LOWARA

ecocirc XL
ecocirc XLplus

Applicare qui il codice a barre

Apply the adhesive bar code nameplate here

cod. 001084006 rev.A ed 01/2014

1 Introduction and Safety

1.1 Introduction

Purpose of this manual

The purpose of this manual is to provide necessary information for:

- Installation
- Operation
- Maintenance

CAUTION:

Read this manual carefully before installing and using the product. Improper use of the product can cause personal injury and damage to property, and may void the warranty.

NOTICE:

Save this manual for future reference, and keep it readily available at the location of the unit.

1.2 Safety terminology and symbols

Hazard levels

Hazard level	Indication
DANGER:	A hazardous situation which, if not avoided, will result in death or serious injury
WARNING:	A hazardous situation which, if not avoided, could result in death or serious injury
CAUTION:	A hazardous situation which, if not avoided, could result in minor or moderate injury
NOTICE:	• A potential situation which, if not avoided, could result in undesirable conditions • A practice not related to personal injury

Hazard categories

Hazard categories can either fall under hazard levels or let specific symbols replace the ordinary hazard level symbols.

Electrical hazards are indicated by the following specific symbol:

Electrical Hazard:

Hot surface hazard

Hot surface hazards are indicated by a specific symbol that replaces the typical hazard level symbols:

CAUTION:

1.3 Inexperienced users

WARNING:

This product is intended to be operated by qualified personnel only.

Be aware of the following precautions:

- Persons with diminished capacities should not operate the product unless they are supervised or have been properly trained by a professional.
- Children must be supervised to ensure that they do not play on or around the product.

1.4 Warranty

For information about warranty, see the sales contract.

1.5 Spare parts

WARNING:

Only use original spare parts to replace any worn or faulty components. The use of unsuitable spare parts may cause malfunctions, damage, and injuries as well as void the guarantee.

For more information about the product's spare parts, refer to the Sales and Service department.

1.6 EC DECLARATION OF CONFORMITY (TRANSLATION)

XYLEM SERVICE ITALIA SRL, WITH HEADQUARTERS IN VIA VITTORIO LOMBARDI 14 - 36075 MONTECCHIO MAGGIORE VI - ITALY, HEREBY DECLARES THAT THE PRODUCT

CIRCULATOR (SEE LABEL ON FIRST PAGE) *

[* in one of following versions: ECOCIRC XL, ECOCIRC XLplus, ECOCIRC XLplus with RS485 module, ECOCIRC XLplus with module Wireless. RS485 and Wireless modules supplied on request with the mounting on installer's care].

FULFILS THE RELEVANT PROVISIONS OF THE FOLLOWING EUROPEAN DIRECTIVES

- MACHINERY 2006/42/EC (ANNEX II: THE TECHNICAL FILE IS AVAILABLE FROM XYLEM SERVICE ITALIA SRL)
- ELECTROMAGNETIC COMPATIBILITY 2004/108/EC.
- RADIO EQUIPMENT AND TELECOMMUNICATIONS TERMINAL EQUIPMENT 1999/5/EC (Wireless module).
- ECODESIGN 2009/125/EC, REGULATION (EC) No.641/2009, REGULATION (EU) No. 622/2012: EEI ≤ 0, …. (SEE LABEL ON FIRST PAGE). (Annex I: "The benchmark for the most efficient circulators is EEI ≤ 0,20.").

AND THE FOLLOWING TECHNICAL STANDARDS

- EN 60335-1, EN 60335-2-51, EN 62233.
- 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.
- EN 60950-1, EN 301 489-17, EN 300 328 (Wireless module).
- EN 16297-1, EN 16297-2.

MONTECCHIO MAGGIORE, 02.09.2013
AMEDEO VALENTE
(DIRECTOR OF ENGINEERING AND R&D)
rev.00

Lowara is a trademark of Lowara srl Unipersonale, subsidiary of Xylem Inc.

2 Transportation and Storage

2.1 Inspect the delivery

1. Check the outside of the package.
2. Notify our distributor within eight days of the delivery date, if the product bears visible signs of damage.
3. Remove the staples and open the carton.
4. Remove the securing screws or the straps from the wooden base (if any).
5. Remove packing materials from the product. Dispose of all packing materials in accordance with local regulations.
6. Inspect the product to determine if any parts have been damaged or are missing.
7. Contact the seller if anything is out of order.

2.2 Transportation guidelines

Precautions

WARNING:
- Observe accident prevention regulations in force.
- Crush hazard. The unit and the components can be heavy. Use proper lifting methods and wear steel-toed shoes at all times.

Check the gross weight that is indicated on the package in order to select proper lifting equipment.

Position and fastening

The unit can be transported only in vertical position as indicated on the package. Make sure that the unit is securely fastened during transportation and cannot roll or fall over. The product must be transported at an ambient temperature from -40°C to 70°C (-40°F to 158°F) with humidity <95% and protected against dirt, heat source, and mechanical damage.

2.3 Storage guidelines

2.3.1 Storage location

NOTICE:
- Protect the product against humidity, dirt, heat sources, and mechanical damage.
- The product must be stored at an ambient temperature from -25°C to 55°C (-13°F to 131°F) and humidity < 95%.

3 Product Description

3.1 Pump design

The pump is a wet rotor circulation pump with energy-efficient electronically commutated permanent magnet technology, ECM technology. The pump does not require a release/ventilation screw.

Intended use

The pump is suitable for:
- Domestic hot water (only for bronze pump housing models)
- Hot water heating systems
- Cooling and cold water systems

The pump can also be used for:
- Solar systems
- Geothermal systems

Improper use

DANGER:
Do not use this pump to handle flammable and/or explosive liquids.

WARNING:
Improper use of the pump may create dangerous conditions and cause personal injury and damage to property.

NOTICE:
Do not use this pump to handle liquids containing abrasive, solid, or fibrous substances, toxic or corrosive liquids, potable liquids other than water, or liquids not compatible with the pump construction material.

An improper use of the product leads to the loss of the warranty.

3.2 Product denomination

Example: ecocirc XLplus D 40-100 F	
ecocirc XL	high efficiency pump series
plus	with communication capabilities
D	Pump type: "empty" = single pump D = twin pump B = bronze pump housing for domestic hot water pumping
40	Flange connection nominal diameter
-100	Maximum head of the pump -100 = 10m
F	Flange type: F = Flanged "empty" = Threaded

3.3 Technical data

Feature	Description
Motor model	Electronically commutated motor with permanent magnet rotor
Series	ecocirc XL ecocirc XLplus
Rated voltage	1 x 230 V ±10%
Frequency	50/60 Hz
Power consumption	40÷1700 W
IP protection	IP 44
Insulation class	Class 155 (F)
Maximum working pressure	The maximum pressure is indicated on pump data plate 0.60 MPa (6 bar) 1.0 MPa (10 bar)
Permitted liquid temperature	The maximum temperature is indicated on pump data plate from -10°C (14°F) to +110°C (230°F) for heating pumps from -10°C (14°F) to +85°C (185°F) for domestic hot water pumps
Permitted ambient temperature	from 0°C (32°F) to 40°C (104°F)
Permitted ambient humidity	< 95%
Permitted pumping media	Heating water according to VDI 2035, water/glycol mixtures[10] up to 50%.
Sound pressure	≤ 43 dB (A)
EMC (electromagnetic 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.
Leakage current	< 3.5 mA
I/O auxiliar +15 VDC power supply (Not available on 25-40, 25-60, 32-40, 32-60 models)	Imax < 40 mA
Fault signal relay	Vmax < 250 VAC Imax < 2 A

3.4 Scope of delivery

Inside the package you will find:

- Pump unit
- Insulating shells (single head only)
- Gasket (OR) to be used as replacement for the OR mounted between motor and pump housing
- Plug connector (for 25-40, 25-60, 32-40, 32-60 models only)
- Seal for threaded connection (only for threaded pump housing)
- Seal for flanged connection (only for flanged pump housing)
- Eight M12 washers and eight M16 washers (for models from DN32 to DN65)
- Eight M16 washers (for DN80 and DN100 PN6 model)
- Sixteen M16 washers (for DN80 and DN100 PN10 models)

3.5 Accessories

- Counter flanges
- Blind flanges
- Port to port adapters
- Pressure sensor (for details see section 5.2.9 of this manual)
- Temperature probe (for details see section 5.2.9 of this manual)
- RS485 module (only for ecocirc XLplus)
- Wireless module (only for ecocirc XLplus)

4 Installation

Precautions

WARNING:

- Observe accident prevention regulations in force.
- Use suitable equipment and protection.
- Always refer to the local and/or national regulations, legislation, and codes in force regarding the selection of the installation site, plumbing, and power connections.

4.1 Pump handling

WARNING:

Observe local regulations setting the limits for manual lifting or handling.

Always lift the pump by the pump head or pump housing. If the pump weight exceeds the manual handling limits, use lifting equipment, positioning lifting straps according to *Figure 11* .

4.2 Facility requirements

4.2.1 Pump location

DANGER:

Do not use this unit in environments that may contain flammable/explosive or chemically aggressive gases or powders.

[10] Performance of the pump is referred to water at 25°C (77°F). Pumped media with different viscosity will have impact on such performances.

Guidelines

Observe the following guidelines regarding the location of the product:

- Make sure that the installation area is protected from any fluid leaks, or flooding.
- If possible, place the pump slightly higher than the floor level.
- Provide shut-off valves in front of and behind the pump.
- The relative humidity of the ambient air must be less than 95%.

4.2.2 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 ¼	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

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.

4.2.3 Piping requirements

Precautions

WARNING:

- Use pipes suited to the maximum working pressure of the pump. Failure to do so can cause the system to rupture, with the risk of injury.
- Make sure that all connections are performed by qualified installation technicians and in compliance with the regulations in force.
- Do not use the on-off valve on the discharge side in the closed position for more than a few seconds. If the pump must operate with the discharge side closed for more than a few seconds, a bypass circuit must be installed to prevent overheating of the water inside the pump.

Piping checklist

- Pipes and valves must be correctly sized.
- Pipe work must not transmit any load or torque to pump flanges.

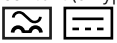
4.3 Electrical requirements

- The local regulations in force overrule specified requirements listed below.

Electrical connection checklist

Check that the following requirements are met:

- The electrical leads are protected from high temperature, vibrations, and collisions.
- The current type and voltage of mains connection must correspond to the specifications on the data plate on the pump.
- The power supply line is provided with:
  - A high-sensitivity differential switch (30 mA) [residual current device RCD] suitable for earth fault currents with DC or pulsating DC content (a Type B RCD is suggested).



  - A mains isolator switch with a contact gap of at least 3 mm

The electrical control panel checklist

NOTICE:

The control panel must match the ratings of the electric pump. Improper combinations could fail to guarantee the protection of the unit.

Check that the following requirements are met:

- The control panel must protect the pump against short-circuit. A time lag fuse or a circuit breaker (Type C model is suggested) can be used to protect the pump.
- The pump has built in overload and thermal protection, no additional overload protection is required.

The motor checklist

Use cable according to rules with 3 leads (2 + earth/ground). All cable must be heat-resistant up to +85°C (185°F).

4.4 Pump installation

1. Install the pump according to the systems liquid flow.
   - The arrow on the pump housing shows the flow direction through the pump.
   - The pump must be installed with the pump head in a horizontal position. For more information about allowed positions, see *Figure 12*
2. If necessary, rotate the position of the pump head for better reading of the user interface.

   For more instructions, see *Change the position of the pump head*.
3. If applicable, install the thermal shells.
   - Only use the pump thermal shells that are included in the delivery. Do not insulate the motor housing, the electronics can overheat so that the pump automatically switch off.
   - The thermal shells that are included in the delivery must only be used in hot water circulation applications with fluid temperature above 20°C (68°F). The thermal shells are

not able to enclose the pump housing in a diffusion-proof manner.
- If the customer creates the diffusion-proof insulation, then the pump housing must not be insulated above the motor flange. The drain opening must not be obstructed so that the accumulated condensation can run out.

4.5 Change the position of the pump head

WARNING:
- Drain the system or close the ON-OFF valves on both sides of the pump before disassembling the pump. The pumped fluid can be pressurized and scalding hot.
- There is the risk of escaping vapor when the pump head is separated from the pump housing.

Electrical Hazard:
Before starting work on the unit, make sure that the unit and the control panel are isolated from the power supply and cannot be energized.

CAUTION:
Burn hazard. During operation various surfaces on the unit will become hot. To avoid burn injury, use heat protective gloves.

WARNING:
- A strong magnetic field is created when the rotor is removed from or inserted into the pump head. This magnetic field can be harmful to pacemaker wearers and others with medical implants. In addition, the magnetic field may attract metal parts to the rotor which can cause injuries and/or damage the bearing of the pump.

For more information, see *Figure 14* and *Figure 15* .

1. Loosen the four hex-head screws (2) that fix the pump head to the pump housing (4).
2. Rotate the pump head (1) in 90° steps to the desired position.
3. When separating the pump head (1) from the pump housing (4):

a) Avoid removing the rotor from the pump head (1);
b) Pay attention to the magnetic hazard listed before;
c) Check that the O-ring (3) is not damaged.

   A defective O-ring must be replaced. An O-ring as spare part is already available inside the package.

4. Fit and tighten according to the table below for the four hex-head screws (2) that affix the motor to the pump housing (4).

Pump model	Screw type	Torque
25-40 25-60 32-40 32-60	M5	2.0 Nm
25-80 25-100 32-80 32-100 32-100F 40-100F 50-100F	M6	10.0 Nm
32-120F 40-120F 50-80F 65-80F	M8	19.0 Nm
50-120F 65-120F 80-120F 100-120F	M10	38.0 Nm

WARNING:
check for the presence of leaks after re-assembling the pump.

4.6 Electrical installation

Precautions

Electrical Hazard:
- Make sure that all connections are performed by qualified installation technicians and in compliance with the regulations in force.
- Before starting work on the unit, make sure that the unit and the control panel are isolated from the power supply and cannot be energized.

Grounding (earthing)

Electrical Hazard:
- Always connect the external protection conductor to ground (earth) terminal before making other electrical connections.
- All electrical equipment must be ground (earth) connected. This applies to the pump unit and related equipment. Verify the pump ground terminal is earthed.

NOTICE:
The number of power on and power off of the pump must be less than 3 times per hour and in any case less than 20/24h

4.6.1 Power supply connection

WARNING:

Do not make any connection in the pump control box unless the power supply has been switched off for at least 2 minutes.

For models with "plug connector" (25-40, 25-60, 32-40, 32-60). See *Figure 16* .	1. Open the connector cover and insert the cable inside the cable gland. 2. Pull down the contact retention spring. 3. Connect the cable according to the wiring diagram. 4. Align the two parts of the connector 5. Push the two parts one inside the other. 6. Close the connector and tighten carefully to the cable gland.
For models with a standard terminal block connection. See *Figure 15* .	1. Open the terminal box cover removing the screws (5). 2. Use the M20 cable gland for the power cable. 3. Connect the cable according to the wiring diagram. See *Figure 17* and *Figure 19* . a. Connect the ground (earth) lead. Make sure that the ground (earth) lead is longer than the phase leads. b. Connect the phase leads. 4. Close the terminal box cover and tighten the screws to 1 Nm.

For cable requirements, see *Connection assignment*.

4.6.2 I/O connections

1. Open the terminal box cover removing the screws (5). See *Figure 14* and *Figure 15*
2. Connect the appropriate cable according to the terminal block diagram. See *Figure 18* , *Figure 19* and the requirements of section *Connection assignment*.
3. Close the terminal box cover and tighten the screws to 1 Nm.

4.6.3 Connection assignment

NOTICE:

- For all the connections use heat resistant cable up to +85°C (+185°F). The cables never have to touch the motor housing or the pump or the pipeline.
- Wires connected to supply terminals and fault signal relay (NO,C) must be separated from others by reinforced insulation.

Only for 25-40, 25-60, 32-40, 32-60 Models	**PLUG Connector**	**M12 (1) Cable Φ 2÷5 mm**	**M12 (2) Cable Φ 2÷5 mm**
Power supply	3 x 0.75÷1.5mm^2 (2P+T)		
Fault signal		2 x 0.75÷1.5mm^2	
• Analog 0-10V • External pressure sensor • External temperature sensor • External Start/ Stop		If NO fault signal on this cable gland. Multiwire control cable, number of wires according to number of control circuits. Shielded if necessary	Multiwire control cable, number of wires according to number of control circuits. Shielded if necessary
Communication bus			Bus cable

	M20 Cable Φ 5÷13 mm	**M16 (1)**	**M16 (2)**
Power supply	3 x 0.75÷2.5 mm^2 (2P+T)		
- Power supply - Fault signal	5 x 0.75÷1.5 mm^2 (4P+T)		
Fault signal		2 x 0.75÷1.5mm^2	
• Analog 0-10V • External pressure sensor • External temperature sensor • External Start/ Stop		If NO fault signal on this cable gland. Multiwire control cable, number of wires according to number of control circuits. Shielded if necessary	Multiwire control cable, number of wires according to number of control circuits. Shielded if necessary

	M20 Cable Φ 5÷13 mm	M16 (1)	M16 (2)
Communication bus			Bus cable

NOTICE:

Tighten the cable glands carefully to ensure protection against cable slipping and humidity entering the terminal box.

5 System Description

5.1 User interface

The list describes the parts in *Figure 13* .

1. Control mode button
2. Control mode indicators
3. Parameter button
4. Parameter indicators
5. Setting buttons
6. Numeric display
7. Power indicator
8. Status / Fault indicator
9. Remote control indicator

Hot Surface:

Burn hazard. During the normal operation, the pump surfaces may be so hot that only the buttons should be touched to avoid burns.

5.1.1 User interface locking/unlocking

The user interface will automatically lock if no button is pressed for ten minutes, or if the upper setting button (5) and the parameter button (3) are pressed for two seconds. See *Figure 13* .

If a button is pressed when the user interface is locked, the display (6) shows:

To unlock the user interface, press the upper setting button (5) and the parameter button (3) for two seconds. The display (6) will show:

Now it is possible to change the pump setting as preferred.

5.2 Functions

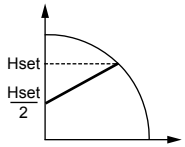
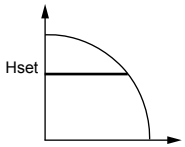
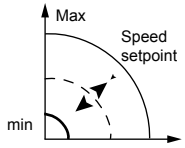
'The main functions of the pump are available through the pump user interface and embedded I/O. Advanced functions or communication features, can only be set via bus protocol or the optional Wireless module[11].

Function	ecocirc XL ecocirc XLplus	ecocirc XLplus only	
	User Interface or embedded I/O	Communication Bus	Wireless communication (optional)
Constant pressure (see section 5.2.1)	X	X	X
proportional pressure (see section 5.2.1)	X	X	X
Constant speed (see section 5.2.1)	X	X	X
Night mode (see section 5.2.2)	X	X	X
Δp-T control (see section 5.2.3)		X	X
Δp-ΔT control (see section 5.2.4)		X	X
T Constant (see section 5.2.5)		X	X
ΔT Constant (see section 5.2.6)		X	X
External Start/stop (see section 5.2.7)	X	X	X
PWM input Available only on 25-40, 25-60, 32-40, 32-60 models (see section 5.2.8)	X	X	X
Analog input (see section 5.2.9)	X	X	X

[11] Commmunication features and optional modules are available only for ecocirc XLplus models.

Function	ecocirc XL ecocirc XLplus	ecocirc XLplus only	
	User Interface or embedded I/O	Communication Bus	Wireless communication (optional)
Fault signal (see section 5.2.10)	X	X	X
External pressure sensor (see section 5.2.11)	X	X	X
External temperature sensor (see section 5.2.11)		X	X

5.2.1 Control mode

Mode	Description
Proportional pressure 	The pump pressure is continuously increased/ decreased depending on the increased/ decreased flow demand. The maximum head of the pump can be set via user interface. See section 6.1.2 Change set point.
Constant pressure 	The pump maintains a constant pressure at any flow demand. The desired head of the pump can be set via user interface. See section 6.1.2 Change set point.
Fixed speed control 	The pump maintains a fixed speed at any flow demand. The speed of the pump can be set via user interface. See section 6.1.2 Change set point.

All the control modes can be combined with the night mode function.

5.2.2 Night mode

The night mode function cannot be used in cooling systems.

Prerequisite

- The pump is 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.

The night mode can be active in combination with:

- Proportional pressure
- Constant pressure
- Constant speed

This function reduces the power consumption of the pump to the minimum when the heating system is not running. An algorithm detects the proper working conditions and automatically adjusts the speed of the pump.

The pump returns to the original set point as soon as the system restarts.

5.2.3 Δp-T control (available only on ecocirc XLplus)

The function alter the nominal differential pressure set point depending on the temperature of the pumped media.

For details refer to advanced functions manual on www.lowara.com

5.2.4 Δp-ΔT control (available only on ecocirc XLplus)

This function requires the external temperature probe type KTY83 (see section 5.2.9 of this manual).

This function alters the nominal differential pressure set point depending on the differential temperature of the pumped media.

For details, refer to the advanced functions manual on www.lowara.com

5.2.5 T constant (available only on ecocirc XLplus)

This function alters the speed of the pump in order to maintain a constant temperature of the pumped media.

For details, refer to the advanced functions manual on www.lowara.com

5.2.6 ΔT constant (available only on ecocirc XLplus)

This function alters the speed of the pump in order to maintain a constant differential temperature of the pumped media.

For details, refer to the advanced functions manual on www.lowara.com

5.2.7 External start/stop

The pump can be started or stopped via an external potential-free contact or a relay that is connected to terminal 11 and 12. See *Figure 18* and *Figure 19* . The pump unit is provided by default, with the terminals 11 and 12 short-circuited.

NOTICE:

- The pump provides 5 VDC through the start / stop terminals.
- No external voltage must be provided to start / stop terminals.
- The cables connected to the terminals 11 and 12, shall not exceed 20 m.

5.2.8 PWM input (available only on 25-40, 25-60, 32-40, 32-60 models)

Only on the listed models, the PWM input is available on terminals 11 and 12. See *Figure 18* .

The PWM signal shares the same terminals of the start/stop input.

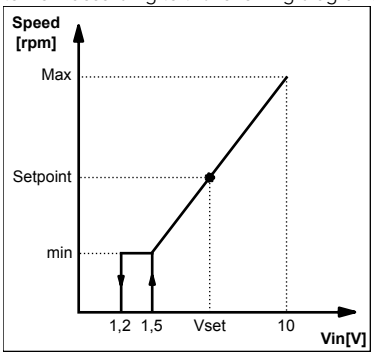
The two inputs are mutually exclusive.

For details, refer to advanced functions manual on www.lowara.com

5.2.9 Analog Input

The pump integrates a 0-10 V analog input at terminals 7 and 8. See *Figure 18* and *Figure 19* for changing the set point.

When a voltage input is detected, the pump switch to fix speed control mode automatically and start to work according to the following diagram:



5.2.10 Signal relay

The pump is equipped with a relay, terminals 4 and 5. See *Figure 18* and *Figure 19* , 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, *Figure 13* .

Ratings

- Vmax < 250 VAC
- Imax < 2 A

5.2.11 External sensors

The pump can be equipped with a differential pressure sensor and a temperature probe according to the following table:

Sensor description	Type	Terminals
Differential pressure sensor 4-20mA	1.0 bar (PN 10) 2.0 bar (PN 10)	9 - 10
External temperature sensor	KTY83	13 - 14

Pressure sensor setup

1. Install the pressure sensor on the pipe
2. Connect the cable at terminals 9 and 10 (see the 4.6.3 Connection assignment).
3. Power on the pump unit.
4. During startup the pump unit detects the sensor and shows a setup menu.
5. Select the right sensor model and confirm the selection using the parameter button (3). See *Figure 13* .
6. The pump will complete the startup sequence and automatically start working with constant pressure mode.
7. The setpoint can be changed using the setting buttons (5). See *Figure 13* .

External temperature sensor setup (only for ecocirc XLplus)

The setup of the sensor and control modes related to it, is available only through communication bus.

For details refer to communication and advanced functions manuals on www.lowara.com

NOTICE:

The sensor cables shall not exceed 20 m.

5.2.12 Communication bus (available only on ecocirc XLplus)

The pump has two built-in RS-485 communication channels. One is available as standard (terminals 15-16-17), while the second one is enabled only with optional RS-485 or Wireless module (terminals 18-19-20). See *Figure 18* and *Figure 19* .

The pump can communicate with external BMS systems via Modbus or BACnet[12] protocol. For a complete description of the protocols, refer to the communication manual at www.lowara.com.

NOTICE:

When remote control is active, the set points and control modes are managed only through communication channels and cannot be changed via the user interface. The displayed quantity and unit of measurement management remain active on user interface.

5.2.13 Automatic twin pump operation (available only on ecocirc XLplus)

Backup operation

Only the master pump runs. The second pump starts in case of failure of the master pump.

Alternate operation

Only one pump runs at the time. The working time is switched every 24 hours so that workload is balanced between both pumps. The second pump is started immediately in case of failure.

Parallel operation

Both pumps run simultaneously with the same set point. The master pump determines the behavior of the full system and is able to optimize the performance. To guarantee the required performance with the minimum power consumption, the master pump starts or stops the second pump depending on the head and flow that is required.

- **NOTE:** If an ecocirc XL basic (no communication available) is used in parallel operation, the two pump-heads may work in different duty points, especially at low flow. This could create some

[12] Not available on 25-40, 25-60, 32-40, 32-60 models.

pump instability and the clapet valve may become noisy. The use of ecocirc XLplus is suggested for parallel operation.

6 System Setup and Operation

Precaution

WARNING:
- Always wear protective gloves when handling the pumps and motor. When pumping hot liquids, the pump and its parts may exceed 40°C (104°F).
- The pump must not run dry as this can result in the destruction of the bearings. Fill the system correctly with liquid and vent the air before first start-up.

NOTICE:
- Never operate the pump with ON-OFF valve closed for longer than a few seconds.
- Do not expose an idle pump to freezing conditions. Drain all liquid that is inside the pump. Failure to do so can cause liquid to freeze and damage the pump.
- The sum of the pressure on the suction side (water mains, gravity tank) and the maximum pressure generated by the pump must not exceed the maximum working pressure that is allowed (nominal pressure PN) for the pump.
- Do not use the pump if cavitation occurs. Cavitation can damage the internal components.

6.1 Configure the pump settings

Change the pump settings using one of the following approaches:
- User interface
- Bus communication [13] (available only on ecocirc XLplus)
- Wireless communication [14] (available only on ecocirc XLplus)

6.1.1 Change the communication parameters

Change pump communication parameters. See *Figure 13* .

1. Switch off the pump.

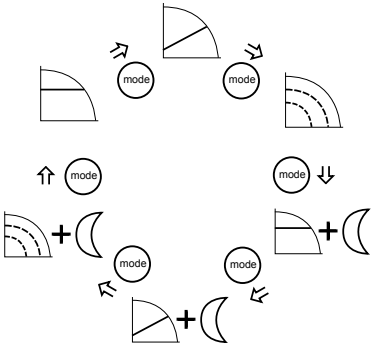
   Wait until the power indicator switch-off before continuing.
2. Switch on the pump.
3. When the display shows **COMM (COM)**[15], press the parameter button (3) to enter inside the communication menu.
4. Select one of the three values with setting button.
   - **BAUD (BDR)**[6] = baud rate setup (available values 4.8 - 9.6 - 14.4 - 19.2 - 38.4 - 56.0 - 57.6 kbps)
   - **ADDR (ADDR)**[6] = address setup (available address 1÷255 for Modbus and 0÷127 for BACnet)
   - **MODU (MDL)**[6] = optional module setup (0 = no module; 1 = Wireless module; 2 = RS-485 module)
5. Press the parameter button to enter the submenu
6. Edit the values using setting buttons.
7. Press the parameter button to confirm and store the new values.
8. Press mode button to exit the submenu.

If no buttons are pressed for 10 seconds, then the pump exit the current menu and continue start-up procedure. All the parameters that are changed without confirmation are restored at previous state.

6.1.2 Change the control mode

The pump can be controlled by a BMS[16] (Building management system) or other devices through the RS-485 communication port via Modbus or BACnet[17] protocol.

The following instruction is used when making the change on the user interface. See *Figure 13* .
- Press the operating mode button.
- The operating modes are cyclically changed by the pressed button.



6.1.3 Change the set point

See *Figure 13* as reference.

1. Press one of the setting buttons (5).

   The display starts to blinking the actual set point.
2. Change the value using the buttons (5).
3. Wait 3 seconds to store and activate the new set point.

13 not described in these instructions, see Communication manual on www.lowara.com
14 requires the installation of Wireless module on the pump
15 On three digit display of models 25-40, 25-60, 32-40, 32-60
16 Commmunication features and optional modules are available only for ecocirc XLplus models.
17 Not available on 25-40, 25-60, 32-40, 32-60 models.

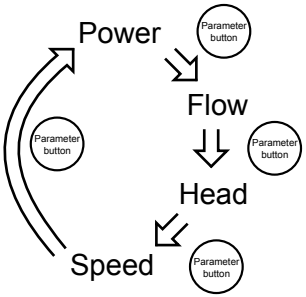
The display will stop blinking to confirm the change.

NOTICE:

If a non return valve is mounted on the system, it must be ensured that the set minimum discharge pressure of the pump is always higher than closing pressure of the valve.

6.1.4 Change the displayed unit of measurement

1. Press the button (3) to change the unit of measurement. See *Figure 13* .



2. When flow and head are displayed, by pressing the button (3) for more than one second, the unit of measurement can be changed as follow:
   - Flow: m3/h ↔ gpm (US)
   - Head: m ↔ ft

6.2 Start or stop the pump

CAUTION:

- The pump must not run dry as this can result in the destruction of the bearings in a very short time. Fill and vent the system correctly with liquid before first start-up. The pump rotor chamber will be vented after the power on of the pump with an automatic air venting procedure.
- The system cannot be vented through the pump.

- Start the pump in one of the following ways:
  - Switch on the power supply of the pump.
  - Close the start/stop contact.
  - Send the start command through the communication bus.

  The pumps starts pumping in constant pressure mode with the following default set point:
  - 2m for XX-40 models (Max head 4m)
  - 3m for XX-60 models (Max head 6m)
  - 4m for XX-80 models (Max head 8m)
  - 5m for XX-100 models (Max head 10m)
  - 6m for XX-120 models (Max head 12m)

  For more information about how to change setting, see *Configure the pump settings*.
- Stop the pump in one of the following ways:
  - Switch off the power supply of the pump.
  - Open the start/stop contact.
  - Send the stop command through the communication bus.

6.2.1 Automatic air venting procedure

At each power-on of the pump unit, an automatic air venting procedure is executed. During this phase, the user interface displays "deg" and a count-down until the completion of the procedure.

The procedure can be recalled or skipped:

- Manually by pressing simultaneously the two buttons (5). See *Figure 13* .
- For ecocirc XLplus only, via communication bus. See the communication manual on www.lowara.com.

6.2.2 Activate automatic twin pump operation (only for ecocirc XLplus)

The following procedure must be executed during the start-up phase of the pump.

1. Enter the twin pump sub menu when the display is showing **tuma** or **tusl**.
2. Select the applicable twin pump operation.
   - **bcup** = backup operation
   - **alte** = alternative operation
   - **para** = parallel operation
3. Push the parameter button to activate the new setting.

The second pump is configured by the master pump.

7 Maintenance

Precaution

Electrical Hazard:

Disconnect and lock out electrical power before installing or servicing the unit.

WARNING:

- Always wear protective gloves when handling the pumps and motor. When pumping hot liquids, the pump and its parts may exceed 40°C (104°F).
- Maintenance and service must be performed by skilled and qualified personnel only.
- Observe accident prevention regulations in force.
- Use suitable equipment and protection.

WARNING:

- A strong magnetic field is created when the rotor is removed from or inserted into the pump head. This magnetic field can be harmful to pacemaker wearers and others with medical implants. In addition, the magnetic field may attract metal parts to the rotor which can cause injuries and/or damage the bearing of the pump.

8 Troubleshooting

Introduction

See *Figure 13*

- In case of any alarm that allows the pump to continue running, the display shows alternatively alarm code and last quantity selected, while the status indicator (8) becomes orange.
- In case of a failure that stops the pump, the display shows the error code permanently and the status indicator (8) becomes red

8.1 Display messages

Table 3: Default

Operating LEDs / Display	Cause
Power On	Pump powered
All LEDs and display On	Start-up of the pump
Status Green light	Pump is working properly
Remote On	Remote communication is activated

Table 4: Fault messages

Operating LEDs / Display	Cause	Solution
Power Off	Pump is not connected or is incorrectly connected	Check connection
	Power failure	Check mains + circuit breaker and fuse
Status Orange light	Alarm for system problem	Check the alarm code on display to understand the problem of the system.
Status Red light	Pump failure	Check the error code on display to understand the problem of the pump.
Remote Off	Remote communication is deactivated	If the communication does not work, then check the connection and the configuration parameters for communication on the external controller.

8.2 Fault and error codes

Error code	Cause	Solution
E01	Internal communication lost	Restart the pump[18]
E02	High motor current	Restart the pump[18]
E03	DC Bus overvoltage	Other sources force too high flow through the pump. Check the system setup, correct position of non return valves and its integrity.
E04	Motor stall	Restart the pump[18]
E05	Data memory corrupted	Restart the pump[18]
E06	Voltage supply out of operating range	Check the electrical system voltage and connection.
E07	Motor thermal protection trip	Check the presence of impurities around impeller and rotor that cause overload on the motor. Check installation conditions and temperature of the water and air. Wait until the motor is cooled. If the error persist try to restart the pump[18].
E08	Inverter thermal protection trip	Check installation conditions and air temperature.
E09	Hardware error	Restart the pump[18].
E10	Dry run	Check presence of system leakage or fill the system.

8.3 Alarm codes

Alarm code	Cause	Solution
A01	Fluid sensor anomaly	Switch off the pump for 5 minutes and then power on.

[18] Switch off the pump for 5 minutes and then power on. If the problem persists, contact service.

Alarm code	Cause	Solution
		If the problem persists, contact service.
A02	High temperature of the fluid	Check the correct status of the system
A05	Data memory corrupted	Switch off the pump for 5 minutes and then power on. If the problem persists, contact service
A06	External temperature probe anomaly	Check the probe and the connection to the pump
A07	External pressure sensor anomaly	Check the sensor and the connection to the pump
A12	Twin pump communication lost	If both pumps show the A12 alarm, check the connection between the pumps. If one of the pump is switched off or shows another error code, check the section 8.1 and 8.2 to find the problem
A20	Internal alarm	Switch off the pump for 5 minutes and then power on. If the problem persists, contact service

8.4 Faults, causes, and remedies

The pump does not start

Cause	Remedy
No power.	Check the power supply and ensure connection to the main is intact.
Triggered ground-fault protection device or circuit breaker.	Reset and replace blown fuses.
Bridged or wrong start signal on the start/stop contacts.	Unbridge and correct the signal.

The pump starts but the thermal protector is triggered after a short time or the fuses blow

Cause	Remedy
Damages power cable, the motor short circuits or thermal protector or fuses are not suited for the motor current.	Check and replace the components as necessary.
Triggered thermo-amperometric protection (single phase) or of the protection device (three-phase) due to excessive current input.	Check the pump working conditions.
Missing a phase in the power supply.	Correct the power supply.

The pump is making loud noises

Cause	Remedy
Not thoroughly vented.	Recall the automatic air - venting procedure. See section 6.2.1 of this manual
Cavitation due to insufficient suction pressure.	Increase the system admission pressure within the admissible range.
Foreign objects in pump.	Clean the system.
Worn bearing	Contact the local sales and service representative.

9 Other Relevant Documentation or Manuals

9.1 Embedded Software and Driver Software License Agreement

With the purchase of the product, the terms and conditions of the license for the software embedded on the product are considered accepted. For more information see license condition on www.lowara.com

1 Introduction et sécurité

1.1 Introduction

Objet de ce manuel

L'objet de ce manuel est d'apporter les informations nécessaires pour :

- L'installation
- L'utilisation
- La maintenance

ATTENTION :

Lire attentivement ce manuel avant d'installer et d'utiliser ce produit. Une mauvaise utilisation du produit peut entraîner des blessures et des dégâts matériels et pourrait annuler la garantie.

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