 shown in Figure 1 on the right. After releasing the button, the power indicator flashes at 2-second intervals according to the AIR display in Figure 2, while the setting area is displayed normally. The pump runs at 25%, 50%, 75% and 100% of maximum speed, for approximately 5 seconds at each speed. After repeating this cycle for 5 minutes, it exits automatic air venting and restores the setting used when protection was entered. The buttons are inactive in air-venting mode.

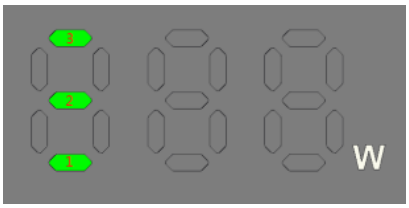



Figure 1




Figure 2

## Manual restart

As when activating automatic air venting, hold the button as shown in Figure 3 on the right. When indicator segments 1 to 6 have lit up, manual restart is activated. Function: after a fault is reported and the pump stops, manual restart resets the current fault count without disconnecting the power supply. After a delay of 6 seconds, the pump attempts to restart. During the 6-second waiting period, the RST display shown in Figure 4 flashes every 2 seconds.

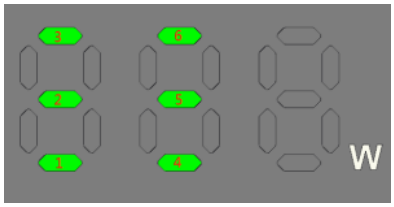



Figure 3

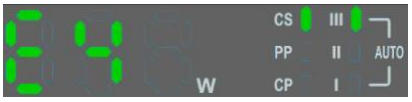



Figure 4

CONTROL AND PROTECTION

# Fault display

## 2.4.3 Fault display

| Fault protection instructions | | |
|---|---|---|
| **Function** | **Instructions** | **Panel display code** |
| Locked-rotor protection | When the pump rotor shaft is locked, the rotor attempts to restart by rotating forwards and backwards at maximum torque. Restart attempts occur every 5-7 seconds. The pump reports a locked-rotor fault and the panel displays an error code. This cycle continues attempting to restart until the fault is resolved. |   |
| Overvoltage / undervoltage protection | In an abnormal condition, when the input voltage exceeds 270 V or falls below 150 V, the pump enters protection mode and stops. It reports an electrical fault, and the panel displays an error code to prevent excessive use and damage. When the voltage returns to 160 V-270 V, the pump resumes operation. | Overvoltage   Undervoltage   |
| Phase-loss protection | When a phase fault occurs, the pump attempts to restart every 3-5 seconds. It reports an electrical error and the panel displays an error code. The restart cycle continues until the fault is resolved. |   |
| Overcurrent (short circuit) protection | When a fault occurs, such as a short circuit or overheating, the pump attempts to restart every 3-5 seconds. During each attempt, the panel displays an error code. The pump repeats this restart cycle 5 times and then stops. The fault can be cleared manually before restarting. |   |
| Overtemperature protection | When the chip detects an IPM temperature of 120 °C, the panel displays an error code and the pump shuts down. When the temperature falls below 100 °C, the pump restarts. |   |

PRODUCT REQUIREMENTS

# Quality and safety

## 3.1 Applicable standards

3.1.1 Q/SG 602 Intelligent variable-frequency circulation pump

3.1.2 GB 4706.1 Safety of household and similar electrical appliances - Part 1: General requirements

3.1.3 GB 4706.71 Particular requirements for stationary circulation pumps for heating and water supply installations for household and similar electrical appliances

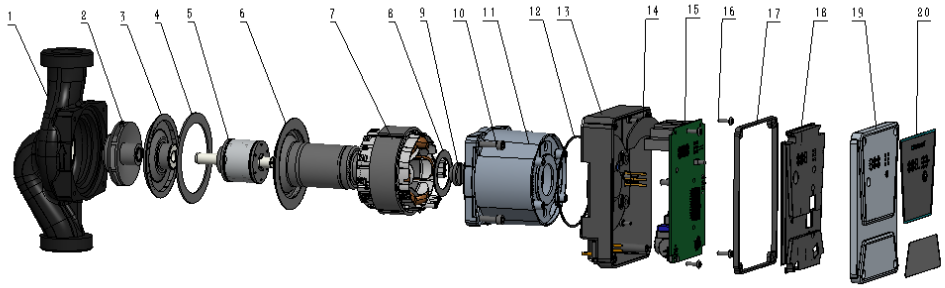
## 3.2 Pump identification

| Functional requirement | Description |
|---|---|
| Brand | ONE PUMP |
| Protection rating | IP44 |
| Insulation class | Class F |
| CE certification | CE |
| ErP certification | EEI≤0.23 |

CONSTRUCTION

# Pump structure

## 4 Exploded view



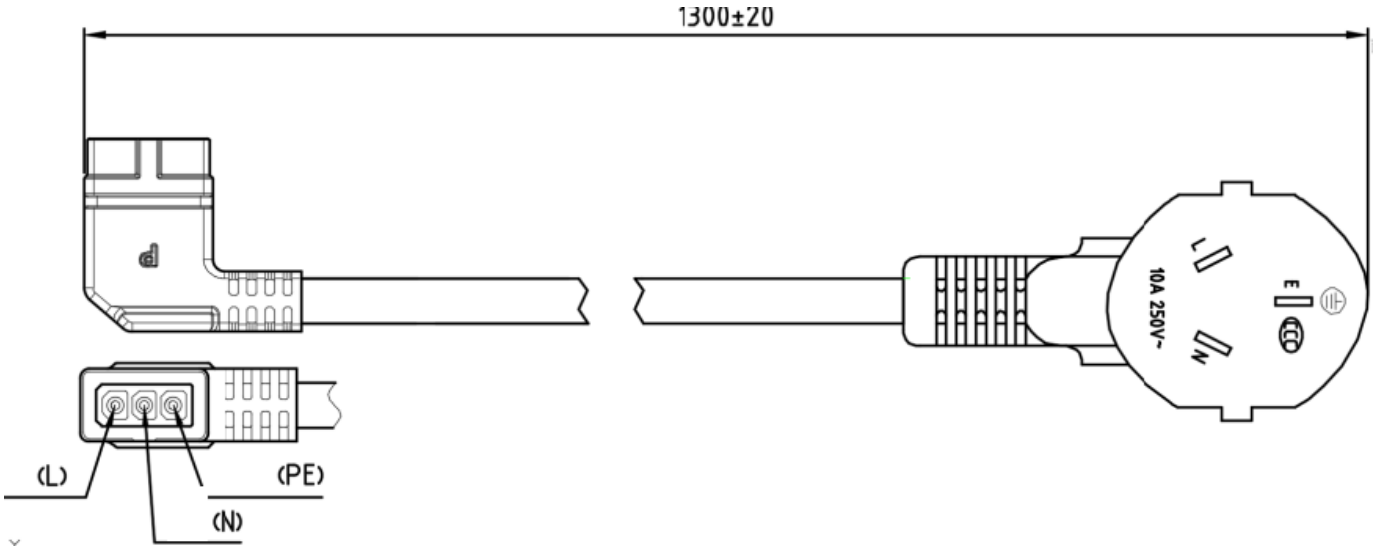

| No. | Name | Material |
|---|---|---|
| 1 | Body | HT200 |
| 2 | Impeller | PA66G30&H59 |
| 3 | Pump cover | 304 and alumina |
| 4 | Gasket I | EPDM |
| 5 | Rotor | Assembly |
| 6 | Protective sleeve assembly | 304 and alumina ceramic |
| 7 | Stator | Assembly |
| 8 | Gasket II | EPDM |
| 9 | Air vent cock | Assembly |
| 10 | Hexagon socket | 201 |
| 11 | Motor cover | YL102 |
| 12 | Gasket | EPDM |
| 13 | Control box lower cover | Assembly |
| 14 | Thermal silicone gasket | Silica gel |
| 15 | PCB | Assembly |
| 16 | Cross-recessed pan-head self-tapping screws | 304 |
| 17 | Gasket | Silicone |
| 18 | Control box centre cover | PC+ABS |
| 19 | Control box cover | YL102 |
| 20 | Label | PVC+PET |

ELECTRICAL CONNECTIONS

# Power supply cable

## 5 Power supply cable

Cable length and terminals can be modified to suit requirements.




The brown wire of the power supply cable connects to L (live) on the control panel, the blue wire connects to N (neutral), and the yellow-green wire connects to PE (earth).

INSTALLATION

# Operating instructions

## 7 Operating instructions

7.1 Before installing the pump, check that the pipework is securely connected and ensure that impurities, welding slag, dirt, etc. have been removed from the pipes.

7.2 Install the pump in a dry, ventilated place to prevent short circuits caused by moisture or splashing water. The installation must allow convenient future maintenance and replacement.

7.3 For outdoor installation, provide a protective cover. For indoor installation, protect the pump from splashing water to prevent electric shock. Do not install it in a bathroom, to prevent water vapour or water from entering the junction box and causing electrical leakage.

7.4 To facilitate future maintenance, it is recommended to install separate shut-off valves at the pump water inlet and outlet.

7.5 When the pump supplies water to the auxiliary heating system, do not touch the pump or its pipes with your hands, to avoid burns.

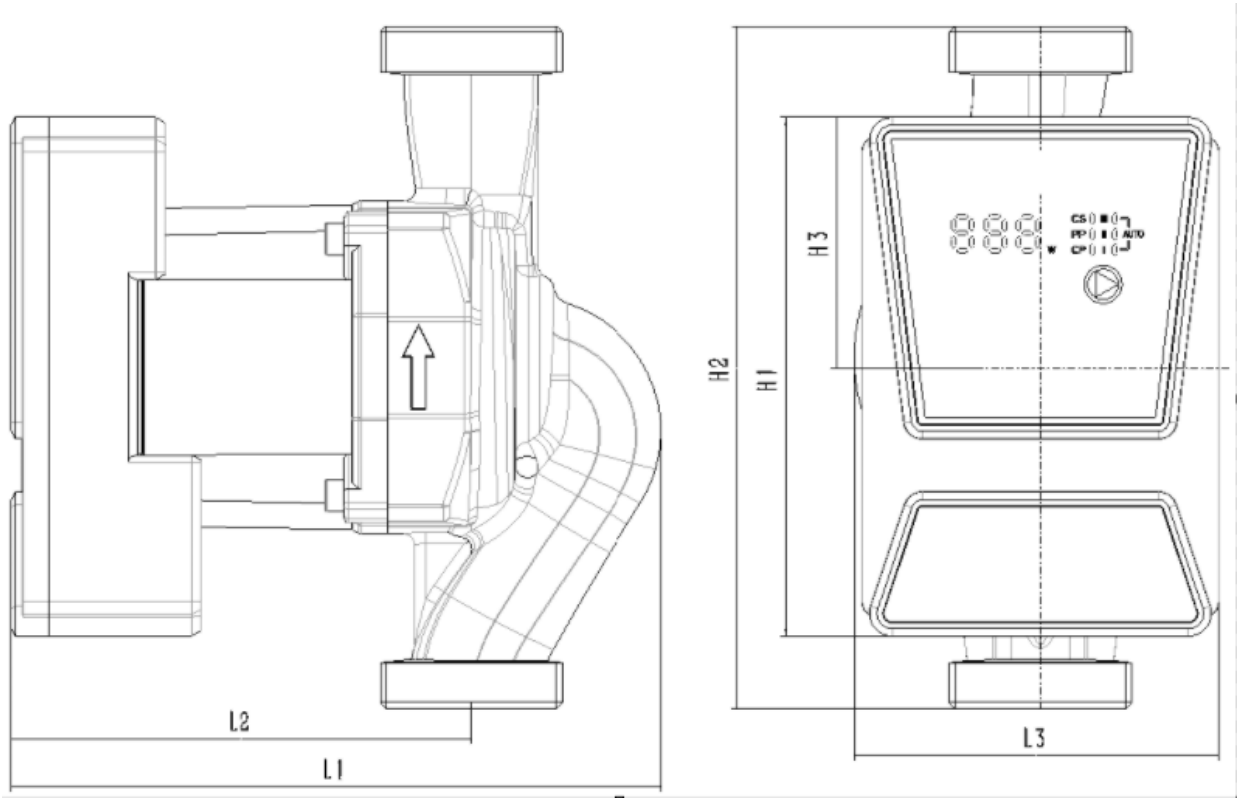
7.6 The power plug must be properly earthed, and its earth pin must connect reliably to the earth contact of the power socket. Do not modify the earth connection without authorisation.

7.7 To adjust the position of the pump or touch it while it is operating, disconnect the power supply first to prevent accidents.

7.8 In winter, when the ambient temperature is below 0 °C and the pump stops operating, drain the water from the pipework to prevent the pump body from rupturing.

ANNEX A

# Dimensional drawing




| MODEL | DIMENSIONS | | | | | | |
|---|---|---|---|---|---|---|---|
| | L1 | L2 | L3 | H1 | H2 | H3 | G |
| OPE 25-10-180 | 171.5 | 121 | 96 | 137 | 180 | 66 | G1 1/2 |
| OPE 32-10-180 | | | | | | | G2 |

ONE PUMP

# Contacts

## ONE PUMP SRL

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