

Operating instructions



**Peristaltic dosing pump
Concept 420smd**

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1 Conventions



Note

These operating instructions include different categories of notes and warnings, which are indicated with a symbol.

Symbol	Note	Meaning
	<i>Danger!</i>	Immediate danger to life. Failure to rectify the situation will result in death or serious injury.
	<i>Warning!</i>	Danger to life. Failure to rectify the situation may result in death or serious injury.
	<i>Caution!</i>	Failure to observe this advice could result in moderate or minor injuries or damage to property.
	<i>Warning!</i>	Danger from electrical current.
	<i>Warning!</i>	Risk of crushing hands.
	<i>Note</i>	Tips for working with the device.
	<i>Caution!</i>	Risk of injury! Wear eye protection!
	<i>Caution!</i>	Danger from chemicals! Wear protective gloves!

	<p><i>Caution!</i></p>	<p>Risk of injury! Wear protective clothing!</p>
	<p><i>Disposal warning!</i></p>	<p>Danger from chemicals! Wear protective clothing!</p>

2 Description

The *Concept* 420-SMD is a high-grade peristaltic dosing pump with step motor drive for dosing liquid media in commercial and industrial applications. The available pump tube sizes allow dosing quantities from 0.5 ml/h up to 10,000 ml/h. The pump offers a variety of operating modes as well as a 2 x 16 character display that shows functions and parameters. An ergonomic control system allows parameters and functions to be changed in a straightforward way while the pump is operating.

3 Equipment

3.1 Hardware

Control elements

- LCD display, 2 x 16 characters
- LEDs: operation, dosing, fault
- On/off function button
- Fill button
- 4 buttons for menu-driven parameter setting
- Dosing pump, inputs/outputs
- Dosing pump with high-precision, low-noise step motor drive, flow rate approx. 5 ml/h to 10,000 ml/h (with appropriate tube sizes)
- Relay output with potential-free changeover contact in event of fault (fail-safe)
- Multi-function input for connecting an external normally open contact, current signals 4-20 mA, 0-20 mA, 20-4 mA, 20-0 mA, x-y mA (freely configurable), or pulse generator (max. frequency 15 Hz)
- Input for connecting suction lance with float switch for container low level signal
- Tube rupture monitoring
- Acoustic fault signal (piezo buzzer, optional)

3.2 Software

3.2.1 Various operating modes:

- Manual with direct input mode for speed
- Manual charge
- Automatic mode for on/off with external contact
- Current activation
- Pulse operation without and with memory
- Charge operation, start with external contact

3.2.2 Operation:

- Ergonomic menu operation via 2 x 16 character display and 4 buttons
- Language selection, currently German, English
- Display current speed in all operating modes
- Display flow rate after performing calibration
- Display details for the respective operating mode
- Display and monitor internal temperature inside housing, switch off in event of overheating
- Quick fill function
- Container low level signal
- Tube rupture monitoring
- Current monitoring in operating modes 4-20 mA and 20-4 mA

4 Technical specifications

Parameters		Conditions	Value
V_{CC}	Supply voltage		115-230 V AC, 50/60 Hz
ΔV_{CC}	Supply voltage tolerance		$\pm 10\%$
I_{in}	Input current	Max.	200 mA
	Max. flow rate	Pump tube PS 140-4.8x1.6.PH, water, unrestricted outlet	11,500 ml/h
	Min. flow rate	Pump tube PS 138-1,6x1.6.PH, water, unrestricted outlet	2 ml/h
T_U	Ambient temperature	Operation	5..45 °C
D	Dosing pump duty cycle	Specified temperature range	100.00%
$t_{min, pulse}$	Minimum duration for pulse input	Falling edge	50 ms
$f_{max, pulse}$	Max. frequency pulse operation		10 Hz

5 Operation and safety information



Note

Read these operating instructions before using the device. All instructions relating to the safety of the operator and protection of the surroundings must be followed.

General notes Before use, the suitability of the pump for the intended purpose must be established beyond doubt.

Before use, the suitability of the pump tube material in respect of its chemical resistance to the medium, temperature and pressure conditions must be established beyond doubt.

Suitable inflow and outflow tubes must be used and properly connected to the pump.

Maintenance The pump tube should be replaced at regular intervals by trained operating personnel following the steps described in these instructions (see "Maintenance" section).

Personnel Operating personnel must be trained and instructed in the safe handling and use of the pump and the pumped media.



Danger from electrical current!

All electrical installation work must be carried out by a qualified electrician. The power supply must be switched off (pull out mains plug) before opening the device housing.



Note

We recommend making suitable provisions in case the pump leaks (e.g. a defined drain, collection vessel or similar).

Danger from chemicals



Warning, risk of eye injury!

Danger from chemicals!
Wear protective goggles!



Warning, risk of skin injury!

Danger from chemicals!
Wear protective gloves!



Warning, risk of contamination of clothing!

Danger from chemicals!
Wear protective clothing!



Disposal warning!

Danger from chemicals!
Wear protective clothing!

Danger from heat generation



Warning, risk of explosion!

The device must not be used in the vicinity of explosive materials and gases.

Danger from rotating rotor



Risk of crushing hands!

The pump should only be operated with all provided covers properly fitted.

5.1 Installation



Caution, heat emission!

Ensure that sufficient clearance is maintained around the side walls of the device for heat dissipation. If necessary, a suitable ventilation system should be installed for the pump.

The device must be installed in a location that is protected against the harmful effects of moisture, vapour, chemical gases, vibrations and other mechanical forces.

The inflow and outflow tubes must be fit for purpose and properly connected to the pump. At the installation site, the device must be secured in place using the four designated fixing points.

Orientation: pump housing vertical, tube connections facing down.

6 Electrical installation



Danger from electrical current!

All electrical installation work must be carried out by a qualified electrician. The power supply must be switched off before opening the device housing.


For electrical installation, refer to the block diagram corresponding to the set operating mode. See pp. 14 ff.

7 Operating statuses

There are three possible operating statuses:


- Operating status "Off"
- Operating status "On, off mode"
- Operating status "On"


7.1 Operating status "Off"


In the operating status "Off", the supply voltage is present at the pump. The green LED  briefly flashes at intervals of approx. two seconds. The display is dark. No dosing takes place. The relay contact for displaying faults is de-energised.

Pressing the  button for approx. two seconds switches the pump into "Off mode".


7.2 Operating status "On, off mode"

In "Off mode", the green LED  briefly flashes at intervals of approx. two seconds. The display shows operating messages. The buttons can be used to make settings. The fill mode is active. The relay contact for displaying faults is de-energised. No faults are shown on the display.


Pressing the  button for approx. two seconds switches the pump into the operating status "Off".

Briefly pressing the  button switches the pump into the operating status "On".

7.3 Operating status "On"

In the operating status "On", the green LED  is permanently lit. Information for the current operating mode appears in the display. The buttons can be used to make settings. The fill mode is active. The relay contact for displaying faults is energised. Faults that occur are shown on the display (see "Faults during operation" section).

The dosing pump operates subject to the conditions determined by the set operating mode.

Pressing the  button for approx. two seconds switches the pump into the operating status "Off".

Briefly pressing the  button switches the pump into the operating status "On, off mode".

8 Display

Apart from displaying information, the display is also used to set functions and their parameters. It has two lines, each with 16 characters.

8.1 Status displays

Status displays show the current operating mode in the first line, with status information in the second line. Depending on the operating mode and device status, the second line shows various types of information in rotation. As a result, the operator always has an overview of the pump status and relevant process parameters for the pump.

8.2 Menu navigation displays

Menu navigation displays are identifiable by the arrows at the right edge of the display. The following "Menu commands" section contains detailed descriptions of what the arrows mean.

9 Menu commands

9.1 Menu commands

Parameters are set via menu commands using the keypad. In the menu, there are three types of menu items:

9.1.1 Information items

A menu information item (Info) only displays information in the menu. These are indicated by a triangular arrow ▲ in the final position on the first line and by a triangular arrow ▼ in the final position on the second line in the display. It is not possible to input or activate settings in a menu information item.

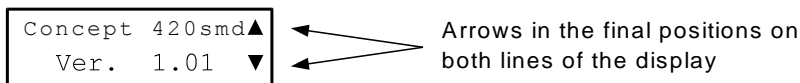


Fig. 1 Example information item

9.1.2 Selection items

Selection items (Sel) are indicated by a triangular arrow ► in the initial position on the first line in the display.

Selection items are used to navigate through the menu. Use the ▲ and ▼ buttons to move through successive selection or information items. In a selection item, further selection, input or information points can be accessed by pressing the ☑ button.

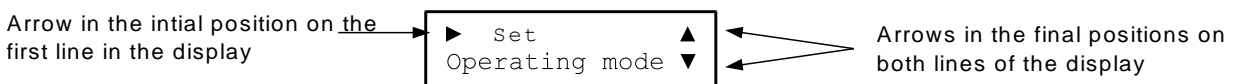


Fig. 2 Example selection item

9.1.3 Setting items

Setting items (Set) are indicated by a triangular arrow ► in the initial position on the second line in the display.

In a setting item, one or more values can be set or changed. The active setting value is marked by the cursor (underline). Press the ▼ or ▲ buttons to change the values. Press the ☑ button to confirm a setting. If multiple parameters are set under one setting item, they are not stored to memory until all displayed parameters have been set and confirmed by pressing the ☑ button. Confirming the last parameter by pressing the ☑ button stores the set values in memory and exits the setting menu.

If after starting to change a setting you wish to cancel the changes, press the **[ESC]** button. In a setting menu with multiple parameter settings, pressing the **[ESC]** button returns to the previous parameter. For the first parameter in a setting menu, pressing the **[ESC]** button exits the setting menu without saving the set values in the memory.

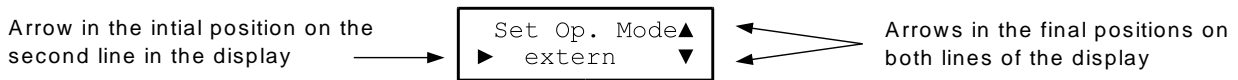


Fig. 3 Example setting item

9.2 Menu navigation

The **[ESC]**, **[↓]**, **[↑]** and **[✓]** buttons are used to navigate through the menu system.

The example in the following diagram summarises what happens when a button is pressed in the various menu items.

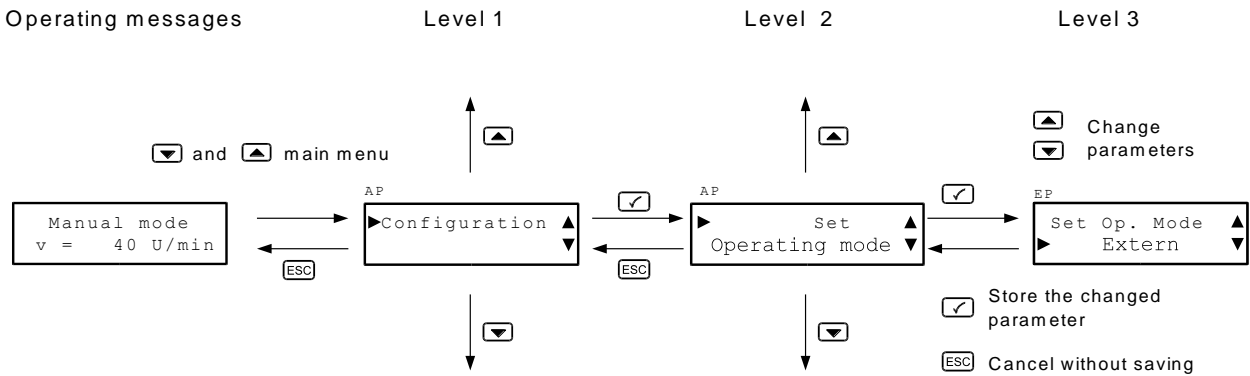


Fig. 4 Navigating through the menu system

9.3 Short menus

The settings that determine how the pump functions are changed in the menu system using the control elements (buttons). There are two short menus which can be accessed during normal operation by pressing the **[ESC]** or **[✓]** button. A short menu cannot be accessed from the main menu, but it is possible to access the main menu from the short menus.

9.3.1 "Info" short menu

Press the **[ESC]** button to access the "Info" short menu, where you can view various types of information by pressing the **[▼]** or **[▲]** buttons:

- Device name
- Software version
- Current temperature of the microcontroller chip, as an indicator of the temperature inside the housing
- Current operating mode for automatic operation

Press the **[ESC]** button to exit the "Info" menu.

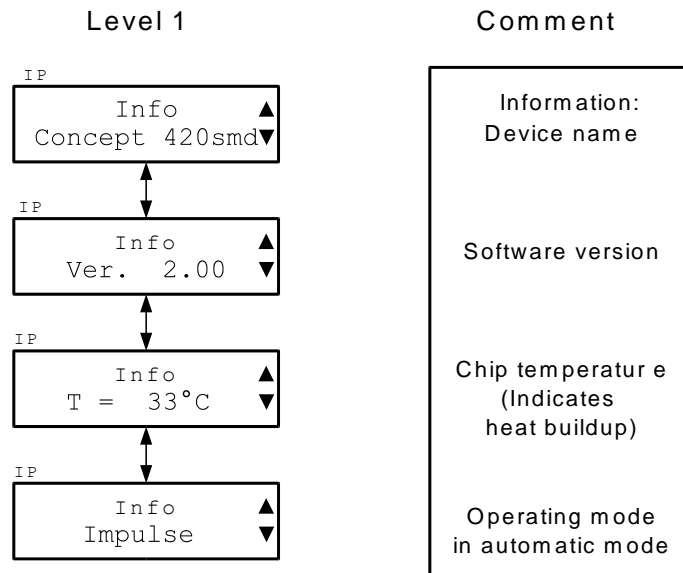


Fig. 5 "Info" short menu

9.3.2 "Switch auto/manual" short menu

Press the **[✓]** button to access the "Switch auto/manual" short menu, where you can rapidly switch between the operating modes "Manual", "Manual charge" and "Automatic". When the menu is active, it always suggests the opposite operating mode to the current operating mode. If the pump is switched into the "Automatic" operating mode, the last selected manual operating mode is suggested.

If you want to select a different operating mode to the one suggested, press the **[▼]** or **[▲]** button to select it.

Pressing the **[✓]** button stores the currently displayed operating mode, switches the pump into "Off mode", and exits the short menu. The device is now in the selected operating mode in "Off mode". Press the **[⏻]** button to activate the device.

Press the **[ESC]** button to exit the short menu without changing the operating mode.

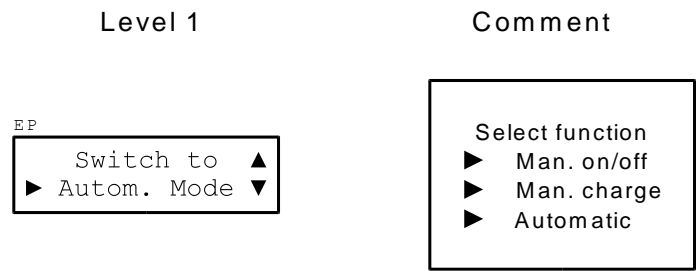


Fig. 6 "Switch auto/manual" short menu

9.4 Main menu

To access the main menu, simultaneously press both the and buttons. In the main menu, you can set parameters applicable to the currently active operating mode. For the sake of clarity and simplicity, the menu does not allow you to change settings for parameters of other operating modes.

The menu tree for the main menu of each operating mode is described together with the respective operating mode. General sections of the main menu are explained in detail below.

9.4.1 Device configuration

In addition to the current parameters, you can also access the device configuration in the main menu. The device configuration provides the following options:

9.4.1.1 Set operating mode for automatic operation

For automatic operation, you can choose between the following operating modes: External on/off, 4-20 mA, 0-20 mA, 20-4 mA, 20-0 mA, x-y mA, Pulse, Pulse with memory, and Charge. This ultimately determines how the pump operates.

9.4.1.2 Quick fill function configuration

You can configure the quick fill function under this setting item. You can set the speed from 1.00 to 100 rpm in steps of 0.5 rpm, and the time for the quick fill function from 00:00 min:sec to 25:59 min:sec.



Note

The quick fill function is a very convenient way to

- fill supply tubes;
- trigger dosing of a desired quantity using the quick fill button;
- pump a defined dosing quantity to calibrate the pump.

9.4.1.3 Enable/disable flow rate display.

If desired, the flow rate of the dosing pump can be shown in ml/h. This setting appears under the Configuration menu item. To obtain an accurate reading, a calibration value must be entered. When the flow rate display is enabled, the associated menu item is activated in the main and configuration menus. For the calibration value, you need to specify the quantity that the pump transports in 100 revolutions. It may be possible to use the quick fill function for this, or the "Manual charge" operating mode.

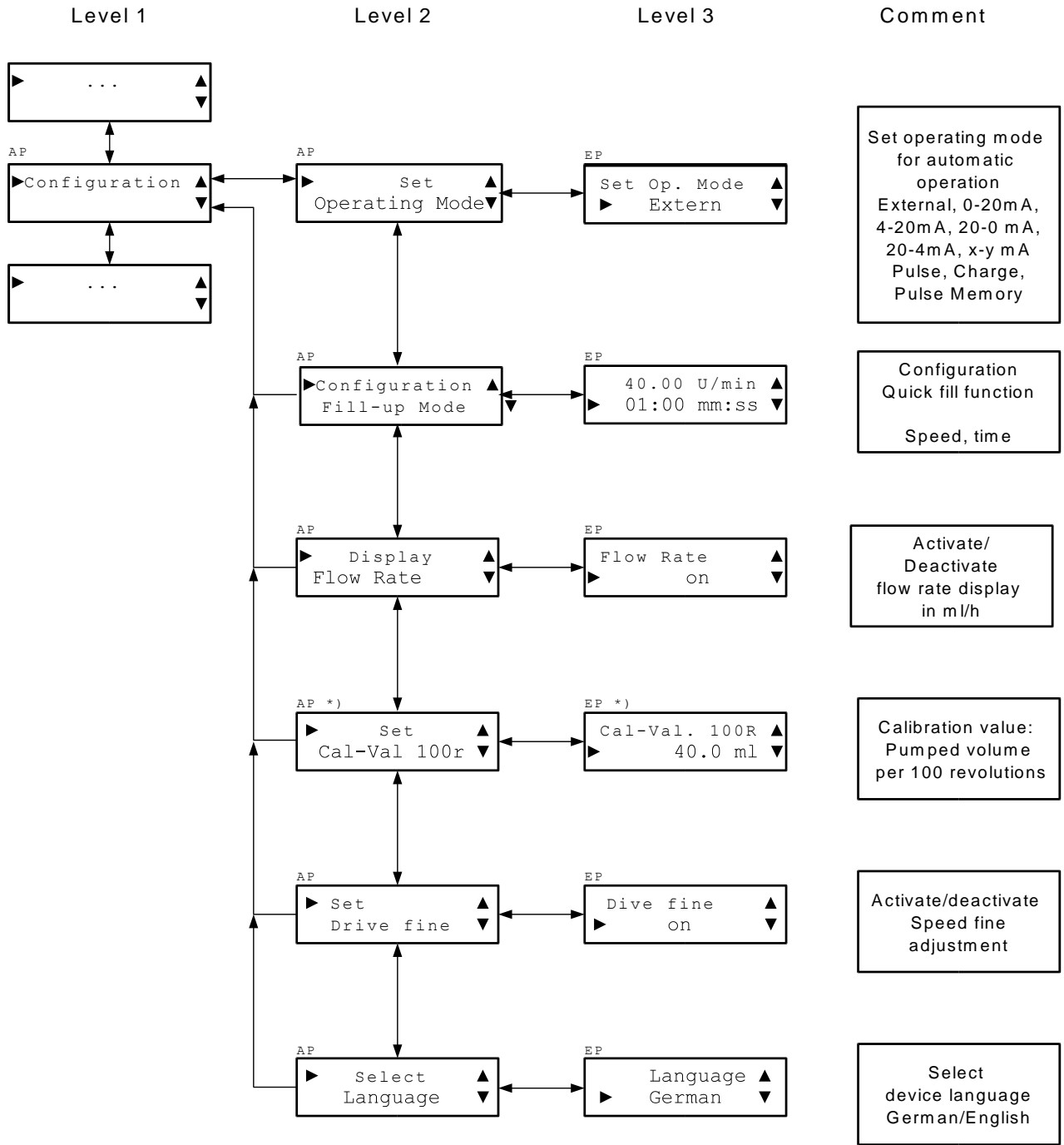
9.4.1.4 Enable/disable "Set fine speed" menu item

Under the "Set rough speed" menu item, you can set the speed with a resolution of 0.5 rpm, which is sufficient for many applications. For applications which require a finer setting, you can finely adjust the speed with a resolution of 0.01 rpm. To do this, the "Set fine speed" function needs to be enabled in the Configuration menu. Enabling this function activates the associated menu item.

9.4.1.5 Select the current language

The device can be operated in various different languages. Currently the following languages are supported:

German, English



*) Only available when the „Display flow rate“ function is switched in the configuration

Fig. 7 Section from the main menu: Configuration

10 Operating modes

The dosing pump can be operated either manually or automatically.

10.1 Manual operating modes

10.1.1 "Manual" operating mode

In the "Manual" operating mode, the pump can be switched on and off by pressing the button. The pump operates at the speed set for manual operation. You can set the speed either via the main menu or in the direct setting mode.

10.1.1.1 Direct setting mode

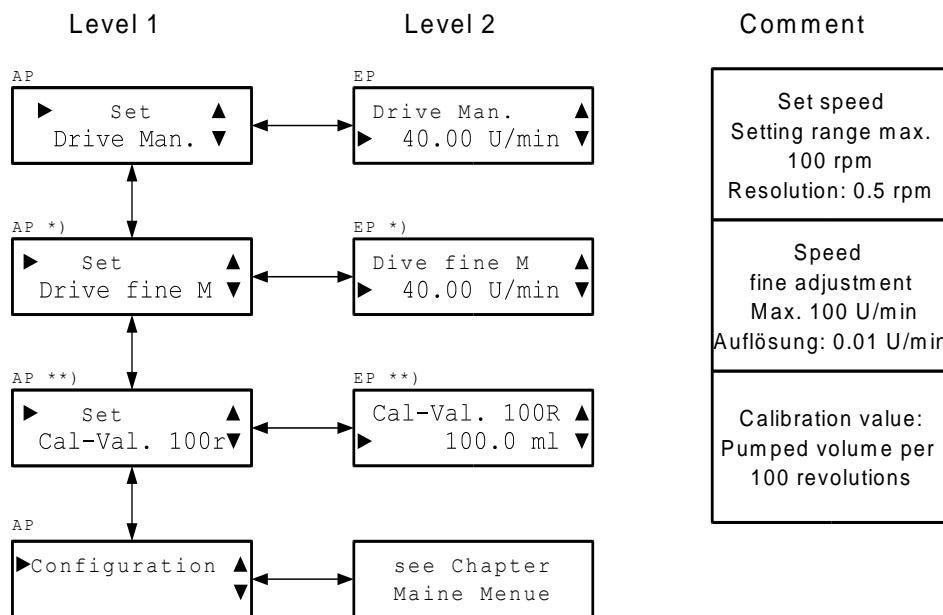
To access the direct setting mode for the speed when in Manual mode, press the or button. Both button symbols appear in the display before the current speed. Press the button to reduce the current speed, or the button to increase it.

The change initially proceeds in steps of 0.1 rpm. Holding down the button for 2.5 seconds increases the increment to 1 rpm. If you hold down the button for another 3.5 seconds, the step increases to 5 rpm.

3 seconds after the last button was pressed, the new speed setting is stored to memory **without** pressing any other button.

In direct setting mode, it is not possible to cancel a speed change by pressing the button.

The direct setting mode for the speed is only available in the "Manual" operating mode.



*) only available when the „Set fine speed“ function is switched on in the configuration

**) only available when the „Display flow rate“ function is switched on in the configuration

Fig. 8 Main menu, "Manual" operating mode

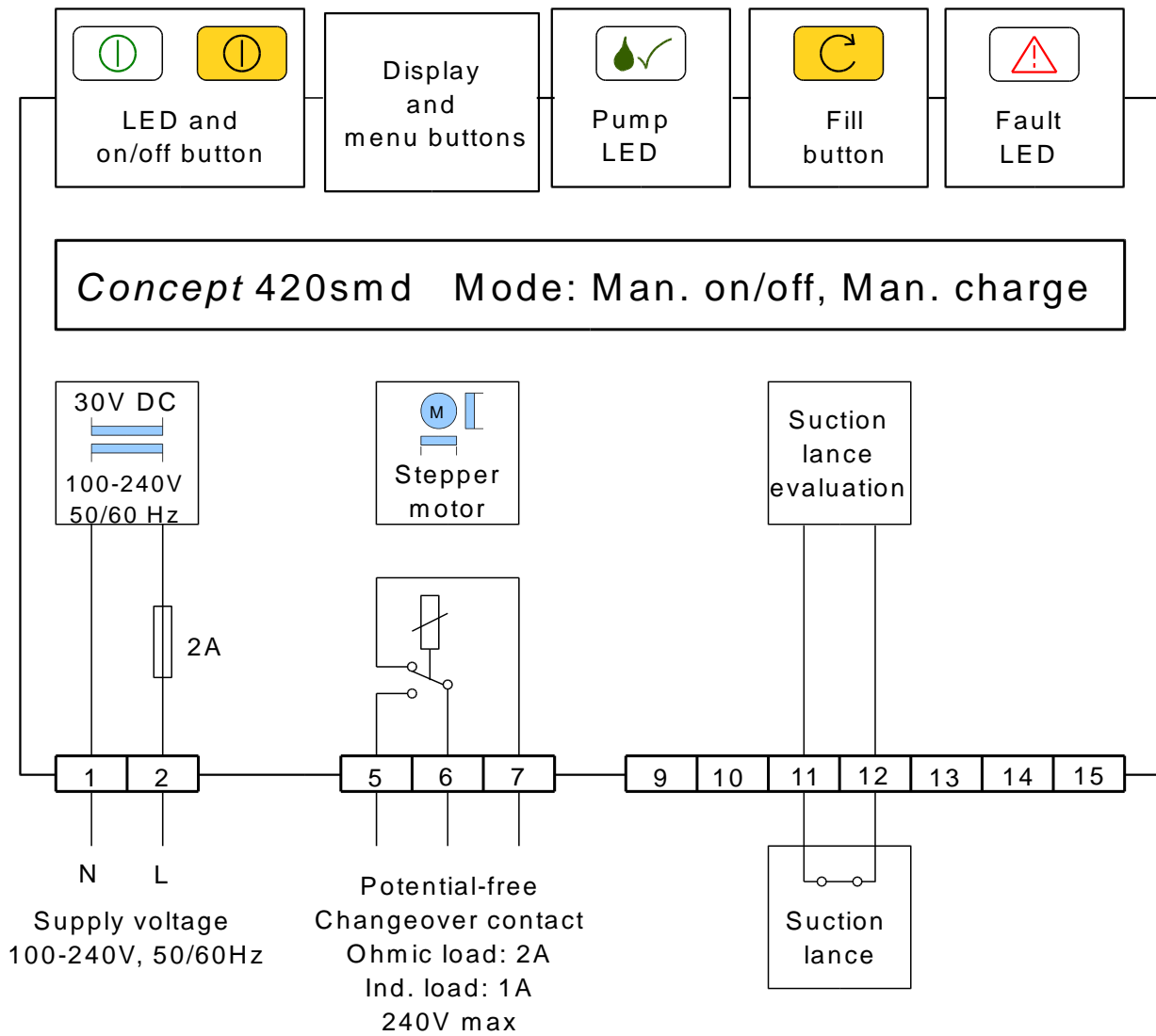
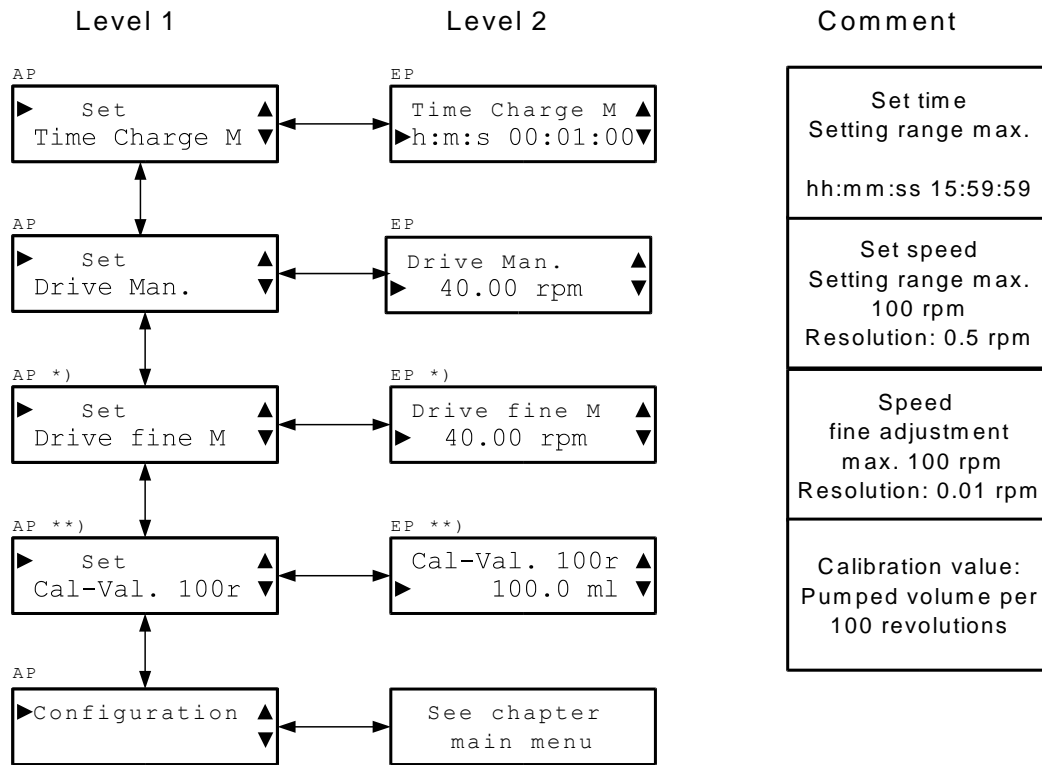


Fig. 9 Connection diagram for manual operating modes

10.1.2 "Manual charge" operating mode

In the "Manual charge" operating mode, press the **[ON]** button to start the pump for a configurable period of time (Manual charge) at a configurable speed (Manual speed). Press the **[ON]** button again to pause the charge. Pressing the **[ON]** button again restarts the charge from the interruption point. Press the **[ESC]** button to cancel a charge that has been paused.



*) only available when the „Set fine speed“ function is switched on in the configuration
 **) only available when the „Display flow rate“ function is switched on in the configuration

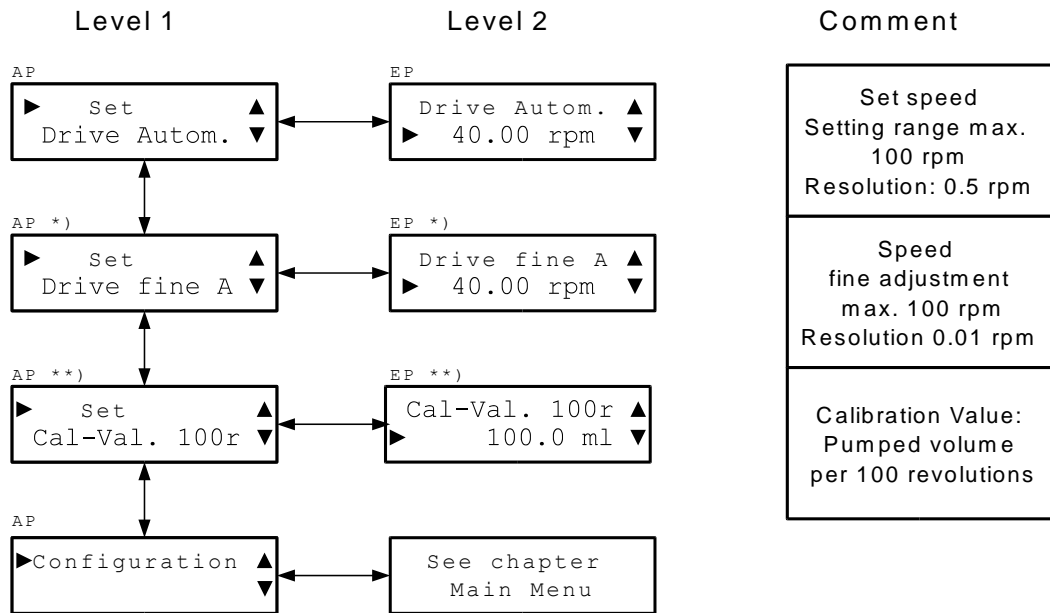
Fig. 10 Main menu, "Manual charge" operating mode

For the connection diagram, see the "Manual on/off" operating mode.

10.2 Automatic operating modes

10.2.1 "Auto external" operating mode

In the "Auto external" operating mode, the pump can be switched on and off via an external potential-free contact or semiconductor, and operates at the speed set for automatic operation.



*) Only available when the „Set fine speed“ function is switched on in the configuration

**) Only available when the „Display flow rate“ function is switched on in the configuration

Fig. 11 Main menu, "Auto external" operating mode

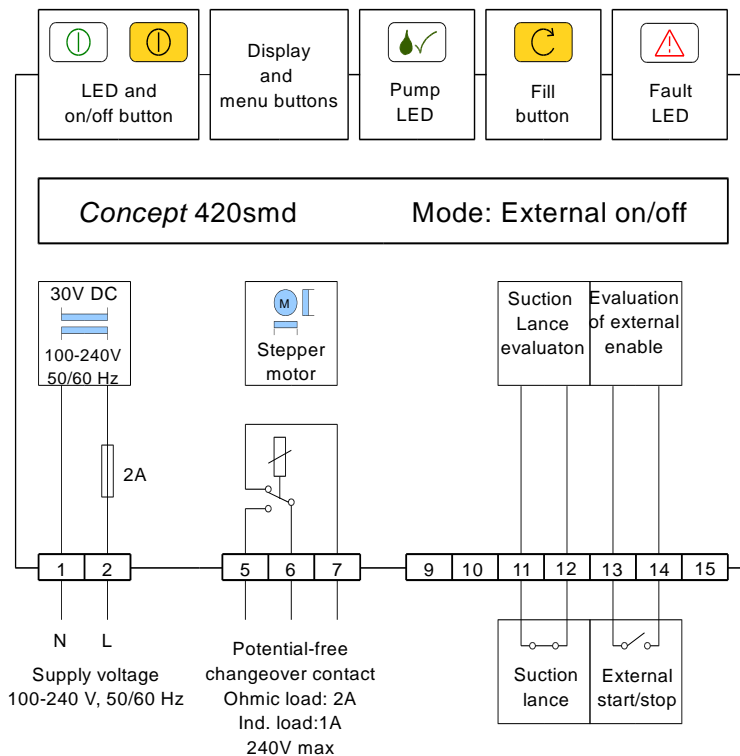


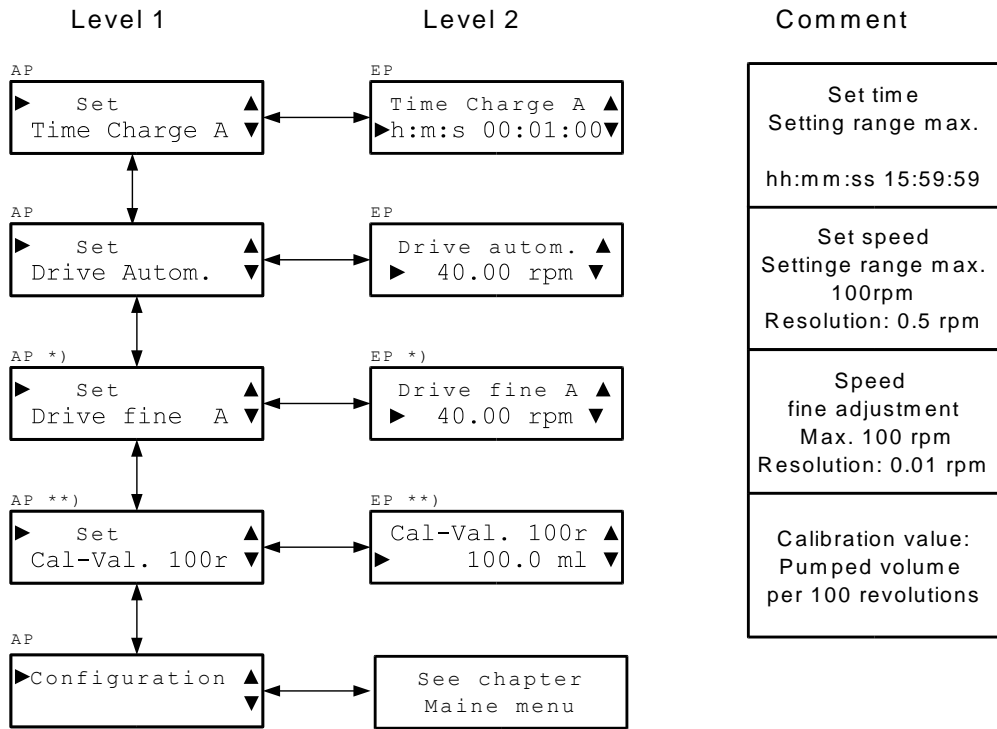


Fig. 12 Connection diagram for "Auto external" operating mode

10.2.2 "Auto charge" operating mode

In the "Auto charge" operating mode, the pump can be started via a pulse (normally open contact) at terminals 13, 14 for a configurable time (Automatic charge) at a configurable speed (Automatic speed). Press the  button to stop the charge. When the pump is switched on again by pressing the , a new charge starts with the next pulse. Pulses are ignored while a charge is running.



*) Only available when the „Set fine speed“ function is switched on in the configuration
 **) Only available when the „Display flow rate“ function is switched on in the configuration

Fig. 13 Main menu, "Auto charge" operating mode

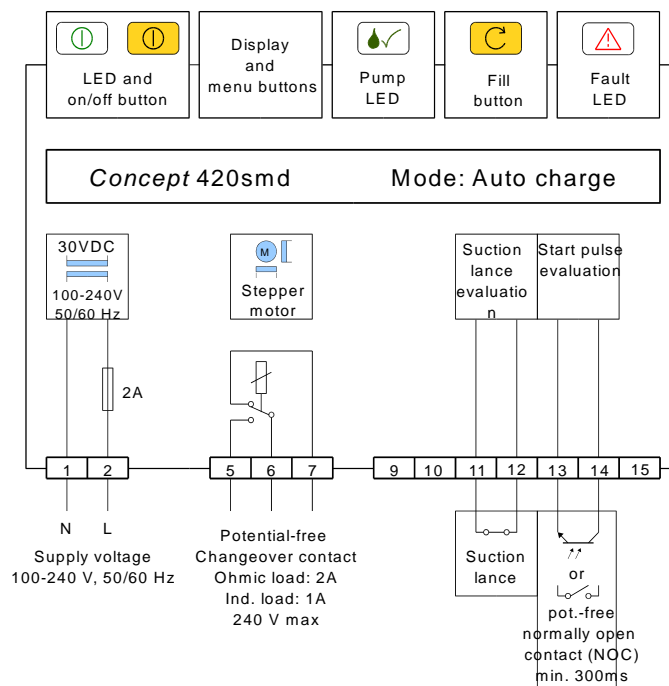


Fig. 14 Connection diagram for "Auto charge" operating mode

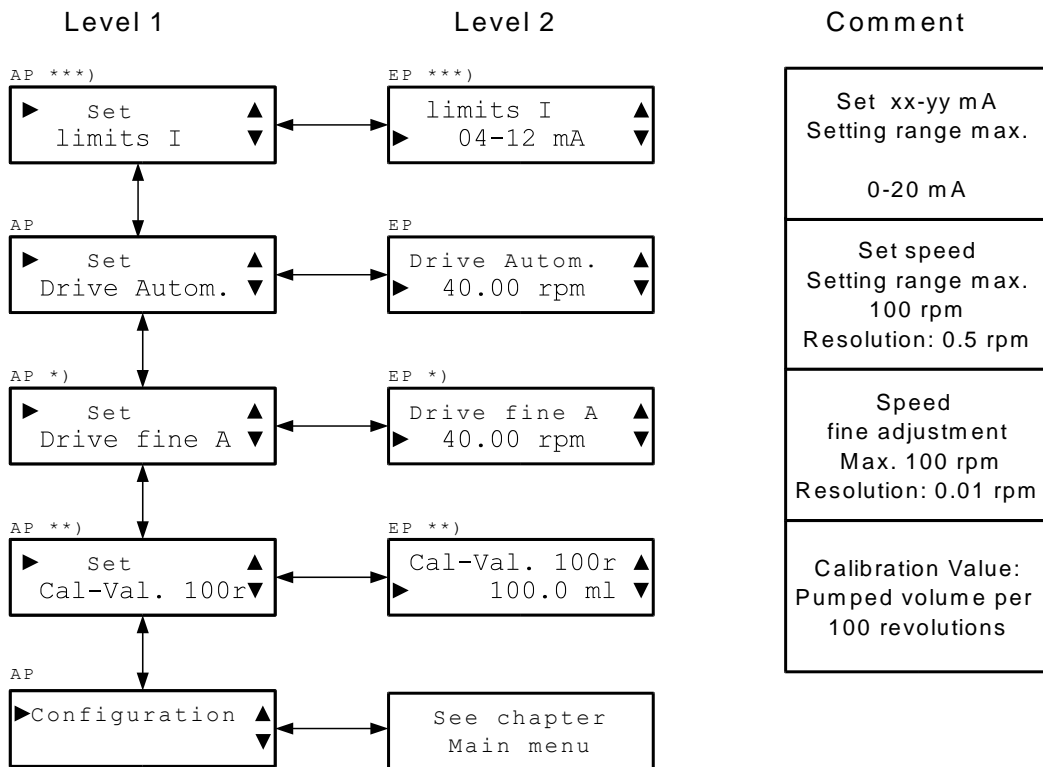
10.2.3 Operating modes with current input

In the automatic operating modes 4-20 mA, 0-20 mA, 20-4 mA, 20-0 mA, x-y mA, the speed is set with an analogue current signal.

In the operating modes 4-20 mA and 0-20 mA, the pump operates at the set maximum speed (Automatic speed) with a current signal of 20 mA, whereas the pump is switched off at a current of 4 mA or 0 mA respectively.

In the operating modes 20-4 mA and 20-0 mA, the pump operates at the set maximum speed (Automatic speed) with a current signal of 4 mA or 0 mA respectively, whereas the pump is switched off at a current of 20 mA.

In the operating mode x-y mA, the pump operates at the set maximum speed (Automatic speed) with a current of $I \geq y$ mA if $y > x$, and does not operate at a current of $I = x$ mA. If $y > x$, it behaves conversely.



- *) Only available when the „Set fine speed“ function is switched on in the configuration
- **) Only available when the „Display flow rate“ function is switched on in the configuration
- ***) Only available with operating mode xx-yy mA

Fig. 15 Main menu, automatic operating modes with current input

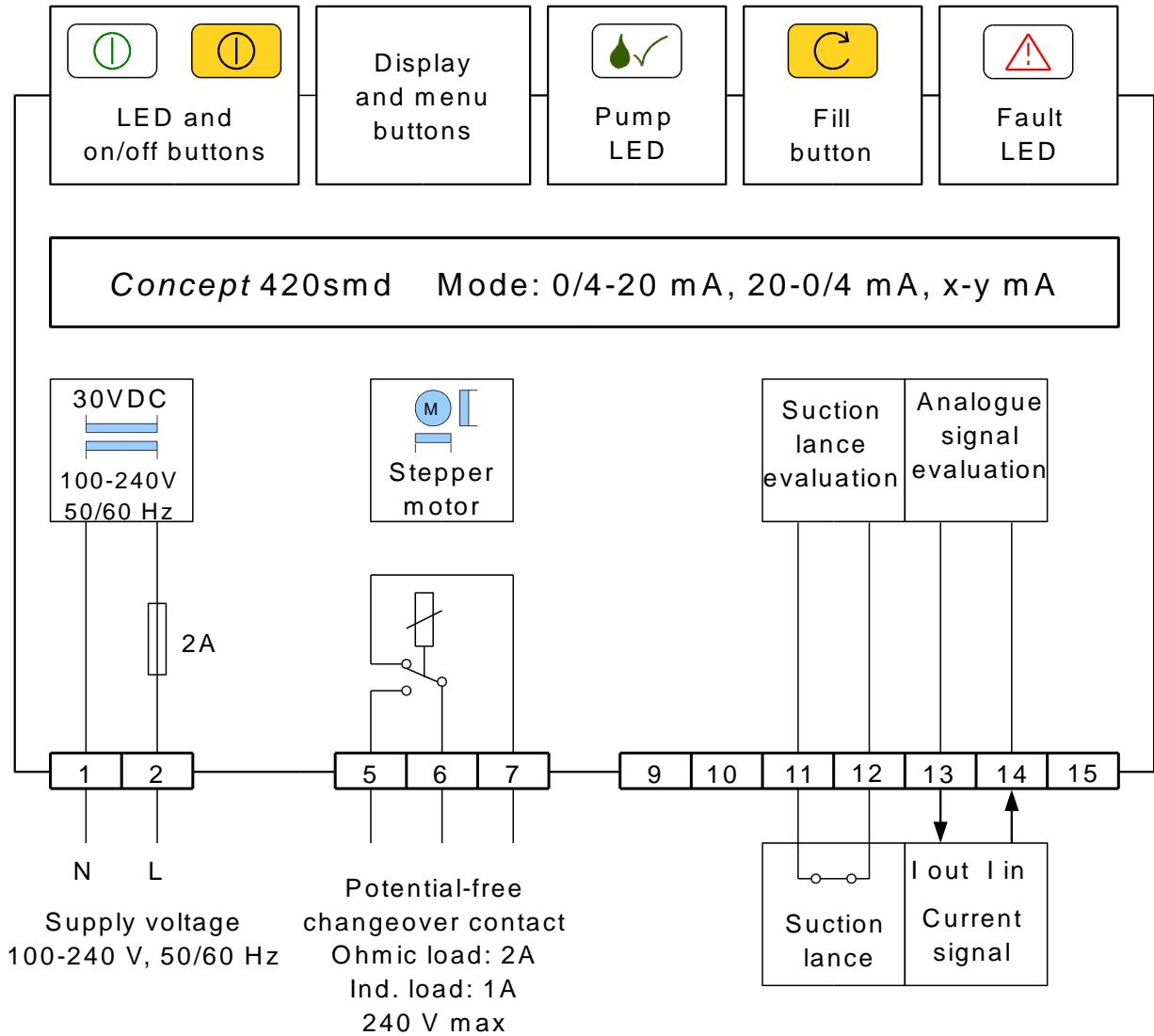


Fig. 16 Connection diagram for automatic operating modes with current input

10.2.4 "Auto pulse" and "Auto pulse mem." operating modes



In the operating modes "Auto pulse" and "Auto pulse mem.", the pump turns through a configurable number of rotations per pulse (closure of control input at terminals 13, 14). The setting range is from 0.02 rotations per pulse up to 10 rotations per pulse with a resolution of 0.02 rotations per pulse.

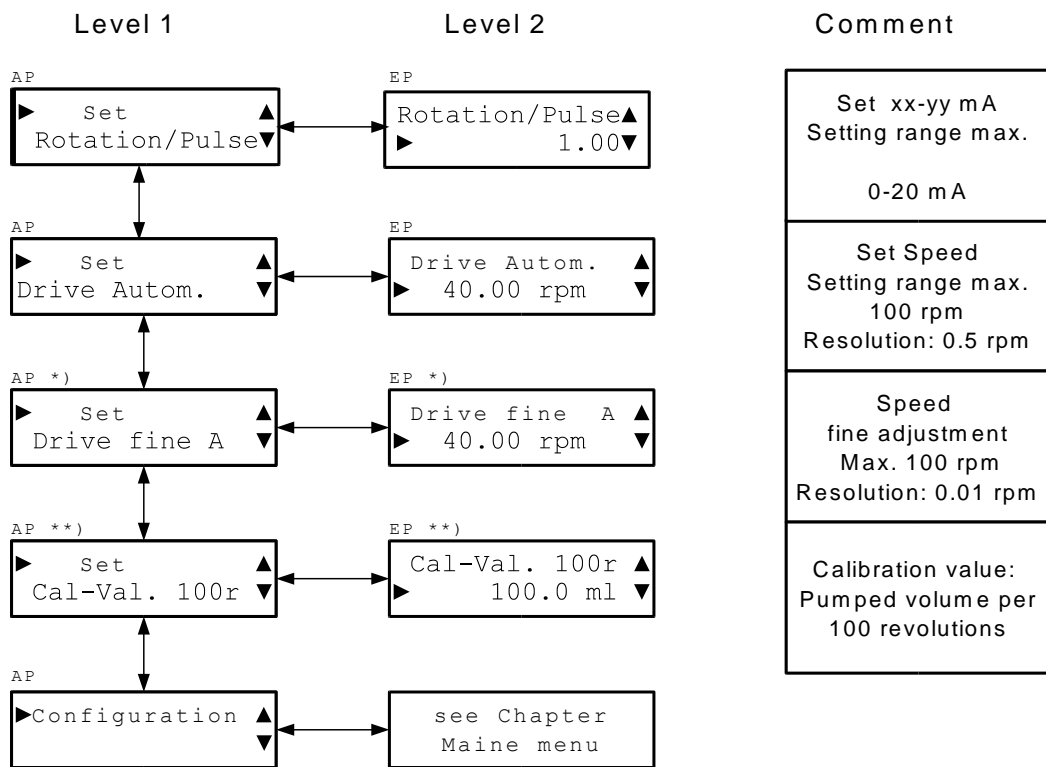
In the pulse operating mode, a maximum of 2.5 times the setting value or minimum of 1 rotation is buffered, if the pulses are so rapid that the pump cannot process them. Additional pulses are cut off.

In the "Pulse mem." operating mode, all pulses up to a total of approx. 2,500 rotations are buffered and processed by the pump.

The display shows the number of rotations to be carried out and the current speed.

The pump speed adapts to the number of rotations to be processed. The maximum speed is configurable in the main menu (Automatic speed).

The  LED briefly flashes with each detected pulse, and the set number of rotations per pulse is added to the number of rotations to be processed. If the  LED lights continuously, incoming pulses can no longer be processed and are ignored ("Pulse" operating mode).



*) Only available when the „Set Drive fine“ function is switched on in the configuration

**) Only available when the „Display flow rate“ function is switched on in the configuration

Fig. 17 Main menu, "Pulse" and "Pulse mem." automatic operating modes

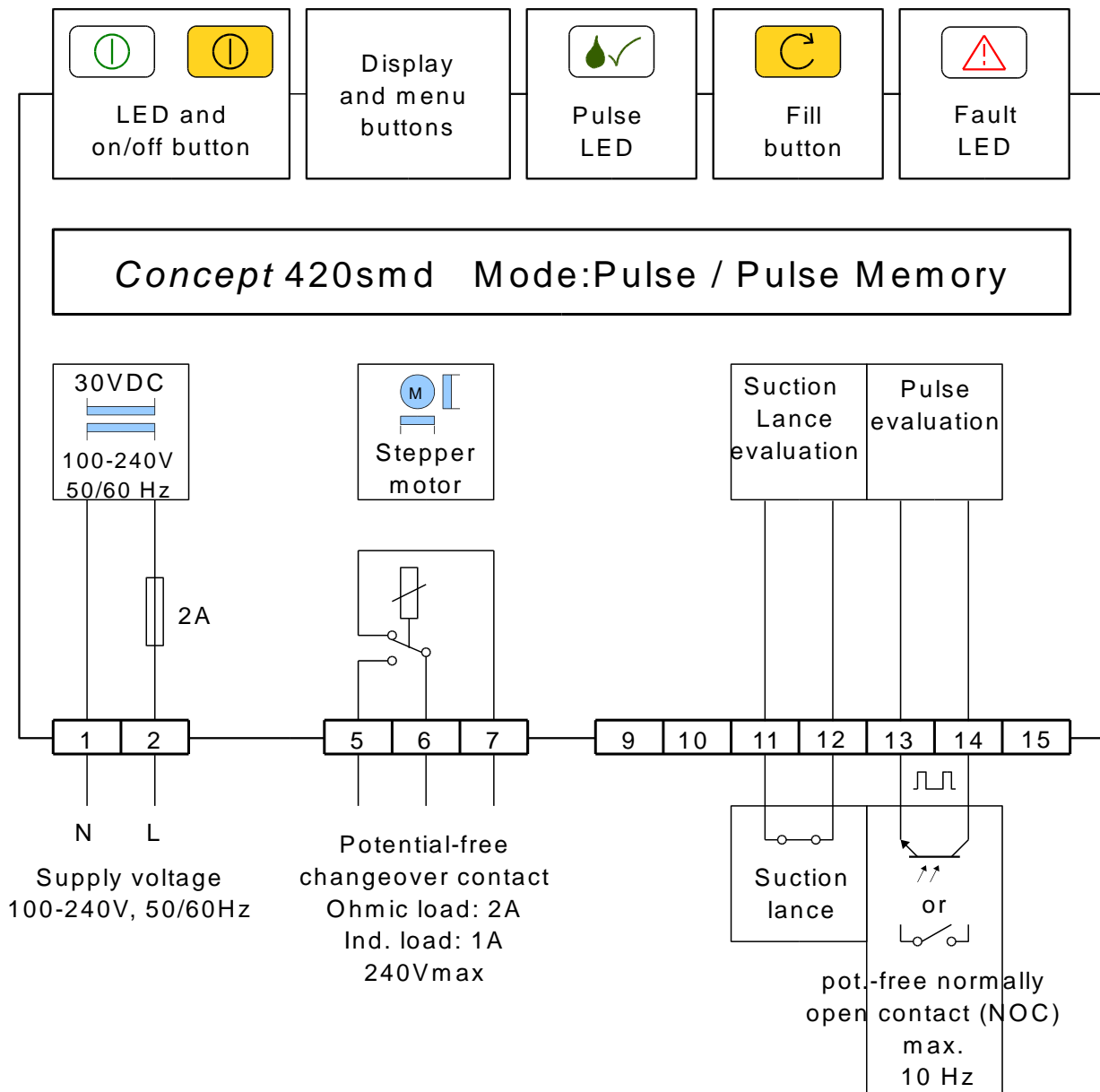




Fig. 18 Connection diagram for "Pulse" and "Pulse mem." automatic operating modes

11 Fill mode

When the quick fill button  is pressed, the pump operates for the period of time set in the "Fill mode configuration" menu item at the speed which is also set in this menu item. Press the quick fill button  again to stop the quick fill function.



Note

You can use the fill function to:

- purge air from supply tubes;
 - dose a fixed quantity between process steps in automatic mode, without needing to switch into the "Manual charge" operating mode;
 - calibrate the flow rate (see section "Display flow rate / calibration").
-

12 Display flow rate / calibration

The current pump flow rate can be shown on the pump's display. There are two conditions:

- "Display flow rate" function is enabled (see "Device configuration" section).
- Enter a value > 0.0 ml in the "Set calibration value" menu item in the main menu. This menu item only appears if the "Display flow rate" function is activated. The required value needs to be determined by carrying out a calibration measurement for 100 rotations of the pump.

To carry out calibration, follow these steps:


- Activate the "Display flow rate" function in the device configuration.
- Prepare the measurement:
Pump the medium either into or out of a measuring receptacle. It may be advantageous to pump the medium out of the measurement vessel so that the flow rate can be determined under real process conditions.
- For calibration, preferably either the "Fill mode" (see corresponding section) or the "Manual charge" operating mode should be used.
- During calibration measurement, if possible the speed should be in the range of the actual process speed.
- If possible, the calibration time should be set so that exactly 100 rotations take place at the set speed (e.g. 1 minute at 100 rpm or 4 minutes at 25 rpm). Then the measured value can be used directly without conversion.
- Carry out calibration.
- Read off the measurement from the measuring receptacle and convert for 100 rotations if necessary.
- Enter the measured value in the "Set calibration value" menu item in the main menu.
- Calibration is successfully completed.



Note

Caution! Even after calibration, the displayed flow rate only indicates the estimated actual flow rate. Calibration should be repeated at appropriate intervals (based on process experience).

13 Faults during operation

Faults or errors during operation are shown on the display. The red LED  flashes, the relay contact at terminals 6, 7 is open.

The relay contact is "fail-safe", i.e. it drops out if the supply voltage is missing.

The relay also drops out in "Off mode" in all operating modes.

Fault / error message	Meaning	Remedy
"Error low level"	Container empty.	Provide new container. If not using a suction lance with float switch, bridge terminals 11, 12.
"Error I < 3.5 mA"	A current < 3.5 mA is detected in operating modes 4-20 mA or 20-4 mA.	Check wiring. Check analogue signal.
"Error tubing leaky"	The electrodes in the pump housing have detected a short circuit.	Check pump tube and replace if necessary. Clean pump housing.
"Error temp. xx °C"	The temperature of the microcontroller chip is over 80 °C. For thermal protection, the pump is switched off.	Check ambient conditions, cool pump if necessary. The pump switches back on once the chip temperature falls below 75 C.
"Error supply voltage"	The switched-mode power supply that supplies power to the pump is overloaded on the secondary side and switches to a lower output voltage. For thermal protection, the pump is switched off.	Check ambient conditions, cool pump if necessary. Once the temperature in the switched-mode power supply cools sufficiently, the supply voltage is set back to the correct value.
The pump sometimes switches off completely. The display is dark, no LEDs are lit or flashing. After a while, the pump works again.	The switched-mode power supply that supplies power to the pump is overloaded on the primary side and cuts off the output voltage for thermal protection.	Check ambient conditions, cool pump if necessary. Once the temperature in the switched-mode power supply cools sufficiently, the supply voltage is switched back on.

14 Technical specifications

Parameters		Conditions	Value
V_{CC}	Supply voltage		115-230 V AC, 50/60 Hz
ΔV_{CC}	Supply voltage tolerance		$\pm 10\%$
I_{in}	Input current	Max.	200 mA
	Max. flow rate	Pump tube PS 140-4.8x1.6.PH, water, unrestricted outlet	11,500 ml/h
	Min. flow rate	Pump tube PS 138-1,6x1.6.PH, water, unrestricted outlet	2 ml/h
T_U	Ambient temperature	Operation	5..45°C
D	Dosing pump duty cycle	Specified temperature range	100.00%
$t_{min, pulse}$	Minimum duration for pulse input	Falling edge	50 ms
$f_{max, pulse}$	Max. frequency pulse operation		10 Hz

15 Maintenance / wearing parts

The rotor and pump tube are considered to be wearing parts of the dosing pump. The pump tube should be replaced at regular intervals. To replace it, follow these instructions:

15.1 Replacing the pump tube



Warning!

Danger from electrical current and sudden operation of the pump. Risk of crushing fingers!

Make sure the pump is switched off (power supply disconnected, or no enable/pulses).



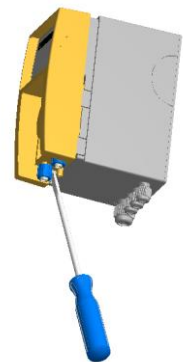
Warning!

Chemicals, risk of splashing!

When detaching tubes etc. wear protective clothing, face and eye protection.

15.1.1 Removing the old pump tube

1. Remove the device's outer cover (e.g. with a screwdriver, see illustration).
2. Remove pump housing cover.
3. Remove rotor cover.
4. Turn rotor by hand to form a "D", i.e. so that the flat side faces left.
5. Pull the tube holder down out of the fitting and turn the rotor clockwise by hand so that the pump tube can be removed.
6. Cover tube holder with a cloth.
7. Remove the hose clip, pull the old pump tube away from the nozzle (under the cloth). Risk of splashing!



15.1.2 Fitting the new pump tube

1. Clean pump housing if necessary. The tube path and pump tube must not be slippery or greasy otherwise the tube will not stay in the path.
2. Fit new pump tube onto tube holder, ensuring the pump tube is not twisted (no torsion) – use the "natural" curvature of the tube.
3. Place the hose clip on the pressure side of the tube holder around the nozzle and tighten, making sure that the connection point is positioned so that it will not obstruct the pump housing or pump housing cover later on.
4. Turn rotor by hand to form a "D", i.e. so that the flat side faces left.
5. Place tube holder into the pump housing.

6. Insert tube into the tube path using your left hand, and with your right hand turn the rotor clockwise to enable the tube to be cleanly inserted into its path within half a revolution.
7. Replace rotor cover.
8. Replace pump housing.
9. Replace outer cover.
10. Start up pump again.



Caution!

Once a fitted tube has been detached from the nozzle, it cannot be used again. As the tube stretches when pulled, it will no longer be the correct length.

16 Replacement parts

Replacement part	Item number
Pump tube PS 138-1.6x1.6-PH	43046
Pump tube PS 138-3.2x1.6 PH	43048
Pump tube PS 140 PH	43066
Rotor 47-13, grey, standard	43113
Rotor 47-13, blue, chlorine-resistant	43061

Other tube sizes and tube materials are available on request.

17 Change history

17.1 Software changes

17.2 Document changes

Revision B	10/2013	Entire document	Layout reorganised
		Entire document	Layout of safety information updated

18 EC Declaration of Conformity

The manufacturer

Herbert Saier GmbH
Industriestrasse 27
79194 Gundelfingen, Germany

hereby declares that the product referred to below is in conformity with the essential requirements of the following EU Directives and harmonised standards.

Product: Peristaltic dosing pump

Type: Concept 420smd

EU Directives: Machinery Directive (2006/42/EC)
Low Voltage Directive (2006/95/EC)
Electromagnetic Compatibility (EMC) Directive (2004/108/EC)

Applied
harmonised standards: EN 809, EN ISO 12100-1, EN ISO 12100-2
EN 60204-1
EN 61000-6-2, EN 61000-6-4

Gundelfingen/Germany, 10 October 2013



Michael Saier, Development Director

Product name



SAIER Dosiertechnik GmbH
79194 Gundelfingen,
Germany

Item no.:	98322
Software version:	2.00
Creation date:	04/2013
Modified:	10/2013
Revision no.:	b
Approved by:	M. Saier