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Handling and Operating Manual

VSD-LB/LC Control Panel



VSD-LB/LC Control Panel Handling and Operating Manual

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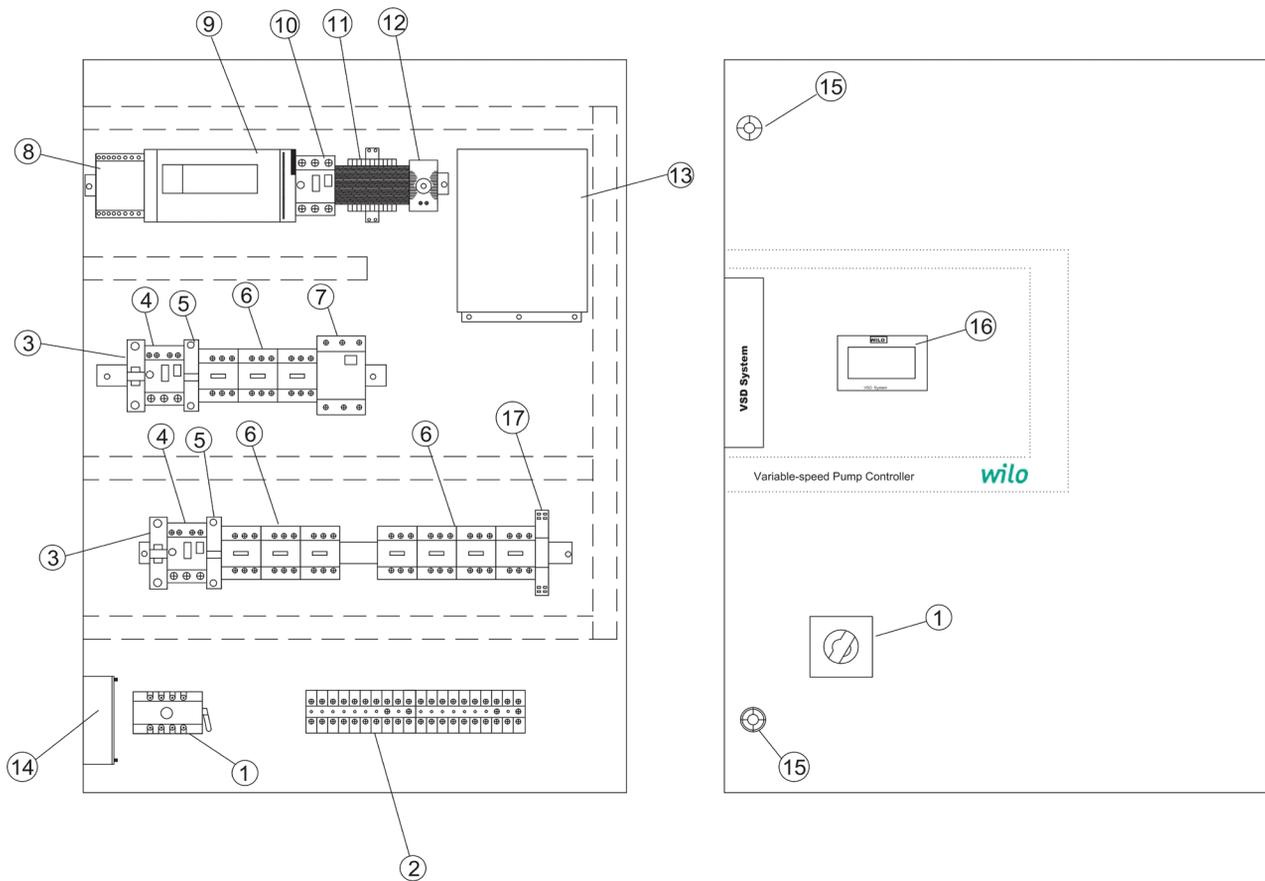


Figure: 1 (Wall Type)

- 1- Main switch
- 2- Terminals
- 3- Auto-Man selector switch
- 4- Thermal magnetic circuit breaker
- 5- Star-Delta relay
- 6- Contactors
- 7- FC Magnetic switch
- 8- 24VDC Transformer
- 9- PLC
- 10- Isolation transformer thermal magnetic switch
- 11- Isolation transformer
- 12- Thermostat
- 13- Frequency converter
- 14- Fan
- 15- Door lock
- 16- Touch screen
- 17- FC Start relay

" Panel design; The number of pumps may vary according to the power and selected options "

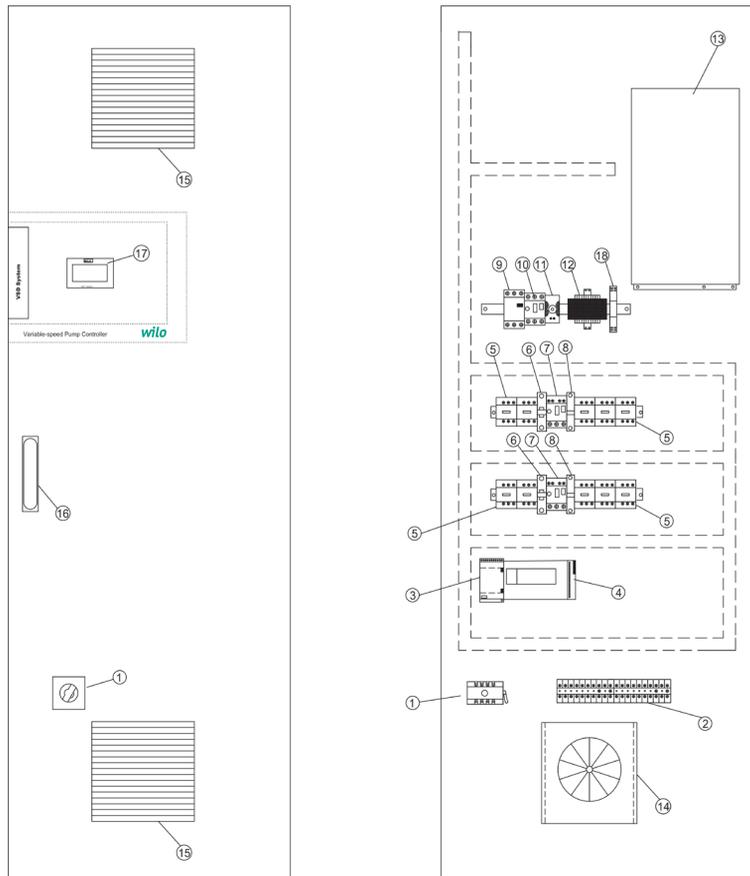


Figure: 2 (Standing Type)

- 1- Main switch
- 2- Terminals
- 3- 24VDC Transformer
- 4- Analog module
- 5- FC and Network contactors
- 6- Auto-Man selector switch
- 7- Thermal magnetic circuit breaker
- 8- Star delta relays
- 9- FC Magnetic switch
- 10- Isolation transformer thermal magnetic switch
- 11- Thermostat
- 12- Isolation transformer
- 13- Frequency converter
- 14- Fan
- 15- Ventilation grilles
- 16- PLC
- 17- Door lock
- 18- Touch screen
- 19- FC start relay

"Panel design; The number of pumps may vary according to the power and selected options"

1. General

Installation and operating should only be carried out by qualified personnel!

Installation and operating instructions are part of the device. It should be available at the side of the device as a source for reference at any time. Completely observing this manual is essential for proper use of the device and proper operation. The installation and operating manual conforms to the device model and the current safety technical norms at the time of printing.

2. Safety

This user manual contains basic explanations that should be taken into account during installation and operation. For this reason, this manual must be read by the installer and the relevant operator during installation and operation. Not only the general safety instructions under this basic safety title but also the special safety instructions added under the following points must be taken into consideration.

2.1 Symbols related to explanations in the user manual

In this operating guide, the safety rules if not followed that may cause injuries and handicaps are indicated by the following symbol.



The warnings against electric shock are specified by the following symbol.



For the purpose of specifying safety rules that may cause damage to machinery, equipment or systems when not in compliance

ATTENTION!

Symbol is used.

2.2 Staff education

The personnel performing the installation must have been properly trained for these operations.

2.3 Dangerous hazards if the safety rules are not observed

Failure to comply with the safety instructions may result in personal injury and damage to the equipment. Failure to comply with the safety rules will also invalidate compensation claims that may arise due to possible injuries. Failure to comply with the rules in general can lead to the following negative facts:

- The important functions of the equipment are disabled,
- Personnel injuries resulting from electrical or mechanical reasons.

2.4 Safety rules for operating personnel

The current legislation on the prevention of accidents should be respected. Necessary precautions should be taken against the hazards that may be caused by electricity. Hazardous electrical hazards must be considered and the directives of the local electricity distribution companies must be respected.

2.5 Safety rules for control and installation works

The business manager should ensure that all control and installation work is carried out by authorized and qualified specialist personnel and that they have information at a sufficient level regarding to the details given in the user manual. In principle, the work on the system should only be carried out when the system is in a completely stopped position.

2.6 Unauthorized modification and spare parts use

Changes to the appliance are only possible with the manufacturer's approval. The use of spare parts recommended by the manufacturer ensures that the safety is complete. The use of other parts may invalidate claims for compensation.

2.7 Unacceptable operating types

The operating safety of the supplied equipment is only guaranteed in case of operation in working condition indicated in paragraph 4 of the operating instructions. The operating limit values given in the catalog or brochures should never be exceeded.

3. Shipping and interim storage

ATTENTION!

The panel is shipped from the factory in boxes or on a pallet, protected against dust and moisture.

Receiving the product:

- The transport should be checked for damage,
- If any transport damage is detected, the transport company must make necessary initiatives.

During transport:

- Always use suitable lifting devices and take the safety nets to prevent parts from falling,



- Secure the product on a flat pallet, use a suitable pallet truck for transportation.
- Never stop under suspended loads, use a cage during lifting and secure the product straight into the cage.
- Ensure that the panel is stable and stable in storage and transport, and before the installation work in a safe place. The control unit must be protected against nausea and mechanical damage.

ATTENTION! The control unit must be protected against humidity and mechanical damage. Environment between -10 ° C and + 50 ° C Should not be used except this temperature range

Purpose of use

VSD-LB control units are for pressure booster systems and VSD-LC control units are for circulation pump systems to be adjusted to operate automatically, comfortably and energy efficiently. It is used for water supply and circulation systems in high-rise flats, hotels, hospitals, management and industrial buildings. The pumps with a connection of appropriate signal transmitters can be operated noiselessly and by providing energy saving. The power of the pumps can be adjusted for constantly changing needs of water supply/pressure booster/circulation systems.

5. Product information



5.1 Application

VSD-LB: Automated control of maximum 3 pumped pressure booster systems.

VSD-LC: Automated control of maximum 3 pumped circulation systems with a frequency converter and 4–20 mA pressure/differential pressure sensor.

5.2 Panel Coding

Sample : VSD-LB 2.2x3 WA

Sample : VSD-LC 2.2x3 WA

VSD-LB Booster control panel with frequency converter

VSD-LC Circulation control panel with frequency converter

3x Number of pumps controlled

2.2 Nominal power of each pump P2 [kW]

WA wall assembly type

SG standing type

5.3 Working Principle

The frequency converter in the panel adjusts the number of revolutions depending on the load of the pump it controls. The pressure sensor connected to the installation senses the pressure on the installation and transmits it as 4–20mA signal to the panel. The control system (PLC) keeps the set pressure value in the system constant at the set pressure value. If the required flow rate is not provided by the working pump(s), the other pump(s) enters the circuit starting from the most powerful one. In case of less need; starting from the oldest, the pump(s) is deactivated and fixed at the system setpoint.

5.4 Product Features / Benefits

- PID control
- Lockable main switch
- Manual-0-Automatic switch
- Special frequency converter for pump applications
- Phase protection
- Preventing dry run with liquid level float
- Extra protection with external electrode to prevent dry run
- Fluidity control
- Auto test
- Emergency stop
- External on/off
- General operation / General fault signals
- Individual operation / Individual fault signals
- Automatic pump replacement
- Frequency converter failure function without frequency converter
- Touch screen for all values and operating status
- Phase protection relay

Through the screen;

- Different language option (English, Turkish, Russian and French)
- Setting the system pressure value
- Existing pressure value in the system
- Selecting a replacement pump
- Delay times of pump on and off
- The "network", "backup" and "drive" operating positions of each pump
- Individual operating/recovering hours of pumps
- Resetting the pump operating time
- Total time of system operation
- Setting external setpoint with 4–20mA
- Work in 4 different pressure values during the day
- Switch to factory settings
- Reading drive speed / frequency value
- 4 different operating modes
- The pump controlled by the frequency converter is stationary, other pumps enter the circuit from the network or; All pumps are switched on via the frequency converter
- Advanced option options can be enabled / disabled on the screen.
- Easy setting of automation communication settings from the screen
- MODBUS communication (standard)
- Automatic day or time-based automatic on / off of the system
- Flow calculation
- Limit number of switches

5.4.1 Control and Signal Functions

- 4–20 milliamperes analog signal input for external setpoint
- Operation / stop with external dry contact
- SSM general fault signal
- SBM general operation signal
- Individual error signal for each pump
- Individual operation signal for each pump
- Monitor system pressure value in 4–20 milliamperes

5.4.2 Bus Types

- Modbus (Standard)

5.5 Equipment used in Panel

The structure of the control panel is designed according to power of connected pumps.

- **Main switch:** It switches the control device on / off. (Fig. 1 no. 1, Fig. 2 no. 1)
- **Touch screen:** Operational data (see. Menus) and operation The status is indicated by the background lighting. It provides menu selection and parameter entry via the touch screen. (Figure 1: 16, Figure 2: 17)



6. Electrical connections

The electrical connection must be carried out by trained personnel in accordance with the regulations of the regional electricity distribution company.

Network connection:

Explanations regarding the installation and operating instructions of the whole equipment must be taken into account.

Pump network connections

ATTENTION!

Take into account the installation and operating instructions of the pump!

6.1 Pressure sensor

According to the installation and operating instructions, connect the 4/20 mA pressure sensor to the terminals according to the circuit diagram. Use shielded cable, place shield in one-sided circuit box

ATTENTION!

Do not apply external voltage to the terminals!

6.2 External on / off circuit:

According to the circuit plan, the tele (remote) on / off circuit can be connected via the potential free contact (opener) after the bridge has been removed with the corresponding terminals (pre-assembled by the factory).

External on / off circuit	
Contact off	Auto ON
Contact on	Auto OFF, reporting on the screen with a symbol.
Contact load	24 VDC / 10 mA

ATTENTION!

Do not apply external voltage to the terminals!

6.3 Actual frequency indicator

In frequency converter control units there is a 0 -10 V signal to provide the possibility of externally measuring / displaying the current actual frequency via the related terminals according to the circuit diagram. The frequency range 0 ... 10 V equals 0 ... 50 Hz.

ATTENTION!

Do not apply external voltage to the terminals!

The individual precautions must be taken from the installing and operating guide for the complete equipment.

7. Operation

We recommend that the device be operated by WILO Customer Service. Before the first commissioning, the cables on the side of the building must be checked for proper connection and especially grounding. The individual precautions must be taken from the installing and operating guide for the complete equipment.

ATTENTION!

**All connection terminals must be tightened before commissioning.
Do not cover the fan inlet and outlet filters.**

7.1 Factory settings

Preset of the control panel was made in the factory. The factory setting can be recreated by the WILO Service.

7.2 Control of motor rotation

Each pump should be activated for a short period of time as «manual operation» to check whether the direction of rotation of the mains operated pump is the same as the arrow mark on the pump casing. In wet rotor pumps, an incorrect or correct direction of rotation is indicated by a control LED in the terminal box. If all the pumps turn in the wrong direction during mains operation, change 2 phases according to the demand of the mains line.

8. Maintenance

Periodic maintenance and repair works are only carried out by WILO Pompa Sistemleri A.Ş. By qualified personnel who are authorized and authorized by the authorized service department!



There is a life-threatening hazard due to electric shock when working on electrical devices.

- During all maintenance and repairs, the control unit must be switched off and must be picked up in such a way that it can not be re-started by unauthorized personnel.
 - Damage that may occur in the connection cable may only be rectified by a qualified electrician.
- The following maintenance by the user must be visually checked once a month;
- The control cabinet must be kept clean, if dusting occurs, it should be cleaned with a dry cloth outside the panel.
 - The filter elements in the fans should be checked by removing the fan cover by means of the tabs on the fan without opening the panel cover, cleaned with air and cleaned if necessary.



ATTENTION!

The leakage current protection relay must be installed in the power line where the control panel is connected.

Do not cover the fan inlet and outlet filters.

9. Spare parts

Spare parts is ordered through the services authorized by WILO Pompa Sistemleri A.Ş. The spare parts list is on the back page of the electrical project of the panel.

10. Authorized services

WILO Pompa Sistemleri A.Ş. You can find a list of services authorized by:

<http://www.wilo.com.tr/anasayfa/servis-destek/yetkili-servisler/>

11. Mis use

- The control panel cover must be kept closed and locked.
- Do not switch off the power supply switch of the control panel except for periodic maintenance (controlled conditions).
- Do not intervene in the panel without interrupting the power supply.
- Do not place any material on or in front of the control panel.
- By inserting an isolated carpet in front of the control panel and pressing on the carpet Interfere with the board.
- Do not pull the power supply line out of the control cabinet.

12. Safety and Environmental Instructions

Waste disposal and Complying with WEEE Regulation on Control of Hazardous Wastes:

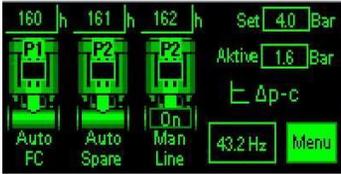
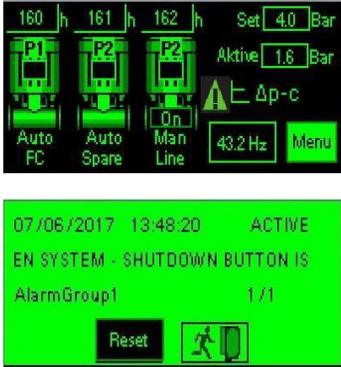
This product is in accordance with EU WEEE Instructions(2012/19/EU). This product includes a symbol that is used for management of waste from electric and electronic equipment. Within the European Union this symbol may be present on the product, packing or its relative manual. This symbol means that the relevant electric or electronic product must not be disposed alongside household waste products. The relevant products must be transported,recycled or disposed of according the following statements:

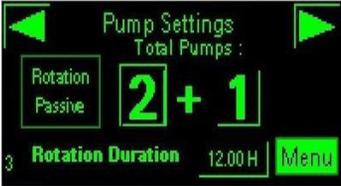
- These products must only be handed over to a certified disposal center.
- Comply with local law at all times! For the proper disposal procedure please contact local authorities, nearest disposal center or the dealer where you have made your purchase. For more information on recycling visit; <http://www.wilo-recycling.com> .

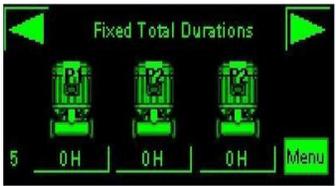
Packing Information Ambalaj Bilgileri : Packaging of this product is made from recycleable materials that comply with National Environmental Legislation. Do not dispose of packaging materials with household or other waste. Take these materials to recycling points designated by local authorities.

Technical differences may apply!

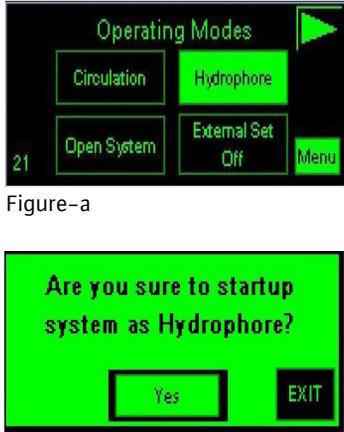
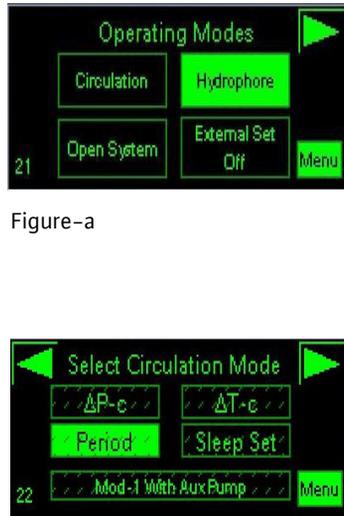
13. Screen Views and Explanations

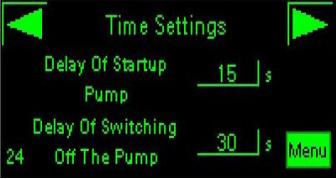
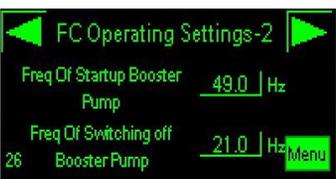
Screen View	Descriptions
	<p>12.1 Screen saver In order to enter the workplace it is required to click to the screen saver.</p>
	<p>Main page After being touched by the opening screen saver, the mainpage is opened and the mainpage changes according to the system operation mode. Set value of the system, current pressure value, operating mode, operating pumps; Information from network, FC or manual operation values can be watched from thispage</p>
	<p>Main Menu You may reach the main menu by clicking the Menu button on the main page. To be able to return to the worksheet again, the Trace button must be pressed.</p>
	<p>Alarms and Alarm Reset  When an alarm occurs, the  sign appears on the main page. When this mark is touched, the active alarms page opens. The other way to reach the alarm page is by pressing the Present Alarms button on the main menu page. The alarms are reset by pressing the Reset button. If the alarm is still active when the reset button is pressed, Please make the necessary checks.</p>
	<p>Past alarms When a system alarm occurs, it is reset by pressing the Reset button on the alarms page. Alarms that occur on the system are kept in the Past Alarms page.(till the number of 20)</p>
	<p>Manual Control Manual Control page is used to manually stop and start operation. This page is accessed by clicking the Pump Control button on the Main Menu page. If the pumps are in the automatic or manual position, it is understood from the lettering on the top and another feature is that the hand signal is displayed on the pump in the manual position. If the pump is operating in manual mode, it can be understood START or STOP written below. If you want to apply the pumps manually or automatically, the system must be active (the system must be open).</p>

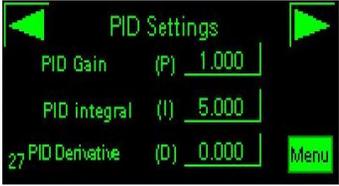
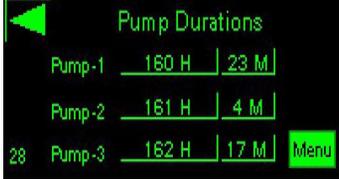
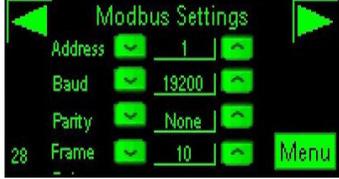
Screen View	Descriptions
	<p>Settings</p> <p>You can access the Settings page by clicking the Settings button on the Main Menu page. All settings related to the system can be accessed from this page. Service settings can be accessed by entering a password, other settings can be made without a password. The Operator button is click to access the settings.</p>
	<p>System Settings</p> <p>When you click on the operator button on the previous page, the system settings page is opened. From this page, the system can be stopped with the close button. The calculated flow rate value is displayed by entering the pump catalog values and the system reads the current pressure.</p>
	<p>Factory settings</p> <p>A confirmation screen appears when the Factory Settings button is pressed, and the system returns to the factory default settings when the Yes button is pressed.</p>
	<p>Operating Range Settings</p> <p>When the ▶ button on the upper right of the system settings page is pressed, the Operating Range Settings page is opened. There are two percentage values in the system. "Percentage value when FC is on"; While trying to get the system set value, the "current value" is considered to have caught the set value of the field called the lower limit and the upper limit. Thus, the system has the possibility of working in the deadband range. If the value entered is "while FC is oon fault", it has a different operating feature. When the FC is faulty, the current value of the system is deactivated when the auxiliary pump is below the lower limit value if necessary, and when the current value is above the upper limit value, the auxiliary pump is deactivated.</p>
	<p>Pump Settings</p> <p>The number of pumps in the system is entered by pressing on the figures on this page, the number on the left side of the + sign indicates the actual pump name, and the number on the right side indicates the spare pump name. Rotation When the Rotation active button is pressed, the pumps operate alternately according to the rotation period entered.</p>
	<p>System Automatic Shutdown Settings</p> <p>The entered "ON" time determines the system's power-on time and the "OFF" time sets the system shutdown time, so the system can be operated within the desired time zone. The shutdown button below the page must be activated.</p>

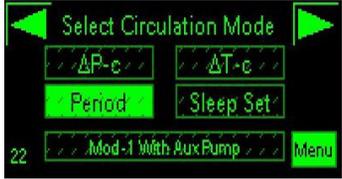
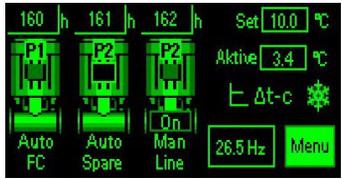
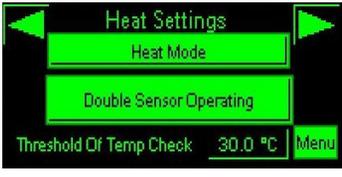
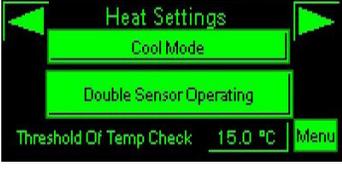
Screen View	Descriptions
	<p>Clock & Date</p> <p>The Clock & Date settings page is accessed by pressing the  button on the previous page of the system auto shutdown settings. After the time and date values entered on the left side of the page, press the  button.</p>
	<p>Fixed Total Durations</p> <p>The Total Durations can not be changed. Page is accessed by pressing the  button from the previous time & date settings page. The time periods displayed on this page give the total running time of the pumps. (The total time is not reset even if the run times are reset from the service settings menu)</p>
	<p>Automatic Test Kick</p> <p>The automatic test (Kick) page is accessed by pressing the previous  button on the previous Fixed total durations page. In order for this function to work, the "Auto Test" button must be "ACTIVE". The Auto Test function counts the number of times the pumps have not run. And it compares this time with the "Auto Test Period" time. If a pump has not been running for at least this time, it goes into the "Auto test duration" and stops. Thus, the pump is stopped for a long time and the system is prevented from collecting bacteria.</p>
	<p>Duration (Kick)</p> <p>The Duration (Kick) times page is reached by pressing the  button on the previous automatic test (kick) page.</p>

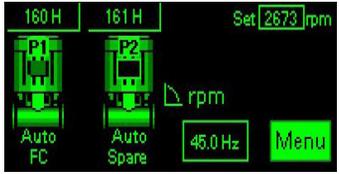
Screen View	Descriptions
	<p>Pressure Set Settings</p> <p>The system operation set value is entered from the Set Value page. Set value page is accessed by pressing the Set Value button on the settings page.</p> <p>Activation options are available to operate the system with different set values during the day. The system can operate according to 4 different set values. You can Press the corresponding button to make adjustments.</p> <p>In this case, the ON time is the time when the set value is active, and the OFF time is the time when the set value is inactive. If zero is entered, the set value entered without time restriction is activated for 24 hours.</p> <p>Each activation value has its own alarm lower limit and alarm upper limit values. The Set Value Limits page is accessed by pressing the previous Set Value button. The system will alarm when the current value is below the lower limit, but it will not affect its operation.</p> <p>2. The 3rd and 4th set values have their own ON OFF button. The self-timer is activated when the activation clock in the "ON" position is reached.</p>
	<p>Service Settings</p> <p>After the Service button under the Settings menu page is pressed, the service password is entered on the password entry screen and the Ent button is pressed after the service password is entered.</p>

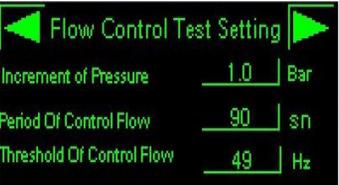
Screen View	Descriptions
	<p>Operating Modes</p> <p>Operating modes page is the first page opened after the service password is entered. Operating mode is selected from this page, control panel can be operated in two modes as Circulation and Booster. The selected mode is highlighted with green color. (As in the picture on the side is in the Booster mode). Another change from this page is the External Set setting; It means that the external set pressure set value is not from the control panel screen, but from an external place (such as building automation) to the relevant terminals in the panel. If External Set Off is written on the button, the system accepts the set value as the value entered from the screen. If the External Set On is written, the system accepts the set value given to the touch panel in the panel from the outside.</p>
 <p>Figure-a</p> <p>Figure-b</p>	<p>Changing Work Modes</p> <p>In order to change the operating mode, the system must be shut down. If the system is running, a dashed line will appear on the buttons and if the system is shutdown, the system will not allow to change the operating mode and will give a warning . Close the warning screen by pressing the Exit button and then turn off the system by pressing the Open System button. (Provide "Open System" on the button.) On this page, when the system is turned off and the Circulation button is pressed, the Select Circulation Mode screen appears.</p>
 <p>Figure-a</p> <p>Figure-b</p>	<p>Circulation modes</p> <p>Δ PC mode: After entering the service code, the circulation mode selection screen appears when the Circulation button is pressed on the operation mode change screen (Figure-a). Press Δ P-c button on the opened page to select Δ PC mode. Δ PC means constant pressure control. This mode is only used in circulation systems. The system tries to get the desired set value with the value read from 1 pressure difference sensor. In this system, at least 1 pump remains in continuous operation. Even if the pressure difference sensor in the system malfunctions, it will continue to operate alone with the "Sensor faulty operating frequency" value entered in the FC Operating settings-1 page. Even if both the sensor and the frequency converter are defective, at least one pump remains active to ensure water circulation in the system. If the system is designed to operate in Δ PC mode, when the panel is energized, the worksheet shown on the next screen (Figure-b) is opened after the opening screen saver page. From this screen, the faults and operating conditions of the pumps and system monitoring are done.</p>

Screen View	Descriptions
	<p>Sensor Settings</p> <p>The Sensor Settings page is accessed by pressing the  button on the previous Select Circulation Mode screen. That's Sensor's Maximum The value's is written in the system in how many bar sensors are used. (For example 16 if a 16 bar sensor is used). In the part of monitoring, the pressure value of the working page is displayed in Bar or Meter, and the selected unit button is highlighted with green color. (As you can see in the picture, if there are dashed lines on the Meter and Bar buttons, the system has an open meaning and you have to close the system with the System Close button in order to change the unit.)</p>
	<p>Time Settings</p> <p>The time settings page is accessed by pressing the  button on the previous Sensor settings page. In this page, the delay time settings for the commissioning and deactivation of the pumps are made.</p>
	<p>FC Operation Settings-1</p> <p>The FC Operation Settings-1 page is accessed by pressing the  button on the previous time settings page. In this page, the operating settings of the Frequency Converter are made.</p>
	<p>FC Operation Settings-2</p> <p>The FC Operation Settings-2 page is reached by pressing the previous FC Operation Settings-1  button. In this page, the operating settings of the Frequency Converter are made.</p>

Screen View	Descriptions
	<p>PID Settings</p> <p>The PID Settings page is accessed by pressing the  button on the previous FC Operation Settings-2 page. The PID values determine how the acceleration and deceleration of the frequency converter device will take place and how the system will behave in order to achieve setpoint. P (proportional) determines the acceleration deceleration step of the system. The set value is captured in smaller steps as the gain decreases. Therefore, catching the set value becomes more delayed. I "Integral time" value determines the speed of the system. If the integral time is smaller, the system will catch the set value faster. If it is longer, then it gets sooner. To capture a correct setting, first enter a derivative value of 0. Determine and set a speed that you want the integral to be. Then adjust the system by simply changing the P (proportional) value. Once the gain value is determined, you can make the system the closest you want by playing a little more with the Integral time value.</p>
	<p>Pump Durations</p> <p>The Pump Times page is accessed by pressing the  button on the previous PID Settings page. If the pumps have been taken or changed from this page, the pump run time can be reset.</p>
	<p>Modbus Settings</p> <p>The Modbus Settings page is accessed by pressing the  button on the previous Pump times page. Modbus communication settings are made from this page.</p>

Screen View	Descriptions
 <p>Figure-a</p>  <p>Figure-b</p>  <p>Figure-c</p>	<p>Δ TC mode</p> <p>After selecting the operation mode, the select circulation mode is opened (Figure-a). Press the ΔT-c button on the page to select TC mode. In this mode, the system is used to provide water circulation from the heating (burner) or cooling (cooling) units.</p> <p>Δ TC heating mode operation screen</p> <p>When the Δ TC heating mode is selected, the system operation screen is opened like that (Figure-b). From this screen, the fault, operating status and system monitoring of the pump are performed. This mode is used in heating water circulation, and the  symbol on this page tells you that the system is operating with only one sensor and is in heating mode.</p> <p>Δ TC cooling mode operation screen</p> <p>When Δ TC cooling mode is selected, the system operation screen is opened like that (Figure-c). From this screen, faults, operating status and system monitoring of the pumps are performed. This mode is used in the circulation of the cooler, which means that the system operates with only one sensor and is in cooling mode, as indicated by the  symbol on this page.</p>
	<p>Sensor Settings</p> <p>The Sensor Settings page is accessed by pressing the  button on the previous page of the Select Circulation Mode page. That's Sensor Max. Value is written in the system if a few C sensor is used. (150 for example if a 150 C sensor is used). Continuous oC is selected in Δ TC mode in the trace section.</p>
 <p>Figure-a</p>  <p>Figure-b</p>	<p>Heating Settings</p> <p>The Heating Settings page is accessed by pressing the  button on the previous Sensor settings page. From this page, it can be monitored and changed which mode the system works and how many sensors it works with. When the buttons are pressed, the operating mode will change and the operating mode name will be written on the button. For example, if the system is operating in the heating mode, it will write * heat mode * on the button (Figure-a). When the button is pressed, the system will go into cooling mode and will write * Cool Mode * on the button (Figure-b). Dual sensor operation; When there are two sensors in the system and in the systems where the return and return water temperatures are read, normally* double sensor operation * is on the button, and when the button is pressed, * single sensor operation * appears. The single sensor operation mode is used in systems where only the return water temperature is read when there is only one sensor in the system.</p>

Screen View	Descriptions
 <p>Figure-a</p>  <p>Figure-b</p>  <p>Figure-c</p>	<p>RPM mode</p> <p>This mode can only be operated when there is only one pump in the system. This mode is used to run the pump at a certain speed (Figure-a). The number of revolutions written on the motor label is entered in the Speed setting screen under the Service settings menu.</p> <p>RPM mode operation screen</p> <p>When the RPM mode is selected, the system operation screen is opened like this. From this screen, fault, operating status and system monitoring of the pump are performed (Figure-c).</p>
 <p>Figure-a</p>  <p>Figure-b</p>	<p>Booster Mode</p> <p>When the control system is used in the booster systems, this mode is selected by pressing the button from the Operation modes page under the Service menu (Figure-a). Features such as sleeping and flow control in this mode are designed to allow the booster system to operate comfortably. When the system operates in the booster mode, the worksheet is opened in this way (Figure-b).</p>

Screen View	Descriptions
	<p>Booster Working Mode</p> <p>From this page; In case of need, the auxiliary pump is set up with the mains or the driver. You can press button to change.</p>
 <p>Figure-a</p>  <p>Figure-b</p>	<p>Sleep Settings</p> <p>This function can only be used actively in booster systems. If the system is running under the drive "Sleep Threshold", the system will go to sleep mode until "Duration of Sleep Delay" and the operation of the pumps will stop. If the system falls to the "Wake up Percent", the pumps start working again. When the system is in sleep mode,  appears on the operation screen. This is how the system works in sleep mode (Figure-b).</p>
	<p>Flow Control Test Setup</p> <p>This function can only be used actively in booster systems. If the system is running on its own and the FC speed is fixed on the "Threshold" of, the system counts up to the " Period of Flow Control" time. At the end of this period, "Increment of Pressure" pressure system for a short time. If there is no need, the system goes to sleep mode with enough pressure in the system. Then, when the pressure drops (when needed), the system goes out of sleep mode and resumes normal operation.</p>
 	<p>Communication</p> <p>The contact information page is accessed by pressing the Communication button under the Settings menu.</p>

Screen View	Descriptions
 	<p>Language Selection</p> <p>The language selection page is accessed by pressing the Language button under the Settings menu.</p>
 	<p>Panel Settings</p> <p>The panel settings page is accessed by pressing the Panel Settings button under the Settings menu.</p>

13. Fault causes and possible solutions

Definition of Problem	Possible reasons	Solution recommendation
The pump goes into trouble when was passing from the network to the driver Pump runs shortly and stops	Acceleration and deceleration times are not compatible	Change the acceleration and deceleration ramp times over the drive.
	Turning directions are incompatible with network operation and drive operation	Change the positions of the two phases.
	Attached contactor	Change the contactor to which the contacts are adhered
	Ground is not connected	Connect the grounding cable
	The sensor reading incorrectly or interrupts the signal	Connect the grounding cable, pull the additional grounding cable.
	Sensor value had not entered or entered incorrectly	Enter the sensor maximum measurement scale from the Sensor settings page.
4/20 amperes Pressure sensor fault / Analog module fault	Pressure alarm upper limit is set too close to set value	Change the set values
	Sensor wiring faulty	Change the cable.
	Sensor grounding is not connected or grounding is insufficient	Connect the grounding cable, pull the additional grounding cable.
	Sensor is defective	The ends of the cables from the panel sensor are disconnected, a 2 k ohm resistor is connected, if the error is deleted the sensor is faulty
The driver contactor works, the frequency (Hz) does not increase in the driver	Sensor cable connectors are reversed connect	Replace the sensor cable ends.
	0-10 V terminals + - can be inverted in the drive	Replace the 0-10 V leads.
The driver contactor works, the frequency is rising but the pump is not running.	No voltage from 0 to from 10 V from PLC	Change the analogue module
	The drive is not powered at the start input	Check the cable.
The actual pressure in the plumbing differs from the plumbing pressure	Sensor values may be misrepresented. Equal reading can be achieved by introducing the sensor value low or high.	Enter the sensor maximum measurement scale from the Sensor settings page.
	The pressure sensor may be faulty if the system is not running, if it is different during operation.	Change the sensor.
	PLC analog input faulty	Change analog module.

Definition of Problem	Possible reasons	Solution recommendation
Triangle mark on screen seem.	The screen can not communicate with the PLC, the PLC program is deleted or there is a problem with the communication cables.	Check the communication cable, please try to reload the program if the problem persists
No text or images on screen	No display power supply.	The power supply should be checked if the display supply does not measure 24VDC.
Frequency on the screen drops to 20 Hz Drive frequency does not fall to 20 Hz	The low speed value in the drive parameter settings is too long.	Make a low speed 0 Hz through the drive.
In the driver, the pump can not taking off	Drive KW and motor KW must be controlled and they must be compatible	The drive should be replaced if the KW and the motor KW are incompatible.
	The driver's engine revolve is not compatible with the parametric revolutions of the driver. It must be compatible	Please Set the speed and drive parameters on the motor nameplate.
	There is a problem in the driver's contactor or in the power cables	Change the cables.
	Kw or motor speed not set	Change the drive parameter settings.
The active pressure is not constant on the display. The system is experiencing the same problem and frequency is navigating	Sensor may be faulty	Change the sensor.
	The sensor cable is not connected to the shielded cable or connected to the shield ground	Change cable, connect shield to ground terminal
	Voltage is affecting the channel where the sensor cable is moved.	Pull the sensor cable from a different duct.
	There may be devices that do not pressurize or leak back from the pumps.	Please do a mechanical check.
No fault on screen. System is not working.	On-screen system on / off position may be off	Change the position of the system on / off button.
	Pumps may be had left manually	From the manual control page, please take the pump automatic mode.
	Set value maybe not entered	Set the system set value from the Set Settings page.
Earth fault and motor short circuit faults	there are problems in Motor winding	The motor windings are measured.
	in contactor has short circuit	Change the contactor
	There is a touch on the trunk in the cables	Short-circuit check is done and corrected if necessary
	The drive outputs do not go to the motor regularly, the terminals may be loose.	Please check the terminals.

GARANTİ BELGESİ

Bu belge 6502 sayılı Tüketicinin Korunması Hakkında Kanun ve Garanti Belgesi Yönetmeliği'ne uygun olarak düzenlenmiştir.

GARANTİ ŞARTLARI

- Garanti süresi, malın teslim tarihinden itibaren başlar ve **2 yıldır**.
- Malın bütün parçaları dahil olmak üzere tamamı garanti kapsamındadır.
- Malın ayıplı olduğunun anlaşılması durumunda tüketici, 6502 sayılı Tüketicinin Korunması Hakkında Kanunun 11 inci maddesinde yer alan;
 - Sözleşmeden dönme,**
 - Satış bedelinden indirim isteme,**
 - Ücretsiz onarılmasını isteme,**
 - Satılanın ayıpsız bir misli ile değiştirilmesini isteme,**haklarından birini kullanabilir.
- Tüketicinin bu haklardan ücretsiz onarım hakkını** seçmesi durumunda satıcı; işçilik masrafı, değiştirilen parça bedeli ya da başka herhangi bir ad altında hiçbir ücret talep etmeksizin malın onarımını yapmak veya yaptırmakla yükümlüdür. Tüketici ücretsiz onarım hakkını üretici veya ithalatçıya karşı da kullanabilir. Satıcı, üretici ve ithalatçı tüketicinin bu hakkını kullanmasından müteselsilen sorumludur.
- Tüketicinin, **ücretsiz onarım hakkını** kullanması halinde malın;
 - Garanti süresi içinde tekrar arızalanması,
 - Tamiri için gereken azami sürenin aşılması,
 - Tamirinin mümkün olmadığının, yetkili servis istasyonu, satıcı, üretici veya ithalatçı tarafından bir raporla belirlenmesi durumlarında;**tüketici malın bedel iadesini, ayıp oranında bedel indirimini veya imkân varsa malın ayıpsız misli ile değiştirilmesini** satıcıdan talep edebilir. Satıcı, tüketicinin talebini reddedemez. Bu talebin yerine getirilmemesi durumunda satıcı, üretici ve ithalatçı müteselsilen sorumludur.
- Malın tamir süresi **20 iş gününü** geçemez. Bu süre, garanti süresi içerisinde mala ilişkin arızanın yetkili servis istasyonuna veya satıcıya bildiri tarihinde, garanti süresi dışında ise malın yetkili servis istasyonuna teslim tarihinden itibaren başlar. Malın arızasının **10 iş günü** içerisinde giderilememesi halinde, üretici veya ithalatçı; malın tamiri tamamlanıncaya kadar, benzer özelliklere sahip başka bir malı tüketicinin kullanımına tahsis etmek zorundadır. Malın garanti süresi içerisinde arızalanması durumunda, tamirde geçen süre garanti süresine eklenir.
- Malın kullanma kılavuzunda yer alan hususlara aykırı kullanılmasından kaynaklanan arızalar garanti kapsamı dışındadır.
- Tüketici, garantiden doğan haklarının kullanılması ile ilgili olarak çıkabilecek uyuşmazlıklarda yerleşim yerinin bulunduğu veya tüketici işleminin yapıldığı yerdeki **Tüketici Hakem Heyetine veya Tüketici Mahkemesine** başvurabilir.
- Satıcı tarafından bu **Garanti Belgesinin** verilmemesi durumunda, tüketici **Gümrük ve Ticaret Bakanlığı Tüketicinin Korunması ve Piyasa Gözetimi Genel Müdürlüğüne** başvurabilir.

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Yetkilinin İmzası :
Firmanın Kaşesi :

Malın
Cinsi : ELEKTRİK PANOSU
Markası : WILO
Modeli :

Malın
Garanti Süresi : 2 yıl
Azami Tamir Süresi : 20 iş günü
Bandrol ve Seri No :

GAİRANTİ İLE İLGİLİ OLARAK MÜŞTERİNİN DİKKAT ETMESİ GEREKEN HUSUSLAR

WILO Pompa Sistemleri San. ve Tic. A.Ş. tarafından verilen bu garanti, aşağıdaki durumları kapsamaz:

1. Ürün etiketi ve garanti belgesinin tahrif edilmesi.
2. Ürünün kullanma kılavuzunda yer alan hususlara aykırı ve amaç dışı kullanılmasından meydana gelen hasar ve arızalar.
3. Hatalı tip seçimi, hatalı yerleştirme, hatalı montaj ve hatalı tesisattan kaynaklanan hasar ve arızalar.
4. Yetkili servisler dışındaki kişiler tarafından yapılan işletmeye alma, bakım ve onarımlar nedeni ile oluşan hasar ve arızalar.
5. Ürünün tüketiciye tesliminden sonra nakliye, boşaltma, yükleme, depolama sırasında fiziki (çarpma, çizme, kırma) veya kimyevi etkenlerle meydana gelen hasar ve arızalar.
6. Yangın, yıldırım düşmesi, sel, deprem ve diğer doğal afetlerle meydana gelen hasar ve arızalar.
7. Ürünün yerleştirildiği uygunsuz ortam şartlarından kaynaklanan hasar ve arızalar.
8. Hatalı akışkan seçimi ve akışkanın fiziksel veya kimyasal özelliklerinden kaynaklanan hasar ve arızalar.
9. Gaz veya havayla basınçlandırılmış tanklarda yanlış basınç oluşumundan kaynaklanan hasar ve arızalar.
10. Tesisat zincirinde yer alan bir başka cihaz veya ekipmanın görevini yapmamasından veya yanlış kullanımından meydana gelen hasar ve arızalar.
11. Tesisattaki suyun donması ile oluşabilecek hasar ve arızalar.
12. Motorlu su pompasında kısa süreli de olsa kuru (susuz) çalıştırmaktan kaynaklanan hasar ve arızalar.
13. Motorlu su pompasının kullanma kılavuzunda belirtilen elektrik beslemesi toleranslarının dışında çalıştırılmasından kaynaklanan hasar ve arızalar.

Yukarıda belirtilen arızaların giderilmesi, ücret karşılığında yapılır.

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