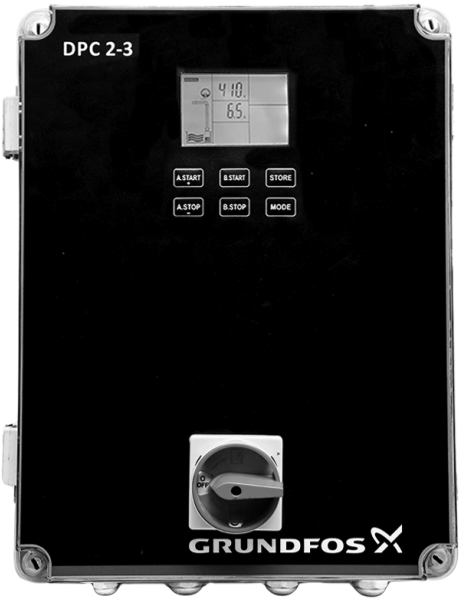
DPC 2-3

"Two-pumps, Three-phase"

Installation and operating instructions



DPC 2-3
Installation and operating instructions
(all available languages)
http://net.grundfos.com/qr/i/93202800

GRUNDFOS

DPC 2-3

English (GB)

Installation and operating instructions 4

Original installation and operating instructions

Table of contents

1. General information . . . 5
1.1 Hazard statements . . . 5
1.2 Notes . . . 5

2. Product introduction . . . 6
2.1 Intended use . . . 6
2.2 Product features . . . 6
2.3 Product selection . . . 7

3. Installation requirements . . . 7
3.1 Tools . . . 7

4. Electrical connection . . . 7
4.1 Terminals . . . 8
4.2 Communication . . . 9

5. Control functions . . . 9
5.1 Control terminal connections based on application type . . . 9
5.2 Operating panel . . . 20
5.3 DIP switch selection . . . 23

6. Operation . . . 24
6.1 Parameter calibration and erasing . . . 24
6.2 Switching to AUTO mode . . . 25
6.3 Switching to MANUAL mode . . . 25
6.4 Pump protection . . . 25
6.5 Last five failure records . . . 26
6.6 Pump accumulative running time . . . 26

7. Fault finding . . . 27
7.1 Flashing of UNDER V . . . 27
7.2 Flashing of OVER V . . . 27
7.3 Flashing of PUMP STALLED . . . 28
7.4 Flashing of OVERLOAD . . . 28
7.5 Flashing of PUMP NO CALIBRATION . . . 28
7.6 Flashing of DRY RUN . . . 28
7.7 Repeated start . . . 28
7.8 Online . . . 28

8. Technical data . . . 29

9. Abbreviation . . . 30

10. Disposing of the product . . . 30

11. Document quality feedback . . . 31

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.

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.

2. Product introduction

The digital pump controller model is an intuitive, controlling and protection device designed for dual pump, three phase with D.O.L. starting method. It supports output power ranging from 0.75 kW to 7.5 kW (1.5 to 16 A) per pump.

The controller offers various operation modes to adapt to different pumping applications. Key features that distinguish the DPC series digital pump controllers from others include push-button calibration for overload protection and dry run protection without the need of float switches. Additionally, it displays various pump parameters, status, and faults, among other information.

2.1 Intended use

The controller is advantageous in all scenarios requiring pump control and protection, particularly for dual pump installations. It facilitates automatic operation management through various switching methods.

Typical applications:

- Storm water
- sewage
- booster sets
- rainwater reuse
- irrigation
- water supply.

2.2 Product features

- Built-in DIP switch for:
  - Drainage by liquid level control through float switches.
  - Boosting water supply by pressure control through pressure switch and float switch.
  - Transfer of water by liquid level control through float switches.
- cyclic and parallel operation between duty and standby pumps.
- duty and standby pump alternate operation on every start command in AUTO mode.
- sensorless dry-running protection
- AUTO or MANUAL switch with screen lock in AUTO mode
- graphical operating panel displays information on pump(s) operation.
- protect the pump(s) against various faults.
- push button calibration
- motor stalled protection
- under-voltage protection
- over-voltage protection
- phase reversal protection
- phase loss protection (incoming as well as outgoing)
- pump accumulative run time (for each pump)
- last five fault records (for each pump)
- RS485 communication (Modbus RTU)
- automatic liquid level and pressure control
- pump shaft anti rust features
- AUTO and MANUAL switch

2.3 Product selection

Pump Current	Description	Starting Method	Product Number
8 A	CP 2x8A DOL 3x415 DPC 2-3	DOL	93206342
12 A	CP 2x12A DOL 3x415 DPC 2-3	DOL	93206343
16 A	CP 2x16A DOL 3x415 DPC 2-3	DOL	93206344

Float or pressure switch can be ordered separately.

3. Installation requirements

3.1 Tools

Controller installation and wiring require the following tools.

Crimping plier

Electric drill

Cross screwdriver

4. Electrical connection

WARNING
Electric shock
Death or serious personal injury

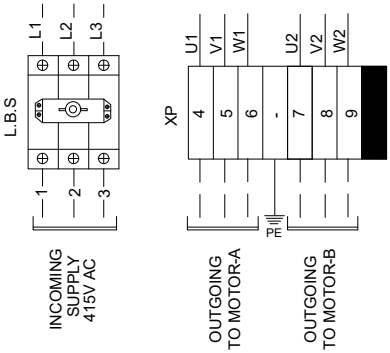
- Before carrying out any installation or maintenance operation, the controller must be disconnected from the power supply.
- Do not open the cover while the pump(s) are running.
- Do not put wire, metal bar filament, etc.., into the controller.

CAUTION
Electric shock
Minor or moderate personal injury

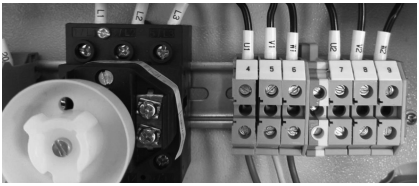
- All electrical connections must be carried out by qualified persons.
- Never connect incoming power supply to output U1, V1, W1 or U2, V2, W2 terminals.
- Ensure the motor, controller and power specification match.

4.1 Terminals

Power terminal connection: three phase



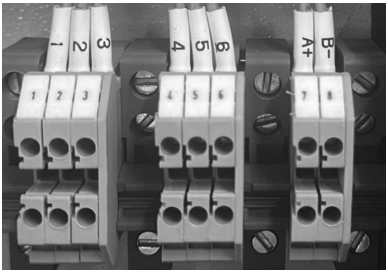
TM087409



TM087410

This terminal is used to supply the input power to the controller and output power to the pump(s).

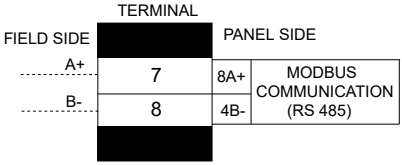
Control terminal connection



TM087420

This terminal is used to get the input signal from the float switches or pressure switches, etc., to control the pump(s).

4.2 Communication



TM087380

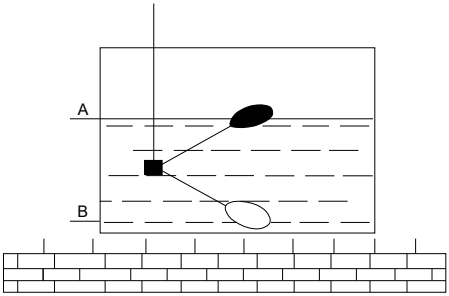
The controller has MODBUS RTU, between the pump controller, computer, SCADA and BMS, users can realize a long-distance monitoring function. This function applies to where the controller is installed in the basement or pumping room, but users require to monitor and control the pump on the ground or in a control room.

5. Control functions

5.1 Control terminal connections based on application type

Float switch installation

In this controller we should only use common wire, NO (Normally open) wire irrespective of application. Float switch should give NO (Normally open) reading while in DOWN position.

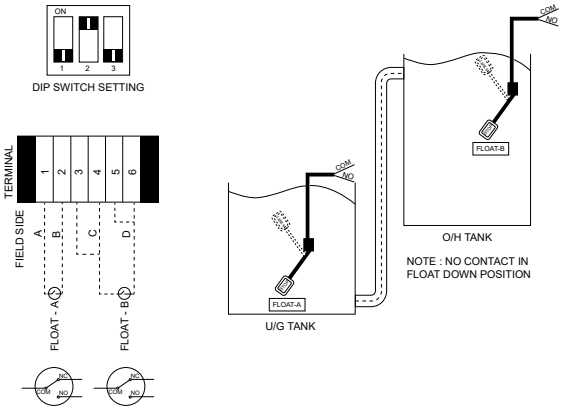


TM087522

Pos.	Description	Contact
A	upper-level	NC (Normally closed)
B	lower-level	NO (Normally open)

5.1.1 Water transfer

5.1.1.1 Using two float switches (one float switch in UG tank and one float switch in OH tank)



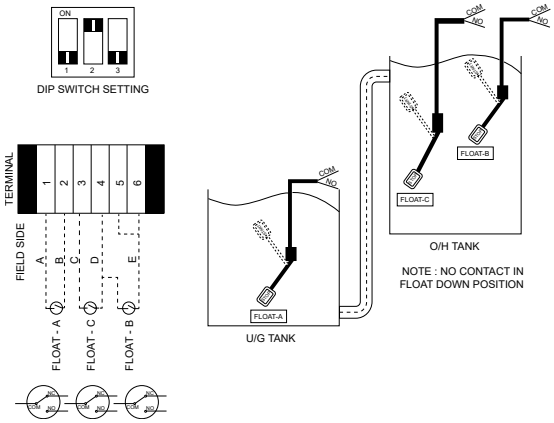
Pos.	Description
A	COM FLOAT - A
B	NO FLOAT - A
C	COM FLOAT - B
D	NO FLOAT - B

Start condition	Stop condition
When the liquid level in the underground (UG) tank is significantly high, indicating the higher position of float A, and concurrently the liquid level in the overhead (OH) tank is depleted, denoting the lower position of float B, the controller will initiate the operation of pump A. Once activated, the controller will continue to operate pump A until float B reaches the higher position. At this point, the controller will initiate alternating operation between pump A and pump B for consecutive cycles. Meanwhile, the operating panel will display a visual indication of the currently running pump.	In the event of the following circumstances, the operation of the pump(s) will cease: • If the liquid level is in the underground (UG) tank register as low, signifying the lower position of float A, and if any of the pump(s) are in operation, the controller will halt their activity. This action serves as an indication that an insufficient quantity of liquid is present in the UG tank. • In the event that the liquid level in the overhead (OH) tank reaches a high point, indicating the higher position of float B, the panel will promptly terminate the operation of the running pump(s). This indicates that the OH tank has reached its full capacity.

Related information

5.1.1.3 Meaning of messages and graphics displayed

5.1.1.2 Using three float switches (one float switch in UG tank and two in OH tank)



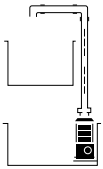
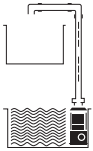
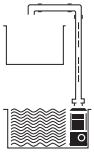
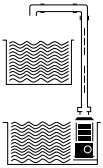
Pos.	Description
A	COM FLOAT - A
B	NO FLOAT - A
C	NO FLOAT - C
D	COM FLOAT - B & C
E	NO FLOAT - B

Start condition	Stop condition
In the event of the following circumstances, the operation of the pump(s) will cease: • If the liquid level in the underground tank is significantly high, represented by float A being in the higher position, and at the same time the liquid level in the overhead tank is low, indicated by float B being in the lower position, the controller will start pump A. It will then switch between pump A and pump B for each cycle. The operating panel will show which pump is currently running. • If the liquid level in the overhead tank continues to decrease, indicated by float C moving lower, the controller will start the standby pump along with the running pump. This operation will continue until float B reaches the higher position, indicating that the overhead tank is completely filled.	In the event of the following circumstances, the operation of the pump(s) will cease: • If the liquid level in the underground tank is low, shown by float A moving lower, and any of the pumps are currently running, the controller will stop the pump(s) operation. This action serves as a signal that there is not enough liquid level in the underground tank. • If the liquid level in the overhead tank reaches a high level, indicated by float B moving higher, the controller will cease the operation of the pump(s) that are running. This indicates that the overhead tank is full.

Related information

5.1.1.3 Meaning of messages and graphics displayed

5.1.1.3 Meaning of messages and graphics displayed

Symbol	Description
 TM087400	Low liquid level in underground tank.
 TM087423	Enough liquid level in underground tank.
 TM087423	Low level in overhead tank.
 TM087424	Overhead tank is full.

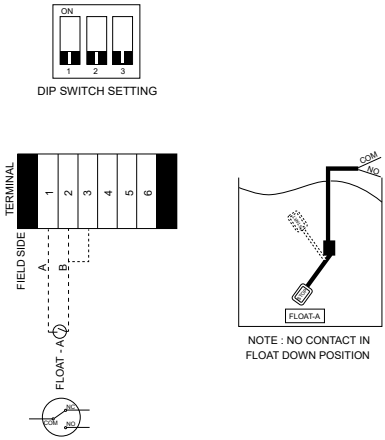
Related information

5.1.1.1 Using two float switches (one float switch in UG tank and one float switch in OH tank)

5.1.1.2 Using three float switches (one float switch in UG tank and two in OH tank)

5.1.2 Drainage or de-watering

5.1.2.1 Using one float switch



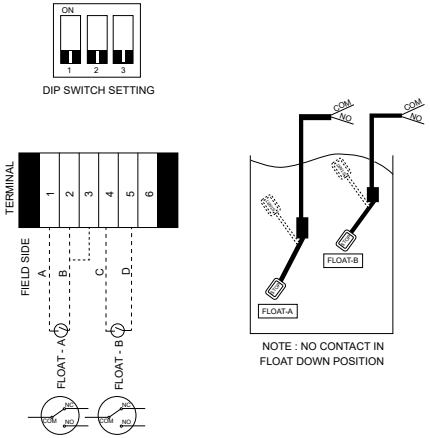
Pos.	Description
A	COM FLOAT - A
B	NO FLOAT - A

Start condition	Stop condition
If the liquid level in the pit or tank is significantly high, shown by float A moving higher, the controller will start pump A. The controller will switch between pump A and pump B for each subsequent cycle. The operating panel will display a visual indicator of the currently running pump.	When the liquid level in the pit or tank is lower, shown by float A moving lower, the controller will stop the running pump. This is a signal that there is not enough liquid available for pumping.

Related information

5.1.2.4 Meaning of messages and graphics displayed

5.1.2.2 Using two float switches



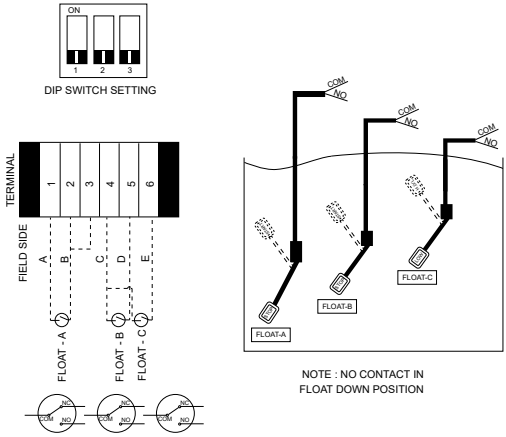
Pos.	Description
A	COM FLOAT - A
B	NO FLOAT - A
C	COM FLOAT - B
D	NO FLOAT - B

Start condition	Stop condition
If the liquid level in the pit or tank is significantly high, shown by float A moving higher, the controller will start pump A. Afterwards, the controller will switch between pump A and pump B for each cycle. The controller will show which pump is currently running. If the liquid level in the pit or tank increases despite the first pump running, meaning both float switch A and float switch B are in the higher position, the controller will start the standby pump along with the running pump. For example, if pump A was running and the liquid level increases even further, when float switch B also moves up, pump B will also start operating alongside pump A.	If the liquid level in the pit or tank lowers, indicated by float A being in the lower position, the controller will stop the pump(s) that is currently running. This is a signal that there is not enough liquid to pump. If both pumps are running, then both pumps will stop at the same time when float switch A is in the lower position. This is the signal that indicates that there is not enough liquid to pump.

Related information

5.1.2.4 Meaning of messages and graphics displayed

5.1.2.3 Using three float switches



TM087607

Pos.	Description
A	COM FLOAT - A
B	NO FLOAT - A
C	COM FLOAT - B
D	NO FLOAT - B
E	NO FLOAT - C

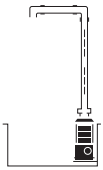
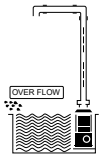
Start condition	Alarm condition	Stop condition
If the liquid level in the pit or tank is significantly high, shown by float A moving higher, the controller will start pump A. Afterwards, the controller will switch between pump A and pump B for each cycle. The controller will show which pump is currently running.		If the liquid level in the pit or tank lowers, indicated by float A being in the lower position, the controller will stop the pump(s) that is currently running. This is a signal that there is not enough liquid to pump.
If the liquid level in the pit or tank increases despite the first pump running, meaning both float switch A and float switch B are in the higher position, the controller will start the standby pump along with the running pump. For example, if pump A was running and the liquid level increases even further, when float switch B also moves up, pump B will also start operating alongside pump A.	If the liquid level in the pit or tank increases despite both pumps are running, and float switch C moves higher, an overflow alarm will be activated, generating an audio-visual alarm. At the same time, a fault indication will appear on the operating panel, showing **"OVERFLOW"**. This condition will remain until the liquid level in the pit or tank goes below float switch C then it will automatically reset the alarm condition.	If both pumps are running, then both pumps will stop at the same time when float switch A is in the lower position. This is the signal that indicates that there is not enough liquid to pump.

In AUTO mode, if the controller detects that the pump(s) have remained inactive for a period of four days (default value), it will proceed to operate Pump A for a duration of 3 seconds and stop thereafter. Subsequently, after an interval of 10 seconds, the controller will initiate Pump B for 3 seconds before halting its operation. This automatic anti-rust feature serves to prevent the corrosion and impeller jamming that may result from prolonged periods of the pump(s) inactivity.

Related information

5.1.2.4 Meaning of messages and graphics displayed

5.1.2.4 Meaning of messages and graphics displayed

Symbol	Description
 TM087400	Lack of liquid in sump.
 TM087399	Overflow in sump.

Related information

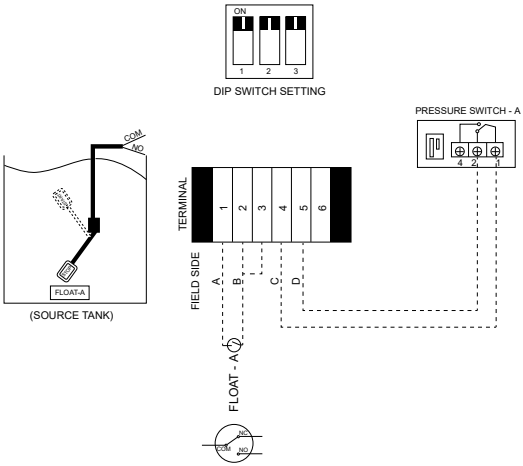
5.1.2.1 Using one float switch

5.1.2.2 Using two float switches

5.1.2.3 Using three float switches

5.1.3 Pressure Boosting

5.1.3.1 Using one float switch and one pressure switch



TM087428

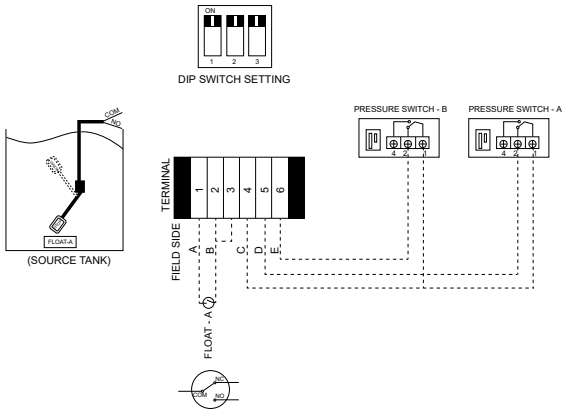
Pos.	Description
A	COM FLOAT - A
B	NO FLOAT - A
C	COM PRESSURE SWITCH - A
D	NC PRESSURE SWITCH - A

Start condition	Stop condition
When the liquid level in the source tank is high and float switch A moves higher, and if the pressure in the pipeline drops below the set cut-in pressure-on-pressure switch A, pump A will be started. Afterward, the controller will switch between pump A and pump B for each cycle. The operating panel will show which pump is currently running.	If the liquid level in the source tank is low and float switch A is in the lower position, the pump(s) will stop. This indicates that there is not enough liquid in the source tank, which can potentially lead to a dry run situation.
	If the pressure in the pipeline reaches or surpasses the pre-set cut-out pressure setting on pressure switch A, the pump(s) will stop operating. This indicates that the desired pressure is achieved.

Related information

5.1.3.3 Meaning of messages and graphics displayed

5.1.3.2 Using one float switch and two pressure switches



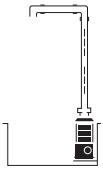
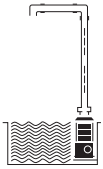
Pos.	Description
A	COM FLOAT - A
B	NO FLOAT - A
C	COM PRESSURE SWITCH - A and B
D	NC PRESSURE SWITCH - A
E	NC PRESSURE SWITCH - B

Start condition	Stop condition
When the liquid level in the source tank is high and float switch A moves higher, and if the pressure in the pipeline drops below the set cut-in pressure-on-pressure switch A, pump A will be started. Afterward, the controller will switch between pump A and pump B for each cycle. The operating panel will show which pump is currently running.	When the liquid level in the source tank decreases, indicated by float switch A moving to the lower position, the pump(s) will stop operating. The operating panel will display a signal indicating the absence of liquid in the source tank, which can lead to a potentially harmful dry run condition.
If the pressure in the pipeline drops below the set cut-in pressure-on-pressure switch B, the controller will start the standby pump along with the running pump. Both pumps will work in parallel operation.	If the pressure in the pipeline reaches or exceeds the set cut-out pressure on pressure switch A, the pump(s) will stop operating. This indicates that the desired pressure is achieved.
	If both pumps are running, they will stop at the same time when the pressure in the pipeline reaches the designated cut-out pressure level on pressure switch A.
! Cut in pressure of pressure switch B is less than cut in pressure of pressure switch A.	! If source tank is not being used, short terminal 1, 2, 3.

Related information

5.1.3.3 Meaning of messages and graphics displayed

5.1.3.3 Meaning of messages and graphics displayed

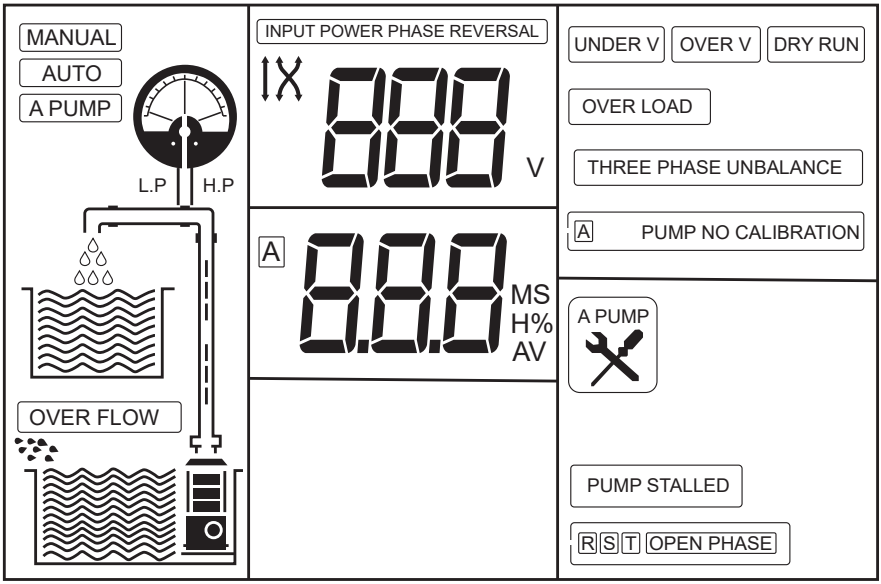
Symbol		Description
	TM087400	Low liquid level in source tank.
	TM087399	Enough liquid level in source tank.
	TM087401	High pressure in pipeline.
	TM087402	Low pressure in pipeline.

Related information

5.1.3.1 Using one float switch and one pressure switch

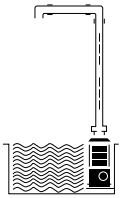
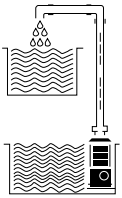
5.1.3.2 Using one float switch and two pressure switches

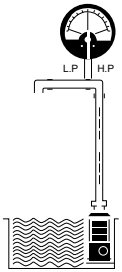
5.2 Operating panel



TM087329

Symbol		Description
OVER LOAD	TM087771	Controller is in trip state due to pump(s) drawing more current than the calibrated overload current limit.
PUMP STALLED	TM087772	Controller is in trip state due to pump(s) drawing very high current than the calibrated pump stalled current limit.
OVER FLOW	TM087773	Liquid level has gone above the sensor set at overflow level.
OPEN PHASE	TM087813	Phase loss.
R OPEN PHASE	TM087814	R Phase is missing.
S OPEN PHASE	TM087815	Y Phase is missing.
T OPEN PHASE	TM087816	B Phase is missing.

Symbol		Description
A B PUMP NO CALIBRATION	TM087818	Calibration to be carried out (Controller is in factory set state).
THREE PHASE UNBALANCE	TM087812	The phase-to-phase difference in incoming supply voltage is more than the set values.
INPUT POWER PHASE REVERSAL	TM087817	Incoming supply sequence is incorrect
MANUAL	TM087766	The controller is set in MANUAL mode (Operation by push buttons only).
AUTO	TM087767	The controller is set in AUTO mode (Operation by sensors only).
DRY RUN	TM087768	Controller is in trip state due to pump(s) drawing less current than the calibrated dry run current limit.
UNDER V	TM087769	Incoming supply has dropped below the set limit.
OVER V	TM087770	Incoming supply has exceeded the set limit.
	TM087764	The controller is set for dewatering application.
	TM087765	The controller is set for water supply or water transfer application.

Symbol		Description
	TM087763	The controller is set for pressure boosting application.
A PUMP	TM087774	Pump A is operating.
B PUMP	TM087819	Pump B is operating.
A PUMP	TM087775	Pump A has developed a fault.
B PUMP	TM087820	Pump B has developed a fault.

Symbol		Primary usage
A.START +	TM087968	To start A pump in manual mode.
B.START	TM087969	To start B pump in manual mode.
MODE	TM087777	To change the mode of the controller.

Symbol		Primary usage
A.STOP	TM087970	To stop the A pump.
B.STOP	TM087971	To stop the B pump.
STORE	TM087972	Function keys or buttons

5.3 DIP switch selection

You can adjust the DIP switch to accommodate various applications. Prior to configuring the DIP switch, ensure the unit is disconnected from the power supply. After setting the DIP switches, power may be reapplied to the unit. The symbol corresponding to the selected application will be displayed on the operating panel.

Related information

5.3.1 DIP switch settings

5.3.2 Factory reset

5.3.1 DIP switch settings

Users can adjust the DIP switch to accommodate various applications. Prior to configuring the DIP switch, ensure the unit is disconnected from the power supply. After setting the DIP switches, power may be reapplied to the unit. The symbol corresponding to the selected application will be displayed on the operating panel.

Application	DIP switch		Description
Water transfer		TM087411	Applied for water supply by liquid level control through float switch
Pressure boosting		TM087412	Applied for water supply by pressure control through pressure switch.
Drainage		TM087413	Applied for drainage by liquid level control through float switch.

For advance setting, MODBUS setting details, MODBUS registered address details, connect with authorized service partner or Grundfos.

Related information

5.3 DIP switch selection

5.3.2 Factory reset

1. Disconnect the power supply.
2. Press and hold the A STOP button while switching on the power supply for the controller.
3. Release the A STOP button when the operating panel displays **099** and gives a beep sound.

Related information

5.3 DIP switch selection

6. Operation

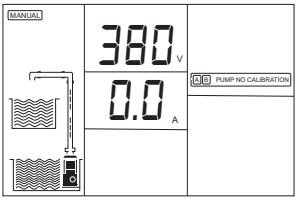
6.1 Parameter calibration and erasing

In order to achieve best performance of the controller and for providing maximum protection to the pump, it is essential that parameter calibration is done at the time of installation itself or after pump is repaired and installed back.

6.1.1 Setting the parameter calibration

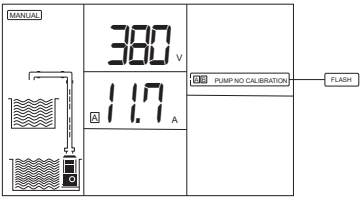
The pump must be drawing current near to its rated current during calibration process to ensure accurate calibration. Calibrating the pumps without liquid may lead to errors such as overload and pump stalling.

1. Press the MODE button to switch to MANUAL mode. Refer section switching to MANUAL mode.



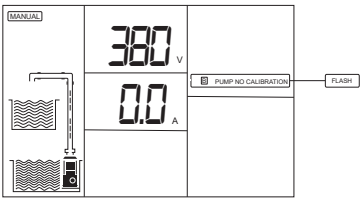
TM087430

2. Press the A START button to run pump A, confirm the pump and all pipe network is in normal working state (including voltage, amperes, etc.) with operating panel displaying:



TM087397

3. Press and hold the A START button and release it when the countdown starts. The controller makes a beep sound, and a countdown starts.
4. The pump stops running, and parameter calibration is completed with operating panel displaying:



TM087398

5. Pump A is ready for running.
6. Press the B Start button to repeat calibration for pump B and follow the same procedure.

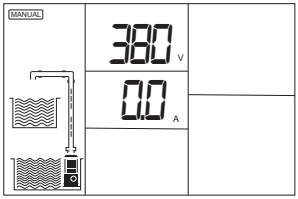
Related information

6.3 Switching to MANUAL mode

6.1.2 Erasing the calibration

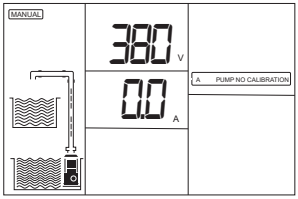
When the pump is reinstalled after maintenance or the new pump is installed, user must erase the former calibrated parameters and new calibration procedure must be performed for the respective pump.

1. Press MODE button to switch to MANUAL mode. Refer section switching to MANUAL mode.



TM087395

2. Press the A STOP button for 3 seconds, the controller makes a beep sound, and the controller recovers the default factory setting and **A PUMP NO CALIBRATION** will appear on the operating panel:



TM087396

3. Repeat for Pump B by using the B STOP button for 3 seconds.

Related information

6.3 Switching to MANUAL mode

6.2 Switching to AUTO mode

To switch between MANUAL and AUTO mode press MODE button. Under AUTO mode the controller will run or stop the pump according to signal received from float switch and pressure switch.

1. Under AUTO mode, if the pump is running and user wants to stop the pump, press the MODE button to switch to MANUAL mode and the pump stops.
2. Under AUTO mode, if the input power is cut off and resumed, the controller will come into operating state after a 10 seconds countdown.
3. No matter if the controller is AUTO or MANUAL mode, if the input power is cut off and resumed, the controller will resume its operation in the same mode as before the power being cut off.

6.3 Switching to MANUAL mode

1. To transition from AUTO mode to MANUAL mode while the controller is under AUTO screen lock, simultaneously press the MODE and STORE buttons until the countdown timer halts, and the mode switches back to MANUAL.
2. Press the START button to initiate pump operation and the STOP button to stop pump operation.

Related information

6.1.1 Setting the parameter calibration

6.1.2 Erasing the calibration

6.4 Pump protection

When the pump is in operation, if failures such as dry run, overload, or over-voltage occur, the controller will promptly stop the running pump. The controller will recover automatically after the default recovery time and once the abnormal situations have been cleared.

If pump stalled, open phase, phase reversal or other serious failure has occurred then the controller shall not recover automatically, pump user must immediately check incoming supply, pump and motor. Automatic recovery by the controller will not take place until all abnormal situations have been resolved.

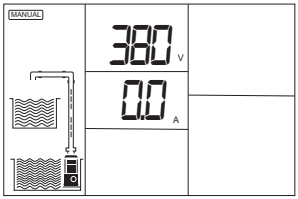
In the event of serious fault such as pump stalling, it is essential for the pump user to conduct an immediate inspection of both the pump and motor.

6.5 Last five failure records

The controller possesses the capability to store the last five instances of pump failure, thereby offering users a convenient method to analyze the operational conditions of the pump.

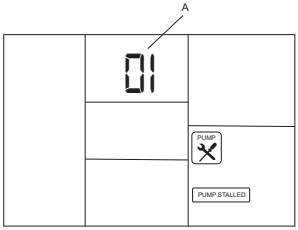
Steps to display last five faults:

1. Press the MODE button to switch to MANUAL mode. Make sure the pump is not running, and the operating panel is displaying:



TM087395

2. Press and hold A STOP button and MODE button, the controller makes a beep sound and displays pump A failure record.
3. Press the MODE button to go to the subsequent fault log.
4. Press the A STOP button to quit the failure record display:



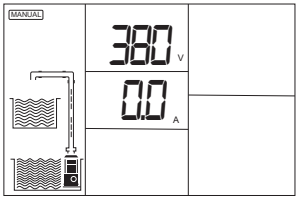
TM087352

Pos.	Description
A	S/N of failure sequence number

The failure displayed above is **PUMP STALLED**. Repeat for the pump B by using B STOP button.

6.6 Pump accumulative running time

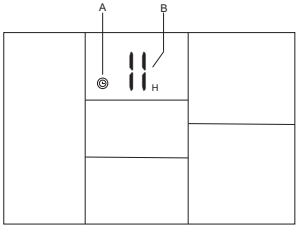
The controller can memorize how many hours that pump has run, so it is very convenient for the pump user to analyze the pump running conditions and do maintenance.



TM087395

Steps to displays pump accumulative running time:

1. Press the MODE button to switch to MANUAL mode, make sure that the pump is not running, and the operating panel is displaying.
2. Press and hold the STORE button and A STOP button. The controller makes a beep sound and displays the accumulative run time. The pump has run for 11 hours.
3. Press the A STOP button to quit the accumulative running time display.
4. Repeat for pump B by using B STOP.



TM087393

Pos.	Description
A	Timer icon
B	Pump has a run for 11 hours

7. Fault finding

7.1 Flashing of UNDER V

Cause	Remedy
The actual running voltage is lower than the voltage configured in parameter "21 - under voltage trip", pump is in under voltage protection state.	• Report low line voltage to the power supply company. • Controller will attempt to restart the pump(s) every 4 minutes (modifiable input) until the line voltage is restored to normal.

7.2 Flashing of OVER V

Cause	Remedy
The actual running voltage is higher than the voltage configured in parameter "22 - over voltage trip", pump is in over voltage protection state.	• Report high line voltage to the power supply company. • Controller will attempt to restart the pump(s) every 4 minutes (modifiable input) until line voltage is restored to normal.

7.3 Flashing of PUMP STALLED

Cause	Remedy
Pump motor running ampere was greater than the normal running ampere (calibrated ampere) by more than 180%.	• Cut off supply and repair or replace pump immediately. • Contact Grundfos service engineer.

7.4 Flashing of OVERLOAD

Cause	Remedy
• The actual running ampere is higher than the calibrated running ampere, pump is in overload protection state. • Pump impeller is jammed, or pump is drawing more current than its rated current.	• Controller will attempt to restart the pump every 4 minutes (modifiable input) until running ampere is restored to normal. • Check pump impeller or bearing.

7.5 Flashing of PUMP NO CALIBRATION

Cause	Remedy
Parameter calibration not completed.	• Refer to section Setting the parameter calibration.

7.6 Flashing of DRY RUN

Cause	Remedy
Liquid level in the well or sump is below the pump intake, pump stops running.	• Controller will attempt to restart the pump every 45 minutes (modifiable input) until liquid level is above the pump intake.

7.7 Repeated start

Following symbol will be flashing during this condition:

Cause	Remedy
Pump starts more than 5 times per minute. The most common cause for rapid cycle condition is waterlogged tank.	• Check for a ruptured bladder in the water tank. • Check the air volume control or sniffer valve for proper operation. • Check the setting on the pressure switch and examine for defects. • Cut off the power supply and repair the water tank, pressure switch or valve.

7.8 Online

Cause	Remedy
No communication link between computer and controller.	• Connect the controller to computer.

8. Technical data

Main technical characteristics

Control characteristics	Double liquid level control
	Pressure control
Working modes	MANUAL or AUTO
Drainage application	Using float switch
Pressure boosting application	Using pressure switch
Water transfer application	Using float switch

Main technical data

Rated output	8 A, 12 A and 16 A
Rated input voltage	415 V
Trip response time of overload	5 seconds - 5 minutes
Trip response time of open phase	Less than 2 seconds
Trip response time of short circuit	Less than 0.1 seconds
Trip response time of undervoltage or over voltage	Less than 5 seconds
Trip response time of dry run	5 seconds (modifiable input)
Recovery time of overload	4 minutes (modifiable input)
Recovery time of undervoltage or over voltage	4 minutes (modifiable input)
Recovery time of dry run	45 minutes (modifiable input)
Trip voltage of overvoltage	437 V (modifiable input)
Trip voltage of undervoltage	304 V (modifiable input)
Protections covered	Dry run (without float switch)
	overload
	short circuit
	undervoltage
	overvoltage
	pump stalled
	short circuit
	phase loss (incoming and outgoing)
	phase reversal
	pump shaft anti rust protection

Other Technical Data

Permissible ambient temperature	- 10°C to + 55 °C
Degree of protection	IP 54
Installation position	Vertical
Unit Dimension (L x W x H)	320 x 420 x 138 mm
Unit weight (net)	5.6 kg

Physical interface	RS485 bus interface: Asynchronous
Baud Rate	1200, 2400, 4800, 9600 bps (default)
Protocol type	MODBUS protocol (RTU)

9. Abbreviation

S. no.	Word	Description
1	OH	Overhead
2	UG	Underground
3	NO	Normally open
4	NC	Normally closed
5	DOL	Direct on-line
6	COM	Common
7	H.LVL	High level

10. Disposing of the product

This product or parts of it must be disposed of in an environmentally sound way.

1. Use the public or private waste collection service.
2. If this is not possible, contact the nearest Grundfos company or service workshop.

The crossed-out wheelie bin symbol on a product means that it must be disposed of separately from household waste. When a product marked with this symbol reaches its end of life, take it to a collection point designated by the local waste disposal authorities. The separate collection and recycling of such products will help protect the environment and human health.

See also end-of-life information at *www.grundfos.com/product-recycling*.

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