50/60 Hz

ecocirc XL and XLplus

HIGH EFFICIENCY WET ROTOR CIRCULATORS
FOR COMMERCIAL HEATING AND COOLING APPLICATIONS

ErP 2009/125/EC

Cod. 191007251 Rev.M Ed. 09/2019

LOWARA
a xylem brand

CONTENTS

ecocirc XL – ecocirc XLplus

High efficiency circulators for commercial heating with electronically commutated permanent magnet technology.

PRODUCT DESCRIPTION

ecocirc XL and ecocirc XLplus circulation pumps are designed for circulating liquids in the following systems:

- Hot water heating systems
- Air conditioning and cooling systems
- Domestic hot water systems.

The pump can be also used for:

- Solar systems
- Geothermal systems.

DUTY RANGE

- Flow rate: up to 70 m^3/h for single-head pumps and up to 135 m^3/h for twin pumps
- Head: up to 18 m
- Maximum power consumption: 1560 [W]
- Temperature of pumped liquid: -10°C to +110°C
- Ambient temperature during operations: 0 to +40°C
- Maximum operating pressure: 10 bar (PN 10).

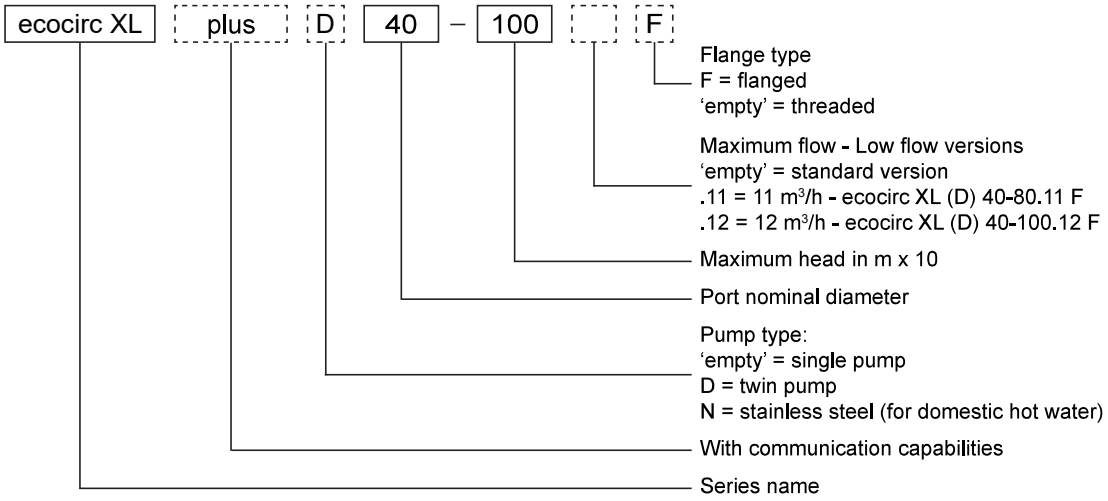
FEATURES

- Proportional pressure control
- Constant pressure control
- Constant speed
- Night Mode
- Constant temperature control (ecocirc XLplus only)
- Differential temperature control (ecocirc XLplus only)
- Additional operating modes for dual pumps (2 single head circulators or twin models) including parallel and alternate operations (ecocirc XLplus only)
- Dry run protection
- Air purge
- Plug for ecocirc XL and ecocirc XLplus 25-40(N), 25-60(N), 32-40(N) and 32-60(N)
- Reading and settings of the pump by digital display and human interface with push buttons
- Insulation shell for single head pumps systems for heating
- Integrated communication capabilities (Modbus and BacNet) for ecocirc XLplus.

BENEFITS

- Low power consumption. ecocirc XL and ecocirc XLplus are compliant to the ErP Directive.
- Easy to set-up
- User-friendly human interface with digital display
- Control panel with push buttons to change circulator status
- Operating status visualization
- Warning and alarm visualization
- Errors and working log history visualization (ecocirc XLplus only)
- Dry running detection
- Multi-pump functions
- External control and monitoring (ecocirc XLplus only)
- Module for wireless communication (ecocirc XLplus only).

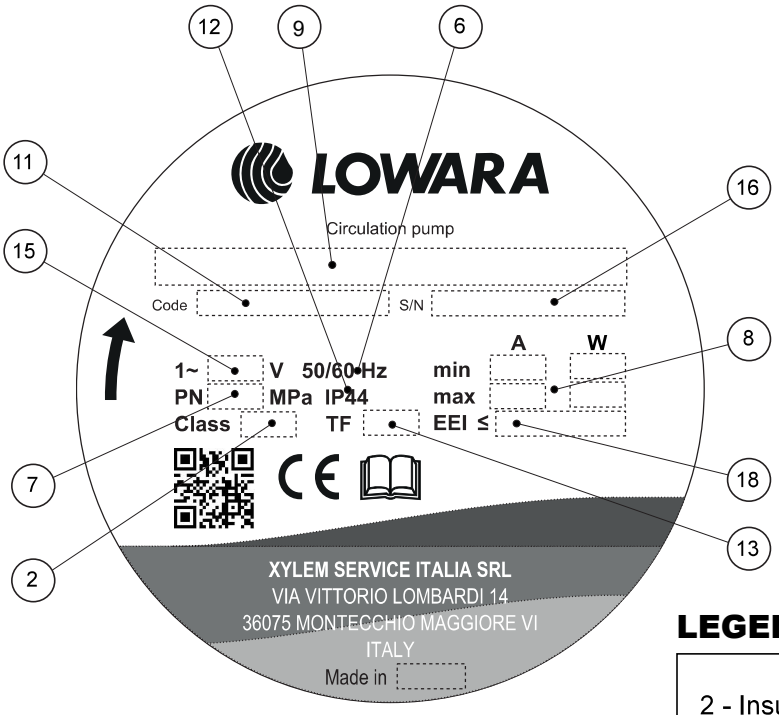
IDENTIFICATION CODE



EXAMPLE: ecocirc XLplus D 40-100 F

High Efficiency electronic circulator ecocirc XL plus with communication capabilities, twin version, port nominal diameter 40, max head 10 m, flanged.

PUMP TYPE RATING PLATE



LEGEND

2 - Insulation class
6 - Frequency
7 - Maximum operating pressure
8 - Electric pump consumption
9 - Electric pump unit type
11 - Electric pump unit / pump part number
12 - Protection degree
13 - Maximum operating liquid temperature (EN 60335-2-51)
15 - Rated voltage range
16 - Serial number (date + progressive number)
18 - EEI index

ecocirc XL

Single-head Pump type	Threaded pipe connection						
	Port to port (mm)	Connection	PN 6/10	PN 6	PN 10	Electrical connection	Integrated communication capabilities
ecocirc XL 25-40 (N)	180	G 1 ½ – Rp 1	•			plug	no communication protocol
ecocirc XL 25-60 (N)	180	G 1 ½ – Rp 1	•			plug	no communication protocol
ecocirc XL 25-80	180	G 1 ½ – Rp 1	•			terminals	no communication protocol
ecocirc XL 25-100	180	G 1 ½ – Rp 1	•			terminals	no communication protocol
ecocirc XL 32-40 (N)	180	G 2 – Rp 1 ¼	•			plug	no communication protocol
ecocirc XL 32-60 (N)	180	G 2 – Rp 1 ¼	•			plug	no communication protocol
ecocirc XL 32-80 (N)	180	G 2 – Rp 1 ¼	•			terminals	no communication protocol
ecocirc XL 32-100 (N)	180	G 2 – Rp 1 ¼	•			terminals	no communication protocol

Single-head Pump type	Flanged connection						
	Port to port (mm)	Connection	PN 6/10	PN 6	PN 10	Electrical connection	Integrated communication capabilities
ecocirc XL 32-80 F	220	DN 32	•			terminals	no communication protocol
ecocirc XL 32-100 F	220	DN 32	•			terminals	no communication protocol
ecocirc XL 32-120 F (N)	220	DN 32	•			terminals	no communication protocol
ecocirc XL 40-80.11 F	220	DN 40	•			terminals	no communication protocol
ecocirc XL 40-80 F	220	DN 40	•			terminals	no communication protocol
ecocirc XL 40-100.12 F	220	DN 40	•			terminals	no communication protocol
ecocirc XL 40-100 F	220	DN 40	•			terminals	no communication protocol
ecocirc XL 40-120 F (N)	250	DN 40	•			terminals	no communication protocol
ecocirc XL 40-150 F	250	DN 40	•			terminals	no communication protocol
ecocirc XL 40-180 F	250	DN 40	•			terminals	no communication protocol
ecocirc XL 50-80 F (N)	240	DN 50	•			terminals	no communication protocol
ecocirc XL 50-100 F	280	DN 50	•			terminals	no communication protocol
ecocirc XL 50-120 F (N)	280	DN 50	•			terminals	no communication protocol
ecocirc XL 50-150 F	280	DN 50	•			terminals	no communication protocol
ecocirc XL 50-180 F	280	DN 50	•			terminals	no communication protocol
ecocirc XL 65-80 F (N)	340	DN 65	•			terminals	no communication protocol
ecocirc XL 65-120 F (N)	340	DN 65	•			terminals	no communication protocol
ecocirc XL 65-150 F	340	DN 65	•			terminals	no communication protocol
ecocirc XL 65-180 F	340	DN 65	•			terminals	no communication protocol
ecocirc XL 80-120 F	360	DN 80		•		terminals	no communication protocol
ecocirc XL 80-120 F	360	DN 80			•	terminals	no communication protocol
ecocirc XL 100-120 F	360	DN 100		•		terminals	no communication protocol
ecocirc XL 100-120 F	360	DN 100			•	terminals	no communication protocol

Twin-head Pump type	Threaded pipe connection						
	Port to port (mm)	Connection	PN 6/10	PN 6	PN 10	Electrical connection	Integrated communication capabilities
ecocirc XL D 32-80	180	G 2 – Rp 1 ¼	•			terminals	no communication protocol
ecocirc XL D 32-100	180	G 2 – Rp 1 ¼	•			terminals	no communication protocol

Twin-head Pump type	Flanged connection						
	Port to port (mm)	Connection	PN 6/10	PN 6	PN 10	Electrical connection	Integrated communication capabilities
ecocirc XL D 32-80 F	220	DN 32	•			terminals	no communication protocol
ecocirc XL D 32-100 F	220	DN 32	•			terminals	no communication protocol
ecocirc XL D 32-120 F	220	DN 32	•			terminals	no communication protocol
ecocirc XL D 40-80.11 F	220	DN 40	•			terminals	no communication protocol
ecocirc XL D 40-80 F	220	DN 40	•			terminals	no communication protocol
ecocirc XL D 40-100.12 F	220	DN 40	•			terminals	no communication protocol
ecocirc XL D 40-100 F	220	DN 40	•			terminals	no communication protocol
ecocirc XL D 40-120 F	250	DN 40	•			terminals	no communication protocol
ecocirc XL D 40-150 F	250	DN 40	•			terminals	no communication protocol
ecocirc XL D 40-180 F	250	DN 40	•			terminals	no communication protocol
ecocirc XL D 50-80 F	240	DN 50	•			terminals	no communication protocol
ecocirc XL D 50-120 F	280	DN 50	•			terminals	no communication protocol
ecocirc XL D 50-150 F	280	DN 50	•			terminals	no communication protocol
ecocirc XL D 50-180 F	280	DN 50	•			terminals	no communication protocol
ecocirc XL D 65-80 F	340	DN 65	•			terminals	no communication protocol
ecocirc XL D 65-120 F	340	DN 65	•			terminals	no communication protocol
ecocirc XL D 65-150 F	340	DN 65	•			terminals	no communication protocol
ecocirc XL D 65-180 F	340	DN 65	•			terminals	no communication protocol
ecocirc XL D 80-120 F	360	DN 80		•		terminals	no communication protocol
ecocirc XL D 80-120 F	360	DN 80			•	terminals	no communication protocol

ecocircXL-modelli-en_h_sc

ecocirc XLplus

Single-head Pump type	Threaded pipe connection						Integrated communication capabilities	Wireless **
	Port to port (mm)	Connection	PN 6/10	PN 6	PN 10	Electrical connection		
ecocirc XLplus 25-40 (N)	180	G 1 ½ – Rp 1	•			plug	Modbus	•
ecocirc XLplus 25-60 (N)	180	G 1 ½ – Rp 1	•			plug	Modbus	•
ecocirc XLplus 25-80	180	G 1 ½ – Rp 1	•			terminals	Modbus & BACnet	•
ecocirc XLplus 25-100	180	G 1 ½ – Rp 1	•			terminals	Modbus & BACnet	•
ecocirc XLplus 32-40 (N)	180	G 2 – Rp 1 ¼	•			plug	Modbus	•
ecocirc XLplus 32-60 (N)	180	G 2 – Rp 1 ¼	•			plug	Modbus	•
ecocirc XLplus 32-80 (N)	180	G 2 – Rp 1 ¼	•			terminals	Modbus & BACnet	•
ecocirc XLplus 32-100 (N)	180	G 2 – Rp 1 ¼	•			terminals	Modbus & BACnet	•

Single-head Pump type	Flanged connection						Integrated communication capabilities	Wireless **
	Port to port (mm)	Connection	PN 6/10	PN 6	PN 10	Electrical connection		
ecocirc XLplus 32-80 F	220	DN 32	•			terminals	Modbus & BACnet	•
ecocirc XLplus 32-100 F	220	DN 32	•			terminals	Modbus & BACnet	•
ecocirc XLplus 32-120 F (N)	220	DN 32	•			terminals	Modbus & BACnet	•
ecocirc XLplus 40-80 F	220	DN 40	•			terminals	Modbus & BACnet	•
ecocirc XLplus 40-100 F	220	DN 40	•			terminals	Modbus & BACnet	•
ecocirc XLplus 40-120 F (N)	250	DN 40	•			terminals	Modbus & BACnet	•
ecocirc XLplus 40-150 F	250	DN 40	•			terminals	Modbus & BACnet	•
ecocirc XLplus 40-180 F	250	DN 40	•			terminals	Modbus & BACnet	•
ecocirc XLplus 50-80 F (N)	240	DN 50	•			terminals	Modbus & BACnet	•
ecocirc XLplus 50-100 F	280	DN 50	•			terminals	Modbus & BACnet	•
ecocirc XLplus 50-120 F (N)	280	DN 50	•			terminals	Modbus & BACnet	•
ecocirc XLplus 50-150 F	280	DN 50	•			terminals	Modbus & BACnet	•
ecocirc XLplus 50-180 F	280	DN 50	•			terminals	Modbus & BACnet	•
ecocirc XLplus 65-80 F (N)	340	DN 65	•			terminals	Modbus & BACnet	•
ecocirc XLplus 65-120 F (N)	340	DN 65	•			terminals	Modbus & BACnet	•
ecocirc XLplus 65-150 F	340	DN 65	•			terminals	Modbus & BACnet	•
ecocirc XLplus 65-180 F	340	DN 65	•			terminals	Modbus & BACnet	•
ecocirc XLplus 80-120 F	360	DN 80		•		terminals	Modbus & BACnet	•
ecocirc XLplus 80-120 F	360	DN 80			•	terminals	Modbus & BACnet	•
ecocirc XLplus 100-120 F	360	DN 100		•		terminals	Modbus & BACnet	•
ecocirc XLplus 100-120 F	360	DN 100			•	terminals	Modbus & BACnet	•

Twin-head Pump type	Threaded pipe connection						Integrated communication capabilities	Wireless **
	Port to port (mm)	Connection	PN 6/10	PN 6	PN 10	Electrical connection		
ecocirc XLplus D 32-80	180	G 2 – Rp 1 ¼	•			terminals	Modbus & BACnet	•
ecocirc XLplus D 32-100	180	G 2 – Rp 1 ¼	•			terminals	Modbus & BACnet	•

Twin-head Pump type	Flanged connection						Integrated communication capabilities	Wireless **
	Port to port (mm)	Connection	PN 6/10	PN 6	PN 10	Electrical connection		
ecocirc XLplus D 32-80 F	220	DN 32	•			terminals	Modbus & BACnet	•
ecocirc XLplus D 32-100 F	220	DN 32	•			terminals	Modbus & BACnet	•
ecocirc XLplus D 32-120 F	220	DN 32	•			terminals	Modbus & BACnet	•
ecocirc XLplus D 40-80 F	220	DN 40	•			terminals	Modbus & BACnet	•
ecocirc XLplus D 40-100 F	220	DN 40	•			terminals	Modbus & BACnet	•
ecocirc XLplus D 40-120 F	250	DN 40	•			terminals	Modbus & BACnet	•
ecocirc XLplus D 40-150 F	250	DN 40	•			terminals	Modbus & BACnet	•
ecocirc XLplus D 40-180 F	250	DN 40	•			terminals	Modbus & BACnet	•
ecocirc XLplus D 50-80 F	240	DN 50	•			terminals	Modbus & BACnet	•
ecocirc XLplus D 50-120 F	280	DN 50	•			terminals	Modbus & BACnet	•
ecocirc XLplus D 50-150 F	280	DN 50	•			terminals	Modbus & BACnet	•
ecocirc XLplus D 50-180 F	280	DN 50	•			terminals	Modbus & BACnet	•
ecocirc XLplus D 65-80 F	340	DN 65	•			terminals	Modbus & BACnet	•
ecocirc XLplus D 65-120 F	340	DN 65	•			terminals	Modbus & BACnet	•
ecocirc XLplus D 65-150 F	340	DN 65	•			terminals	Modbus & BACnet	•
ecocirc XLplus D 65-180 F	340	DN 65	•			terminals	Modbus & BACnet	•
ecocirc XLplus D 80-120 F	360	DN 80		•		terminals	Modbus & BACnet	•
ecocirc XLplus D 80-120 F	360	DN 80			•	terminals	Modbus & BACnet	•

(**) Available as an accessory.

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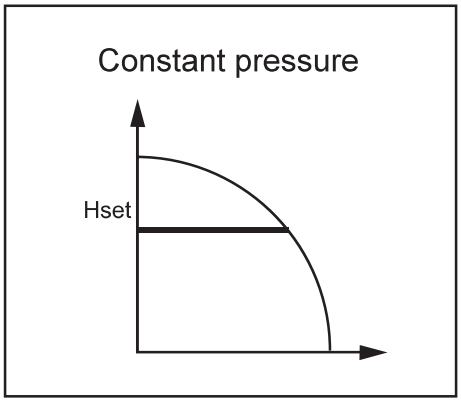
CONTROL MODES
Constant pressure
Proportional pressure
Constant speed
Night mode
Control modes influenced by the temperature
ΔP-T control
T - Constant temperature control
ΔT - Differential temperature
Additional operating modes for dual-pump setup
Alternate operation
Backup operation
Parallel operation
Reading and settings on the pump
Pump settings
Control panel and display
Communication
External Start - Stop (Digital input)
Signal relay (Digital Output)
Analog input 0-10V
Analog input 4-20mA for external differential pressure sensor
Temperature sensor (ecocirc XLplus)
Communication BUS (ecocirc XLplus)
Wireless (ecocirc XLplus)

En-Rev_D

CONTROL MODES

ecocirc XL and XLplus can be operated with 3 different functional modes: Constant pressure, Proportional pressure and Fixed speed. The additional Night Mode function can be activated in combination of the 3 functional modes. The pump has been factory set at constant pressure without Night Mode. The set point is factory set and it is suitable for more installations.

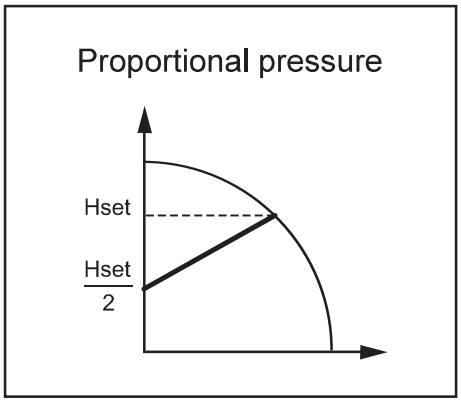
Constant pressure



The pump maintains a constant pressure at any flow demand. The desired head of the pump can be set via user interface.

Constant pressure functional mode is recommended in systems with relatively small pressure losses.

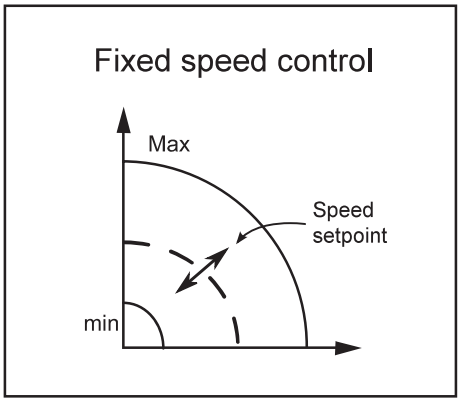
Proportional pressure



The pump pressure is continuously increased / decreased depending on the flow demand. The maximum head can be set via user interface.

Proportional pressure functional mode is recommended in systems with relatively large pressure losses in the distribution pipes.

Constant Speed



The pump maintains a fixed speed at any flow demand. The speed of the pump can be set via user interface. Constant speed is great when used in the primary or boiler loop in a primary/secondary hydronic system.

Night Mode

This function reduces the power consumption of the pump to the minimum when the heating system is not running. An autolearn process detects the proper working conditions. The electronic registers a drop of the water temperature and the circulator automatically decreases the speed. The pump returns to the original set point as soon as the system restarts and the water temperature has increased.

The Night Mode can be activated in combination with:

- Proportional pressure
- Constant pressure
- Constant speed

It cannot be used in cooling systems.

The prerequisite of this functional mode are:

- The pump has to be installed in the supply line;
- The night condition can be detected with good confidence if a higher level control system is set to change the supply temperature.

CONTROL MODES INFLUENCED BY THE TEMPERATURE

ecocirc XLplus version can be used with 3 additional control modes depending on the temperature of the pumped media. The set-up of the control modes as well as of the external temperature sensor, necessary for ΔT control, is available only through Communication BUS or Wireless capabilities by the connection to an external device.

ΔP – T Control

This function changes the nominal differential pressure set point depending on the temperature of the pumped media.
The temperature is controlled by the built-in temperature sensor or by an additional external temperature sensor (type KTY82).

T – Constant temperature control

The functional mode changes the speed of the pump in order to maintain constant temperature of the pumped media.
The temperature is controlled by the built-in temperature sensor or by an additional external temperature sensor (type KTY82).
It is suitable for heating systems with fixed system characteristics, for example domestic hot water systems.

ΔT – Differential temperature control

The function changes the speed of the pump in order to maintain a constant differential temperature of the pumped media.
This function requires an additional external temperature sensor (type KTY82) that controls, together with the built-in temperature sensor, the differential water temperature in the system.

ADDITIONAL OPERATING MODES FOR DUAL-PUMP SET UP

Each ecocirc XLplus circulator can be configured to work together with another one in dual-pump functionality.

The dual-pump setting is already configured as default with twin pumps, but can also be set in case of two single head circulators if they are connected to each other through the communication port RS485; in this second case the two single head pumps must be of the same model, and once connected it is necessary to establish which one is the main pump (master) and which is the secondary pump (slave).

When the communication ports are to be used for communication between two circulators, and the pump is also to be connected to an external device (i.e. Building Management System) via port RS485, then it is necessary to install the optional module RS485. This enables the use of the second port (and this must be done on the main pump).

ecocirc XLplus dual pump can be used in different operating modes.

Back-up operation

Only the main pump (master) operates, while the second (slave) pump starts running in case of failure of the main pump. The back-up pump is automatically put into operation once a day for a few minutes in order to prevent rotor-blocking due to long-term inactivity.
In case of a failure of the main pump, the secondary pump starts running immediately, using the same parameters and functionality of the main.

Alternate operation

In this functional mode only one pump runs at a time.
The working time is switched every 24 hours so the workload is balanced between both pumps.
In case of failure of one of the two pumps, the other will immediately start operating continuously.

Parallel operation

Both pumps run simultaneously with the same setpoint. The main pump determines the needs of the entire system and it is able to optimize performance; to ensure the required performance with minimum energy consumption, the main pump starts or stops the second pump based on the head and flow demand.

In the case of ecocirc XLplus twin models, there is the possibility that in some situations this functional mode will generate non-optimal behaviour of the circulator, changing the speed of the two motors continuously and generating a noise from the flap valve inside the pump housing. In this situation “forced parallel” can be set to ensure that the pumps operate at the same setpoint with stable behaviour.

READING AND SETTINGS ON THE PUMP

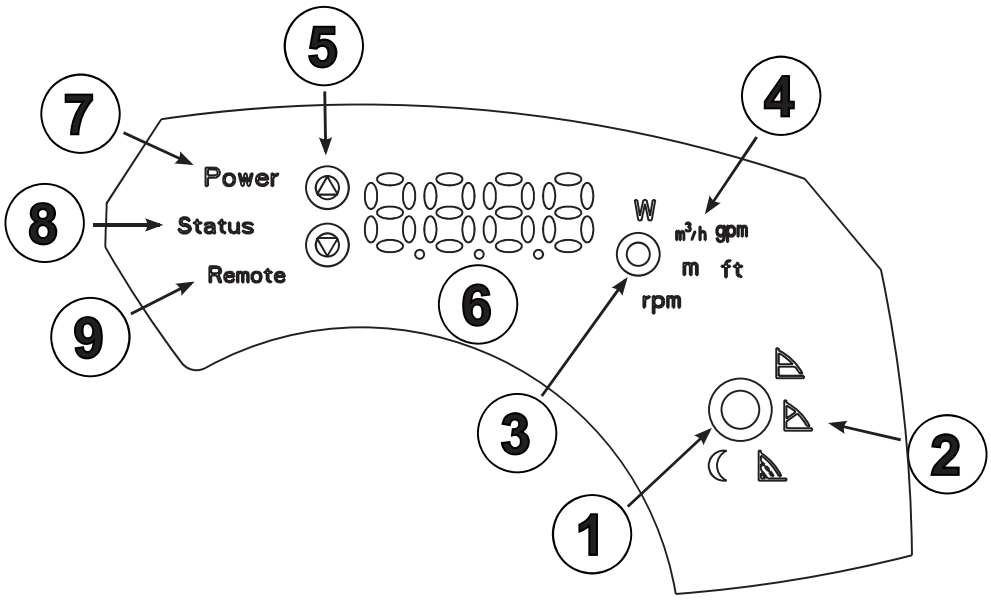
Pump settings

To change the pump settings it can be used one of the following ways:

- User Interface
- Communication BUS (ecocirc XLplus only)
- Wireless capability (ecocirc XLplus only).

Control panel and Display

ecocirc XL and ecocirc XLplus features a 3 or 4 digits display with intuitive and user-friendly interface.
The control panel has 4 self-explanatory push buttons and is designed to give quick and easy access to the pump and performance data on installation site.



Ref.	Function	Description
1	Control Mode Button	Operating modes are cyclically changed by pressing the button
2	Control mode indicators	- Constant Pressure - Proportional Pressure - Constant Speed - Night Mode
3	Parameter Button	The unit of measurement changes by pressing the button
4	Parameter indicators	The units of measuremet displayed are: - Power consumption (W) - Flow rate (m^3/h - gpm) - Head (m - ft) - Speed (rpm) By pressing the "Parameter Button" for more than 1 second the unit of measurement changes to: - Flow: m^3/h <--> US gpm - Head: m <--> ft
5	Setting Buttons	To change the set point: - Press one of the setting buttons: displays starts to blinking the actual set point. - Change the value using the button. - Wait 3 seconds to store and activate the new set point: the display will stop blinking.
6	Digital Display	
7	Power indicator	When lighted-up power supply is present
8	Status / Fault indicator	- Green: pump is working properly - Orange: alarm for system problem - Red: pump failure
9	Remote Control indicator	- Off: remote communication deactivated - On: remote communication activated

En-Rev_B

FLOW ESTIMATION ACCURACY

Ecocirc XL has a special software function able to estimate the actual flow rate across the pump.
The estimation is based on a calculation by knowing the speed and the hydraulic design of the pump.
The estimated flow rate has an accuracy specified as ± xx % of Qmax determined through laboratory tests using pure water at 20°C.
Water/glycol mixture and different fluid temperature can decrease the accuracy.
The ± xx % of Qmax accuracy is valid for a flow rate range up to 70% of the Qmax.
In case of low flow rate (< xx% of Qmax) the pump could display “ON” meaning both that the actual flow rate is ZERO or is too low to be properly estimated.

The table below shows the flow accuracy of the complete “ecocirc XL” range. The calculations are based on a single-head pump cast iron model (±15% of Qmax) and single-head pump stainless steel model or twin-head pump (±20% of Qmax).

Pump type	Q Max	Single-Head Pumps Cast Iron	Single-Head Pumps Stainless Steel Twin-Head Pumps
		± 15%	± 20%
	[m³/h]	[m³/h]	[m³/h]
ecocirc XL 25-40 (N)	4,2	0,6	0,84
ecocirc XL 25-60 (N)	5,9	0,9	1,18
ecocirc XL 32-40 (N)	4,3	0,6	0,9
ecocirc XL 32-60 (N)	6,0	0,9	1,2
ecocirc XL 25-80	9,5	1,4	-
ecocirc XL 25-100	10,2	1,5	-
ecocirc XL (D) 32-80 (N)	10,2	1,5	2,0
ecocirc XL (D) 32-100 (N)	10,7	1,6	2,1
ecocirc XL (D) 32-80 F	10,2	1,5	2,0
ecocirc XL (D) 32-100 F	10,8	1,6	2,2
ecocirc XL (D) 32-120 F (N)	22,5	3,4	4,5
ecocirc XL (D) 40-80.11 F	10,7	1,6	2,1
ecocirc XL (D) 40-80 F	19,3	2,9	3,9
ecocirc XL (D) 40-100.12 F	10,7	1,6	2,1
ecocirc XL (D) 40-100 F	20,8	3,1	4,2
ecocirc XL (D) 40-120 F (N)	26,8	4,0	5,4
ecocirc XL (D) 40-150 F	26,6	4,0	5,3
ecocirc XL (D) 40-180 F	28,9	4,3	5,8
ecocirc XL (D) 50-80F (N)	29,6	4,4	5,9
ecocirc XL 50-100 F	29,7	4,5	-
ecocirc XL (D) 50-120 F (N)	45,8	6,9	9,2
ecocirc XL (D) 50-150 F	53,7	8,1	10,7
ecocirc XL (D) 50-180 F	54,1	8,1	10,8
ecocirc XL (D) 65-80 F (N)	35,2	5,3	7,0
ecocirc XL (D) 65-120 F (N)	47,1	7,1	9,4
ecocirc XL (D) 65-150 F	61,6	9,2	12,3
ecocirc XL (D) 65-180 F	70,6	10,6	14,1
ecocirc XL (D) 80-120 F	71,7	10,8	14,3
ecocirc XL 100-120 F	62,7	9,4	-

Zero_flow-en_a

Note: the estimated flow has to be considered valid only as an indication. We recommend to not use the estimated flow for controlling purpose.

Note: in case of twin pump head the estimated flow rate of the right and left head could be different due to the different hydraulic design of the two heads.

COMMUNICATION

ecocirc XL and ecocirc XLplus enables communication by the following:

- External start / stop (Digital input)
- Signal relay (Digital output)
- Analog input 0-10 V
- Analog input 4-20 mA
- Communication BUS (ecocirc XLplus only)
- Wireless capability (ecocirc XLplus only).

External start / stop (Digital Input)

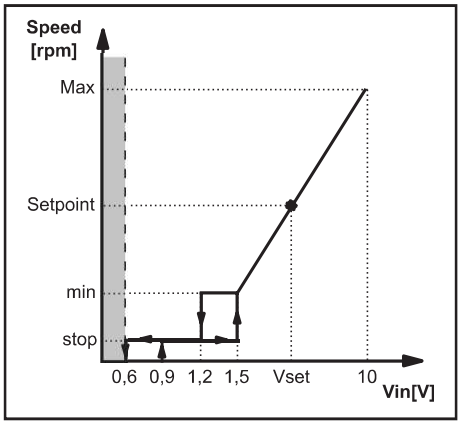
The pump can be started or stopped via an external potential-free contact or a relay.
The pump unit is provided by default with the digital input short-circuited.

Signal relay (Digital output)

The pump is equipped with a relay for a potential-free fault signal. If there is a fault the relay is activated together with the red status light and the error code on the user interface display.

Analog input (0-10V)

The pump integrates a 0-10 V analog input.
When a voltage input is detected the pump switch to fixed speed control mode automatically and start to work according to the following diagram:



Analog input (4-20mA)

The pump can be equipped with a 4-20mA external differential pressure sensor with the purpose of increasing the precision in operating modes involved with pressure regulation.

Communication BUS

ecocirc XLplus can communicate remotely through a built in RS485 port with the following protocols:

- Modbus RTU
- Bacnet MSTP (not available on ecocirc XL and XLplus 25-40 (N), 25-60 (N), 32-40 (N), 32-60 (N)).

The circulator is factory setting with Modbus protocol.
This communication BUS capability offers the possibility to:

- connect two pumps in dual pumps operation;
- connect the pump to a BMS (Building Management System);
- connect the pump to an external device (PC or laptop).

It can be used for the following functions:

- Reading of operating parameters
- Reading of warning and alarm indications
- Setting the control mode
- Setting the set point
- Setting the control modes influenced by the temperature
- Give access to all the parameters that cannot be set-up by the user interface.

To offer a connection to an external BMS or to a generic external device even when the standard communication BUS is used for dual pump operations (in case of twin-head pumps), the pump can be equipped with an additional communication BUS provided as an optional.

Wireless

ecocirc XLplus is designed for wireless communication with Smart-Phone or Tablet by an optional Wireless module.

The Wireless communication capability offers the possibility to read and set up the pump status.
It can be used for the following functions:

- Reading of operating parameters
- Reading of warning and alarm indications
- Setting the control mode
- Setting the set point
- Setting the control modes influenced by the temperature
- Give access to all the parameters that cannot be set-up by the user interface.

OPERATING CONDITIONS

Water conditions

General recommendation:
- Water in heating systems: according to VDI 2035
- Water containing glycol: water/glycol mixture up to 50%.

Ambient conditions

The unit can be transported only in vertical position as indicated on the packaging. The product can be transported at an ambient temperature from -40°C to 70°C with humidity maximum 95% and protected against dirt, heat source and mechanical damage.
The product must be stored at an ambient temperature from -25°C to 55°C and maximum humidity of 95%.

Pumped liquids

The pump is suitable for thin, clear, non-aggressive and non-explosive liquids, not containing abrasive, solid or fibrous substances, toxic or corrosive liquids, potable liquids other than water or liquids not compatible with the pump construction material.
The pump is electronically protected against overloads; for this reason the use of water + glycol in the system can reduce the performance of the circulator, according to the percentage of glycol and the temperature of the fluid.

Minimum inlet pressure at the suction port

The values in the table are the inlet pressure above the atmospheric pressure.

Nominal Diameter	Fluid temperature 25°C	Fluid temperature 95°C	Fluid temperature 110°C
Rp 1	0,2 bar	1 bar	1,6 bar
Rp 1 1/4	0,2 bar	1 bar	1,6 bar
DN 32	0,3 bar	1,1 bar	1,7 bar
DN 40	0,3 bar	1,1 bar	1,7 bar
DN 50	0,3 bar	1,1 bar	1,7 bar
DN 65	0,5 bar	1,3 bar	1,9 bar
DN 80	0,5 bar	1,3 bar	1,9 bar
DN 100	0,5 bar	1,3 bar	1,9 bar

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NOTICE:
- Do not apply a pressure lower than the values specified as this could cause cavitation and damage the pump.
- The inlet pressure plus the pump pressure against a closed valve must be lower than maximum admissible system pressure.

ELECTRICAL DATA

Pump type	ecocirc XL ecocirc XLplus
Rated Voltage	1 x 230 V +/- 10%
Frequency	50/60 Hz
IP Protection	IP 44
Insulation class	Class 155 (F)
Digital input	External potential free contact Contact load: 5V, 10 mA
Digital output	Vmax < 250 VAC Imax < 2 A
Analog input	0-10 V 4-20 mA
Communication Bus	Modbus RTU BACnet MS/TP (not available for ecocirc XL and XLplus 25-40 (N), 25-60 (N), 32-40 (N) and 32-60 (N)).
Leakage current	< 3.5 mA
ECM (Electomagnetic compatibility)	EN 55014-1:2006 + A1:2009 + A2:2011, EN 55014-2:1997 + A1:2001 + A2:2008, EN 61000-3-2:2006 + A1:2009 + A2:2009, EN 61000-3-3:2008, 61800-3:2004+A1:2012.

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CONSTRUCTION

The circulator is a wet rotor circulation pump: all rotating components are immersed in the pumped liquid, which cools the motor and lubricates the bearings. The motor has high-efficiency due to the permanent magnet rotor, and it is driven by an electronic drive integrated with the circulator.

ecocirc XL and ecocirc XLplus are of the spherical rotor type for models 25-40, 25-60,32-40, 32-60: the specific design of these circulators prevents blocked rotors and / or bearing damage caused by the presence of impurities in the water. An automatic air-venting routine allows the perfect filling of water in the rotor zone, to avoid potential dry-runs: this routine can also be manually re-called by the user whenever deemed appropriate.

The remaining models in the ecocirc XL and ecocirc XL-plus range have electrical motors of the cylindrical-rotor type.
The pump automatically protects itself from poor lubrication with an automatic air-venting routine during the startup phase (and it can be also manually re-called whenever deemed appropriate), along with the detection of any dry-run; in addition, the circulator prevents itself from potential rotor-locking related to the presence of solid particles suspended in the pumped liquid through a system of internal filters.

In case of stand-by periods, an automatic anti-block routine rotates the rotor for few minutes a day..

The pump features the following:

- Controller integrated in the control box
- User interface on the control box
- Cast iron or stainless steel pump housing
- Twin-head versions
- No external motor protection required
- Insulation shell supplied with single head pumps for heating systems.

Pump connections

Threaded pipe connections according to ISO 228-1
Flange dimensions to EN 1092-2.

Surface treatment

For heating applications the material is cast iron G250 as standard.
Pump coating (cataphoretyc) in black color.