

SmartFlo

Start-up guide for SP pumps

Installation and operating instructions



SmartFlo

English (US)

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English (US) Installation and operating instructions

Original installation and operating instructions

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A red or grey circle with a diagonal bar, possibly with a black graphical symbol, indicates that an action must not be taken or must be stopped.



If these instructions are not observed, it may result in malfunction or damage to the equipment.



Tips and advice that make the work easier.

1. General information



Read this document before you install the product. Installation and operation must comply with local regulations and accepted codes of good practice.

1.1 Hazard statements

The symbols and hazard statements below may appear in Grundfos installation and operating instructions, safety instructions and service instructions.



DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious personal injury.



WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious personal injury.



CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate personal injury.

The hazard statements are structured in the following way:



SIGNAL WORD

Description of the hazard

Consequence of ignoring the warning

- Action to avoid the hazard.

1.2 Notes

The symbols and notes below may appear in Grundfos installation and operating instructions, safety instructions and service instructions.



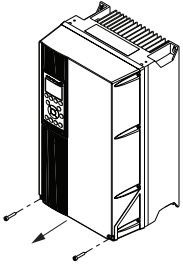
Observe these instructions for explosion-proof products.



A blue or grey circle with a white graphical symbol indicates that an action must be taken.

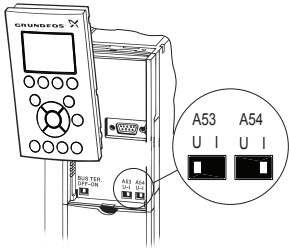
2. SmartFlo Quick guide, SP version

1. Remove the terminal cover.



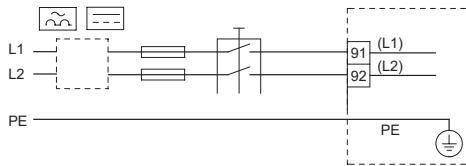
Access to signal terminals

2. Set DIP switch A54 to position "I".



Setting contact A54 to current signal "I"

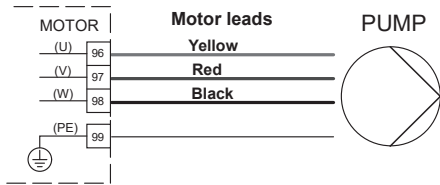
3. Connect the power supply.



SmartFlo wiring diagram

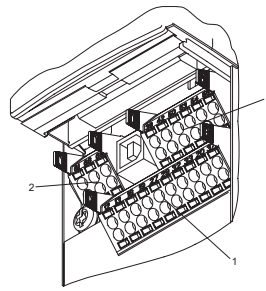
Terminal	Function
91 (L1)	Single-phase supply
92 (L2)	
95/99 (PE)	Ground connection

4. Connect the motor.



Motor connection wiring diagram

5. Plug the terminal strip.



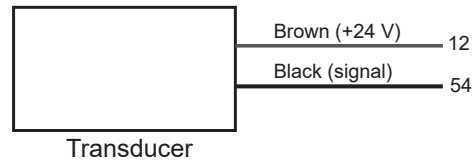
Signal terminals

6. Open up the jaw of the terminal by pressing a screwdriver into the center.



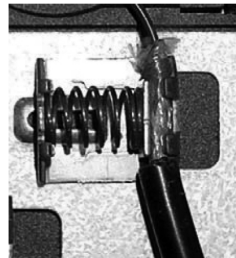
Opening up the jaw of the terminal

7. Connect the transducer.



Pressure transducer wiring diagram

8. Ground the transducer cable as shown below.



Grounding the transducer cable

TM039004

TM039104

TM055867

TM081107

TM039025

TM081104

TM081106

TM056003

3. Local Control Panel (keypad)







TM081113

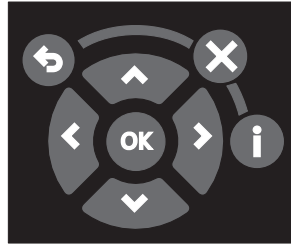
3.1 Menu selection






TM081114

Button	Description
	[Status]: Used for selecting the single-display screen or multi-display screen. Also used for returning to the display mode when in the [Quick Menu] or [Main Menu].
	[Favorites Menu]: Gives access to the parameters in the [Favorites Menu].
	[Main Menu]: Gives access to all parameters.
	[Alarm log]: Displays the last 10 alarms. For additional information about a specific alarm logged, use the arrow buttons to navigate to the alarm number and press OK . The additional information will be displayed.

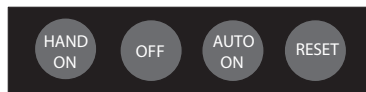
3.2 Navigation







TM081115

Button	Description
	[Back]: Used for reverting to the previous step or exiting the current parameter subgroup.
	[Cancel]: Used if a change to the selected parameter is not to be carried out.
	[Information]: Displays information about a command parameter or function in any display window. Press the [Information], [Cancel] or [Back] buttons to exit.
OK	OK: Used for selecting or changing a parameter in either the [Main Menu] or [Favorites Menu]. Must be pressed to accept the change to a parameter.

3.3 Operation



TM081116

Button	Description
	HAND ON: Operates the VFD (variable frequency drive) in Hand (manual) mode.
	OFF: Stops the VFD and the motor during Hand or Auto mode operation.
	AUTO ON: Operates the VFD in Auto mode based on the present parameters and PID signal.
	RESET: Resets the VFD after an alarm.

4. Preliminary configuration



This configuration must be completed before startup.

WARNING



Electric shock

Death or serious personal injury

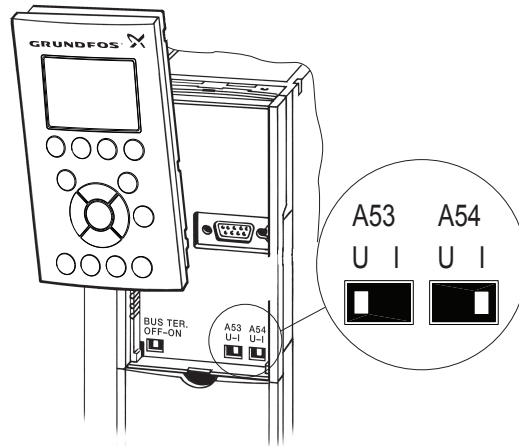
- Touching the electrical parts may be fatal, even after SmartFlo has been switched off. Before starting any work on SmartFlo, the main supply and other input voltages must be switched off for at least 7 minutes.

4.1 Setting the analog input, terminal 54

Contact A54 is positioned behind the Local Control Panel (keypad) and used for setting the signal type for the analog input (terminal 54). The factory setting of the input is voltage signal "U".

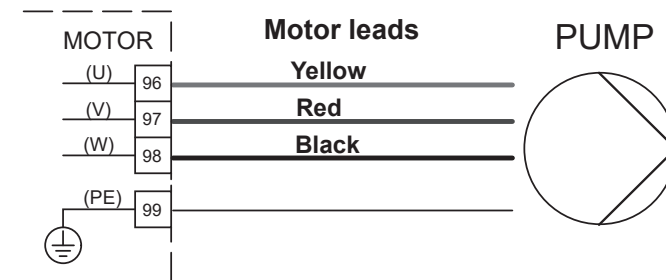


If a 0/4-20 mA sensor is connected to terminal 54, the input must be set to current signal "I".
Switch off the power supply before setting contact A54.



Setting contact A54 to current signal "I"

4.2 SP motor connection



Motor connection wiring diagram

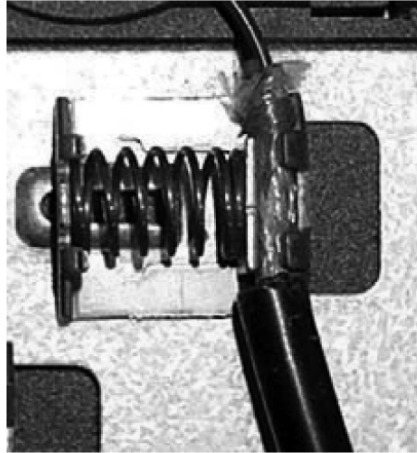
5. Transducer wiring

The type of the supplied transducer: 24 VDC, 4-20 mA, 2-wire with a braided shield.

The **brown** wire (+ 24 VDC) must be connected to **terminal 12**.

The **black** wire (signal) must be connected to **terminal 54**.

The braided shield must be attached to the chassis of the VFD, as seen below.

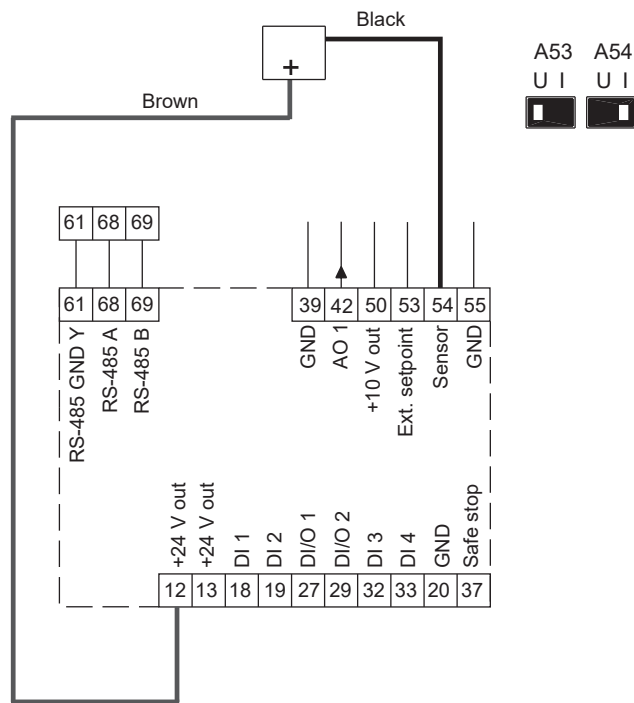


TM056003

Transducer wiring

U: 0-10 V

I: 0/4-20 mA



Wiring diagram, two-wire sensor

TM081108



If the warning "LIVE ZERO" is displayed on the Local Control Panel, check the transducer connections at terminals 12 and 54.

6. First-time setup via the "Start-up Guide"



At each step, if defaulted to the correct selection, press the [Down] button to continue to the next step. If the selection needs to be changed, press **OK** and use the [Up] and [Down] buttons until the correct selection is highlighted. Press **OK** again, then press the [Down] button to continue to the next step.

1. Press **OK** to begin the Start-up Guide.

Welcome screen

2. Press **OK** to select the desired language.

Language

3. Select the "Imperial" unit type.

Units

Imperial units are, for example, psi, hp and gpm as opposed to metric units like bar, kW and m³/h.

4. Select the **SP** pump family.

Pump type

5. Select "**Asynchronous motor**" as the motor type.

Motor type

6. Enter the motor power found on the motor nameplate.

Motor power

7. Enter a nominal voltage closest to the actual measured supply voltage.

Motor voltage



The actual supply voltage must be within the voltage range of the motor.

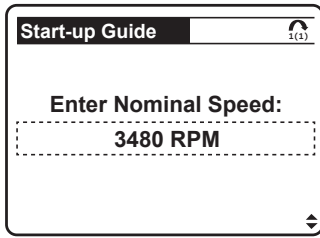
8. Enter the motor frequency and the maximum continuous current (MCC).

Motor frequency and MCC

The motor frequency is defaulted to 60 Hz. Press the [Down] button to keep the default value.

As MCC, enter the SFA value found on the motor nameplate.

9. Enter the nominal speed (RPM) found on the motor nameplate.



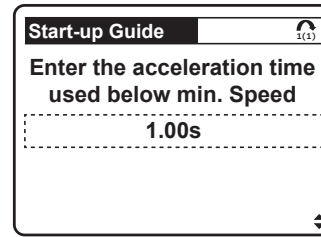
TM081119

Nominal speed



For 208-230 V motors, enter the RPM closest to the supply voltage.

13. Set the ramp time between 0 RPM and the minimum speed to **1.00** second.



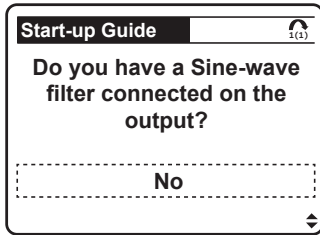
TM077511

Initial ramp time



For submersible motors, the ramp time from 0 to 30 Hz must be 1.00 second or less.

10. Select whether a sine-wave filter is installed.

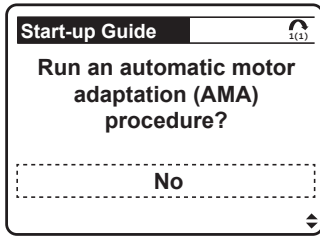


TM077493

Sine-wave filter

In the example above, it is assumed that there is no sine-wave filter installed.

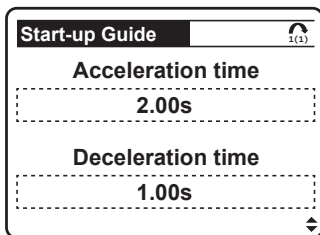
11. Select **"No"** for the question about running an automatic motor adaptation (AMA).



TM077494

Run AMA

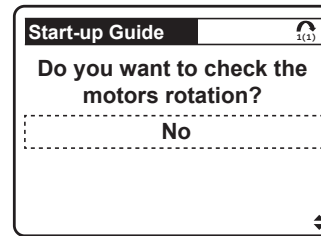
12. Set the acceleration time (30 Hz to control speed) to **2.00** seconds and the deceleration time to **1.00** second.



TM081120

Acceleration and deceleration time

14. Select **"No"** for the question about checking the direction of rotation.

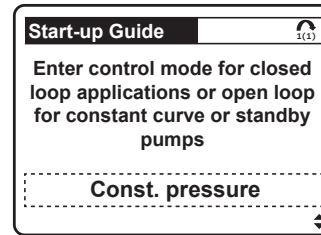


TM077512

Direction of rotation check

For Grundfos 230 V 3-phase motors, the direction of motor rotation is correct in case of the following wiring: yellow motor lead to terminal 96, red motor lead to terminal 97 and black motor lead to terminal 98.

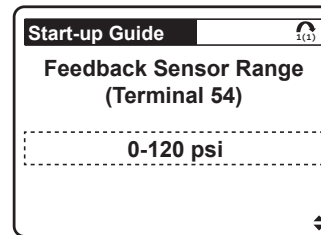
15. Select the **"Const. pressure"** control mode.



TM077549

Control mode

16. Select **"0-120 psi"** for the feedback sensor range.



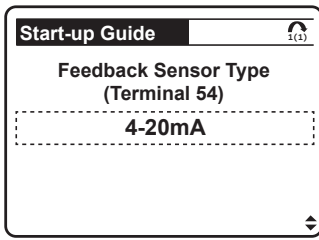
TM081124

Feedback sensor range



If using a non-Grundfos feedback sensor, contact the Grundfos Groundwater Contractor Technical Hotline for setup instructions.

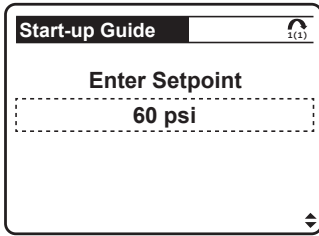
17. Select "4-20mA" for the feedback sensor type.



TM077551

Feedback sensor type

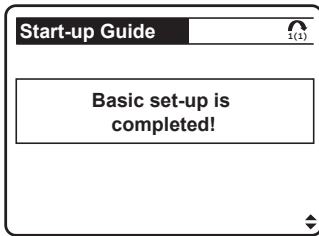
18. Enter "60 psi" as the setpoint.



TM081129

Setpoint

19. By pressing **OK**, the setup is completed.



TM077508

Setup completed

7. Setting the "End of Curve Tolerance"

The "End of Curve Tolerance" for dry-running protection can be adjusted to eliminate nuisance trips where long fill times are expected, for example, irrigation, drop pipe fill.

1. Press the [Main Menu] button twice to go to the beginning of the main menu.
2. Press the [Down] button until **"22-** Appl. Functions"** is highlighted, and press **OK**.
3. Press the [Down] button until **"22-5* End of Curve"** is highlighted, and press **OK**.
4. Press the [Down] button until **"22-52 End of Curve Tolerance"** is selected, and press **OK**.
5. Enter the applicable percentage value from the table below, and press **OK**.

Example:

Calculation for "End of Curve Tolerance":

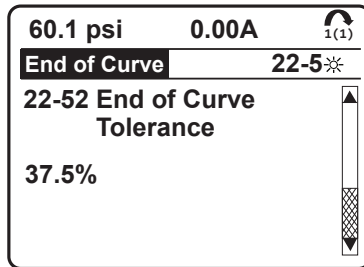
Setpoint - (37.5% × Sensor range) = 15 psi

Setpoint = 60 psi

Sensor range = 120 psi



Contact the Grundfos Groundwater Contractor Technical Hotline for further assistance.



TM081125

Example for setting the "End of Curve Tolerance"

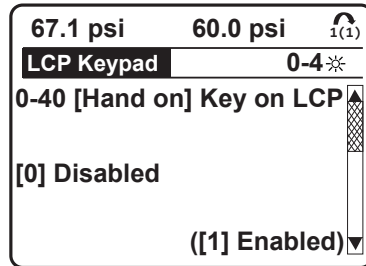
Setting in menu 22-52	Setpoint: 50 psi	Setpoint: 60 psi	Setpoint: 70 psi
20% [-24]	26 psi	36 psi	46 psi
25% [-30]	20 psi	30 psi	40 psi
30% [-36]	14 psi	24 psi	34 psi
35% [-42]	8 psi	18 psi	28 psi
40% [-48]	2 psi	12 psi	22 psi
45% [-54]	-	6 psi	16 psi
50% [-60]	-	-	10 psi

8. Disabling the "Hand on" mode from the keypad

1. Press the [Main Menu] button twice to go to the beginning of the main menu.
2. Press **OK** on the highlighted **"0-** Operation/Display"** menu.
3. Press the [Down] button until **"0-4* LCD Keypad"** is highlighted, and press **OK**.
4. Press **OK** on the selected **"0-40 (Hand on) Key on LCP"** menu, and press the [Down] button to select **"Disabled"**.



Selecting **"Hand on"** will cause the motor to operate at uncontrolled maximum speed.



Disabling "Hand on"

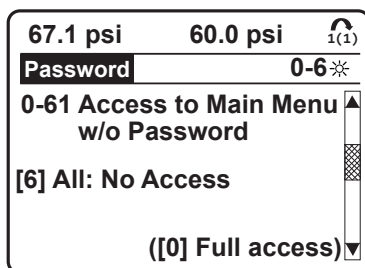
9. Locking the keypad

1. Press the [Main Menu] button twice to go to the beginning of the main menu.
2. Press **OK** on the highlighted **"0-** Operation/Display"** menu.
3. Press the [Down] button until **"0-6* Password"** is highlighted, and press **OK**.



Keep the value for parameter "0-60 Main Menu Password". It will be needed for access.

4. Press the [Down] button until **"0-61 Access to Main Menu w/o Password"** is selected, and change the value from "[0] Full Access" to **"[6] All: No Access"**.



TM081128

"Access to Main Menu" setting



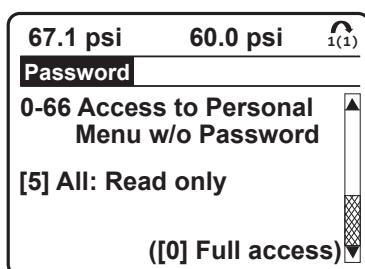
Once the 0-61 parameter is changed, the password must be entered for "Main Menu" access.
Password: 100

5. Press the [Main Menu] button twice to go to the beginning of the main menu.
6. Press **OK** on the highlighted **"0-** Operation/Display"** menu.
7. Press the [Down] button until **"0-6* Password"** is highlighted, and press **OK**.
8. Press the [Down] button until **"0-65 Personal Menu Password"** is selected.



Keep the value for parameter "0-65 Personal Menu Password". It will be needed for access.

9. Press the [Down] button until **"0-66 Access to Personal Menu w/o Password"** is selected, and change the value from "[0] Full Access" to **"[5] All: Read Only"**.



TM081127

"Access to Personal Menu" setting



Once the 0-66 parameter is changed, the password must be entered for "Personal Menu" access.
Password: 200

10. Technical support

For technical support, contact the **Grundfos Groundwater Contractor Technical Hotline** which is open 12 hours a day.

- Phone: (844) 824-8953
- Email: gwhotline@grundfos.com

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