

Wilo-IR-Monitor



de Einbau- und Betriebsanleitung
en Installation and operating instructions

fr Notice de montage et de mise en service
nl Inbouw- en bedieningsvoorschriften

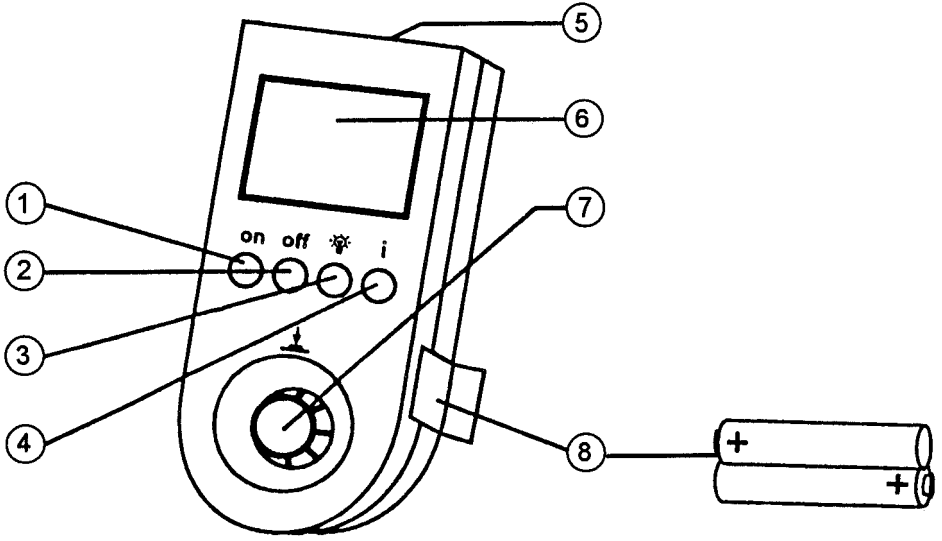


Fig. 1

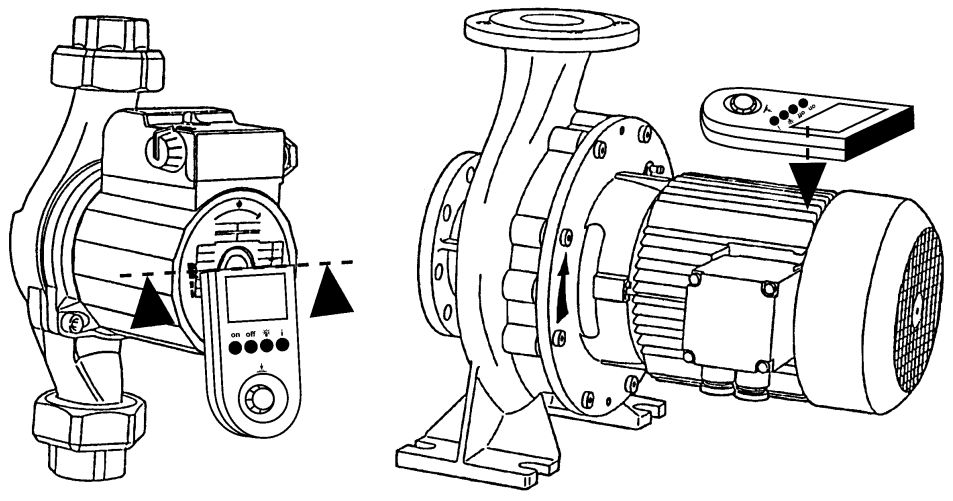


Fig. 2

max. 16

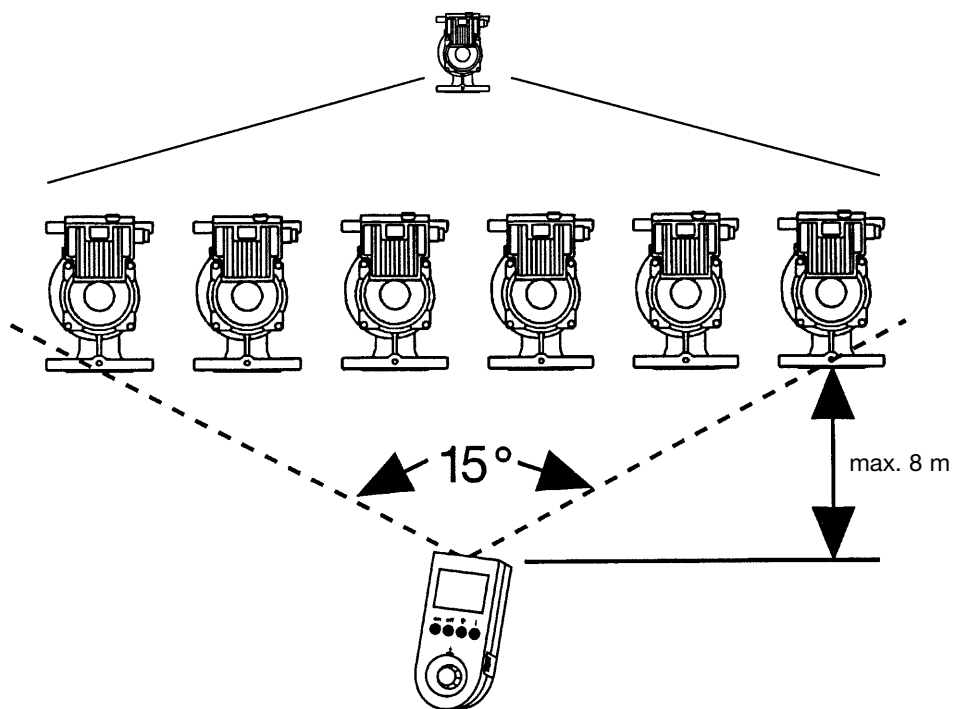


Fig. 3

1. General Information

1.1 Uses

Circulating pumps for Series TOP-E and TOP-ED "Monitoring" in heating systems are electronically set, operated and controlled by the **Infra Red** monitor. All technical data can be transferred between the pumps and the IR monitor and processed by infra red remote control. It is therefore the central monitoring unit in a heating system.

1.2 Technical data

Unit dimensions:	185 x 85 x 34 mm
Display dimensions:	47 x 47 mm 128 x 128 dots
Battery:	2 x 1.5 Volt Round Cells R6
Shock resistance:	max. height of fall 1 m
System of protection:	IP 43
Operating temperature:	0 °C to 40 °C
Storage temperature:	-20 °C to 70 °C
Permissible relative humidity:	≤ 95 %
IR bearing angle:	15°
Distance IR Monitor - module:	0.1 ... 8 m

2. Safety

The safety instructions for the connected pumps must be strictly adhered to at all times.

3. Transport and storage

WARNING! This apparatus must be protected against moisture and mechanical damage.

4. Description of product and accessories

4.1 Description of the IR monitor (Fig. 1)

The IR monitor, which was designed as a service apparatus, is fitted with a micro processor which enables it to register, process, and set all operating modes for the corresponding pumps TOP-E and TOP-ED. The pump modules are fitted with a remote control receiver and transmitter (positioned above the heat sink) for this purpose. By processing the data it registers, the unit supplies

more information than the modules on the pumps themselves.

Certain settings on the pump module can be blocked using the IR monitor. The monitor has been constructed in such a way that it will also be compatible with pump modules which will be developed in the future.

4.2 IR Monitor Technical Equipment

- **Display:** (Fig. 1, pos. ⑥). Screen definition: 128 x 128 dots, graphic compatibility, presentation of freely-defined symbols, optional background illumination (Fig. 1, pos. ③).
- **Energy supply:** 2 x round cells R6 (Fig. 1, pos. ⑧), each 1.5 V or suitable storage batteries. Once the battery is dead, an acoustic warning sound will be heard. In addition, "Battery dead" appears on the display. In order to save storage battery capacity, the monitor automatically switches off after a certain length of time during which it has not been operated.
- **Memory:** Non volatile memory for documenting the preset values.
- **Controlling the direction of rotation:** The following appears on the display: Motor ON/OFF, direction of rotation left/right, rotary frequency of the motor 10 ...100 Hz. The monitor must be placed on the pump housing (Fig. 2) in order to measure this data.

4.3 Operating the IR Monitor

The **IR window** (Fig. 1, pos. ⑤) is positioned on the face of the monitor. This window constitutes the transmitter and receiver surface and must be directed at the pump with which the display is to communicate. The bearing angle of the transmitter and receiver range of the monitor and the pump module are depicted in Fig. 3 and must be directed at the selected pump during the location procedure. Throughout the duration of the communication the monitor's direction of bearing must be maintained.

By pressing the **"ON" button** (Fig. 1, pos. ①) the **Start menu**, **WILLO** logo and the address of the operator will appear on the display (see table II). The monitor can be switched off using the **OFF button** (Fig. 1, pos ②).

The background lighting on the display can be switched on and off using the **light button** (Fig. 1, pos. ③).

Information on how to operate the menu can be called up onto the display by pressing the **"I" button** (Fig. 1, pos. ④).

The menu can be operated using the **one hand operating button** (Fig. 1, pos. ⑦). The directly selectable switching panel in the menus appears inverted. By pressing (clicking) the operating button the command for the inverted switching panel is carried out. By turning the operating button by one point, the inverted switching display moves to other switching displays on the same menu (turning to the right moves forward and to the left backwards), which can then be selected. The appearance of an arrow at the lower or the upper end of the data display, signifies that there are further data displays which can be viewed by turning the operating button. Using the same button, the data field can be scrolled upwards. In this case none of the switching displays appears inverted on the screen.

The structure of the menu is presented in tables I and II. The 5 main menus: display, operate, statistics, service and adjust, can be selected in the fixed order of appearance by turning and pressing the button. The sub menus can be reached by clicking the button. The data in the sub menu can be accessed by clicking on the button. To return to the main menu, click on "exit".

Should the connection between the monitor and the pump module be interrupted, the following message appears on the display: "IR Communication fault". A warning tone will sound at the same time. In this case, the unit must be re-started.

Should a double pump be controlled by the IR monitor the IR monitor will identify the double pump. The menus for double pump mode will then appear automatically on the display. As long as the WILO interface has been connected, the PCT (building management system) function will also be automatically identified and activated.

4.4 Products delivered

- IR monitor with batteries, protective cassette and service card,
- Installation and Operating Instructions.

5. Installation

No specific instructions.

6. Operation

The necessary pump settings with the IR monitor must be carried out by a trained professional. Details of how to operate the unit are given in chapter 4.

7. Maintenance

The switchgear is maintenance-free.

8. Problems, Causes and Solutions

IR monitor cannot be switched on

- Batteries dead, replace batteries
- Batteries incorrectly inserted, reinsert observing polarity

IR monitor switches off automatically on a regular basis

- Batteries dead, replace batteries
- Reset time-out time interval

Display contrast too high or too low

- Extreme ambient temperature, reset contrast

Communication faults occur on a regular basis

- Monitor communicates with several pumps at the same time (LEDs flash), disconnect and then reconnect
- Interference from another light or distance between monitor and pump too great, Reduce distance to pump.

Table I

Overview of menus on the IR Monitor

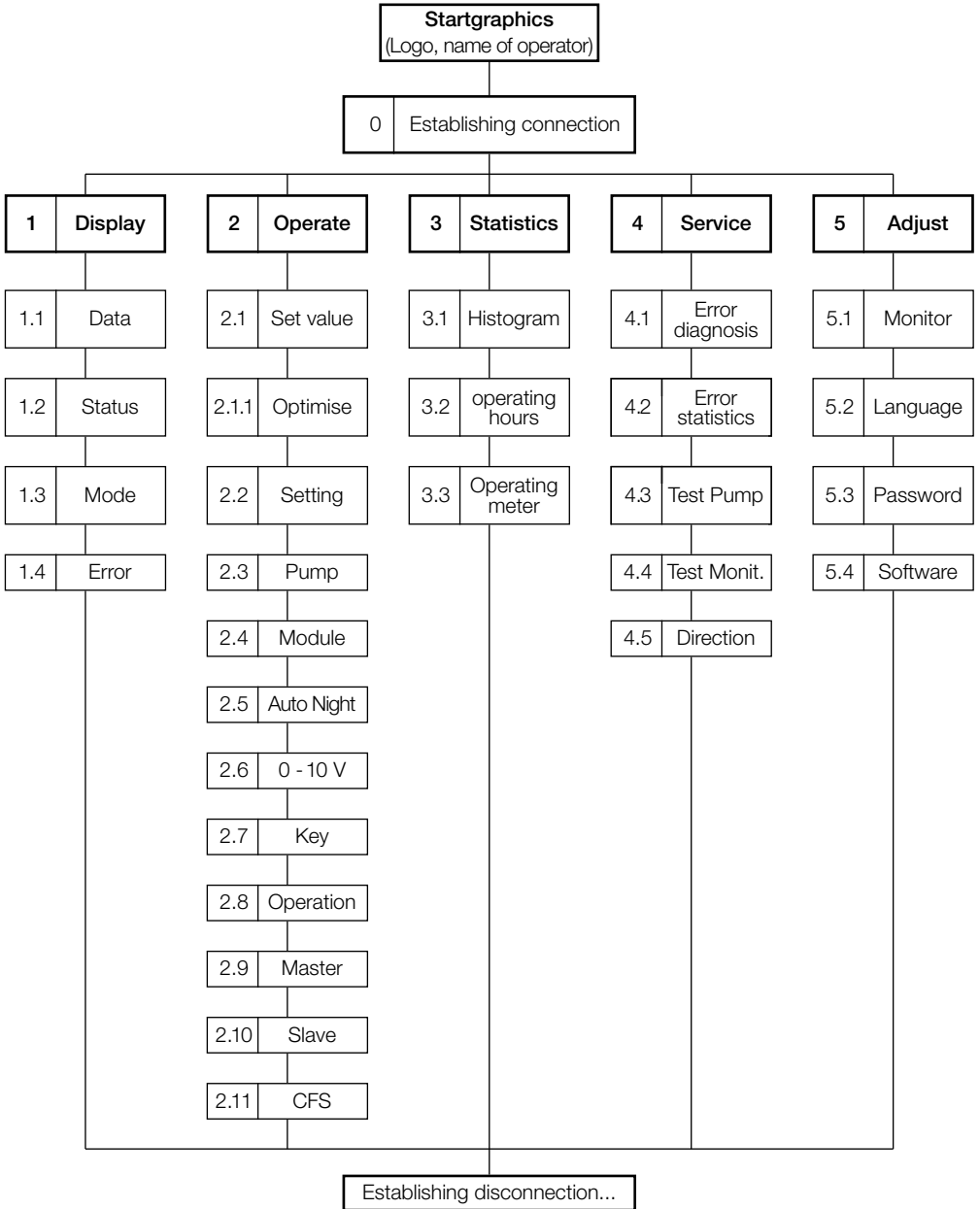


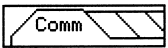

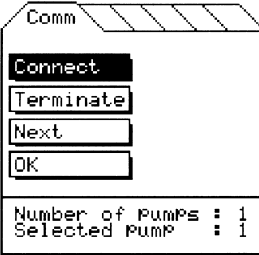








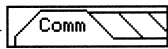


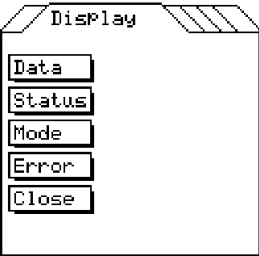

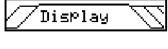

Table II IR monitor menu structure

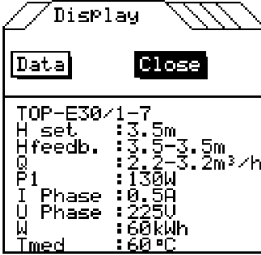


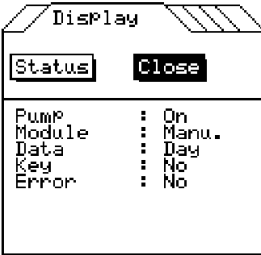
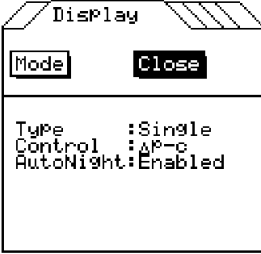
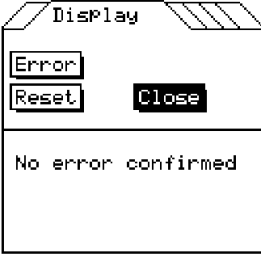


The menu images presented here refer to single pumps (EP). In the menu images for double pumps

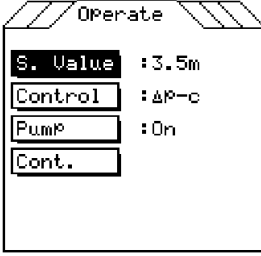
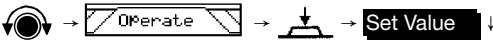
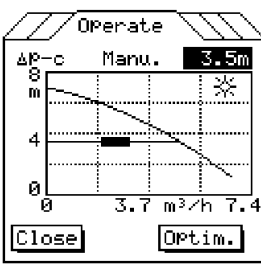

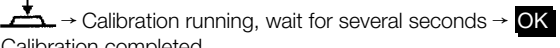
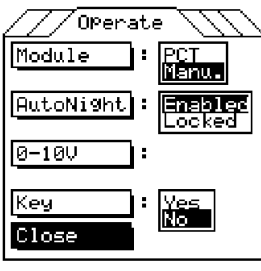
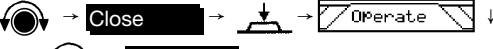

(DP) the data for Master and Slave will also be given.

No.	Display	Explanation of the Display
	 <p>Comm</p> <p>wilo</p> <p>IR-MONITOR</p> <p>NAME - NOM - NAAM</p>	<p>“on” → Start menu: WILO logo and operator address.</p> <p> → Communication menu  →  ↓</p>

0	Comm	Establishing connection
	 <p>Comm</p> <p>Connect</p> <p>Terminate</p> <p>Next</p> <p>OK</p> <p>Number of Pumps : 1</p> <p>Selected PUMP : 1</p>	<p>Locate pumps →  → LEDs of all pumps which have been located will light up in green. Connection confirmed by a tone. The number of pumps located will appear on the display. Should the selected pump not be located, repeat the aforementioned procedure.</p> <p> → Terminate →  : Connection terminated.</p> <p> → Next →  : Green LED will flash on one of the pumps.</p> <p> → The next pump will flash, select the desired pump.</p> <p> → OK →  →  ↓</p>

1	Display	Feedback value data will appear but cannot be altered.
<p>1.1</p> <p>1.2</p> <p>1.3</p> <p>1.4</p>	 <p>Display</p> <p>Data</p> <p>Status</p> <p>Mode</p> <p>Error</p> <p>Close</p>	<p>Entry into the first main menu “Display”</p> <p> →  →  → Data ↓</p>

<p>1.1</p>		<p>→  → Close →</p> <p>Displays the type of pump and all current operating data</p> <p> → Data ↓</p>
<p>1.2</p>		<p>Displays the selected settings:</p> <p>Pump: Ready for operation ON/OFF</p> <p>Module: Set value set on the pump (manual), PCT over 0-10 V</p> <p>Data: Pump runs in regular (Day) or light load mode (Night)</p> <p>Key: Adjustments not permissible for operators, Yes/No</p> <p>Ext. OFF: Ext. pump OFF, Yes/No (if terminal present)</p> <p>Error to be removed: Yes/No</p> <p>DP: Master: Ready for operation Locked/Enabled Slave: Ready for operation Locked/Enabled</p>
<p>1.3</p>		<p>Display pump type and set control system:</p> <p>Pump type: Single / Double (DP)</p> <p>Control system: Δp-c, Δp-v, Δp-T, n-regulator,</p> <p>Auto Night: Locked/Enabled (Light load mode)</p> <p>0-10 V: Locked/Enabled (Ext. set value, if terminal present)</p> <p>DP: Mode: Reserve/Addition</p>
<p>1.4</p>		<p>Error display, Error acknowledgement</p> <p>No error confirmed</p> <p>Displays the type of error which has occurred</p> <p> → Reset →  → Type of error</p> <p>Error acknowledged</p> <p>Automatic start in x Min</p> <p>Can be reset in x Min</p>

2	Operate	Setting the operating parameters
2.1 2.2 2.3		 <p>The set values used to date are displayed.</p>
2.1		<p>H/Q diagram with max. characteristic line of the pump and current operating area in accordance with set control system. The following set values can be set for different control systems:</p> <p>Δp-c: set value delivery head [m] Δp-v: set value delivery head [m] Regulator: set speed [min⁻¹] Δp-T: Δp_{min}, Δp_{max} [m], T_{min}, T_{max} [°C]</p> <p>The factory setting can also be called up under control system.</p>
2.1.1		<p>0-point calibration of the pump characteristics are necessary when starting up the pump for the first time. Power input of the pump motor with transport capacity Q = 0 m³/h and maximum speed is measured and used as a reference point. Optimisation increases the accuracy of measurements but does not impair the function in any way. Optimisation also necessary for light load mode. Close discharge valve!</p>  <p>Calibration running, wait for several seconds → OK, Calibration completed.</p>
2.4 2.5 2.6 2.7		<p>Module: PCT: Adjustment of the set value via the PLR (pump control processor)/interface converter manual: Adjustment of the set value at the pump</p> <p>Auto Night: Enabled: Adjustment if light load mode permissible Locked: Light load mode blocked</p> <p>0-10 V: can only be activated if terminal is present Enabled: Input for external n-set value (regulator) Locked: Input blocked</p> <p>Key: Yes: Adjustment blocked by user No: Release</p>  <p>DP:  → Continue box ↓</p>

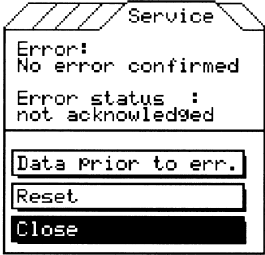
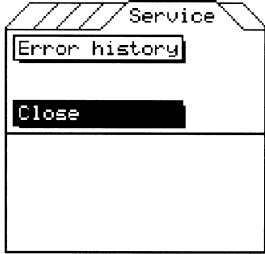
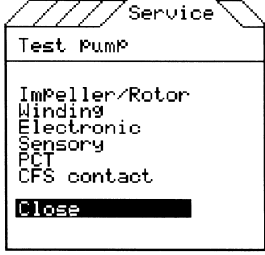
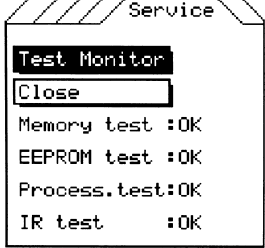
<p>2.8 2.9 2.10 2.11</p>		<p>Additional settings for double pump</p> <p>Data: Reserve: set to reserve mode Addition: setting in addition mode</p> <p>Master: Enabled: Master ready for operation Locked: Master blocked</p> <p>Slave: Enabled: Slave ready for operation Locked: Slave blocked</p> <p>CFS: Collect: Error reading for interference DP Single: Error reading for every pump</p>
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<p>3</p> <p>3.1 3.2 3.3</p>	<p>Statistics</p>	<p>Histogram and operating hours</p> <p>Operating hours: Added up between 2 delete commands DP: Total, Master and Slave hours</p> <p>Operating meter: Network On: Number of times pump switched on Pump kick: Number of short starts due to stoppages Auto Night: Number of times pump switched on in light load mode</p> <p>DP: same for Master and Slave</p>
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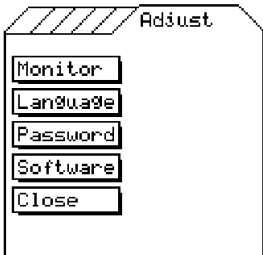
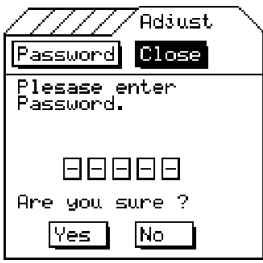

<p>3.1</p>		<p>Load diagram: ΔQ / % of running time, Gives information concerning how long the pump ran in the individual delivery capacity areas between the 2 delete commands. The sum total of each section gives the total operating time since the last delete command.</p>
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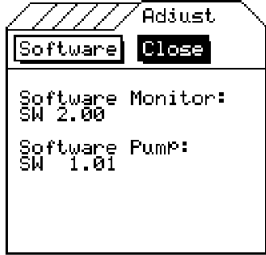
<p>4</p> <p>4.0 4.1 4.2 4.3 4.4 4.5</p>	<p>Service</p>	<p>Service Information</p>
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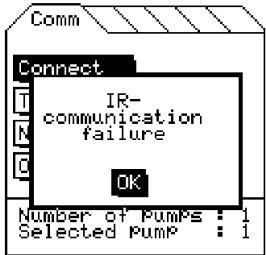
ENGLISH

<p>4.1</p>		<p>Error: No error / type of error Error status: acknowledged / not acknowledged Data prior to error: List of data in the sub menu Reset: Error is reset</p>
<p>4.2</p>		<p>Lists a maximum of 16 errors in the order in which they occurred Error list: see installation and operation instructions for the pump.</p>
<p>4.3</p>		<p>Every test is shown in a sub menu:</p> <p>Impeller/Rotor test: not yet available Winding: Contact or motor error Electronics: Self test External sensors: Self test PCT: Displays correctly received protocols, counts down from 60 s to 0 s CFS contact: Opens the CFS contact for 15 s Error indicated if test result negative.</p>
<p>4.4</p>		<p>Self test runs automatically. Test results OK or error reading</p>

4.5		<p>Direction of rotation Direction</p> <p>Place monitor on pump in accordance with. Fig. 2</p> <p>The following are displayed:</p> <p>Direction of rotation, Rotary-field frequency, Motor ON/OFF, nothing displayed for OFF</p>	
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<p>5</p> <p>5.0</p> <p>5.1</p> <p>5.2</p> <p>5.3</p> <p>5.4</p>	<p>Adjust</p> 	<p>Basic setting for starting up</p> <p>Monitor: Contrast: Contrast between writing and background on display, can be set between 1 (low contrast) and 15 (greater contrast).</p> <p>Time Out: Time passed between last operation and automatic mode. Monitor switch-off, can be set between 2 and 30 min.</p> <p>Language: menu languages: German, English, French, Dutch</p>	
5.3	 	<p>Password → → → → From A to the desired letter → → A → → → etc...</p> <p>until the last box → → Yes → → Password</p> <p>If the IR Monitor is switched off and then on again, the password will not reappear (personal code).</p> <p>Warning! Once a password has been confirmed it cannot be deleted.</p> <p>The menu only appears once the correct code has been entered in the first menu. This protects against unauthorised alteration of the operator's address.</p> <p>Entry of the address as above.</p> <p>Only confirm using Yes if the address entered is correct.</p>	

5.4	 <p>The screenshot shows a menu titled 'Adjust' with two options: 'Software' and 'Close'. Below the options, the following text is displayed: Software Monitor: SW 2.00 Software Pump: SW 1.01</p>	Description of monitor and pump software is set by WILO prior to delivery. The data shown here is given as an example.
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	<p>Error indication</p>  <p>The screenshot shows a menu titled 'Comm' with a 'Connect' option. A central box displays the error message: 'IR-communication failure' with an 'OK' button below it. At the bottom of the screen, the following status information is shown: Number of PUMPS : 1 Selected PUMP : 1</p>	<p>The dialogue boxes appear when errors or interference occur. The following messages appear on the display:</p> <ul style="list-style-type: none"> ■ IR communication failure <p>This message appears when the connection to the pump is interrupted for a brief period, usually due to the fact that the monitor is outside the receiver range.</p> <p>Maintain direction of bearing.</p> <ul style="list-style-type: none"> ■ Function not present ■ Too many connections ■ No pump selected ■ Function not possible in this mode ■ Test running ■ Pump exchange in operation ■ Incorrect password, does not comply with entry ■ Battery dead
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