TECHNICAL MANUAL AND OPERATING INSTRUCTIONS

OPE 10

High-efficiency electronic circulator

OPE 25-10-180 / OPE 32-10-180



Document	Reference
Technical specifications	OPE 25/32-10-180
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USING THE MANUAL

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1 / 1.1 | OVERVIEW

Overview and model designation

OPE series circulators feature an intelligent frequency converter and comply with standard Q/SG 602.

The stator is fully shielded; the rotating parts are immersed in clean water, which cools and lubricates the motor during operation. The thin-walled sleeve isolates the motor core from the water and eliminates the conventional mechanical seal and its associated leakage.

Ceramic bearings and shafts resist wear. Clean-water lubrication cools the motor and reduces noise. When used correctly at full load, the circulator generally requires no maintenance.

1.1 Model description: OPE 25-12-180

Element	Meaning
OPE	Intelligent variable-frequency circulator.
25	Nominal inlet and outlet diameter: 25 mm.
12	Maximum head: 12 m, at a flow rate of 0 m^3/h.
180	Pump body length from inlet to outlet: 180 mm.
UN	Power display.

1.2 / 1.3 | FEATURES

Applications and construction

1.2 Applications

The series is designed for heating and cooling systems, domestic hot-water circulation and HVAC systems.

- Water mixing for underfloor heating.
- Pneumatically powered domestic hot-water circulation.
- Heating, ventilation and air conditioning (HVAC).
- Boiler systems.
- Micro combined heat and power (CHP).
- Heat pumps.

1.3 Main features

- Energy efficiency index EEI ≤ 0.23.
- Permanent-magnet motor with intelligent frequency-conversion control.
- Integrated controller and motor in a compact, space-saving construction.
- Optional quick-connect cable coupling for easier installation and maintenance.
- Low noise and no leakage.

1.4 / 1.5 | OPERATING CONDITIONS

Temperature, pressure and fluids

Condition	Value
Liquid temperature	-20 °C to +95 °C
Ambient temperature	-20 °C to +60 °C
At a maximum ambient temperature of 55 °C	Maximum liquid temperature: 70 °C
Maximum system pressure	1.0 MPa (10 bar)
Rated power supply	230 V, 50/60 Hz
Protection / thermal class	IP44 / F

Minimum inlet pressure

Maintain the specified pressure to prevent cavitation noise and bearing damage.

Liquid temperature	85 °C	90 °C	110 °C
Minimum head	≥ 0.5 m	≥ 2.8 m	≥ 11 m
Minimum pressure	≥ 0.05 bar	≥ 0.27 bar	≥ 1.08 bar

1.5 Pumped liquids

Water for heating or cooling and ethylene glycol solutions up to 50%. The liquid must be clean, non-toxic, chemically neutral, free from solids and mineral oils, and have properties similar to water.

pH: 6.5-8.5. The volumetric content of solid particles must not exceed 0.1 per unit of volume; particle size must not exceed 0.2 mm. The filter mesh count must be at least 55.

1.7 / 2 | SPECIFICATIONS

Technical parameters and functions

Parameter	Specification
Type	Non-self-priming centrifugal circulator
Power supply	AC, 230 V (±10%)
Frequency	50/60 Hz
Input power	25-180 W
Speed range	2700-5000
Protection rating	IP44
Insulation class	F
Energy efficiency index	EEI ≤ 0.23
Noise level	≤ 45 dB
Maximum head	12 m
Maximum flow rate	6 m^3/h (DN25)
Nominal diameter / thread	DN25 (G 1 1/2) / DN32 (G 2)
Rotor rotation	Clockwise, viewed from the control box towards the pump body

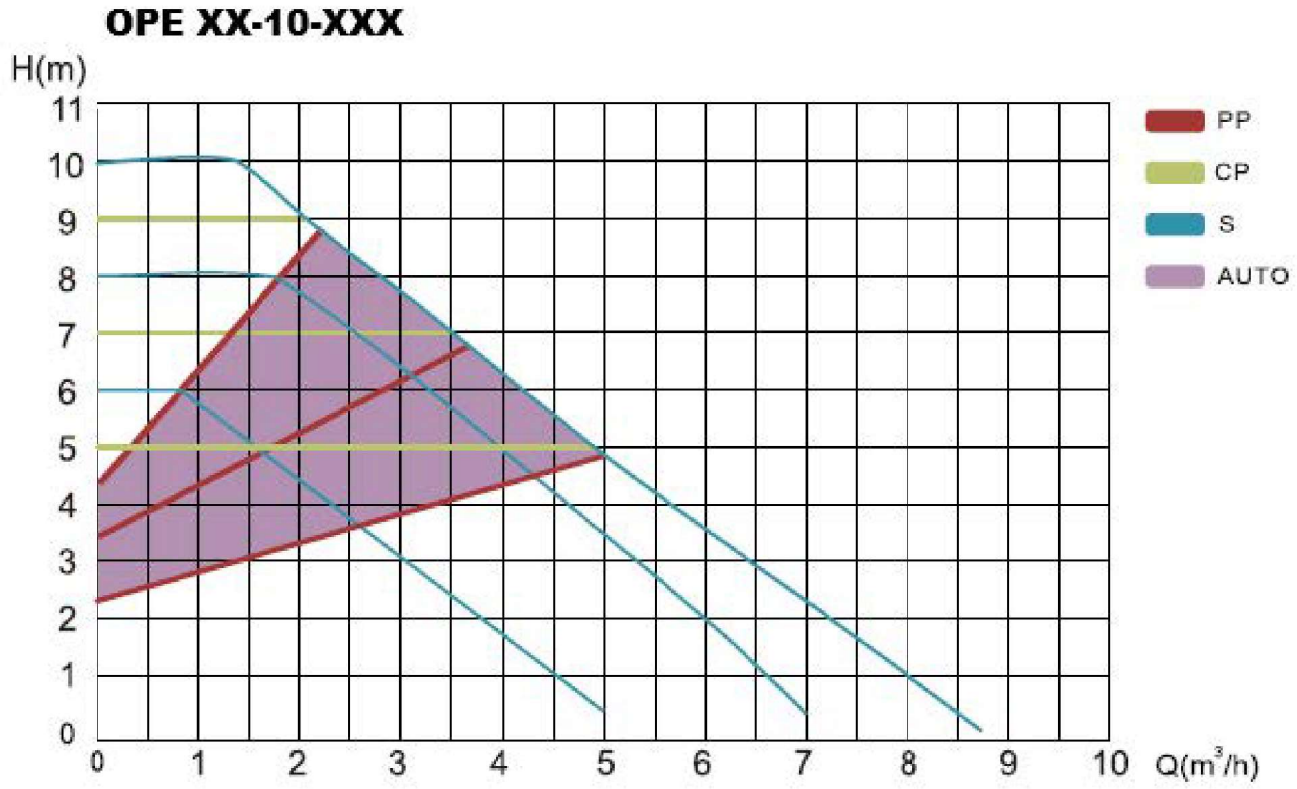
2. Product functions

Function	Description
Control	PP1-3 / CP1-3 / S1-3 / AUTO
Start-up	Maximum starting torque
Display	Digital LED display showing error codes
Protection	Overcurrent, over/undervoltage, phase loss, locked rotor and overtemperature

2.1 | PERFORMANCE

Hydraulic curve

OPE XX-10-XXX - head H in metres and flow rate Q in m³/h.



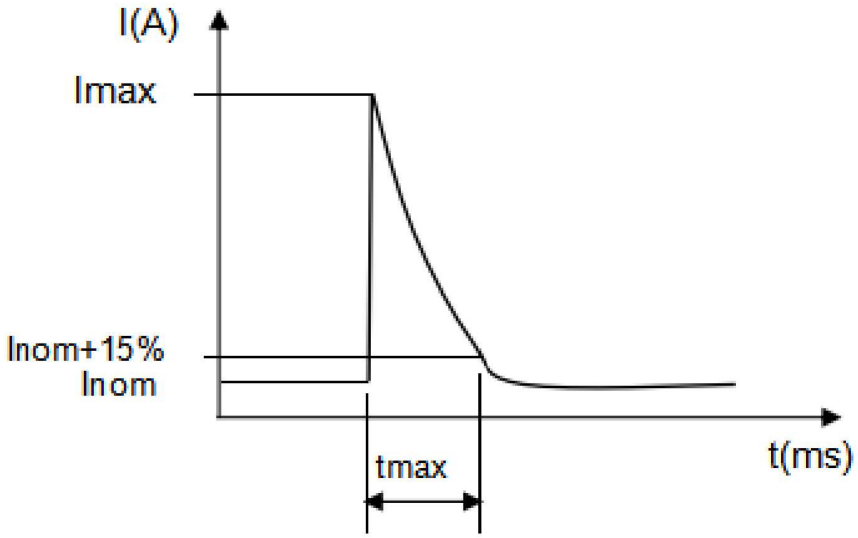
Parameter	OPE 25-10-180	OPE 32-10-180
Nominal diameter	DN25	DN32
Thread	G 1 1/2	G 2
Maximum head	10 m	10 m
Maximum flow rate	9 m³/h	9 m³/h
Reference flow rate	4 m³/h	4 m³/h
Reference head	6 m	6 m
Maximum power	140 W	140 W
Efficiency	46%	46%

2.2 / 2.3.1 | START-UP AND CONTROLS

Inrush current and control panel

Model	Input voltages	Imax	Tmax
OPE 25-10-180	180 / 230 / 265 V	< 6 A	< 25 ms

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



Peak current diagram

2.3.1 Control panel



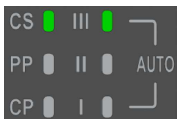
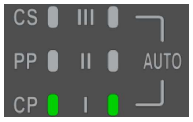
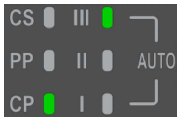
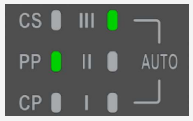
Press the button to select the operating curve.

The LED display on the left shows instantaneous power; the area on the right indicates the active mode. The button cycles through the settings.

2.3.2 | BRIEF BUTTON PRESS

Setting sequence

Initial setting: S3. Each brief press advances to the next mode.

Brief presses	Mode	LED indication
Initial	**S3**	
1	**AUTO**	
2	**CP1**	
3	**CP2**	
4	**CP3**	
5	**PP1**	
6	**PP2**	
7	**PP3**	
8	**S1**	
9	**S2**	

Press again after S2 to return to S3.

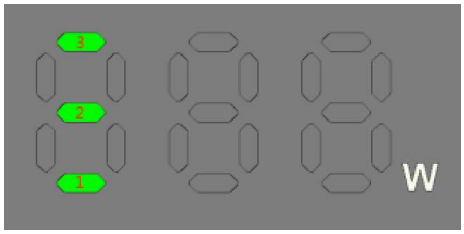
2.3 | LONG BUTTON PRESS

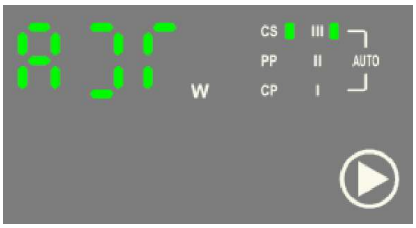
Air venting and manual restart

Automatic air venting - AIR

Hold the button until the three segments 1, 2 and 3 light up in sequence. When released, AIR appears and flashes every 2 seconds; the mode area continues to display normally.

The circulator runs at 25%, 50%, 75% and 100% of maximum speed, for approximately 5 seconds at each speed. The air-venting cycle ends after 5 minutes; operation is restored when it enters protection mode. The buttons are inactive during air venting.

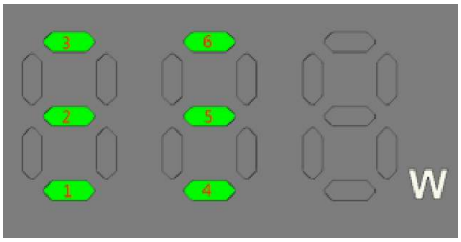


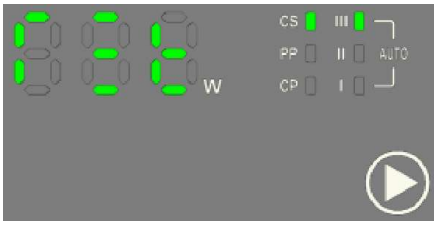


Manual restart - RST

Hold the button until segments 1 to 6 light up, as shown. After a fault and pump shutdown, manual restart resets the fault count without disconnecting the power supply.

After a 6-second delay, the pump attempts to start again. During the delay, RST flashes every 2 seconds.





2.4.3 | FAULT DISPLAY

Protection and error codes

Code	Protection	Circulator behaviour
E7	Locked rotor	The rotor attempts to restart by rotating forwards and backwards at maximum torque every 5-7 seconds. The code remains displayed and attempts continue until the fault is resolved.
E5 / E4	Overvoltage / undervoltage	The pump stops if the voltage is above 270 V or below 150 V. The panel indicates the fault. Operation resumes when the voltage returns to between 160 V and 270 V.
E6	Phase loss	The panel indicates an electrical error and the pump attempts to restart every 3-5 seconds until the fault is resolved.
E1	Overcurrent / short circuit	In the event of a fault, short circuit or overheating, the pump attempts to restart every 3-5 seconds and displays the error. It stops after 5 attempts. The error can be cleared manually and the pump restarted.
E18	Overtemperature	When the IPM module temperature reaches 120 °C, the pump stops and displays the error. It restarts when the temperature falls below 100 °C.

3 | QUALITY AND SAFETY REQUIREMENTS

Standards and identification

3.1 Applicable standards

Q/SG 602

Intelligent variable-frequency circulation pump.

GB 4706.1

Household and similar electrical appliances - Safety. Part 1: general requirements.

GB 4706.71

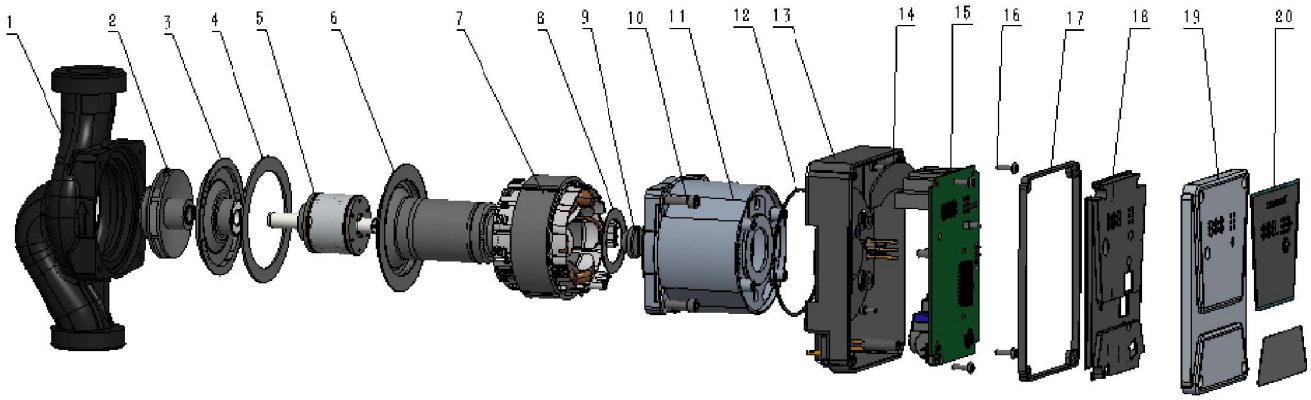
Particular requirements for stationary circulation pumps for heating and water-supply systems, within the safety requirements for household and similar electrical appliances.

3.2 Pump identification

Requirement	Identification
Brand	ONE PUMP
Protection rating	IP44
Insulation class	F
CE marking	CE
ErP energy efficiency	EEI ≤ 0.23

4 | PUMP CONSTRUCTION

Exploded view and components



Components 1-10

No.	Component	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 ceramic alumina
7	Stator	Assembly
8	Gasket II	EPDM
9	Air vent valve	Assembly
10	Hexagon socket	201

4 | PUMP CONSTRUCTION

Components and materials

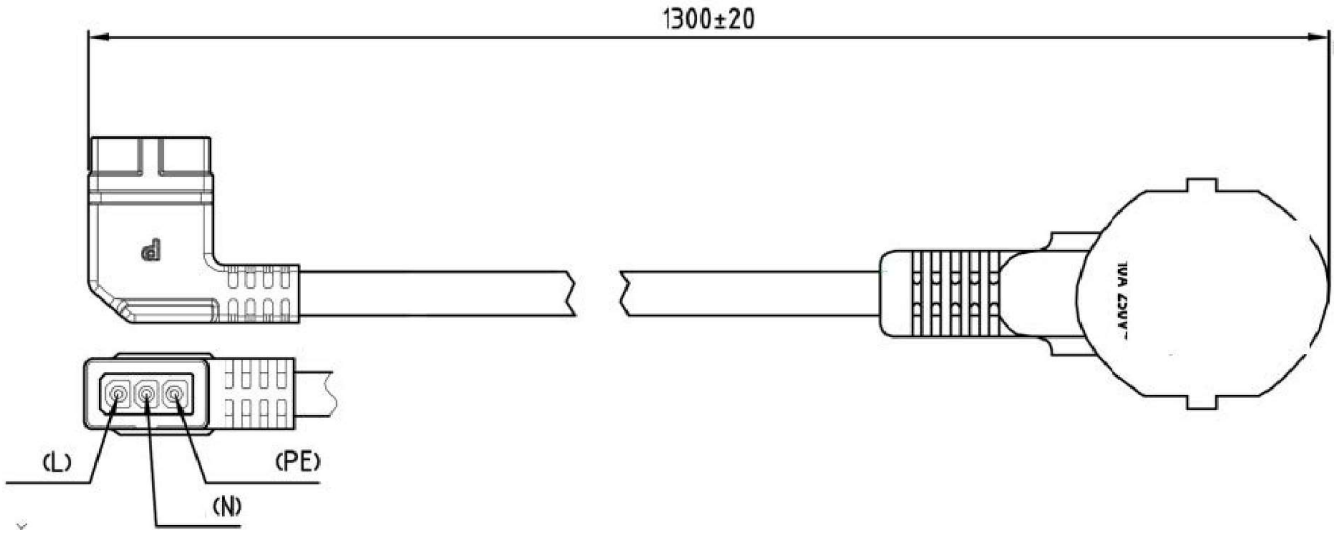
The numerical references correspond to the exploded view on the previous page.

No.	Component	Material
11	Motor cover	YL102
12	Gasket	EPDM
13	Control box lower cover	Assembly
14	Silicone thermal pad	Silica gel
15	PCB	Assembly
16	Cross-recessed pan-head self-tapping screws	304
17	Gasket	Silicone
18	Control box middle cover	PC+ABS
19	Control box upper cover	YL102
20	Label	PVC+PET

5 | ELECTRICAL CONNECTIONS

Power supply cable

Cable length and terminals can be modified on request.



Conductor connections

Wire colour	Terminal	Function
Brown	L	Live (energised conductor)
Blue	N	Neutral
Yellow/green	PE	Protective earth

Protective earthing

Securely connect the protective conductor to terminal PE.

1.6 / 7.1-7.4 | INSTALLATION

Installation and preparation

1.6 Shaft orientation

Install the circulator with the motor shaft parallel to the horizontal plane. Do not run the pump without water.

7.1 Cleaning the pipes

Before installation, check that the pipes are in good condition, securely connected and clean. Remove impurities, welding slag and dirt, which can damage the pump.

7.2 Installation location

Install the circulator in a dry, ventilated location to prevent short circuits caused by moisture or splashes. The location must allow easy access for maintenance and replacement.

7.3 Protection against water

For outdoor installations, provide a protective cover. Indoors, protect the circulator from splashes to prevent electric shock. Do not install it in a bathroom: water and steam may enter the terminal box and cause electrical leakage.

7.4 Shut-off valves

Install an independent shut-off valve at both the inlet and the outlet to facilitate maintenance.

Safety and frost protection

7.5 Hot surfaces

When the circulator supplies the heating system, do not touch the pump or pipes with your hands: risk of burns.

7.6 Protective earthing

The power supply plug must be earthed. The earth contact of the plug must be securely connected to the corresponding socket contact. Do not replace the earthed plug without authorisation.

7.7 Disconnecting the power supply

Before adjusting the circulator position or touching it, disconnect the electrical power supply to prevent accidents.

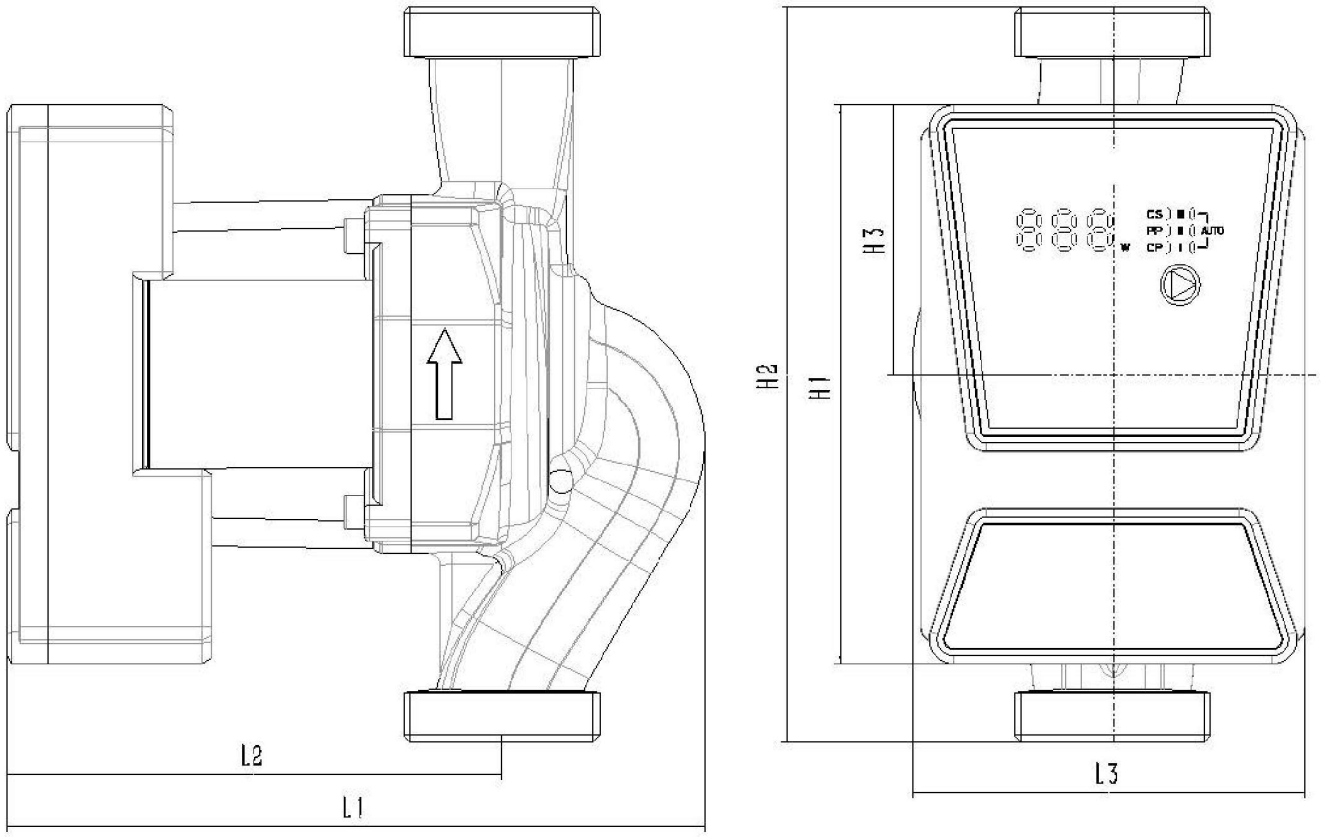
7.8 Frost protection

In winter, when the ambient temperature is below 0 °C and the circulator is stopped, drain the water from the pipework to prevent the pump body from breaking.

APPENDIX A | INSTALLATION DIMENSIONS

Dimensions

Dimensions in millimetres. G identifies the connection thread.



Dimension / model	OPE 25-10-180	OPE 32-10-180
L1	171.5	171.5
L2	121	121
L3	96	96
H1	137	137
H2	180	180
H3	66	66
G	G 1 1/2 / G 2	G 1 1/2 / G 2