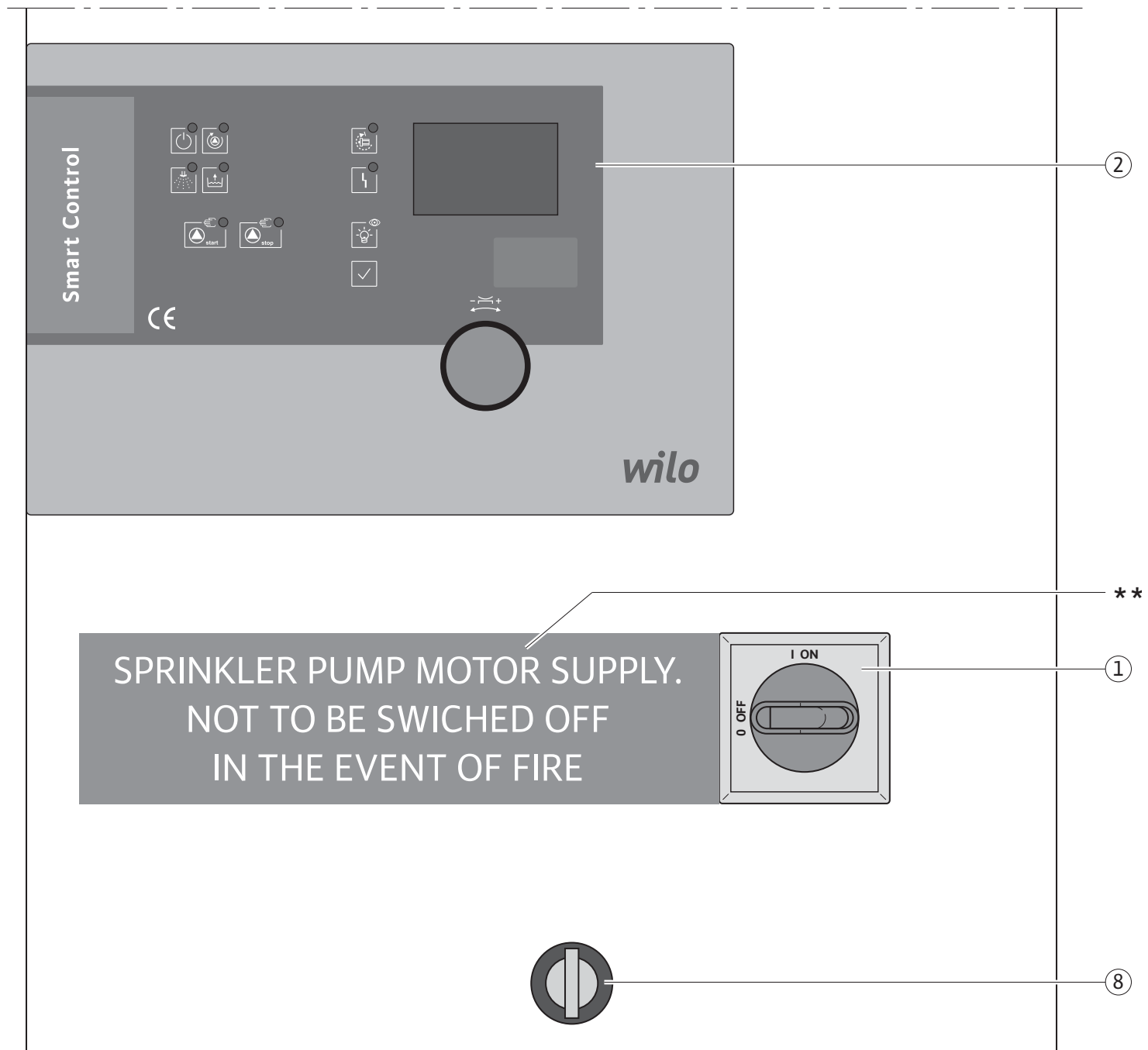


## Wilo-Control SC-Fire Electric



**en** Installation and operating instructions

Fig. 1:



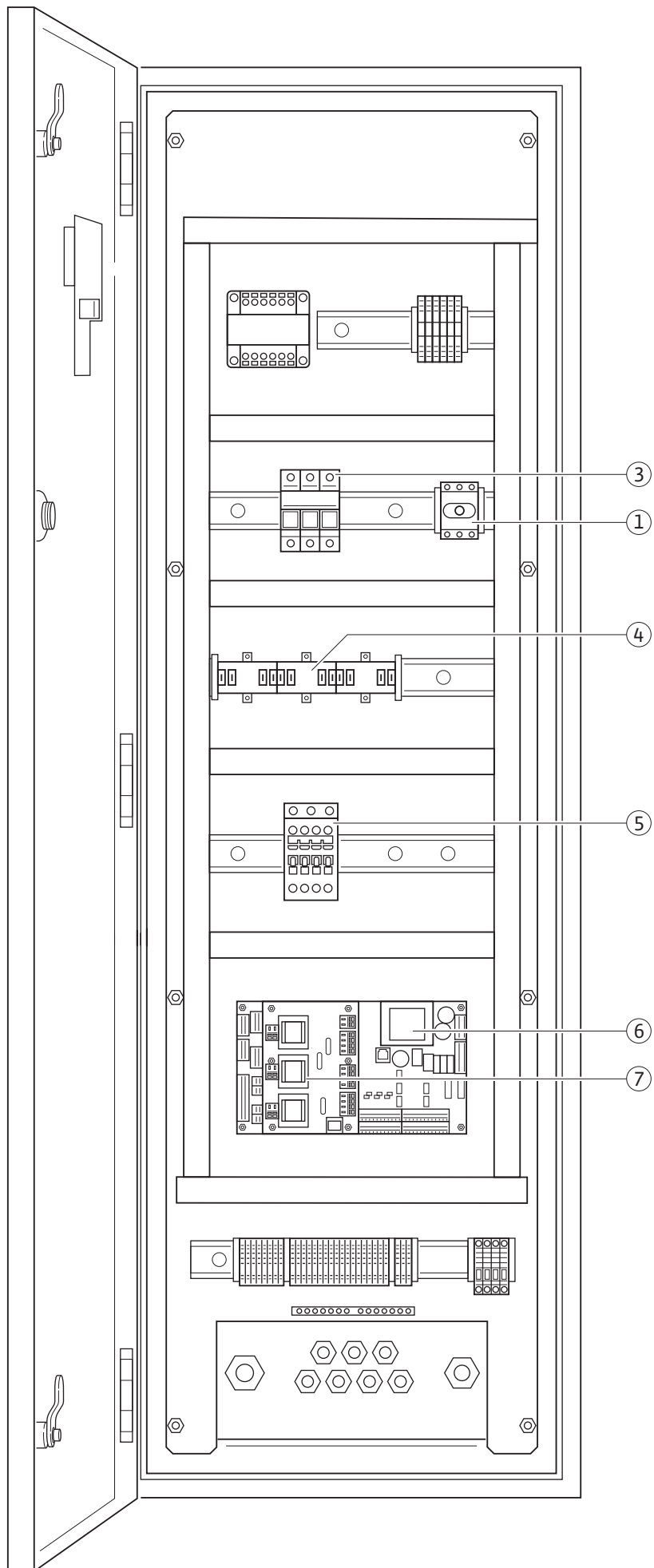
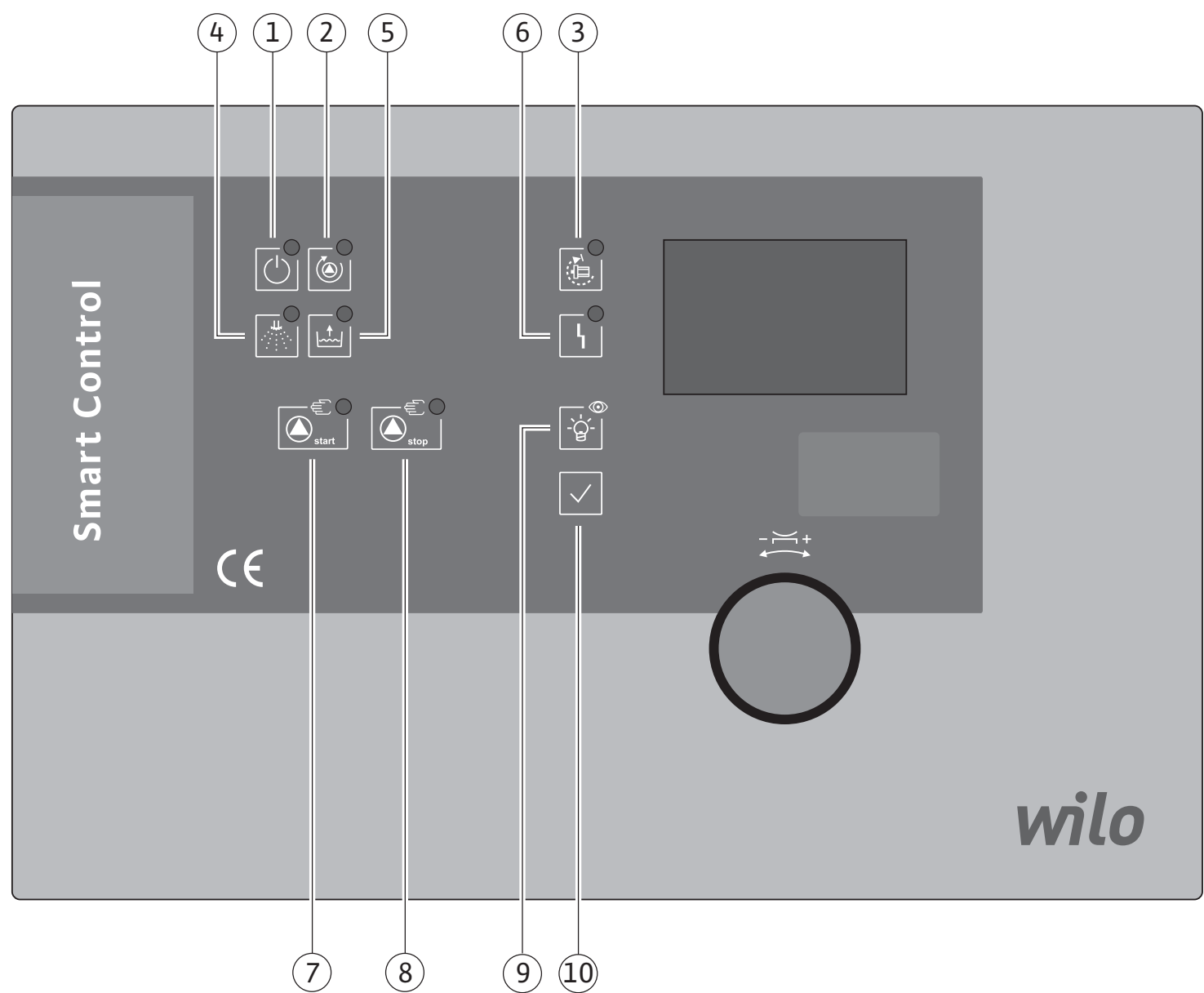


Fig. 2:





## Captions

Fig. 1	Switchgear set-up
1	Main switch: for switching the switchgear on/off
2	Menu selection and parameter input
3	Fusible cut-outs
4	Transformer: 3-phase pump current measurement
5	Contactors/contactator combinations
6	Base board: printed circuit board with micro-controller
7	Measurement board: converting current and voltage values
8	Key-operated selector switch
**	Note regarding the main switch: Power supply for the sprinkler pump motor. DO NOT SWITCH OFF IN THE EVENT OF A FIRE!

Fig. 2	Switchgear display elements
1	LED (green): Operational standby
2	LED (green): Pump operation
3	LED (yellow): False start
4	LED (white): Sprinkler request
5	LED (yellow): Float switch request
6	LED (yellow): Collective fault
7	LED (green) and button: Manual start
8	LED (red) and button: Manual stop
9	Button: Lamp test
10	Button: Acknowledgement of error messages

## 1 General

### 1.1 About this document

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

These installation and operating instructions are an integral part of the product. They must be kept readily available at the place where the product is installed. Strict adherence to these instructions is a precondition for the proper use and correct operation of the product.

These installation and operating instructions correspond to the relevant version of the product and the underlying safety regulations and standards valid at the time of going to print.

EC declaration of conformity:

A copy of the EC declaration of conformity is a component of these operating instructions.

If a technical modification is made on the designs named there without our agreement or the declarations made in the installation and operating instructions on product/personnel safety are not observed, this declaration loses its validity.

## 2 Safety

These operating instructions contain basic information which must be adhered to during installation, operation and maintenance. For this reason, these operating instructions must, without fail, be read by the service technician and the responsible specialist/operator before installation and commissioning.

It is not only the general safety instructions listed under the main point "safety" that must be adhered to but also the special safety instructions with danger symbols included under the following main points.

### 2.1 Indication of instructions in the operating instructions

**Symbols:**

**General danger symbol**



**Danger due to electrical voltage**



**NOTE**



**Signal words:**

**DANGER!**

**Acutely dangerous situation.**

**Non-observance results in death or the most serious of injuries.**

**WARNING!**

**The user can suffer (serious) injuries. 'Warning' implies that (serious) injury to persons is probable if this information is disregarded.**

### CAUTION!

**There is a risk of damaging the pump/unit. 'Caution' implies that damage to the product is likely if this information is disregarded.**

**NOTE:**

Useful information on handling the product. It draws attention to possible problems.

Information that appears directly on the product, such as:

- Direction of rotation arrow,
  - Identification for connections,
  - Rating plate,
  - Warning sticker,
- must be strictly complied with and kept in legible condition.

### 2.2 Personnel qualifications

The installation, operating and maintenance personnel must have the appropriate qualifications for this work. Area of responsibility, terms of reference and monitoring of the personnel are to be ensured by the operator. If the personnel are not in possession of the necessary knowledge, they are to be trained and instructed. This can be accomplished if necessary by the manufacturer of the product at the request of the operator.

### 2.3 Danger in the event of non-observance of the safety instructions

Non-observance of the safety instructions can result in risk of injury to persons and damage to the environment and the product/unit. Non-observance of the safety instructions results in the loss of any claims to damages.

In detail, non-observance can, for example, result in the following risks:

- Danger to persons from electrical, mechanical and bacteriological influences
- Damage to the environment due to leakage of hazardous materials
- Property damage
- Failure of important product/unit functions
- Failure of required maintenance and repair procedures

### 2.4 Safety consciousness on the job

The safety instructions included in these installation and operating instructions, the existing national regulations for accident prevention together with any internal working, operating and safety regulations of the operator are to be complied with.

### 2.5 Safety instructions for the operator

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

If hot or cold components on the product/the unit lead to hazards, local measures must be taken to guard them against touching.

Guards protecting against touching moving components (such as the coupling) must not be removed whilst the product is in operation.

Leakages (e.g. from the shaft seals) of hazardous fluids (which are explosive, toxic or hot) must be led away so that no danger to persons or to the environment arises. National statutory provisions are to be complied with.

- Highly flammable materials are always to be kept at a safe distance from the product.
- Danger from electrical current must be eliminated. Local directives or general directives [e.g. IEC, VDE etc.] and instructions from local energy supply companies must be adhered to.

## 2.6 Safety instructions for installation and maintenance work

The operator must ensure that all installation and maintenance work is carried out by authorised and qualified personnel, who are sufficiently informed from their own detailed study of the operating instructions.

Work on the product/unit must only be carried out when at a standstill. It is mandatory that the procedure described in the installation and operating instructions for shutting down the product/unit be complied with.

Immediately on conclusion of the work, all safety and protective devices must be put back in position and/or recommissioned.

## 2.7 Unauthorised modification and manufacture of spare parts

Unauthorised modification and manufacture of spare parts will impair the safety of the product/personnel and will make void the manufacturer's declarations regarding safety.

Modifications to the product are only permissible after consultation with the manufacturer. Original spare parts and accessories authorised by the manufacturer ensure safety. The use of other parts will absolve us of liability for consequential events.

## 2.8 Improper use

The operating safety of the supplied product is only guaranteed for conventional use in accordance with Section 4 of the operating instructions. The limit values must on no account fall under or exceed those specified in the catalogue/data sheet.

## 3 Transport and interim storage

Immediately after receiving the product:

- Check product for transport damage.
- In the event of damage in transit, take the necessary steps with the forwarding agent within the respective time limits.

**CAUTION! Risk of property damage!**

**Incorrect transport and interim storage can cause property damage.**

- **The switchgear is to be protected against moisture and mechanical damage.**
- **It must not be exposed to temperatures outside the range of -10°C to +50°C.**



## 4 Application (intended use)

The SC Fire pump switchgear is used to control an individual electric pump in automatic sprinkler systems, in accordance with EN 12845.

The device is used in residential and office buildings, hospitals, hotels, administrative and industrial buildings.

The pump is used in conjunction with suitable signal transmitters and it is switched according to the pressure or the level.

The intended use includes complying with these instructions.

Any other use is considered to be outside the intended use.



## 5 Product information

### 5.1 Type key

Example:	
W	W = Wilo
CTRL	Control
SC	Smart Control = control unit
F	F = fire fighting purposes
1x	Number of pumps
7.7 A	Maximum rated motor current [A]
T4	T = 3 phases; 4 = 400 V
DOL	Direct online (direct starting)
SD	Star delta (star-delta starting)
FM	Frame mounted (on a base frame)
BM	Base mounted (free-standing cabinet)
ND3	New Design switchbox 400 x 1300 x 250 mm
E	Switchgear for electric pump

5.2 Technical data (standard version)	
Mains supply voltage [V]:	3~400 V (L1, L2, L3, PE)
Frequency [Hz]:	50/60 Hz
Control voltage [V]:	230 VAC; 24 VDC
Max. current consumption [A]:	See rating plate
Protection class:	IP 54
Max. fuse protection on mains side [A]:	See wiring diagram
Ambient temperature [°C]:	0 to +40°C
Electrical safety:	Degree of contamination II
Alarm/signalling contact	250 VAC, 1 A

### 5.3 Scope of delivery

- Switchgear
- Wiring diagram
- Installation and operating instructions
- Test report acc. to EN 60204-1

### 5.4 Accessories

Potential-free contacts are available for forwarding run or fault signals messages to the building management system.

## 6 Description and function

### 6.1 Description of the product (Fig. 1)

#### 6.1.1 Function description

The switchgear is used to control an individual electric pump in sprinkler systems, in accordance with EN 12845. The pump can be switched on by the control depending on the pressure. Once the pump has started, it can only be stopped manually if the pressure in the system has not been reached. The pump can be controlled via a connected float switch in order to automatically replenish the pump priming tank. The pump can be switched on and off by the control depending on the pressure. The system's operating statuses, such as standby, pump operation, fault etc., are displayed visually by LEDs on the door and operating parameters such as current or voltage values are shown on the display. The system is operated using the rotary knob and the buttons in the door.

#### 6.1.2 Set-up of the switchgear (Fig. 1)

The set-up of the switchgear depends on the capacity of the pump to be connected. It consists of the following main components:

- Main switch: Switches the switchgear on/off (Fig. 1, item 2)
- Human-machine interface (HMI): signal lamps or display for indicating the operating status (e.g. standby, fault, and rated pump current), rotary knob and buttons for menu selection, parameter input and operation (Fig. 1, item 1)
- Base board: printed circuit board with microcontroller (Fig. 1, item 6)
- Measurement board: converting current and voltage values (Fig. 1, item 7)
- Transformer: 3-phase pump current measurement (Fig. 1, item 4)
- Fuse protection for drives: fusing for the pump motor by means of fusible cut-outs (Fig. 1, item 3)
- Contactors/contact combinations: contactors for switching on the pumps (Fig. 1, item 5)
- Key-operated selector switch: Automatically switches on/off (auto on/off) (Fig. 1, item 8)

## 6.2 Function and operation



### **DANGER! Risk of fatal injury!**

**When working on the open switchgear, there's a danger of electric shock from touching the live components.**

**This work must only be carried out by qualified personnel!**



#### **NOTE:**

After connecting the switchgear to the supply voltage, as well as after every mains interruption, the switchgear returns to the operating mode set before the power interruption.

### 6.2.1 Switchgear operating modes (Fig. 2)

#### **Switching the switchgear on/off**

After connection to the mains supply, the switchgear can be switched on or off using the main switch. Once the main switch has been switched on, the system is ready for operation after a few seconds (the start phase). If the supply voltage is within the set parameters, standby is indicated by the signal lamp (Fig. 2, item 1) lighting up green.

#### **Pump request**

If the pressure drops below the set target pressure at least one of the two pressure switches, the signal lamp lights up (Fig. 2, item 4). After a configurable delay period (see menu 1.2.5.1) (LED flashes), the connected pump is activated. The signal lamp (Fig. 2, item 2) lights up green, indicating that the pump is in operation.

Once the pressure reaches or exceeds the target pressure, the signal lamp (Fig. 2, item 4) goes out again but the pump remains activated. The pump has to be switched off manually. The signal lamp (Fig. 2, item 2) then goes out.

#### **Priming device**

If the level of the pump priming tank falls below 2/3, the float switch closes and the signal lamp (Fig. 2, item 5) lights up yellow. After a configurable delay time (see menu 1.2.5.2) (LED flashes), the pump activates and the signal lamp (Fig. 2, item 2) lights up green. Once the pump priming tank is full and the float switch opens again, the signal lamp goes out (Fig. 2, item 5) and the pump can be deactivated manually. The signal lamp (Fig. 2, item 2) then goes out.

#### **Voltage monitoring**

To improve operational reliability, the mains power supply is monitored continuously. To do this, the correct supply voltage has to be set in menu 1.2.1.1. The voltage is monitored individually between all three live wires. If no pump is running (standby), the voltage in the display switches alternately between all three conductors. When the supply voltage exceeds or drops below the configurable tolerances (see menu 5.4.1.0 and 5.4.2.0), the signal lamp (Fig. 2, item 1) goes out after a configurable delay (see menu 1.2.5.3) and the collective fault signal (Fig. 2, item 6) lights up yellow. If a fault occurs, the pump nevertheless

starts or continues running. Once the voltage is back within the tolerance range, the fault is self-acknowledging. The signal lamp (Fig. 2, item 6) goes out and the signal lamp (Fig. 2, item 1) lights up green again.

#### **Current monitoring**

The pump current is monitored while the pump is in operation. To do this, the correct rated current for the pump has to be set in menu 1.2.1.2. If the pump is running, the pump current in the display switches alternately between all three conductors, and also the voltage between all three conductors is shown. The signal lamp (Fig. 2, item 2) lights up green once the pump current reaches a configurable minimum threshold (see menu 5.4.3.0). When the pump current exceeds or drops below the configurable tolerances (see menu 5.4.3.0 and 5.4.4.0), the signal lamp (Fig. 2, item 6) lights up after a configurable delay (see menu 1.2.5.5). If a fault occurs, the pump nevertheless starts or continues running. Once the pump current is back within the tolerance range, the fault can be acknowledged. The signal lamp (Fig. 2, item 6) goes out.

#### **Monitoring hydraulic false start**

Once the pump has started, the hydraulic output is monitored by a pressure switch on the pump. If the pump does not build up any pressure after the configurable period of time (see menu 1.2.2.2) and the pressure switch on the pump remains open, the signal lamps (Fig. 2, item 6) and (Fig. 2, item 3) light up. If the pump is running, the relevant pressure has been reached and the pump pressure switch is closed accordingly, the fault can be acknowledged. The signal lamps (Fig. 2, item 6) and (Fig. 2, item 3) go out and the signal lamp (Fig. 2, item 2) lights up green.

#### **Monitoring electric false start**

Once the pump has started, the pump's electric output is monitored for a configurable period of time after the start (see menu 1.2.2.1). To do this, the correct voltage for the pump has to be set in menu 1.2.1.1, and the correct rated current in menu 1.2.1.2. If the configurable minimum threshold (see menu 5.4.5.0) is not reached within the monitoring period, the signal lamps (Fig. 2, item 6) and (Fig. 2, item 3) light up after a configurable delay period (see menu 1.2.5.4) plus the time for the star/delta changeover (see menu 1.2.5.6). If the pump is running and the relevant pump output has been reached, the fault can be acknowledged. The signal lamps (Fig. 2, item 6) and (Fig. 2, item 3) go out and the signal lamp (Fig. 2, item 2) lights up green.

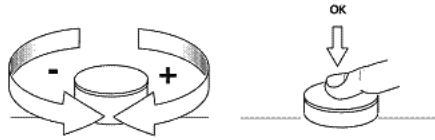
#### **Logic reversal of the collective fault signal (SSM)**

The required logic of the SSM can be set in menu 5.5.2.0. In this case, it is possible to select between negative logic (falling edge in case of a fault = "fall") or positive logic (rising edge in case of a fault = "raise").

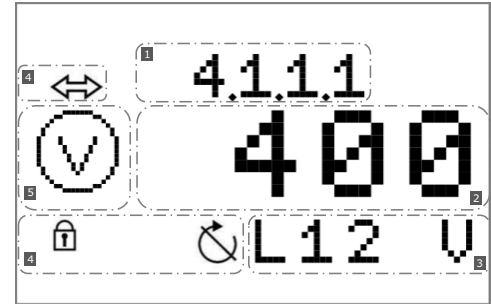
## 6.2.2 Operation of the switchgear

### Operating elements

- **Main switch** on/off (lockable in "Off" position)
- The **LCD** shows the operating statuses of the pump and the settings menu. The menu selection and parameter input are performed using the **operating knob**. Turn the knob to change values or to scroll through a menu level; press it in order to select and confirm:



Information appears on the display as shown in the sample illustration below:


























Item	Description
1	Menu number
2	Value display
3	Units display
4	Standard symbols
5	Graphic symbols

The following graphic symbols are used:

Symbol	Function/description	Availability
	Go back (brief press: one menu level; long press: main screen)	all
	EASY menu	all
	EXPERT menu	all
	Meaning: Service not logged in Meaning: Display value – no entry possible	all
	Service menu	all
	Parameter	all
	Information	all
	Fault	all
	Reset fault	all
	Alarm settings	all
	Pump	all

Symbol	Function/description	Availability
	Setpoints	all
	Actual value	all
	Sensor signal	all
	Sensor measurement range	Electrical equipment
	Delay time	all
	Operating mode/application	all
	Stand-by	all
	Operating data	all
	Switchgear data: Controller type; ID number; software/firmware	all
	Operating hours	all
	Pump's operating hours	all
	Switchgear's switching cycles	all
	Pump's switching cycles	all
	Communication	all
	Output parameters	all
	SSM parameter	all
	Set motor speed	Diesel
	Starting time per start attempt	Diesel

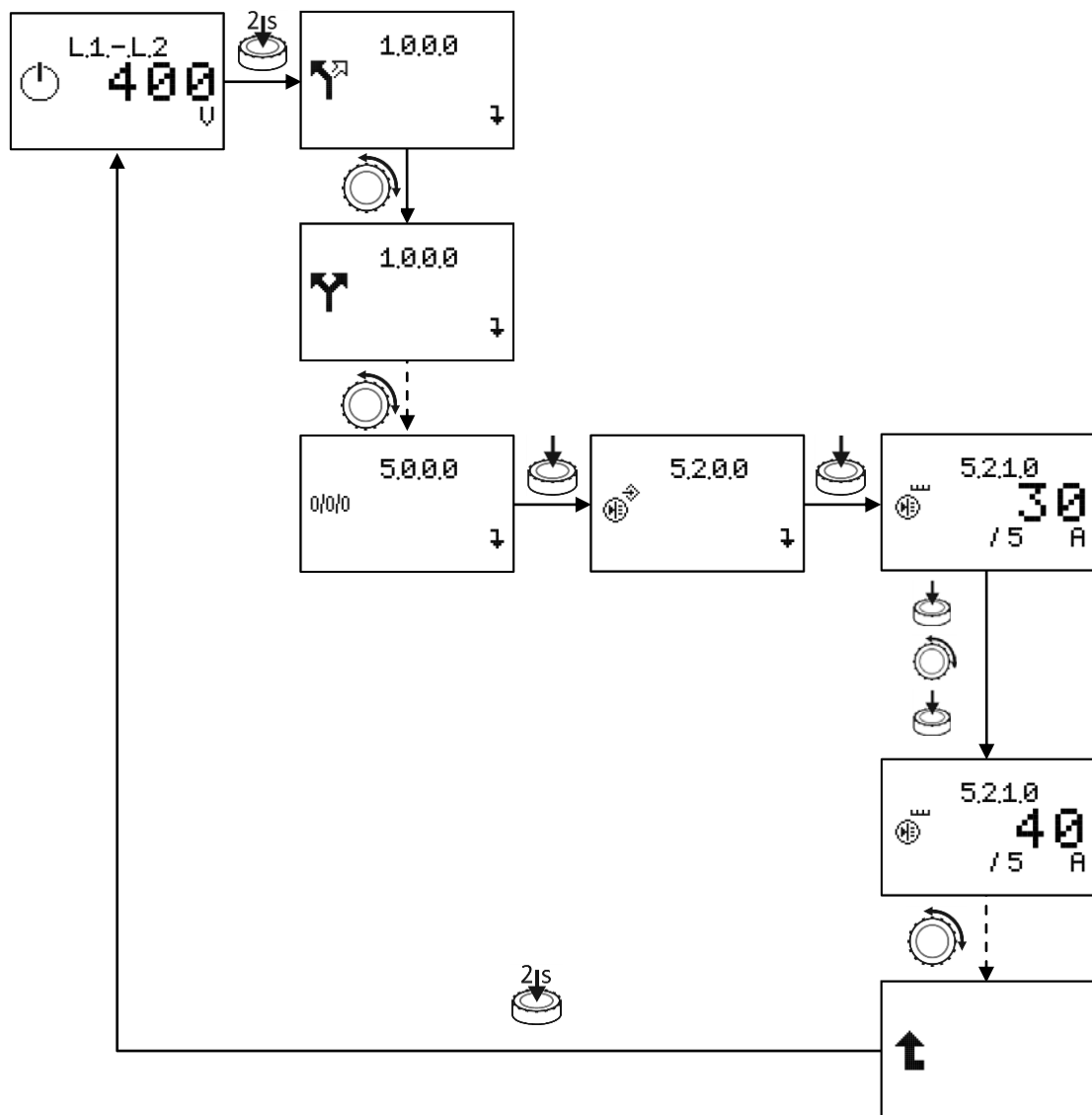
Symbol	Function/description	Availability
	Pause between start attempts	Diesel
	Fuel	Diesel
	Battery A	Diesel
	Battery B	Diesel
	Sprinkler (pressure switch)	all
	Pump priming tank (float switch)	all
	Heating	Diesel
	Engine oil	Diesel
	Motor temperature thermostat	Diesel
	Cooling water (temperature)	Diesel
	Belt break	Diesel
	False start	Electrical equipment
	Pressure	Electrical equipment
	Mains power supply	Electrical equipment
	Voltmeter	all
	Ampere meter	all
	Star-delta switching	Electrical equipment
	Freely configurable fault signal	all

Symbol	Function/description	Availability
	Fault input	all
	Start attempts counter	Diesel
	Duration	all
	Power meter	Electrical equipment
	Communication parameters	all
	Modbus	all
	BACnet	all
	Factory setting	all
	Resetting the settings to the factory settings	all
	Alarm counter	all
	Maintenance interval	all
	Reset	all
	Motor speed	Diesel
	Set motor speed	Diesel
	Minimum speed for "motor in operation"	Diesel
	Reset starting counter	Diesel

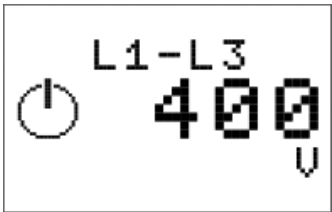
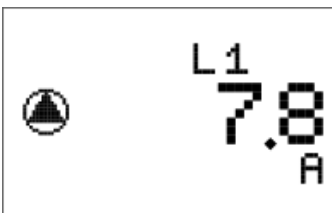
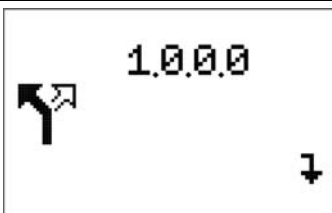

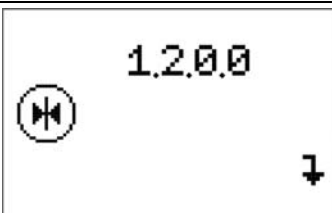
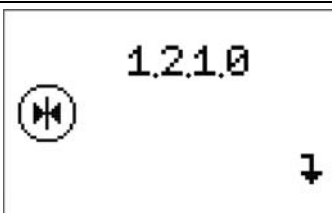
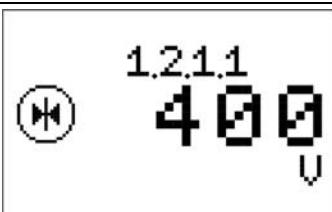
**Menu structure:**

The menu structure of the control system has 4 levels.









Navigation in the individual menus as well as the parameter input are described in the following example (selecting the transformer):

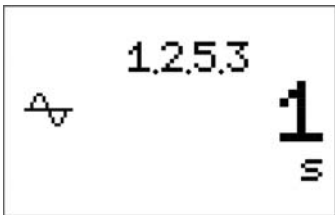
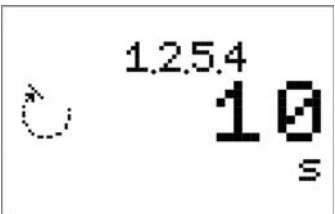
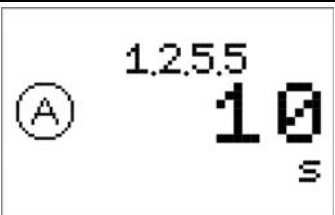
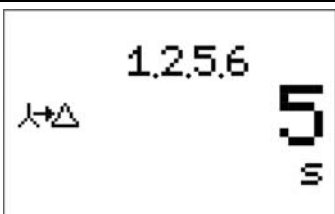
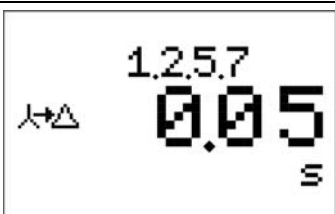

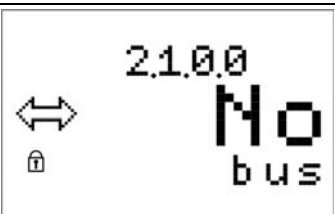





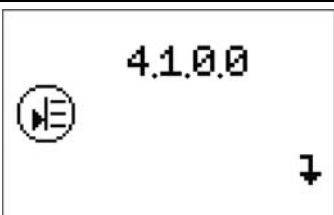
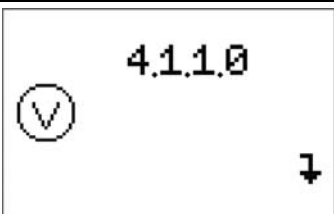
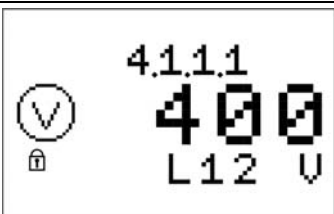
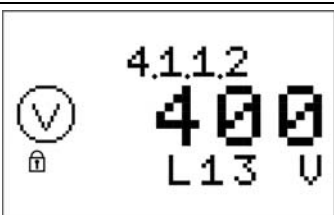
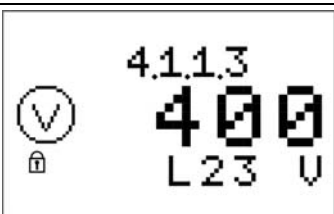
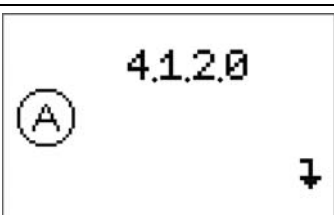
Refer to the following table for a description of the individual menu items:

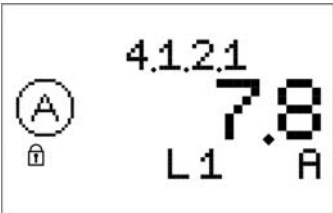
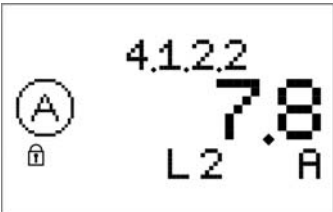
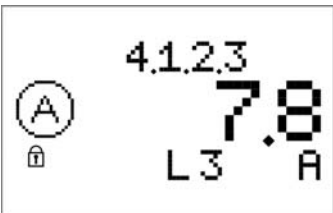
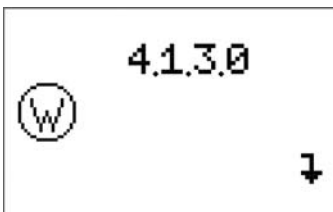
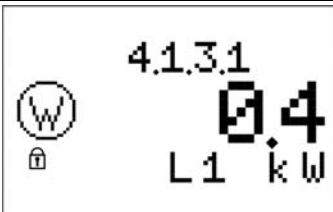
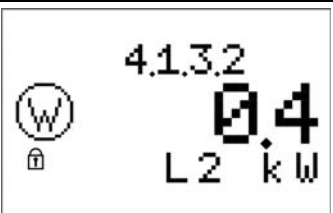
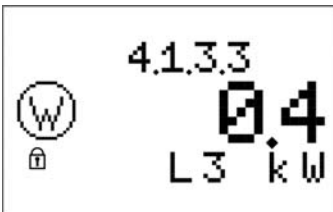
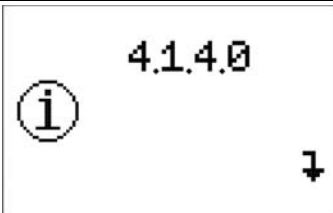
Menu no./	Display	Description	Parameter range Factory setting
		The main screen shows the status of the system. The display continuously switches between the voltages of the live wires.	
		When the motor is running, the present pump current in all three live wires and the voltages between all three live wires are shown alternately on the display.	
		The EASY menu makes it possible to set the supply voltage and the rated pump current.	
		The EXPERT menu contains other settings that can be used for a detailed setting of the switch-gear.	
		The parameter menu for all settings that influence operation.	
		The setting menu for the electrical parameters of the connected pump.	
		Setting the supply voltage.	400











Menu no./	Display	Description	Parameter range Factory setting
	 <div>1.2.1.2</div> <div>7.8</div> <div>A</div>	Setting the rated pump current.	0.1.. <b>7.8</b> ..500,0
	 <div>1.2.1.3</div> <div>4.6</div> <div>kW</div>	Displaying the pump motor's output.	
	 <div>1.2.2.0</div> <div>↓</div>	The setting menu for the monitoring operations periods.	
	 <div>1.2.2.1</div> <div>40</div> <div>s</div>	Setting the duration for monitoring of the pump's electric output (electric false start).	0.. <b>40</b> ..120
	 <div>1.2.2.2</div> <div>40</div> <div>s</div>	Setting the duration for monitoring of the pump's hydraulic output (hydraulic false start).	0.. <b>40</b> ..120
	 <div>1.2.5.0</div> <div>↓</div>	The setting menu for the delays.	
	 <div>1.2.5.1</div> <div>1</div> <div>s</div>	Start delay when pressure switch trips	<b>1</b> ..120
	 <div>1.2.5.2</div> <div>1</div> <div>s</div>	Start delay when float switch trips	<b>1</b> ..120









Menu no./	Display	Description	Parameter range Factory setting
		Delay in event of error message from voltage monitoring	0..1..10
		Delay for "electric false start" error message	5..10..20
		Delay in event of error message from current monitoring	5..10..20
		Star-delta changeover time	0..5..60
		Buffer time between deactivation of star contactor and activation of delta contactor	0.00..0.05..1.0
		Communication	
		Display of currently activated fieldbus	<b>No bus</b> Modbus BACnet
		Pump menu	


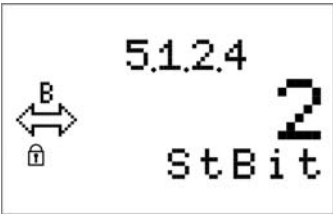
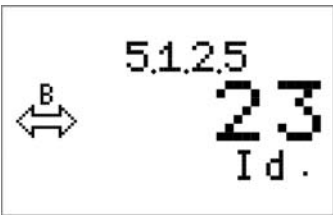

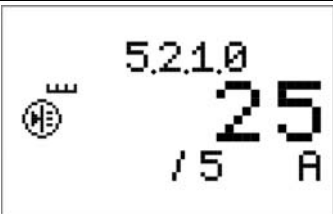

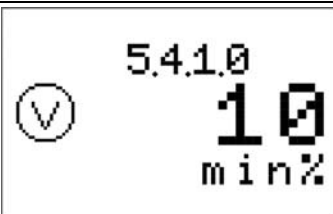
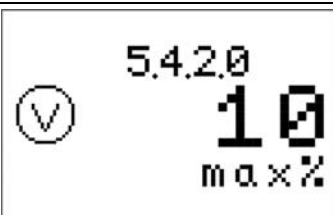
Menu no./	Display	Description	Parameter range Factory setting
		Display: Automatic on/off	
		Information	
		Current operating values	
		Voltage values	
		Voltage between conductors L1 and L2	
		Voltage between conductors L1 and L3	
		Voltage between conductors L2 and L3	
		Current values	

Menu no./	Display	Description	Parameter range Factory setting
		Pump current in L1	
		Pump current in L2	
		Pump current in L3	
		Output values	
		Power L1	
		Power L2	
		Power L3	
		Status information	


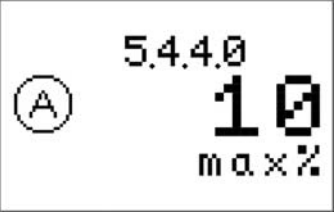


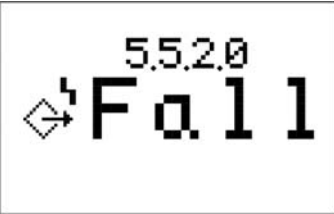


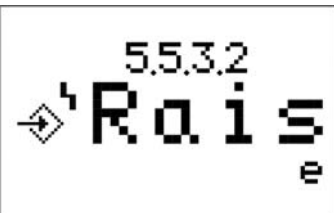
Menu no./	Display	Description	Parameter range Factory setting
	 <div>4.1.4.1 <b>Sys</b> ready</div>	System status or readiness	
	 <div>4.1.4.2 <b>P-Sw</b> close</div>	Status of pressure switch	
	 <div>4.1.4.3 <b>F-Sw</b> close</div>	Status of float switch	
	 <div>4.2.0.0 ↓</div>	Operating data	
	 <div>4.2.1.0 <b>2</b> h</div>	Total running time of the system	
	 <div>4.2.2.0 <b>3</b> min</div>	Total running time of pump	
	 <div>4.2.3.0 <b>1</b> min</div>	Running time of pump during last start	
	 <div>4.2.4.0 <b>2</b> 0 - &gt; 1</div>	Unit switching cycles	


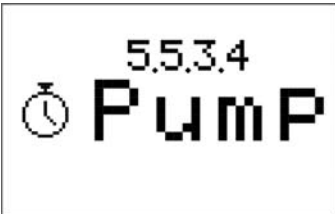
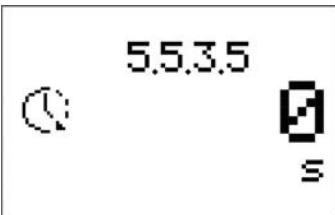

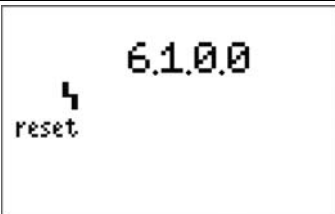
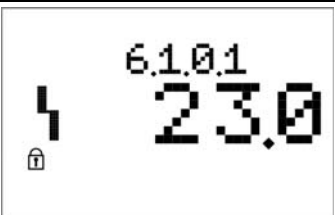
Menu no./	Display	Description	Parameter range Factory setting
		Pump's switching cycles	
		System data	
		System type	
		Serial number as ticker format	
		Software version	
		Firmware version	
		Settings	
		Communication	

Menu no./	Display	Description	Parameter range Factory setting
	 <div>5.1.1.0</div> <div>↓</div>	Modbus	
	 <div>5.1.1.1</div> <div>19.2</div> <div>kBaud</div>	Baudrate	9,6 <b>19,2</b> 38,4 76,8
	 <div>5.1.1.2</div> <div>3</div> <div>Adres</div>	Slave Adresse	1...4...247
	 <div>5.1.1.3</div> <div>even</div> <div>Parit</div>	Parity	<b>even</b> non odd
	 <div>5.1.1.4</div> <div>1</div> <div>StBit</div>	Stop bits	<b>1</b> 2
	 <div>5.1.2.0</div> <div>↓</div>	BACnet	
	 <div>5.1.2.1</div> <div>19.2</div> <div>kBaud</div>	Baud rate	9,6 <b>19,2</b> 38,4 76,8
	 <div>5.1.2.2</div> <div>3</div> <div>Adres</div>	Slave address	1... <b>128</b> ...255

Menu no./	Display	Description	Parameter range Factory setting
		Parity	even <b>non</b> odd
		Stop bits	<b>1</b> 2
		BACnet device instance ID	0... <b>128</b> ...9999
		Sensor settings	
		Transformer selection	<b>25</b> ..1000
		Limit values	
		Lower tolerance limit for supply voltage	0.. <b>10</b> ..20
		Upper tolerance limit for supply voltage	0.. <b>10</b> ..20



Menu no./	Display	Description	Parameter range Factory setting
		Lower tolerance limit for rated pump current	0..10..100
		Upper tolerance limit for rated pump current	0..10..100
		Setting for minimum output necessary for detection that pump has started	0..50..100
		Signal output parameters	
		Characteristics of collective fault signal (SSM)	<b>Fall, Rise</b>
		Freely configurable fault signal	
		Acknowledgement process for fault signal	<b>Not store, ON store</b>
		Logic reversal of input signal	Fall, <b>Rise</b>

Menu no./	Display	Description	Parameter range Factory setting
		Activation of configurable fault signal	OFF, ON
		Fault active: Always Only when pump in operation	Ever, <b>Pump</b>
		Response delay	0..60
		Fault signals	
		Resetting fault signals	
6.1.0.1 to 6.1.1.6		Fault signal 1 to 16	

**Operation levels:**

The parameterisation of the switchgear is divided into the menu areas EASY and EXPERT.

For rapid commissioning using the factory presets, it is enough to set the speed values and the speed adjustment in the EASY area.

The EXPERT area is provided in case other parameters need to be changed, or for reading out data from the device.

Menu level 7.0.0.0 is reserved for Wilo customer service.

- **Automatic on/off** (Fig. 1, Pos. 8) The key-operated selector switch can be shut off in the "on" position. The key can only be removed in the "on"

position. Once the "off" position has been selected, automatic starting of the pumps via the pressure switch or float switch no longer takes place. The deactivated automatic control is indicated by the flashing signal lamp (Fig. 2, item 6) and can only be started again manually.

- **Manual start** (Fig. 2, item 7) The pump is started manually by pressing the button. The relevant signal lamp (Fig. 2, item 7) lights up green when the button is pressed, indicating that the pump was started manually, not automatically. The pump can only be stopped manually. The signal lamp (Fig. 2, item 7) then also goes out.

- **Manual stop** (Fig. 2, item 8) The pump is stopped manually by pressing the button. The relevant signal lamp (Fig. 2, item 8) lights up red when the button is pressed, indicating that the pump was stopped manually. The pump can be stopped only with this button. The signal lamp (Fig. 2, item 8) goes out the next time the pump starts again or when the button (Fig. 2, item 10) is pressed.
- **Lamp test** (Fig. 2, item 9) Pressing the button switches on all the signal lamps (Fig. 2, items 1, 2, 3, 4, 5, 6, 7, 8) for as long as the button is pressed, in order to check that the lamps are working. When you release the button, the signal lamps go out again or only light up according to the function.
- **Acknowledgement** (Fig. 2, item 10) Pressing the button resets all the error messages or signal lamps provided that the cause of the error no longer exists.

### 6.2.3 Switchgear display elements

#### Operational standby

The signal lamp (Fig. 2, item 1) lights up green if the power supply is connected, activated via the main switch and the power supply is within the configurable tolerance range (see menu 5.4.1.0 and 5.4.2.0).

#### Pump operation

The signal lamp (Fig. 2, item 2) lights up green if the pump is activated and the pump current is within the configurable tolerance range (see menu 5.4.3.0 and 5.4.4.0).

#### False start

When the pump starts, it is monitored by means of two different parameters (hydraulic false start, electric false start).

The signal lamp (Fig. 2, item 3) lights up yellow after the pump has started and the configurable minimum output (see menu 5.4.5.0) is not reached within a configurable period of time (see menu 1.2.2.1).

The signal lamp (Fig. 2, item 3) lights up yellow after the pump has started and the pump pressure switch (option) does not close again (pump under pressure) after a configurable period of time (see menu 1.2.2.2).

#### Sprinkler request

The signal lamp (Fig. 2, item 4) lights up white if the pressure in the system falls below the set/requested pressure and at least one of the two pressure switches trips. If the pressure rises accordingly, the signal lamp (Fig. 2, item 4) goes out again.

#### Float switch request

The signal lamp (Fig. 2, item 5) lights up yellow when the level in the pump priming tank falls to 2/3 and the float switch is triggered. If the level

rises again accordingly, the signal lamp (Fig. 2, item 5) goes out.

#### Collective fault

The signal lamp (Fig. 2, item 6) lights up yellow when a fault occurs. Faults include a fault in the supply network, over- or undercurrent, false pump start and a fault in the freely configurable fault signal. The signal lamp (Fig. 2, item 6) goes out again once the fault no longer exists and the fault has been acknowledged.

If the key-operated selector switch is set to "Automatic off", the signal lamp (Fig. 2, item 6) will flash yellow, because the automatic mode is disabled.

#### Manual pump start

The signal lamp (Fig. 2, item 7) lights up green when the pump is started manually using the button (Fig. 2, item 7). It goes out again when the pump is stopped manually.

#### Manual pump stop

The signal lamp (Fig. 2, item 8) lights up red when the button (Fig. 2, item 8) is pressed to stop pump operation. It goes out once the pump stop has been acknowledged.

## 7 Installation and electrical connection

**Installation and electrical connection must be carried out in accordance with local regulations and only by qualified personnel!**

**WARNING! Risk of injury!**

**The existing directives for accident prevention must be adhered to.**

**Warning! Danger of electric shock!**

**Danger from electrical current must be eliminated.**

**Local directives or general directives [e.g. IEC] and instructions from local energy supply companies must be adhered to.**



### 7.1 Installation

Install the switchgear/system at a dry location. Protect the place of installation from direct exposure to sunlight.

### 7.2 Electrical connection

**DANGER! Risk of fatal injury!**

**Improper electrical connections can lead to fatal electric shocks.**

- **Have the electrical connection established by an electrician approved by the local electricity supplier only and in accordance with local regulations.**
- **Observe the installation and operating instructions for the pumps and accessories!**
- **Disconnect the power supply before any work.**



**Warning! Danger of electric shock!**

**There is a potentially fatal voltage on the supply side, even when the main switch is turned off.**

- The type of mains, current and voltage of the mains connection must match the details on the rating plate of the control device.



## NOTE:

- Fuse on mains side in accordance with the information in the wiring diagram
- Feed the ends of the mains cable through the threaded cable connections and cable inlets and wire them according to the markings on the terminal strips.
- Earth the pump/installation in accordance with the regulations.



## NOTE:

In accordance with EN /IEC 61000-3-11 (see table below), the switchgear and pump with motor

power of ... kW (column 1) are provided for operation on a mains power supply with a system impedance of  $Z_{max}$  at the building connection of max. ... Ohm (column 2) for a maximum number of ... connections (column 3).

If the mains impedance and the number of connections per hour are greater than the values given in the table, the switchgear with the pump may lead to temporary voltage drops and also to disturbing voltage fluctuations (flickering) due to the unfavourable mains conditions.

Therefore, measures may be necessary before the switchgear with pump can be operated as intended at this connection. The necessary information must be obtained from the local electricity supply company and the manufacturer.

	Output [kW] (Column 1)	System impedance [ $\Omega$ ] (Column 2)	Connections per hour (Column 3)
3~400 V 2-pole Direct starting	2.2	0.257	12
	2.2	0.212	18
	2.2	0.186	24
	2.2	0.167	30
	3.0	0.204	6
	3.0	0.148	12
	3.0	0.122	18
	3.0	0.107	24
	4.0	0.130	6
	4.0	0.094	12
	4.0	0.077	18
	5.5	0.115	6
	5.5	0.083	12
	5.5	0.069	18
	7.5	0.059	6
	7.5	0.042	12
	9.0 – 11.0	0.037	6
	9.0 – 11.0	0.027	12
	15.0	0.024	6
	15.0	0.017	12
3~400 V 2-pole S-D starting	5.5	0.252	18
	5.5	0.220	24
	5.5	0.198	30
	7.5	0.217	6
	7.5	0.157	12
	7.5	0.130	18
	7.5	0.113	24
	9.0 – 11.0	0.136	6
	9.0 – 11.0	0.098	12
	9.0 – 11.0	0.081	18
	9.0 – 11.0	0.071	24

### 7.2.1 Power supply connection

Connect the on-site 4-wire cable (L1, L2, L3, PE) for the supplying network to the main switch, in accordance with the wiring diagram.

### 7.2.2 Fault signal/run signals connection

A signal can be taken from the terminal strip for the fault signal/run signal via a potential-free contact in order to indicate a fault/operation (see wiring diagram).

Potential-free contacts, max. contact load  
250 V~/1 A



**Warning! Danger of electric shock!**  
**There is a potentially fatal voltage on these terminals, even when the main switch is turned off.**

## 8 Commissioning



**WARNING! Risk of fatal injury!**  
**Commissioning by qualified personnel only!**  
**Improper commissioning poses a risk of fatal injury. Have commissioning performed by qualified personnel only.**



**DANGER! Risk of fatal injury!**  
**When working on the open switchgear, there's a danger of electric shock from touching the live components.**  
**This work must only be carried out by qualified personnel!**

We recommend that you have the switchgear commissioned by Wilo customer service.  
Before switching on for the first time, the on-site wiring must be checked, in particular the earthing.



**Tighten all terminals prior to commissioning!**

### 8.1 Switchgear settings

After switching on the main switch and expiration of the start sequence in the display and of the signal lamps, the switchgear is ready for operation and factory preset.

The factory settings can be restored by Wilo customer service.

To ensure correct operation it is necessary to implement and/or check certain settings in the menu

Menu 1.2.1.1:  
Setting of the supply voltage in volts.

Menu 1.2.1.2:  
Setting of the pump's rated current. Information relating to the pump's rated current is to be inferred from the pump's rating plate.

Menu 5.2.1.0:

Setting of the transformer type (primary current measuring range). Information relating to the transformer type can be found on the transformer's rating plate.

NOTE:

If the measuring line has not only been run through the transformer but also wrapped around it, the current value of the transformer is to be halved for each wrapping.

Example:

The measuring line has been wrapped twice around a 100/5A transformer.

1 wrapping = 50/5A transformer

2 wrappings = 25/5A transformer

A 25/5A transformer should therefore be set in the menu.

Menu 3.1.0.0:

Displaying the operating mode.



**CAUTION! Risk of malfunctions!**

If "Automatic off" is set, automatic mode is not possible. The pump can only be switched on manually.

### 8.2 Checking the motor direction of rotation

By briefly switching on the pump, check that the direction of rotation of the pump is correct. When the pump motor runs out, compare the direction of rotation of the fan wheel and the direction specified on the pump housing.

If the direction of rotation of the pump is wrong, swap over any two phases of the power cable.

## 9 Maintenance

**Have maintenance and repair work carried out by qualified skilled personnel only!**



**DANGER! Risk of fatal injury!**

**There is a risk of fatal injury from electric shock when working on electrical equipment.**

- **The switchgear should be electrically isolated and secured against unauthorised switch-on during any maintenance or repair work.**
- **Any damage to the connection cable should only ever be eradicated by a qualified electrician.**
- The switchbox must be kept clean.
- Visual inspection of the electric system parts in the switchbox

## 10 Faults, causes and remedies



### DANGER! Risk of fatal injury!

There is a risk of fatal injury from electric shock when working on electrical equipment.

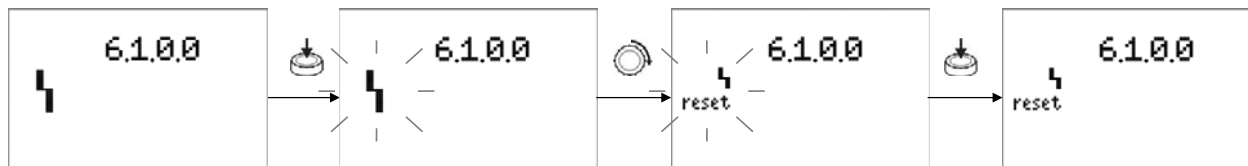
Have faults remedied by qualified skilled personnel only! Follow the safety instructions in Section "2 Safety".

Before all work to remedy faults, disconnect the unit from the power supply, and make sure it cannot be switched back on by unauthorised persons.

### 10.1 Fault indication

If a fault occurs, the relevant fault signal LED lights up, the collective fault signal and associated individual fault contact are activated and the fault is displayed on the LCD (fault code number).

The fault can be acknowledged by pressing the acknowledgement button (Fig. 2, item 10) or in menu 6.1.0.0 by proceeding as follows:



### 10.2 History memory for faults

A history memory has been set up for the switch-gear and operates according to the FIFO principle (first-IN, first-OUT).

The memory is configured for 16 faults. The fault memory can be called up using menus 6.1.0.1 – 6.1.1.6.

Code	Fault description	Causes	Remedy
E54.0	No bus communication to HMI board	Connection to HMI board interrupted	Check connection
			Request customer service
E4.0	Undervoltage	Supply voltage too low on mains side	Check mains voltage/mains supply, check fuses
E5.0	Overvoltage	Supply voltage too high on mains side	Check mains voltage/mains supply
E61.0	Hydraulic false start	Pump pressure switch indicates no pressure after pump start	Check pump/impeller, check pipes for leaks, check pump's direction of rotation, check pressure switch setting
E11.0	Electric false start	Motor's minimum electric output not reached after pump start	Check settings, check pump/impeller
E23.0	Excess current	Excessive rated pump current during operation	Pump blocked or stiff, check supply voltage
E25.0	Undercurrent	Insufficient rated pump current during operation	Check settings, check pump/impeller
E109.0	Freely configurable fault	Depending on the fault configuration	Depending on the fault configuration

**If the fault cannot be remedied, please contact your nearest Wilo customer service point or representative.**



Pioneering for You

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