

Wilo-Control Fire E VdS



en Installation and operating instructions



W-CTRL Fire VdS
<https://qr.wilo.com/1340>

Table of contents

1 General.....	4	12 Spare parts.....	23
1.1 About these instructions	4	12.1 Recommended spare parts inventory.....	23
1.2 Copyright	4	13 Disposal	23
1.3 Subject to change.....	4	13.1 Information on the collection of used electrical and elec- tronic products.....	23
1.4 Exclusion from warranty and liability.....	4		
1.5 VdS certification	4		
2 Safety.....	4		
2.1 Identification of safety instructions	5		
2.2 Personnel qualifications.....	5		
2.3 Electrical work	6		
2.4 Transport.....	6		
2.5 Installing/dismantling.....	7		
2.6 Operator responsibilities	7		
3 Transport and storage.....	7		
3.1 Delivery.....	7		
3.2 Transport.....	8		
3.3 Storage	8		
4 Intended use.....	8		
4.1 Intended use	8		
4.2 Improper use.....	8		
5 Product description	8		
5.1 Switchgear	9		
5.2 Control panel	9		
5.3 Switchgear door buttons	11		
5.4 Electrical components.....	11		
5.5 Display	12		
5.6 Technical data	12		
5.7 Technical data display	12		
5.8 Analogue and digital inputs.....	12		
5.9 Analogue and digital outputs.....	13		
5.10 Type key	13		
5.11 Scope of delivery.....	13		
5.12 Accessories	13		
6 Installation and electrical connection	14		
6.1 Requirements at the installation location.....	14		
6.2 Electrical connection	14		
7 Operation.....	15		
7.1 Menu	15		
7.2 Operating modes	16		
7.3 Monitoring functions.....	17		
7.4 Additional functions	17		
7.5 Running the operating modes	17		
8 Commissioning.....	18		
8.1 Carry out commissioning	19		
9 Shut-down	20		
9.1 Decommissioning	20		
10 Maintenance.....	20		
10.1 Maintenance intervals.....	20		
11 Faults, causes and remedies	21		

1 General

1.1 About these instructions

These instructions form part of the product. Compliance with the instructions is essential for correct handling and use:

- Read the instructions carefully before all activities.
- Keep the instructions in an accessible place at all times.
- Observe all product specifications.
- Observe the markings on the product.

The language of the original operating instructions is German. All other languages of these instructions are translations of the original operating instructions.

1.2 Copyright

WILO SE © 2024

The reproduction, distribution and utilisation of this document in addition to communication of its contents to others without express consent is prohibited. Offenders will be held liable for payment of damages. All rights reserved.

1.3 Subject to change

Wilo shall reserve the right to change the listed data without notice and shall not be liable for technical inaccuracies and/or omissions. The illustrations used may differ from the original and are intended as an exemplary representation of the product.

1.4 Exclusion from warranty and liability

Wilo shall specifically not assume any warranty or liability in the following cases:

- Inadequate configuration due to inadequate or incorrect instructions by the operator or the client
- Non-compliance with these instructions
- Improper use
- Incorrect storage or transport
- Incorrect installation or dismantling
- Insufficient maintenance
- Unauthorised repairs
- Inadequate construction site
- Chemical, electrical or electrochemical influences
- Wear

1.5 VdS certification

These instructions are for switchgears with VdS certification for fire-extinguishing systems with electric motors.

If the switchgear is used in fire-extinguishing systems in the purview of the VdS (VdS Schadenverhütung GmbH), the VdS regulations for installation, operation and maintenance must be observed and adhered to.

- Please observe VdS CEA 4001.

2 Safety

This section contains basic information about the individual stages in the life cycle of the pump. Failure to observe this information carries the following risks:

- Danger to persons from electrical, mechanical and bacteriological effects as well as electromagnetic fields
- Environmental damage from discharge of hazardous substances
- Damage to property
- Failure of important functions

Failure to observe the information contained herein will render any claims for damages void.

The directions and safety instructions in the other sections must also be observed!

2.1 Identification of safety instructions

These installation and operating instructions set out safety instructions for preventing personal injury and damage to property, which are displayed in different ways:

- Safety instructions relating to personal injury start with a signal word and are **preceded by a corresponding symbol**.
- Safety instructions relating to property damage start with a signal word and are displayed **without** a symbol.

Signal words

- **Danger!**
Failure to observe safety instructions will result in serious injury or death!
- **Warning!**
Failure to follow instructions can lead to (serious) injury!
- **Caution!**
Failure to follow instructions can lead to property damage and possible total loss.
- **Notice!**
Useful information on handling the product

Markups

- ✓ Prerequisite
- 1. Work step/list
 - ⇒ Notice/instructions
 - ▶ Result

Notices on the product

Comply with all notices and marks on the product and keep them in legible condition.

- Symbol for direction of rotation/flow
- Mark for connections
- Rating plate
- Warning stickers

Symbols

These instructions use the following symbols:



General danger symbol



Danger caused by electric voltage



Notices

2.2 Personnel qualifications

- Personnel have been instructed on locally applicable regulations governing accident prevention.
- Personnel have read and understood the installation and operating instructions.
- Electrical work: qualified electrician
Person with appropriate technical training, knowledge and experience who can identify and prevent electrical hazards.

- Installation/dismantling work: qualified fire protection expert according to the state of the art.
Correct installation and connection of the system to the supply line.
- Operation/control: Operating personnel, instructed in the functioning of the complete system
- Setting/operating the switchgear: trained expert for fire protection according to the state of the art.
Specialised linguistic knowledge in the areas of fire protection and motor technology.
- Maintenance work: trained fire protection expert according to the state of the art
Correct installation and connection of the system to the supply line.
Specialised linguistic knowledge in the areas of fire protection and motor technology.

2.3 Electrical work



NOTICE

Carry out electrical connection according to VdS CEA 4001.

- Electrical work must be carried out by a qualified electrician.
- Observe applicable local fire protection regulations when connecting to the mains power supply.
- Earth the device.
- Before commencing work, disconnect the product from the mains and secure it against being switched on again without authorisation.
- Train personnel on how to make electrical connections.
- Train personnel on the options for switching off the device.

2.4 Transport

- Wear the following protective equipment:
 - Safety footwear
 - Safety gloves for protection against cuts
 - Safety helmet (when using lifting equipment)
- Locally applicable laws and regulations on work safety and accident prevention must be complied with.
- Demarcate and cordon off the working area.
- Keep unauthorised persons away from the working area.
- Only use legally prescribed and approved lifting gears and lifting devices.
- Select the lifting gear based on the prevailing conditions (weather, attachment point, load, etc.).
- Always attach the lifting gear to the attachment points.
- Standing under suspended loads is not permitted. Do **not** move suspended loads over workplaces where people are present.

2.5 Installing/dismantling



NOTICE

Carry out installation according to VdS CEA 4001.

- Wear the following protective equipment:
 - Safety footwear
 - Safety gloves for protection against cuts
 - Safety helmet (when using lifting equipment)
- Locally applicable laws and regulations on work safety and accident prevention must be complied with.
- Demarcate and cordon off the working area.
- Keep working area free from ice.
- Keep the working area free of any objects lying around.
- Keep unauthorised persons away from the working area.
- Work must always be carried out by two persons.
- Disconnect the product from the mains and secure it against being switched on again.
- Cover open wells and water tanks or attach a safety harness.
- Only use legally prescribed and approved lifting gears and lifting devices.
- Stay outside the swivel range of the lifting device.

2.6 Operator responsibilities

- Provide installation and operating instructions in a language which the personnel can understand.
- Make sure that the personnel have received the required training for the specified work.
- Provide protective equipment. Ensure that the protective equipment is worn by personnel.
- Ensure that safety and information signs mounted on the device are always legible.
- Train the personnel on the function of the system.
- Eliminate any risk from electrical current.
- Equip hazardous components inside the entire system with an on-site guard.
- Demarcate and cordon off the working area.
- Define personnel responsibilities to ensure safe working practice.

Children and persons younger than 16 years or with reduced physical, sensory or mental capacities or limited experience are prohibited from handling the product! A technician must supervise persons younger than 18 years!

3 Transport and storage

3.1 Delivery

- After delivery, check product and packaging for defects (damage, completeness).
- The transport company or the manufacturer must be notified of any defects the day the shipment is received, and the damage noted on the freight documentation.

Claims cannot be asserted if the notification of defects takes place at a later date.

The product may already be pre-assembled on a system on delivery. If the product is not pre-assembled, it is delivered separately on a pallet or in a box. The product is packed in plastic wrap to protect it from humidity and dirt.

3.2 Transport



WARNING

Risk of injury from falling parts!

Never allow anyone to stand under suspended loads!

- Do not move the load over workplaces where persons are present.



WARNING

Risk of injury from a lack of protective equipment!

Danger of (serious) injuries during work. Wear the following protective equipment:

- Safety gloves for protection against cuts
- Safety shoes
- Safety helmet must be worn if lifting accessories are used!

CAUTION

Damage to property due to wet packaging!

Wet packaging may tear. If unprotected, the product may fall on the ground and be irreparably damaged.

- Carefully lift wet packaging and replace it immediately!

1. Only transport the product in the packaging provided.
2. If the outer packaging is damaged or no longer present, apply suitable protection from humidity and dirt.
3. Remove the outer packaging only once the system is on site.
4. Demarcate and cordon off the working area.
5. Keep unauthorised persons away from the working area.
6. Use approved lifting gear, such as sling chains or transport straps.
7. Only use proper and suitable lifting equipment.

3.3 Storage

- Place the product on a firm and level surface.
- Pack the product in dustproof and watertight packaging.
- Protect the product from direct sunlight and heat.
- Storage temperature between 0...+40 °C with a max. relative humidity of 95 %, non-condensing.
- All open threaded cable glands must be sealed to prevent water ingress into the housing.
- Attached cables should be protected against kinking, damage and ingress of moisture.

4 Intended use

4.1 Intended use

Switchgear for professional application in sprinkler systems:

- Control and monitoring of pump groups for firefighting.

4.2 Improper use

Intended use includes compliance with this manual. Any other use is regarded as non-intended use.

5 Product description

The switchgear is designed for professional use as part of a pump group. The switchgear is located in a switch cabinet with fixing holes at the rear and bottom for installation. The switch cabinet can be installed directly on a pump group or on a wall.

The switchgear is supplied with power via the mains. The switchgear supplies the motor with the necessary power for starting and operation.

5.1 Switchgear

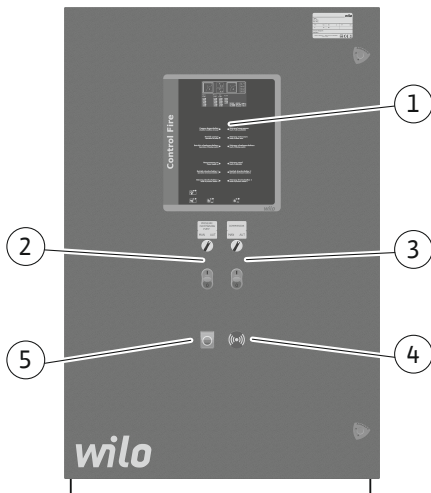


Fig. 1: Switchgear overview

All instruments, indicators and operating elements are located on the switchgear door. The main switch is located inside the switchgear.

	Description	Function
1	Control panel	Control panel with buttons, indicators and touchscreen display
2	<ul style="list-style-type: none"> Jockey pump/pressure-maintaining pump start and stop button Selection switch (jockey pump/pressure-maintaining pump) for manual or automatic mode 	<p>The jockey pump can be started and stopped via these buttons.</p> <p>Automatic mode: The jockey pump is started by an external float switch in the pressurised break tank.</p> <p>If it is a pressure-maintaining pump, it is started by an external pressure switch.</p> <p>If the amount of water in the break tank is too low and a compressor is needed, the jockey pump starts automatically until enough water is available. The compressor provides the required pressure. The jockey pump and compressor switch off when enough water and pressure are available.</p>
3	<ul style="list-style-type: none"> Compressor start and stop button Selection switch (compressor) for manual or automatic mode <p>Selection switch (compressor) for manual or automatic mode</p>	<p>The compressor can be started and stopped with these buttons. The automatic mode or manual mode can be selected with the selection switch.</p> <p>Automatic mode: The compressor is started by an external pressure switch.</p> <p>If a pressurised break tank is used, the compressor provides pressure in the break tank. In dry pipe systems, the compressor provides pressure to the piping.</p>
4	Acoustic alarm	Buzzer for acoustic alarm
5	Emergency stop	<p>If the switchgear has a fault, the unit can be stopped using the emergency stop button.</p> <p>After the emergency stop has been activated, the fuse protection QF1 must be switched back on in the switchgear.</p>

5.2 Control panel

The control panel contains the following:

- Instruments for monitoring and operating the pump and all subassemblies
- Graphical user interface with a touchscreen display

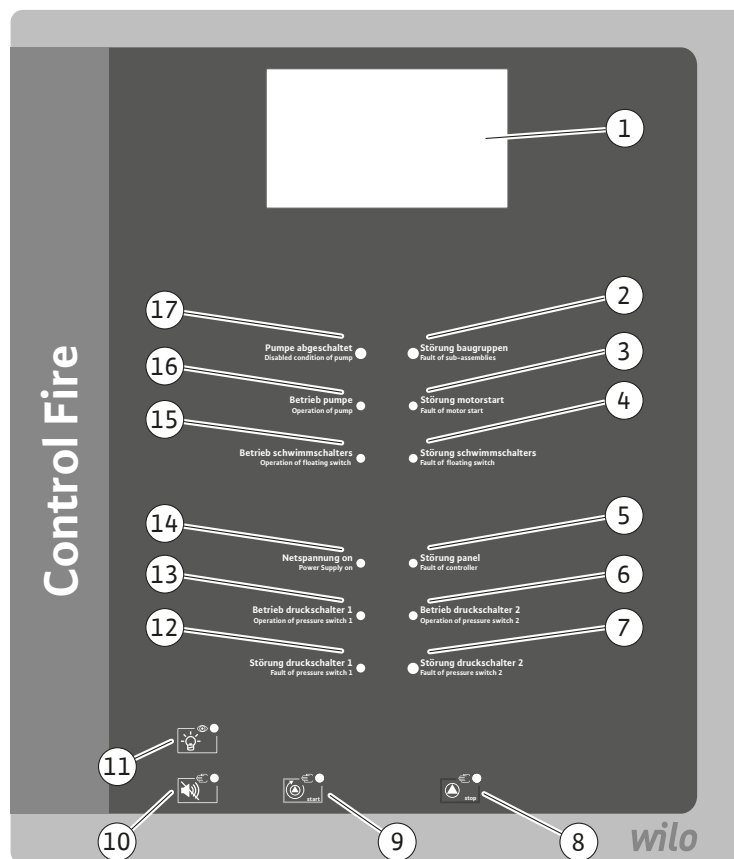


Fig. 2: Control panel overview

	Element	Description	Colour	As per VdS 2100-21en / VdS 2100-22en
1	Display	Display and settings of system parameters [► 12]		
2	Fault of subassemblies LED	Error in one of the optional subassemblies	Yellow	4.2.14.1
3	Fault of motor start LED	Error while starting the electric motor	Yellow	4.2.14.1
4	Fault of floating switch LED	Float switch error in the inlet tank due to short-circuited or interruption of the cable.	Yellow	4.2.14.1
5	Fault of switchgear LED	Error in switchgear or program execution	Yellow	
6	Operation of pressure switch 2 LED	Pressure switch 2 operating	White	4.2.14.1
7	Fault of pressure switch 2 LED	Error at pressure switch 2	Yellow	4.2.14.1
8	Manual stop button	Stop the pump manually after an automatic or manual start-up. LED lights up if the button is pressed.	Red	4.2.13
9	Manual start button	Start pump manually. The pressure switch start is simulated. LED lights up if the manual start is active.	White	4.2.13
10	Buzzer off button	Deactivate acoustic alarm in case of fault. LED lights up when mute is activated. Mute is deactivated if another alarm occurs.	White	4.2.13
11	Lamp test button	Test LED indicators. LED lights up if the button is pressed.	White	
12	Fault of pressure switch 1 LED	Error at pressure switch 1	Yellow	4.2.14.1
13	Operation of pressure switch 1 LED	Pressure switch 1 operating	White	4.2.14.1
14	Power supply on LED	Mains voltage is normal, power supply is switched on If the LED does not light up: Check power supply and fuse protection frequency converter 1 + frequency converter 2	White	4.2.14.1

	Element	Description	Colour	As per VdS 2100-21en / VdS 2100-22en
15	Operation of floating switch LED	Water level in the inlet tank has dropped to 2/3 of the normal fill level.	Yellow	4.2.11.1
16	Operation of pump LED	Pump is in operation (automatic start via pressure switch or manual start)	White	4.2.14.1
17	Disabled condition of pump LED	Pump was in automatic mode and was stopped. A request from a pressure switch is still present. LED turns off when pressure is restored (no request from pressure switch) and the system is back in automatic mode.	Blue	4.2.14.1

5.3 Switchgear door buttons

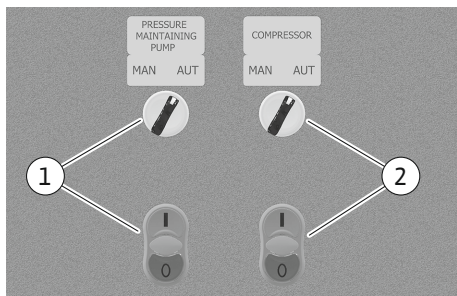


Fig. 3: Switchgear door buttons

	Button	Description	As per VdS 2100-22en
1	Manual start/stop of the jockey pump/pressure-maintaining pump (option)	Top button starts the jockey pump/pressure-maintaining pump. Bottom button stops the jockey pump/pressure-maintaining pump. Selection switch für automatic or manual mode.	4.2.13
2	Manual start/stop of the compressor (option)	Top button starts the compressor. Bottom button stops the compressor. Selection switch für automatic or manual mode.	4.2.13

5.4 Electrical components

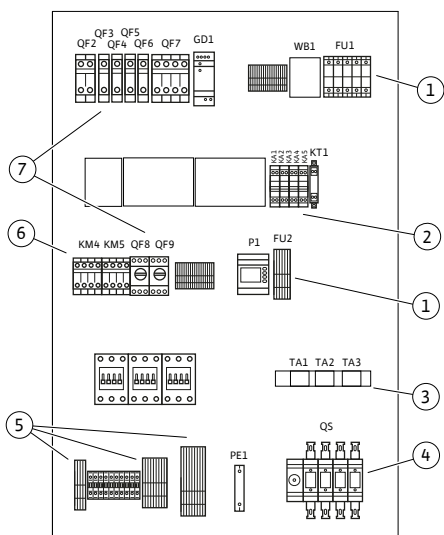


Fig. 4: Overview of electrical components

	Description
1	Fuse protection (Frequency converter 1 – Frequency converter 2)
2	Relay (KA...)
3	Amperometric transformer (TA...)
4	Main switch (QS1)
5	Terminal strips (M...)
6	Power contactors (KM...)
7	Circuit breaker (QF...)

5.5 Display

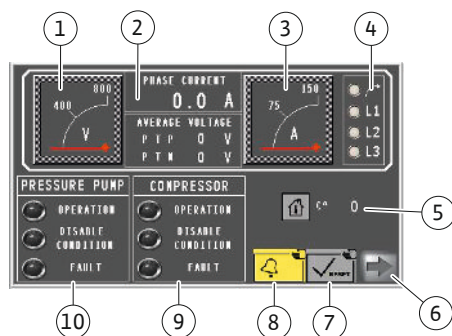


Fig. 5: Overview of main menu

	Description
1	Voltmeter display
2	Electric current and voltage meter display
3	Ammeter display
4	Phase sequence and phase supply display
5	Ambient temperature
6	Scroll menu <ul style="list-style-type: none"> Press to access the system menu and scroll through pages.
7	Reset alarms <ul style="list-style-type: none"> Press to reset all alarms and indicators.
8	General alarm indicator <ul style="list-style-type: none"> Press to display the alarm type and the alarm record.
9	Compressor status (option) <ul style="list-style-type: none"> Fault (yellow) Operation (white) Fault (blue)
10	Jockey pump/pressure-maintaining pump status (option) <ul style="list-style-type: none"> Fault (yellow) Operation (white) Fault (blue)

- For more menus, see Menu [► 15].

5.6 Technical data

Switchgear material	Steel, red
Ambient temperature	+4 ... +40°C
Mains voltage	3~ 400 V +/-10%
Mains frequency	50 Hz
Max. relative humidity	50% at max. 40°C
Switchgear protection class	IP54
Insulation class	F
Energy efficiency class	IE3
Max. installation height	1000 m above SL
Min. air pressure	1 bar
Rated current	See rating plate
EMC noise emission	According to EN 61000-6-3
EMC noise insensitivity	According to EN 61000-6-2

5.7 Technical data display

Display type	TFT colour display
Display size	4.3"
Resolution	480 x 272 pixels
Colours	65,536 colours
Backlight	White LED
Service life of backlight	50,000 hours
Brightness setting	16 stages

5.8 Analogue and digital inputs

The switchgear has digital and analogue inputs.

Designation	Input (digital) SLAVE10	Terminal
IN8	Emergency switch active	M1 -6
IN9	Jockey pump/pressure-maintaining pump pressure switch	M1 -8
IN10	Compressor pressure switch	M1 -10

Designation	Input (analogue) SLAVE12	Terminal
IN1	Pump 1 pressure switch	M2 -1
IN2	Pump 2 pressure switch	M2 -3
IN3	Float switch inlet tank	M2 -5
IN8	Room temperature sensor	M2 -7

5.9 Analogue and digital outputs

The switchgear has digital outputs. Some outputs are dependent on the optionally selected potential-free changeover contacts.

Printed circuit board 1 designation	Output (slave 10)	Terminal
OUT1	Bus communication OK, motor OK	M3. 159-161
OUT2	Start float switch of inlet tank	M3. 156-158
OUT3	Mains voltage OK	M3. 153-155
OUT4	General error	M3. 150-152
OUT5	Pump stop, automatic mode excluded	M3. 147-149
OUT6	Start request	M3. 144-146
OUT7	Pump overload	M2. 141-143

Printed circuit board 2 designation	Output (slave 11)	Terminal
OUT1	Automatic transfer switch for reset-blocking	M3. 181-183
OUT4	Start: Jockey pump/pressure-maintaining pump/compressor (option)	M3. 168-170
OUT5	Fault: Jockey pump/pressure-maintaining pump/compressor (option)	M3. 165-167
OUT6	Out of operation: Jockey pump/pressure-maintaining pump/compressor (option)	M3. 162-164

5.10 Type key

Example: W-CTRL-F-1x33A-TN4-N37-SD-E18.5

W-CTRL	Wilo switchgear
F	Fire-fighting system
1x	Number of pumps
33A	Rated current strength (A)
TN4	T: 3 phases N: Neutral conductor 4: Rated voltage 400 V
N37	Coding for tested product through VdS
SD	Star-delta starting
E18.5	E: Pump with electric motor 18.5: Rated power of the electric motor (A)

5.11 Scope of delivery

- Switchgear
 - Ready for connection
 - Pre-assembled and set at the factory
 - Including function test
- Installation and operating instructions
- Accessories, depending on order

5.12 Accessories

- Jockey pump/pressure-maintaining pump
- Pressure switch with pre-assembled resistors
- Float switch with pre-assembled resistors
- Automatic transfer switch (switchover to 2nd power supply)

For more information on the installation, calibration and adjustment of the accessories supplied, refer to the manufacturer's instructions.

- Order accessories separately.

6 Installation and electrical connection



WARNING

Danger due to improper installation!

- Have the switchgear connected in accordance with local regulations and by qualified personnel.
- If the switchgear is installed in fire pump systems within the scope of VdS, observe VdS regulations for installation, operation and maintenance.
- Please observe VdS CEA 4001.



DANGER

Risk of explosion if the switchgear is installed in potentially explosive areas!

The switchgear does not have its own explosion protection class and must always be installed outside of potentially explosive areas! The connection must be made by a qualified electrician.

CAUTION

Risk of material damage due to escaping water.

Escaping water can damage the components of the switchgear.

- Install the switchgear in such a way that water escaping from the pump or pipework cannot damage the switchgear.

6.1 Requirements at the installation location

- Install the switchgear in a dry, well-ventilated, frost-free room.
- Avoid direct sun exposure.
- Place the switchgear as close as possible to the pump and within sight of the pump unit.
- Maintain sufficient distance for installation and later access to the switchgear.
- Ensure that the switchgear is installed at the correct height.
- Ensure sufficient air circulation for cooling.

6.2 Electrical connection



DANGER

Risk of fatal injury due to electrical current!

Improper conduct when carrying out electrical work can lead to death due to electric shock!

- Electrical work must be carried out by a qualified electrician in accordance with the locally applicable regulations.
- If the product is disconnected from the mains, secure it against being switched on again.



CAUTION

Risk of damage to property.

An incorrect electrical connection will damage the product.

- Carry out the electrical connection according to the circuit diagram in the switchgear.

The circuit diagram documentation is stored in the switch cabinet.

- The mains connection current and voltage must be as stated on the rating plate.



If the switchgear is part of a fire-fighting system, the wiring is pre-assembled at the factory.



If the switchgear is supplied as a component, carry out the following work:

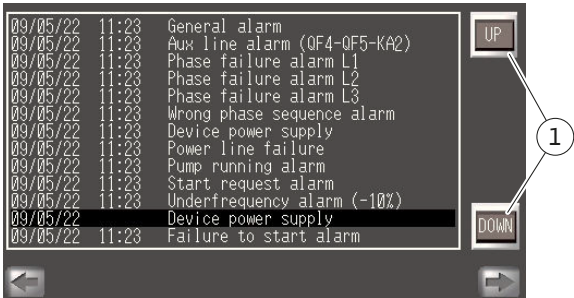

- The mains connection cable must be dimensioned in accordance with the relevant standards.
- Use safety switches that match the cable cross-sections.
- Connect the mains connection cable to the main switch.
- Pressure switch 1 to terminal M2 -1 (pressure switches from the accessories are ready for connection with pre-assembled resistors.)
- Pressure switch 2 to terminal M2 -3 (pressure switches from the accessories are ready for connection with pre-assembled resistors.)
- Float switch for break tank to terminal M2 -5. If not available as an accessory, bridge the corresponding terminal.
- When status and alarm signals are passed on to a building services system, the signals can be sent via free contacts. Each alarm has a free contact in the commutation.

7 Operation

7.1 Menu

The menus can be called up using the  and  buttons.

Page	View	Description
2		<p>Display of electric current and voltage per phase, frequency and power</p> <ol style="list-style-type: none"> 1. Duration of the last start 2. Total number of operating hours 3. Next page in the menu 4. Open page 2.1: <ul style="list-style-type: none"> — Enter password 9456 5. Change display language
2.1		<ul style="list-style-type: none"> • Change values <ul style="list-style-type: none"> — Select value. — Enter new value. • Date and time <ol style="list-style-type: none"> 1. Rated voltage (Phase to Phase “PTP”, or Phase to Neutral “PTN”) 2. Rated current 3. Frequency 4. Ammeter setting 5. Motor power 6. Pressure switch start delay for automatic start 7. Reset: Press for 5 seconds for system reset. 8. Change values
3		<p>Status display for inputs and outputs: Slave 10 and slave 11 (full rectangle: active)</p>

Page	View	Description
4		1. Call up alarm history
5		Software version

7.2 Operating modes

The switchgear is in automatic mode as standard.

In automatic mode, the control lamp “Power supply ON” lights up. All error and status messages do not light up or are reset.

The switchgear can work on other operating modes:

- Manual mode
- Additional operating functions

7.2.1 Manual mode

The pump can be started manually for manual mode with the “Manual start” button. The pressure switch on the discharge side is bypassed and the start cycle of automatic mode is activated.

When the pump is in operation, the control lamp “Pump operation” lights up. When the pump is stopped with the “Manual stop” button and the pressure is above the pressure set on the pressure switches, the control device returns to automatic mode. If the pressure is not sufficient, the control device switches off the pump (automatic deactivation).

Start pump

1. Open the switchgear.
2. Check that all circuit breakers are switched on.
3. Activate switchgear at the main switch.
4. Close switchgear.
 - ⇒ If the electrical connection is correct, the control lamp “Power supply ON” lights up. Possible notifications are shown on the display and by the general message display.
5. Reset alarms with the reset button in the display.
6. Press the “Manual start” button.
7. If the pump does not start, check fault indications and instructions in the display.
 - The system is in manual mode.

Stop pump

1. Press the “Manual stop” button on the control panel.
 - ⇒ When the pressure is restored, the system goes into automatic mode.

7.2.2 Emergency stop

The switchgear is equipped with emergency stop buttons including cover on the front door. The emergency start and emergency stop buttons are always active, even if the switchgear has an error.

- After the emergency stop has been activated, switch the fuse protection QF1 back on in the switchgear.

7.2.3 Additional operating functions

Test control lamps

- To test the function of the control device's control lamp, press the "Lamp test" button on the control panel.

7.3 Monitoring functions

Function	Description
Phase error	The power supply is monitored for phase error and low voltage. A fault is indicated if the power supply drops below 400 V. If the fault no longer exists, the fault indicator is automatically reset.
Main printed circuit board	The main printed circuit board is monitored. LED lights up in the event of a fault or communication error of the slave printed circuit boards with the main printed circuit board. In the event of a general malfunction of the control, all LEDs light up.
Pressure switch	The electric circuit is monitored to detect wire breakage and short-circuits. In case of wire breakage or short-circuit, the control lamp "Fault of pressure switch 1" or "Fault of pressure switch 2" lights up. If the fault no longer exists, the fault indicator is automatically reset.

7.4 Additional functions

Function	Description
Jockey pump/pressure-maintaining pump control	The jockey pump/pressure-maintaining pump can be set to automatic mode or manual mode with the selection switch. In automatic mode, the jockey pump/pressure-maintaining pump is controlled by a float switch in the pressure tank or an external pressure switch. If the fill level and pressure in the pressure tank is too low, the jockey pump/pressure-maintaining pump starts up automatically and raises the fill level to the preset level. The pressure is generated by the compressor. The jockey pump/pressure-maintaining pump can be switched on and off manually using the buttons on the switchgear.
Compressor control	The compressor can be set to automatic mode or manual mode with the selection switch. In automatic mode, the compressor is started by an external pressure switch. In manual mode, the compressor can be switched on and off with the buttons on the switchgear. If the pressure in the pressure tank is too low, the compressor starts automatically and increases the pressure in the pressure tank.
Inlet tank fill level	The fill level in the inlet tank can be monitored by a float switch. When the fill level drops below 2/3 of the tank capacity, the pump starts automatically and the "Operation of float switch" indicator lights up. In the event of a float switch error, the "Fault of float switch" indicator lights up. If the fault no longer exists, the fault indicator is automatically reset.

7.5 Running the operating modes



WARNING

Risk of injury due to improper operation!

- Observe safety information in the installation and operating instructions of the pumps.



CAUTION

Risk of damage to property!

Insufficient ventilation can cause damage to the switchgear.

- Ensure sufficient ventilation of the switchgear

The most important operating parameters, notifications and alarm signals appear on the display panel and are indicated via control lamps in the control panel.

- Reset alarm signals that do not reset automatically by pressing the reset button on the display.

7.5.1 Automatic mode

After the system has been installed correctly and commissioned, it will be in automatic mode. The control lamp "Power supply ON" lights up. The system starts once the sprinklers have been activated by a fire. No further operation is required.

Start via pressure switch

- If the sprinklers are activated during a fire and water is expended, the pressure in the discharge pipe is reduced.
- If the pressure drops below the set value, the pump starts automatically.
- When the pump is running, the control lamps "Operation of pump" and "Operation of pressure switch" as well as the control lamp "Operation of pressure switch 1" or "Operation of pressure switch 2" are lit.

Start via float switch

The pump also starts when the fill level of the inlet tank (if present) falls below 2/3 of the filling volume. The pump must always be supplied with water on the suction side.

- Check the system pipework for leakage.
- Check the suction line and valve of the pump.



NOTICE

The system is not stopped if warnings arise. To stop the pump, press "Manual stop" on the control panel.

Execute emergency stop

If an emergency shutdown is required, carry out one of the following actions:

- Disconnect the entire fire-fighting system from the power supply.
- Press the emergency stop button on the front of the switchgear.

7.5.2 Performing test runs



CAUTION

Risk of material damage during test run.

If a fault occurs during the test run, the product may be damaged.

- Do not leave the installation room during the test run.
- Observe all operating and fault indications, as the product does not stop automatically in the event of a fault (e.g., no cooling water or no oil).

1. Press the "Manual start" button.
2. Press the "Manual stop" button.
3. Close the stop valve of the test line.
 - After stopping, the pump group enters automatic mode.

8 Commissioning

8.1 Carry out commissioning



DANGER

Risk of fatal injury due to electrical current!

Improper conduct when carrying out electrical work can lead to death due to electric shock!

- Electrical work must be carried out by a qualified electrician in accordance with the locally applicable regulations.
- If the product is disconnected from the mains, secure it against being switched on again.



DANGER

Risk of fatal injury due to electrical current!

There is a risk of fatal injury when performing work on the open switchgear! The components carry current!

- Have work carried out by a qualified electrician.
- Avoid contact with earthed metal parts (pipes, frames etc.).



WARNING

Risk of injury due to improper commissioning!

- Observe the information on commissioning in the installation and operating instructions of the pump.

Preliminary work

- ✓ Switchgear and pump group are properly installed and connected.
1. Set the pressure switch to the required values.
 2. Check the tight fit of the screw terminals of the controllers and signal transmitters before commissioning.

Commissioning



CAUTION

Risk of property damage due to improper commissioning!

- Ensure that there are no problems with the other components of the pump group during commissioning.
- Ensure that no dangerous situations occur during start-up.

1. Open the switchgear.
2. Check that all circuit breakers are switched on.
3. Activate the switchgear with the main switch.
4. Close switchgear.
 - ⇒ If the electrical connection is correct, the control lamp "Power supply ON" lights up.
5. Press the "Manual start" button to check whether the system functions.
 - ⇒ If the motor does not start, check the control panel and display for error messages.
6. Press the "Manual stop" button.
 - The pump group is ready for operation and is in automatic mode.

After installation, a test run must be carried out for commissioning on site in accordance with VdS:

- Activate the automatic start command by lowering the pressure in the discharge line. Press and hold down the motor stop button.
- Each start cycle consists of a start phase (10 seconds) followed by a pause of maximum 10 seconds.

- After six failed start-up attempts, the switchgear has to activate the start fault alarm.
- Release the motor stop button and reset the alarm indicator using the reset button. The pump must start up correctly.
- Commissioning is complete when the system is pressurised after a start-up and the switchgear is in automatic mode.

9 Shut-down

9.1 Decommissioning

To decommission the pumps, they must first be stopped.



NOTICE

Observe the drainage instructions for the pump and electric motor.



NOTICE

Observe the regulations of VdS CEA 4001 (safety measures and procedure in the event of a non-functional system).

1. Close stop valve on the discharge side.
 2. Close stop valve on the suction side.
 3. Open the switchgear.
 4. Set the main switch to "OFF".
 5. Open all circuit breakers.
 6. Close switchgear.
- The unit is switched off and cannot be started.

10 Maintenance



DANGER

Risk of fatal injury due to electrical current!

Improper conduct when carrying out electrical work can lead to death due to electric shock!

- Electrical work must be carried out by a qualified electrician in accordance with the locally applicable regulations.
- If the product is disconnected from the mains, secure it against being switched on again.



NOTICE

Observe regulations!

- Observe the maintenance instructions of the VdS.



NOTICE

Professional maintenance!

The operator must ensure that all maintenance, inspection and installation work is carried out by qualified personnel. A regular maintenance schedule helps to avoid expensive repairs and contributes to trouble-free, reliable operation.

10.1 Maintenance intervals

Weekly

- Test control lamps.
1. Press the "Lamp test" button. If a control lamp is defective, contact Wilo customer service.

Monthly

- Check optional leakage detection device.

1. Carry out a functional test of the leakage detection device; see component documentation.

Annually

- Check cable and cable connections.
- Check terminals.
- Check earthing.

1. Tighten loose connections.
2. Replace damaged cables.

11 Faults, causes and remedies**WARNING****Risk of fatal injury due to insufficient qualification!**

- Faults should only be remedied by qualified personnel!
- Carefully read and understand the instructions in this manual.
- Do not repair materials or equipment unless you understand how they function.

Contact Wilo for regular maintenance if:

- The personnel do not have sufficient knowledge about the product.
- The personnel do not have sufficient knowledge of the operating logic required by the specific standards for fire-fighting systems.
- The personnel do not have the necessary technical skills.

Main pump with electric motor

Fault	Cause	Remedies
Motor does not start	No power supply	Check connections and electrical components.
	Short-circuit in the turns	Check the turns.
	Overload	Check dimensions of connection cables. Check free movement of the pump.
	Switchgear defective/faulty connections	Check the switchgear and connections.
	Incorrect direction of rotation	Swap phases.
Pump does not deliver water or has a very low volume flow or delivery head	Negative suction head is too high. Pump cavitation	Check calculations according to the NPSHr value of the pump.
	Incorrect diameters of suction pipe and valves. Pump cavitation	Check calculations according to the NPSHr value of the pump
	Air entering the suction line	Make sure that there are no leakages in the suction line. Check the distance between the suction units if more than one pump is installed. Install anti-vortex plates.
	Partially/fully closed stop valves	Open the stop valve.
	Wear and tear on pump	Check and repair.
	Pump impeller blocked.	Check and repair.
	Suction strainer/clogged filters	Check and repair.
	Wear and tear on pump/motor joint	Check and repair.
	The motor does not reach the rated speed.	Check voltage. Check connections and cable cross-sections.
	Voltage at motor too low.	Check voltage. Check connections and cable cross-sections.
The motor does not reach the rated speed	Loose contact in the power contactor	Check and repair.
	Error in starting mechanism	

Fault	Cause	Remedies
	Phase error	Check cable, connections and fuses.
	Loose contact in the connecting cable	Ensure that the connection terminals are securely attached.
	Earthing/short-circuit in the turns	Remove motor and contact customer service.
Operation not possible under load when starting	Switch und fuse of the connecting cable unsuitable	Exchange with suitable switch and fuse.
	Voltage too low	Check power supply.
	Pump blocked	Remove and check the rotating parts.
Voltage on the motor housing	Live wires and earthing mixed up	Connect live wire and earthing correctly.
	Moist or old insulation	Dry motor or rewind.
	Short-circuit between connections and motor housing	Check insulation
	Overload with partially blocked pump	Remove and check.
	Misalignment between pump and motor	Realign.
	Ambient temperature higher than 40 °C	Air-condition the area.
Motor housing heats up in an unusual manner	Rated voltage too high/low	Check power supply.
	Phase failure	Check power supply and fuses.
	Insufficient ventilation	Check filter and ventilation screen, clean or change size.
	Slip between stator and rotor	Contact customer service.
	Voltage difference between the three phases	Check power supply.
	Momentary overload/foreign body in the pump	Stop the motor, disassemble and repair the pump.
Sudden drop in speed	Single-phase operation	Check power supply and fuses.
	Voltage drop	Check power supply.
Magnetic noise and sudden whistling	Short-circuit in the turns	Contact customer service.
	Slip between stator and rotor	Contact customer service.
	Loose screws	Check and tighten the screwed connection.
	Loose screws on the fan cover	Check and tighten the screwed connection.
	Loose cardan cover	
	Slip between fan and housing	Realign and remount.
Mechanical noise	Foreign object in the pump or motor	Disassemble and clean.
	Misalignment between pump and motor	Realign.
	Bearings poorly lubricated or worn/broken	Lubricate with grease or replace.
	Damaged bearings	Replace bearings.
Overheating of pump/motor bearings	Insufficient lubrication	Lubricate with grease.
	Misalignment between pump and motor	Realign.
	Pump cavitation	Check the configuration of the system.
Unusual vibrations	Water with high air content	Make sure that there are no leakages in the suction line. Check the distance between the suction units if more than one pump is installed. Install anti-vortex plates.
	Closure on bearings, pump shaft	Replace bearings.

Fault	Cause	Remedies
	Wear and tear on the pump/rubber plug motor coupling	Replace the rubber plug.
	Misalignment between pump and motor	Realign.
The motor does not stop after pressing the STOP button.	Normal if pressure in the system is not restored	End the automatic mode by turning the selection switch to "AUTOMATIC OFF" and press the "Manual stop" button.
	Error in the control unit	Cut power supply to switchgear with main switch.

12 Spare parts

Spare parts are ordered via customer service. To avoid return queries and incorrect orders, the serial or article number must always be supplied. **Subject to change without prior notice!**

12.1 Recommended spare parts inventory

To ensure that interventions can be made and the system can be restored quickly, maintaining a stock of the spare parts is recommended.

- For additional information, see spare parts list.
- Contact customer service.

13 Disposal

13.1 Information on the collection of used electrical and electronic products

Proper disposal and appropriate recycling of this product prevents damage to the environment and danger to your personal health.



NOTICE

Disposal in domestic waste is prohibited!

In the European Union this symbol may be included on the product, the packaging or the accompanying documentation. It means that the electrical and electronic products in question must not be disposed of along with domestic waste.

To ensure proper handling, recycling and disposal of the used products in question, please note the following points:

- Hand over these products at designated, certified collection points only.
- Observe the locally applicable regulations!

Please consult your local municipality, the nearest waste disposal site, or the dealer who sold the product to you for information on proper disposal. See www.wilo-recycling.com for more information about recycling.



1. **Introduction** (10 minutes)

2. **Background** (10 minutes)

3. **Methodology** (10 minutes)

4. **Results** (10 minutes)

5. **Conclusion** (10 minutes)

6. **References** (10 minutes)

7. **Appendix** (10 minutes)

8. **Summary** (10 minutes)

9. **Q&A** (10 minutes)

10. **Conclusion** (10 minutes)

11. **References** (10 minutes)

12. **Appendix** (10 minutes)

13. **Summary** (10 minutes)

14. **Q&A** (10 minutes)

15. **Conclusion** (10 minutes)

16. **References** (10 minutes)

17. **Appendix** (10 minutes)





1. **Introduction** (10 minutes)

2. **Background** (10 minutes)

3. **Methodology** (10 minutes)

4. **Results** (10 minutes)

5. **Conclusion** (10 minutes)

6. **References** (10 minutes)

7. **Appendix** (10 minutes)

8. **Summary** (10 minutes)

9. **Q&A** (10 minutes)

10. **Final Remarks** (10 minutes)

11. **Thank You** (10 minutes)

12. **Next Steps** (10 minutes)

13. **Conclusion** (10 minutes)

14. **References** (10 minutes)

15. **Appendix** (10 minutes)

16. **Summary** (10 minutes)

17. **Q&A** (10 minutes)





Pioneering for You



Local contact at
www.wilo.com/contact

WILO SE
Wilopark 1
44263 Dortmund
Germany
T +49 (0)231 4102-0
T +49 (0)231 4102-7363
wilo@wilo.com
www.wilo.com