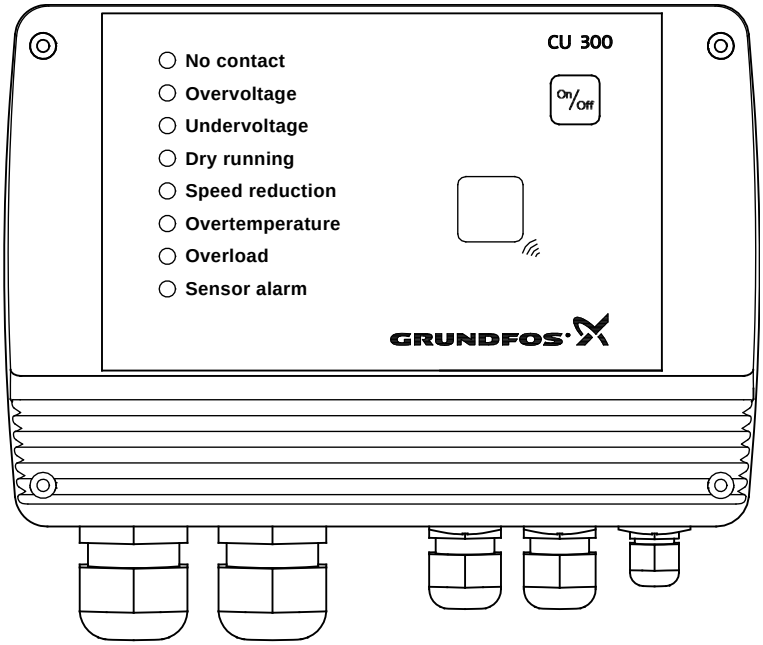
CU 300

Installation and operating instructions



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Warning

Prior to installation, read these installation and operating instructions. Installation and operation must comply with local regulations and accepted codes of good practice.

Warning

This product can be used by children of eight years and up and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they are under supervision or have been instructed in the safe use of the product and understand the hazards involved.

Children must not play with the product. Cleaning and maintenance of the product must not be made by children without supervision.

1. Symbols used in this document

Warning

If these safety instructions are not observed, it may result in personal injury.

Note

Notes or instructions that make the job easier and ensure safe operation.

2. General

The control unit CU 300 is developed for the SQE submersible pumps.

CU 300 covers the voltage range 1 x 100-240 V - 10 %/+ 6 %, 50/60 Hz, PE.

CU 300 has the following functions:

- control of the pump on the basis of sensor signals
- setting of operating parameters
- monitoring of operation and alarm indication, if any.

CU 300 indicates the following alarms:

- no contact
- overvoltage
- undervoltage
- dry running
- speed reduction
- overtemperature
- overload
- sensor alarm.

The individual alarms are described in details in section *13. Alarm functions*.

CU 300 receives alarm signals from the motor for the following parameters:

- dry running
- incipient pump or motor defect
- too high temperature in motor electronics
- supply failure.

As standard, CU 300 incorporates an alarm signal relay.

2.1 Expansion possibilities

CU 300 enables the use of the following devices:

- **Grundfos GO:**
  Wireless infra-red remote control that enables change of factory settings and monitoring of the installation by calling up actual operating data, e.g. speed, operating hours and power consumption.
- **External sensors:**
  Reception of data from external sensors and control according to the data received, e.g. flow rate, pressure, water level and conductivity.
- **External potentiometer SPP 1:**
  Manual speed control.

2.2 On/Off button

By means of the On/Off button on CU 300, you can do the following:

- Start or stop the pump.
- Reset alarms.

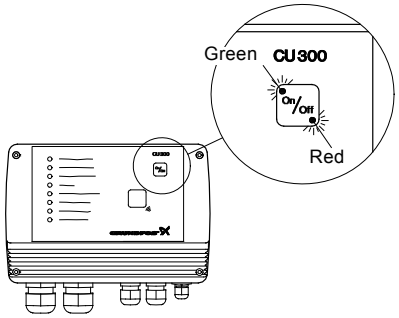

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Fig. 1

The green and red indicator lights in the On/Off button indicate pump operating condition as follows:

Indication	Description
Green indicator light permanently on	Pump is operating
Green indicator light flashing	Pump has been stopped by one of the following: • a sensor • an external on/off switch • a stop command from the Grundfos GO
Red indicator light permanently on	Pump has been stopped by means of the On/Off button*
Red indicator light flashing	CU 300 is communicating with the Grundfos GO

* If you use the On/Off button to stop the pump, you must also use this button for restarting the pump.
If you press the On/Off button for minimum 5 seconds, you start the pump, irrespective of any active fault or alarm indications. When you release the On/Off button, the pump will stop.

3. Mechanical installation

Warning

Before starting any work on CU 300, make sure that the power supply has been switched off and that it cannot be accidentally switched on.

3.1 Location

You can place CU 300 both indoors and outdoors. The control unit must not be exposed to direct sunlight.

3.2 Mounting CU 300

CU 300 is designed for wall mounting.

The box has six mounting holes (∅4). See fig. 2. The dimensions are in mm.

CU 300 must be mounted as follows:

- Horizontally to allow condensed water, if any, to escape. See fig. 2.
- On a plane surface to avoid deformation of the box.

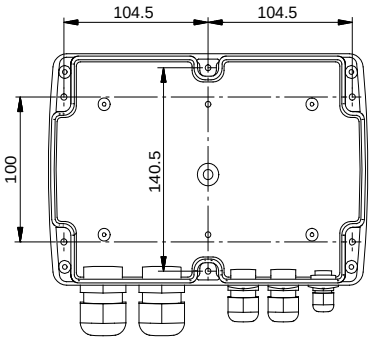

Fig. 2

CU 300 is supplied with a set of gaskets for the Pg screwed connections.

The gaskets are to be used for the connection of cables or wires to ensure tight connections, IP55, and cable relief.

4. CU 300 as an alarm unit

4.1 Description

When CU 300 is connected to an SQE pump, one of the eight red indicator lights on CU 300 will indicate any alarm.

The indications are based on signals from the motor and from sensors, if installed. The individual alarms are described in details in section *13. Alarm functions*.

You can connect an external alarm-signal transmitter and an external on/off switch. See section *4.2 Electrical installation* concerning connection, etc.

Figure 3 shows an example of an installation with CU 300 as an alarm unit.

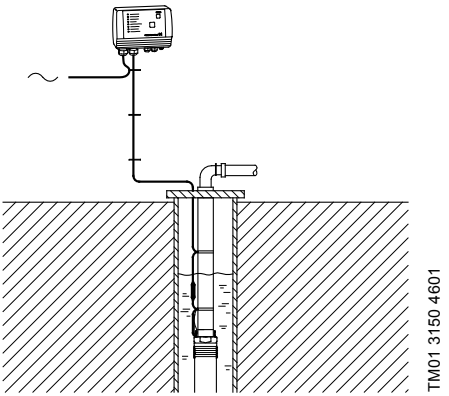

Fig. 3

CU 300 functions as an alarm unit for the pump. Furthermore, you can communicate with the pump via the remote control Grundfos GO, see also section *14. CU 300 with Grundfos GO*.

4.2 Electrical installation

Warning

Never make any connections in the CU 300 unit unless the power supply has been switched off. CU 300 must be connected in accordance with the rules and standards in force for the application in question.

The supply voltage and frequency are marked on the nameplate. Make sure that CU 300 is suitable for the power supply on which it will be used.

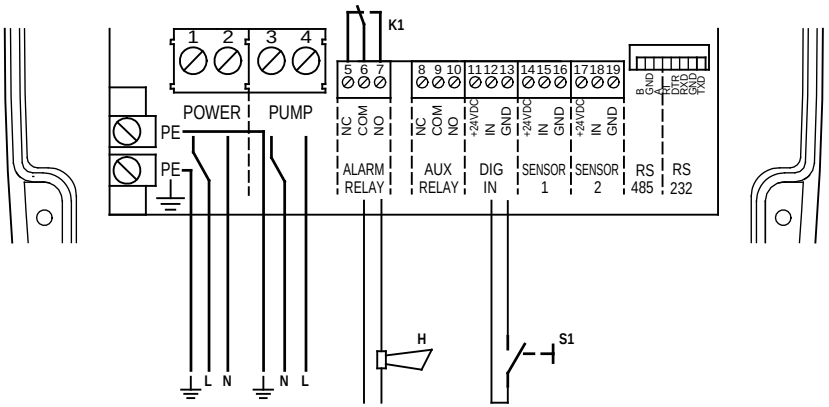

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Fig. 4

Pos.	Description
S1	On/off switch for start or stop of pump
H	Alarm signal transmitter (optional)
K1	Internal alarm signal relay Relay data: 250 VAC, 1 A, AC1

4.2.1 Mains supply

POWER, terminals 1, 2 and PE

Connect terminals 1 and 2 to the phase and neutral leads of the mains supply. You can connect each terminal to any of the two leads.

Connect the PE terminal to the green/yellow earth lead. You must connect each PE terminal to an earth lead of its own.

The maximum cross-section of the leads to be connected is 6 mm^2.

Backup fuse: Maximum 16 A.

Note

You must not connect the leads of the mains supply to terminals 3 and 4.

4.2.2 Pump supply

PUMP, terminals 3, 4 and PE

Connect terminals 3 and 4 to the phase and neutral leads of the pump. You can connect each terminal to any of the two leads.

Connect the PE terminal to the green/yellow earth lead. You must connect each PE terminal to an earth lead of its own.

The maximum cross-section of the leads to be connected is 6 mm^2.

4.2.3 Alarm signal relay

ALARM RELAY, terminals 5, 6 and 7

Connect terminals 5, 6 and 7 to the internal alarm signal relay as follows:

- Terminal 5 NC (normally closed).
- Terminal 6 COM (common).
- Terminal 7 NO (normally open).

The relay is activated when the alarm and warning limits are exceeded.

You can select manual or automatic restarting in the Grundfos GO display "Automatic restarting".

Manual restarting is carried out by means of the On/Off button on CU 300.

4.2.4 Digital input

DIG IN, terminals 11, 12 and 13

In fig. 4, the digital input is used to start and stop the pump.

You can select the function of the digital input by means of the Grundfos GO in the display "Digital input".

4.3 Description of dry-running protection

When the pump sucks air, the pump power input decreases.

If the pump power input falls below the dry-running power limit set in the Grundfos GO display "Dry-running stop", the pump will stop and CU 300 will indicate the dry-running alarm.

4.3.1 Function

The dry-running protection applies only if the motor speed lies within the maximum speed range (i.e. maximum speed less than 1000 min^{-1}). See fig. 5.

Normally, maximum speed is 10,700 min^{-1}. However, you can reduce the maximum speed in the Grundfos GO display "Maximum speed". The dry-running power limit set in the display "Dry-running stop" must match the speed.

Changing the setpoint:

If you use the Grundfos GO display "Setpoint" or "External setpoint" to change the setpoint, the pump can be forced to run at a reduced speed in relation to the maximum speed. The dry-running protection will not protect the pump if the reduced speed lies outside the maximum speed range (i.e. maximum speed less 1000 min^{-1}). See fig. 5.

Constant-pressure control

In constant-pressure control mode, the dry-running protection is active, as the motor will operate at maximum speed in connection with dry running.

Pump power input curve

The curve shows the pump power input in relation to the pump speed.

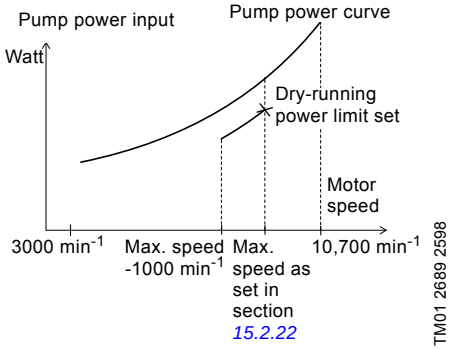

Fig. 5

4.4 Settings

For a detailed description of the Grundfos GO displays, see section *14. CU 300 with Grundfos GO*.

4.4.1 Required Grundfos GO settings

If the maximum speed of the pump has been reduced by more than 1000 min^{-1}, the dry-running stop value must be changed. In order to change the dry-running protection function, you must make the following Grundfos GO settings.

1. Set "Dry-running protection" to "Active".

Note

In certain installations, it may be necessary to disable the dry-running protection. The disabling applies to the dry-running power limit set in the display *15.2.21 Dry-running stop*. See fig. 5.

Set the dry-running power limit in the display *15.2.21 Dry-running stop* by following the procedure below:

- Start the pump against a closed discharge pipe.
- Read the input power (P1) in the display *15.1.9 Power consumption*.
- Calculate the dry-running power limit: P1 x 0.9 [W].
- Set this value in the display *15.2.21 Dry-running stop*.

4.5 Description of the dewatering function

When the pump sucks air, the pump power input decreases.

If the pump power input falls below the dry-running power limit set in the display *15.2.21 Dry-running stop*, the pump will stop.

During dewatering, the green indicator light in the On/Off button on CU 300 is flashing to indicate that the pump has stopped.

4.5.1 Applications

You can use the dewatering function in applications where the pump often runs dry, e.g.:

- In boreholes with a low yield.
- In boreholes and building sites where the water table should be lowered.

4.5.2 Function

The dewatering function works as follows:

1. The pump is operating.
2. The pump sucks air due to a drop in the water level.
3. The load decreases, and consequently the pump power input does as well.
4. The pump stops when the power input falls to the dry-running power limit set in the Grundfos GO display *15.2.21 Dry-running stop*.

Note

The length of the stop time depends on the setting you have made in the Grundfos GO display "Dewatering max off time". See section *15.2.19 Dewatering, maximum "On" and "Off" time*.

4.5.3 Required Grundfos GO settings

In order to activate the dewatering function, you must make the following Grundfos GO settings:

1. Set "Dry-running protection" to "Active".
2. Set the dry-running power limit, i.e. dry-running stop. See "Setting of dry-running power limit (dry-running stop)" below.
3. Set the relation between run and stop times.
   Indication of operation:
   The dry-running alarm indication on CU 300 is automatically disabled, when you make the setting in the display *15.2.19 Dewatering, maximum "On" and "Off" time*.
   To disable the dewatering function and return to dry-running protection, simply disable the "Dewatering" function in the display *15.2.18 Dewatering*.

Setting of dry-running power limit (dry-running stop):

1. Start the pump against a closed discharge pipe.
2. Read the input power (P1) in the display *15.1.9 Power consumption*.
3. Calculate the dry-running power limit: P1 x 0.9 [W].
4. Set this value in the display *15.2.21 Dry-running stop*.

4.5.4 On/off times

The dewatering function means that there is a dependence between the period of time during which the pump is running, the on time, and the period of time during which the pump is stopped, the off time.

Figure 6 shows an example of on and off times set in the display *15.2.19 Dewatering, maximum "On" and "Off" time*.

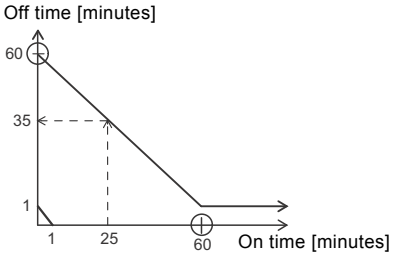

Fig. 6

Explanation:

The on and off times are set to 60 minutes each. The pump has been running for 25 minutes when dry running occurs. The pump will be stopped for 35 minutes. If the pump has been running for e.g. 120 minutes, the stop time will be 1 minute.

5. CU 300 with constant-pressure control - 0 to 6 bar

5.1 Description

Using constant-pressure control enables automatic adjustment of the pump performance according to consumption. The system maintains a constant pressure within the maximum pump performance in spite of a varying water consumption.

Figure 7 shows an example of an installation with constant-pressure control within the range from 0 to 6 bar.

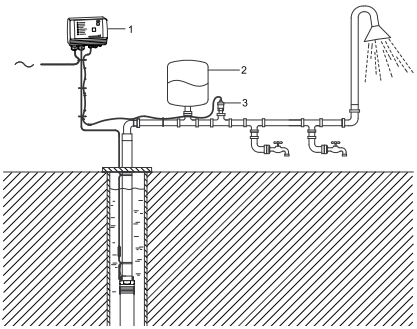

Fig. 7

Pos.	Description
1	CU 300
2	Diaphragm tank Absorbs pressure variations.
3	Pressure sensor The required pressure is set using the Grundfos GO.

5.2 Function

The pressure is registered by means of the pressure sensor, which transmits a signal to CU 300. CU 300 adjusts the pump performance accordingly by changing the pump speed.

Mains borne signalling

The communication between CU 300 and the pump is effected via the power supply cable.

This communication principle is called mains borne signalling or power line communication. Using this principle means that no additional cables to the pump are required.

The communication of data is effected by means of a high-frequency signal transmitted to the power supply cable and led into the electronics unit by means of signal coils incorporated in the motor and CU 300 respectively.

When does the pump start?

The pump starts as a consequence of:

- high flow
- low pressure
- a combination of both.

To ensure that the pump is started when water is consumed, a flow detection is required. The flow is detected via pressure changes in the system. When water is consumed, the pressure will drop accordingly depending on the size of the diaphragm tank and the water flow:

- At a low flow, the pressure will drop slowly.
- At a high flow, the pressure will drop quickly.

See fig. 8.

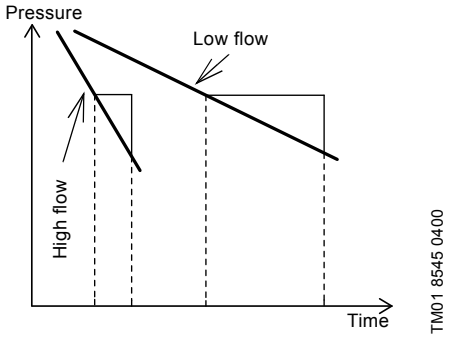

Fig. 8

Note When the pressure is dropping 0.1 bar/s or faster, the pump will start immediately.

If you use a diaphragm tank of 8 litres, the pump will start at a flow rate of approx. 0.18 m^3/h.

Note If a you use a larger tank, the flow must be higher before the pump starts.

Consumption up to 0.18 m^3/h

The pump will start when the pressure has dropped to 0.5 bar below the pressure setting.

The pump will run until the pressure is 0.5 bar above the pressure set.

Flow detection

During pump operation, i.e. when water is consumed, CU 300 will adjust the pump speed to maintain a constant pressure. In order to stop the pump when no water is consumed, CU 300 performs flow detection every 10 seconds.

The pump speed is reduced until a small pressure drop is registered. This pressure drop indicates that water is consumed and the pump speed is resumed. See fig. 9.

If the pump speed can be reduced without any pressure drop being registered, this indicates that no water is consumed. The diaphragm tank will be filled with water and the pump will be stopped.

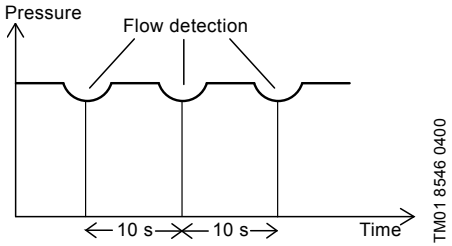

Fig. 9

System limits

Even though CU 300 is controlling the pressure within ± 0.2 bar, bigger pressure variations may occur in the system.

If the consumption is suddenly changed, e.g. if a tap is opened, the water must start flowing before the pressure can be made constant again. Such dynamic variations depend on the pipework, but, typically, they will lie between 0.5 and 1 bar.

If the desired consumption is higher than the quantity the pump is able to deliver at the desired pressure, the pressure follows the pump curve as illustrated in fig. 10.

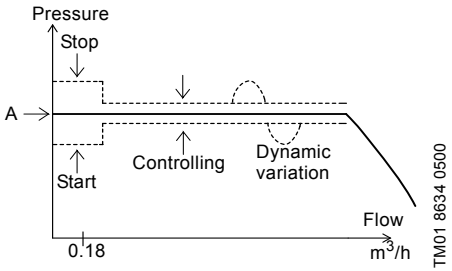

Fig. 10

A = Required pressure

5.3 Positioning the pressure sensor

Pressure loss often causes inconvenience to the user. CU 300 keeps the pressure constant in the place where the pressure sensor is positioned. See fig. 11.

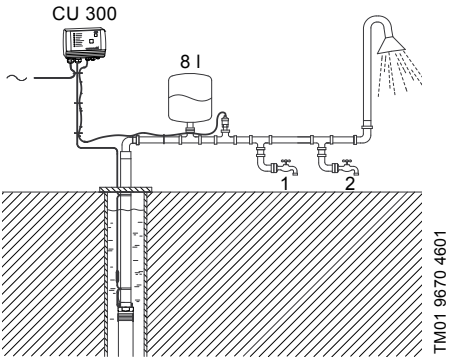

Fig. 11

In fig.11, tap 1 is placed close to the pressure sensor. Therefore, the pressure will be kept nearly constant at tap 1, as the friction loss is small. At the shower and tap 2, the friction loss is bigger. This, of course, depends on the piping. However, old and furred-up piping may cause inconvenience due to friction loss.

Therefore, we recommend that you position the pressure sensor as close to the places of consumption as possible.

5.4 System sizing

Warning

The installation must be designed for the maximum pump pressure.

In normal installations with CU 300 and an SQE pump set to constant-pressure control, the required tank size is 8 litres. You can use bigger tanks without causing any problems.

5.5 Electrical installation

Warning

Never make any connections in the CU 300 unit unless the power supply has been switched off. CU 300 must be connected in accordance with the rules and standards in force for the application in question.

The supply voltage and frequency are marked on the nameplate. Make sure that CU 300 is suitable for the power supply on which it will be used.

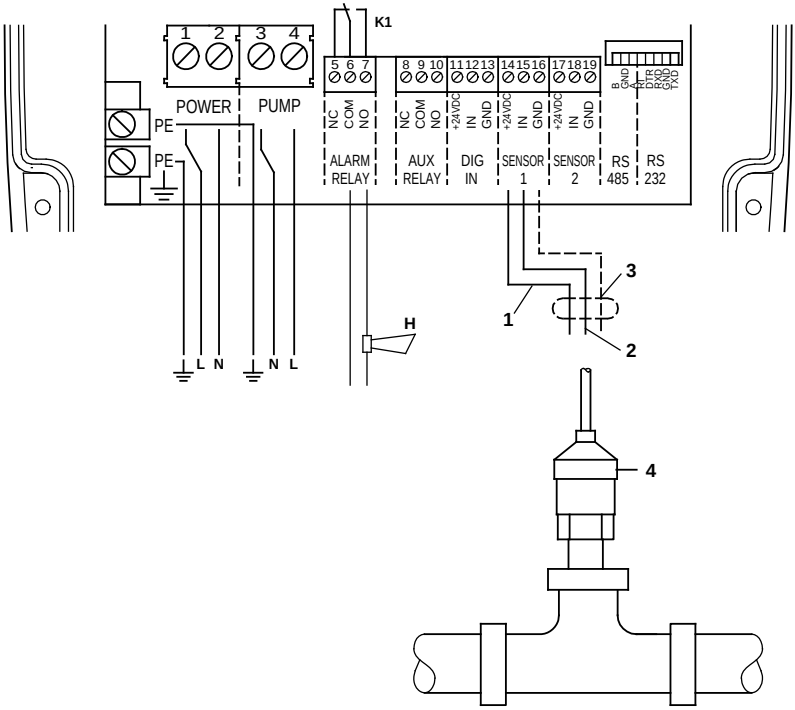

Fig. 12

Pos.	Description
1	Pressure sensor, brown lead, terminal 14
2	Pressure sensor, black lead, terminal 15
3	Pressure sensor, screen, terminal GND
4	Pressure sensor Must be connected to analog input 1.
H	Alarm signal transmitter (optional).
K1	Internal alarm signal relay Relay data: 250 VAC, 1 A, AC1

5.5.1 Mains supply

POWER, terminals 1, 2 and PE

Connect terminals 1 and 2 to the phase and neutral leads of the mains supply. You can connect each terminal to any of the two leads.

Connect the PE terminal to the green/yellow earth lead. You must connect each PE terminal to an earth lead of its own.

Maximum cross-section of the leads to be connected is 6 mm^2.

Backup fuse: Maximum 16 A.

Note You must not connect the leads of the mains supply to terminals 3 and 4.

5.5.2 Pump supply

PUMP, terminals 3, 4 and PE

Connect terminals 3 and 4 to the phase and neutral leads of the pump. You can connect each terminal to any of the two leads.

Connect the PE terminal to the green/yellow earth lead. You must connect each PE terminal to an earth lead of its own.

Maximum cross-section of the leads to be connected is 6 mm^2.

5.5.3 Alarm signal relay

ALARM RELAY, terminals 5, 6 and 7

Connect terminals 5, 6 and 7 to the internal alarm signal relay as follows:

- Terminal 5 NC (normally closed).
- Terminal 6 COM (common).
- Terminal 7 NO (normally open).

The relay operates when the alarm and warning limits are exceeded.

You can select manual or automatic restarting in the Grundfos GO display "Automatic restarting".

Manual restarting is carried out by means of the On/Off button on CU 300.

5.5.4 Required Grundfos GO settings

You must make the following Grundfos GO settings:

1. In display "Control mode" select "Closed loop".
2. Set the sensor in the "Analog input 1" or "Analog input 2" display.
   Example:
   – sensor output signal (4-20 mA)
   – setting range unit (m)
   – setting range - head
   min.: 0.0
   max.: 40
3. Set the stop type in the "Stop type, sensor 1" display.
   – "Fill".
4. Set the digital input.
   – "Not active"
5. Set the setpoint
   Example: Desired head 35 m.
   Rule: The maximum setting of the setpoint corresponds to the maximum value set in display *15.2.4 Analog inputs* less 5 m.
   In this case, 40 less 5 = 35 m.

5.6 Startup

Prior to startup, the precharge pressure of the diaphragm tank must be set to 70 % of the setpoint set in the Grundfos GO display "Setpoint".

6. CU 300 with constant-pressure control - 0 to 10 bar

6.1 Description

Using constant-pressure control enables automatic adjustment of the pump performance according to consumption. The system maintains a constant pressure within the maximum pump performance in spite of a varying water consumption.

Figure 13 shows an example of an installation with constant-pressure control within the range from 0 to 10 bar.

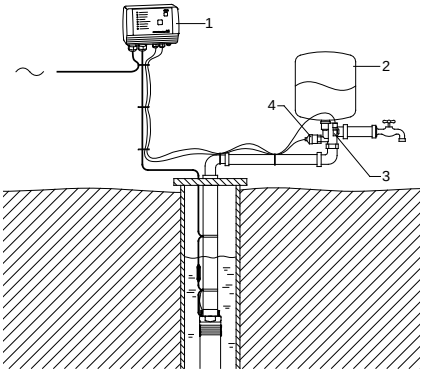

Fig. 13

Pos.	Description
1	CU 300
2	Diaphragm tank Absorbs pressure variations.
3	Flow switch The pump starts at once when water is consumed at the taps.
4	Pressure sensor The required pressure is set using the Grundfos GO.

6.2 Function

The pressure is registered by means of the pressure sensor and transmitted to CU 300. CU 300 adjusts the pump performance accordingly. To ensure that the pump is started when water is consumed, include a flow switch in the system.

The required pressure (setpoint) is set in the Grundfos GO display "Setpoint".

- **Consumption up to 0.18 m^3/h.**
  The flow switch contact is open.
  The pump starts when the pressure is equal to the setpoint less 0.5 bar. The pump will fill the tank and stop when the pressure is equal to the setpoint plus 0.5 bar. Consequently, the pump runs on/off operation.
- **Consumption above 0.18 m^3/h.**
  The flow switch contact is closed.
  The pump starts when the flow switch contact closes and the speed control ensures that the pressure is kept constant. If the flow is below 0.18 m^3/h and the flow switch contact is opened, the tank is filled to a pressure equal to the setpoint plus 0.5 bar. When this pressure is reached, the pump stops. Stopping is a combination of the flow switch contact opening and the pressure being equal to the setpoint plus 0.5 bar.

If the flow is larger than the quantity the pump is able to deliver at the desired pressure, the pressure follows the pump curve as illustrated in fig. 14.

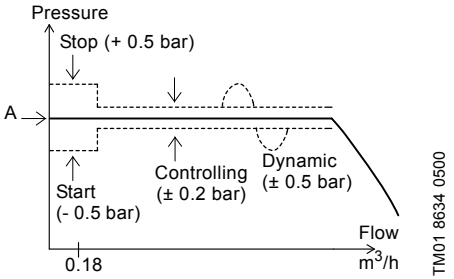

Fig. 14

A = Required pressure

6.3 Positioning the pressure sensor

Pressure loss often causes inconvenience to the user. CU 300 keeps the pressure constant in the place where the pressure sensor is positioned. See fig. 15.

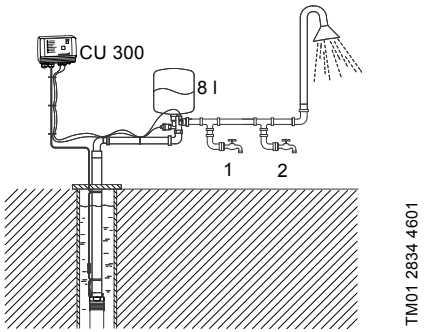

Fig. 15

In fig. 15, tap 1 is placed close to the pressure sensor. Therefore, the pressure will be kept nearly constant at tap 1, as the friction loss is small. At the shower and tap 2, the friction loss is bigger. This, of course, depends on the piping. However, old and furred-up piping may cause inconvenience due to friction loss.

Therefore, we recommend that you position the pressure sensor as close to the places of consumption as possible.

6.4 System sizing

Warning

The installation must be designed for the maximum pump pressure.

In normal installations with CU 300 and an SQE pump set to constant-pressure control, the required tank size is 8 litres. You can use bigger tanks without causing any problems.

6.5 Electrical installation

Warning

Never make any connections in the CU 300 unit unless the power supply has been switched off. CU 300 must be connected in accordance with the rules and standards in force for the application in question.

The supply voltage and frequency are marked on the nameplate. Make sure that CU 300 is suitable for the power supply on which it will be used.

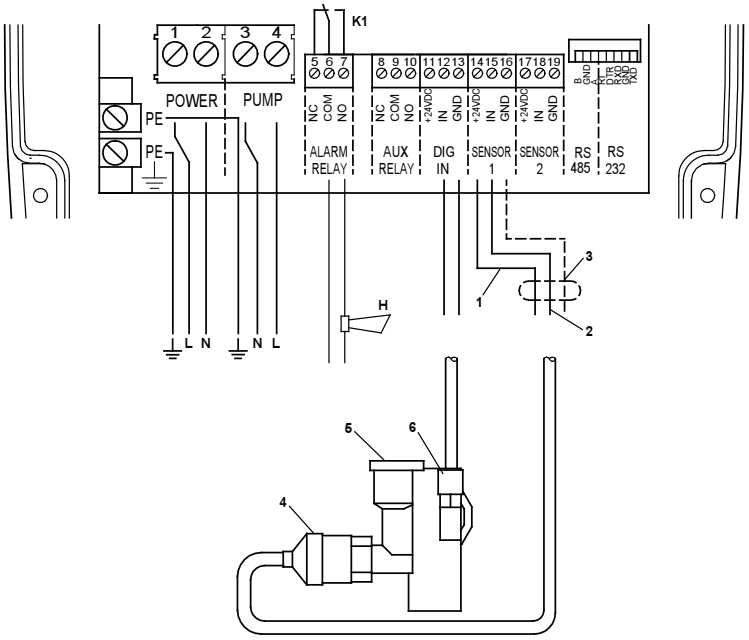

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Fig. 16

Pos.	Description
1	Pressure sensor, brown lead, terminal 14
2	Pressure sensor, black lead, terminal 15
3	Pressure sensor, screen, terminal GND
4	Pressure sensor Must be connected to analog input 1.
5	Diaphragm tank connection
6	Flow switch Must be connected to the digital input, terminals 12 and 13. Cannot be connected wrongly.
H	Alarm signal transmitter (optional)
K1	Internal alarm signal relay Relay data: 250 VAC, 1 A, AC1

6.5.1 Mains supply

POWER, terminals 1, 2 and PE

Connect terminals 1 and 2 to the phase and neutral leads of the mains supply. You can connect each terminal to any of the two leads.

Connect the PE terminal to the green/yellow earth lead. You must connect each PE terminal to an earth lead of its own.

Maximum cross-section of the leads to be connected is 6 mm^2.

Backup fuse: Maximum 16 A.

Note

You must not connect the leads of the mains supply to terminals 3 and 4.

6.5.2 Pump supply

PUMP, terminals 3, 4 and PE

Connect terminals 3 and 4 to the phase and neutral leads of the pump. You can connect each terminal to any of the two leads.

Connect the PE terminal to the green/yellow earth lead. You must connect each PE terminal to an earth lead of its own.

Maximum cross-section of the leads to be connected is 6 mm^2.

6.5.3 Alarm signal relay

ALARM RELAY, terminals 5, 6 and 7

Connect terminals 5, 6 and 7 to the internal alarm signal relay as follows:

- Terminal 5 NC (normally closed).
- Terminal 6 COM (common).
- Terminal 7 NO (normally open).

The relay operates when the alarm and warning limits are exceeded.

You can select manual or automatic restarting in the Grundfos GO display "Automatic restarting".

Manual restarting is carried out by means of the On/Off button on CU 300.

6.5.4 Required Grundfos GO settings

You must make the following Grundfos GO settings:

1. In display *15.2.2 Control mode*" select "Closed loop".
2. Set the sensor in the "Analog input 1" or "Analog input 2" display.
   Example:
   – sensor output signal (4-20 mA)
   – setting range unit (m)
   – setting range - head
   min.: 0.0
   max.: 40.
3. Set the stop type in the "Stop type, sensor 1" display.
   – "Fill".
4. Set the digital input.
   – "Not active"
5. Set the setpoint
   Example: Desired head 35 m.
   Rule: The maximum setting of the setpoint corresponds to the maximum value set in display "Analog input 1" less 5 m.
   In this case, 40 less 5 = 35 m.

6.6 Startup

Prior to startup, the precharge pressure of the diaphragm tank must be set to 70 % of the setpoint set in the Grundfos GO display "Setpoint".

7. CU 300 with constant-pressure control - two-pump operation

7.1 Description

Using constant-pressure control in connection with two-pump operation enables automatic adjustment of the pump performance according to the consumption in systems where a high flow is required. The system maintains a constant pressure within the maximum pump performance in spite of a varying water consumption.

Note

During two-pump operation, the two pumps **must** have the same nominal flow, e.g. two SQE 2.

Figure 17 shows an example of a two-pump installation with constant-pressure control.

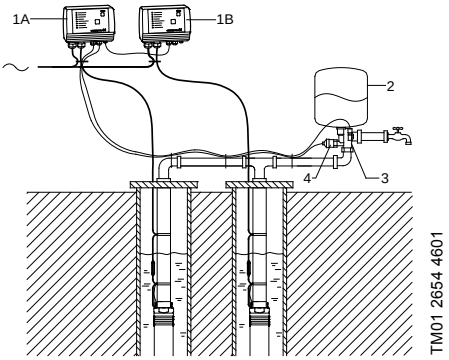

Fig. 17

Pos.	Description
1A, 1B	1A = CU 300 (master) 1B = CU 300 (slave)
2	Diaphragm tank, minimum 24 litres Absorbs pressure variations.
3	Flow switch The pump starts at once when water is consumed at the taps.
4	Pressure sensor The required pressure is set using the Grundfos GO.

7.2 Function

The pressure is registered by means of the pressure sensor and transmitted to CU 300 (master). CU 300 adjusts the pump speed to ensure that the pressure is kept constant. To ensure that the pump connected to CU 300 (master) is started when water is consumed, a flow switch must be included in the system.

Set CU 300 (master) to the desired pressure (setpoint) in the Grundfos GO display "Setpoint".

- **Consumption up to 0.18 m^3/h.**
  The flow switch contact is open.
  The pump connected to CU 300 (master) starts when the pressure is equal to the setpoint less 0.5 bar. The pump will fill the tank and stop when the pressure is equal to the setpoint plus 0.5 bar. Consequently, the pump runs on/off operation.
- **Consumption above 0.18 m^3/h.**
  The flow switch contact is closed.
  The pump connected to CU 300 (master) starts when the flow switch contact closes and the speed control ensures that the pressure is kept constant.
  If the flow is lower than 0.18 m^3/h and the flow switch contact is opened, the tank is filled to a pressure equal to the setpoint plus 0.5 bar. When this pressure is reached, the pump stops.
  Stopping is a combination of the flow switch contact opening and the pressure being equal to the setpoint plus 0.5 bar.
  If the consumption exceeds the quantity the pump connected to CU 300 (master) is able to deliver, the pressure in the diaphragm tank will fall.

The pump connected to CU 300 (slave) will be started in the two following situations:

1. If the pressure in the diaphragm tank falls to 1 bar below the setpoint.
2. If the pump connected to CU 300 (master) has been operating at maximum performance for more than 5 seconds and the water requirement has increased.

The pump connected to CU 300 (slave) will be stopped in the three following situations:

1. If the system pressure is 1 bar higher than the setpoint.
2. If the pump connected to CU 300 (master) has been operating at minimum performance for more than 5 seconds and the water requirement has fallen.
3. If the flow switch indicates "No flow" and the system pressure is 0.5 bar higher than the setpoint.

If the flow is larger than the quantity the pumps are able to deliver at the desired pressure, the pressure follows the pump curve. See fig. 18.

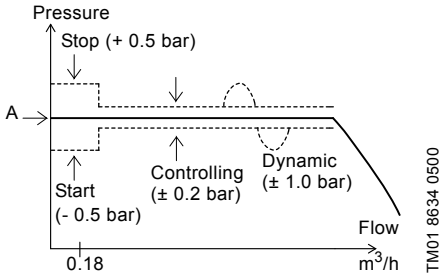

Fig. 18

A = Required pressure

7.3 Positioning the pressure sensor

See section *6.3 Positioning the pressure sensor*.

7.4 System sizing

Warning

The installation must be designed for the maximum pump pressure.

In two-pump installations set for constant-pressure control, the required tank size is 24 litres. You can use bigger tanks without any problems.

7.5 Electrical installation

Warning

Never make any connections in the CU 300 unit unless the power supply has been switched off. CU 300 must be connected in accordance with the rules and standards in force for the application in question.

The supply voltage and frequency are marked on the nameplate. Make sure that CU 300 is suitable for the power supply on which it will be used.

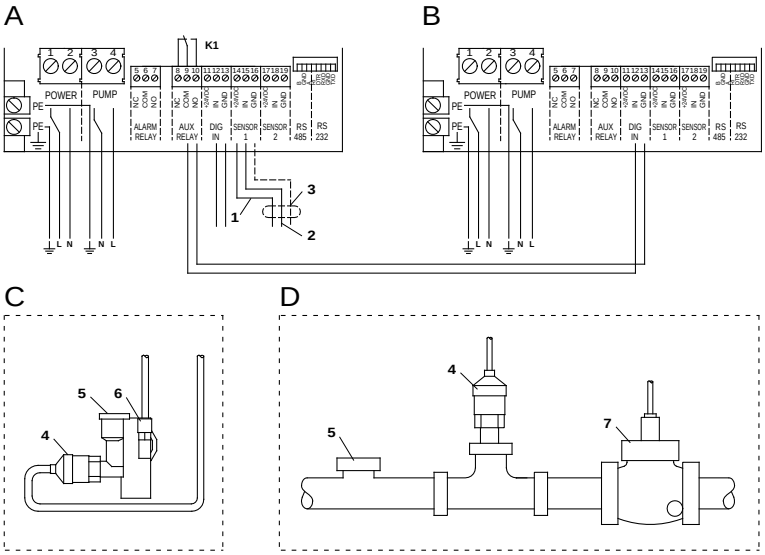

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Fig. 19

Pos.	Description
A	CU 300 (master)
B	CU 300 (slave)
C	Installation for Q < 5 m^3/h
D	Installation for Q > 5 m^3/h
1	Pressure sensor, brown lead, terminal 14
2	Pressure sensor, black lead, terminal 15
3	Pressure sensor, screen, terminal GND
4	Pressure sensor Must be connected to analog input 1.
5	Diaphragm tank connection
6	Flow switch (Q < 5 m^3/h) Must be connected to the digital input, terminals 12 and 13. Cannot be connected wrongly.
7	Flow switch (Q > 5 m^3/h) Must be connected to the digital input, terminals 12 and 13. Cannot be connected wrongly.
K1	Internal alarm signal relay Relay data: 250 VAC, 1 A, AC1

7.5.1 Auxiliary relay

Connect CU 300 (master) to CU 300 (slave) as follows:

Connections	
CU 300 (master)	**CU 300 (slave)**
Terminal 9 (COM)	Terminal 12 (IN)
Terminal 10 (NO)	Terminal 13 (GND)

See fig. 19.

7.5.2 Mains supply

POWER, terminals 1, 2 and PE

Connect terminals 1 and 2 to the phase and neutral leads of the mains supply. See fig. 19.

You can connect each terminal to any of the two leads.

Connect the PE terminal to the green/yellow earth lead. You must connect each PE terminal to an earth lead of its own.

Maximum cross-section of the leads to be connected is 6 mm^2.

Backup fuse: Maximum 16 A.

Note

You must not connect the leads of the mains supply to terminals 3 and 4.

7.5.3 Pump supply

PUMP, terminals 3, 4 and PE

Connect terminals 3 and 4 to the phase and neutral leads of the pump. See fig. 19.

You can connect each terminal to any of the two leads.

Connect the PE terminal to the green/yellow earth lead. You must connect each PE terminal to an earth lead of its own.

Maximum cross-section of the leads to be connected is 6 mm^2.

7.5.4 Alarm signal relay

ALARM RELAY, terminals 5, 6 and 7

Connect terminals 5, 6 and 7 to the internal alarm signal relay as follows:

- Terminal 5 NC (normally closed).
- Terminal 6 COM (common).
- Terminal 7 NO (normally open).

The relay operates when the alarm and warning limits are exceeded.

You can select manual or automatic restarting in the Grundfos GO display "Automatic restarting".

Manual restarting is carried out by means of the On/Off button on CU 300.

7.5.5 Flow switch and pressure sensor

Connect the flow switch and the pressure sensor to the control unit (A = master) as illustrated in fig. 19.

Flow switch:

Pump type	Product number
SQE 1	96037332
SQE 2, SQE 3, SQE 5, SQE 7	96037559

7.5.6 Required Grundfos GO settings

You must make the following Grundfos GO settings on CU 300 (master):

1. In display "Control mode" select "Closed loop".
2. Set the sensor in the "Analog input 1" or "Analog input 2" display.
   Example:
   – sensor output signal (4-20 mA)
   – setting range unit (m)
   – setting range - head
   min.: 0.0
   max.: 40.
3. Set the stop type in the "Stop type, sensor 1" display.
   – "Fill".
4. Set the digital input in "Digital input 1" display:
   – "Start".
5. Set the setpoint
   Example: Desired head 35 m.
   Rule: The maximum setting of the setpoint corresponds to the maximum value set in display *15.2.4 Analog inputs* less 5 m.
   In this case, 40 less 5 = 35 m.

You must make the following Grundfos GO setting on CU 300 (slave):

6. Set the digital input in "Digital input 1" display:
   – "Start"

7.6 Startup

Prior to startup, you must set the precharge pressure of the diaphragm tank to 70 % of the setpoint set in the Grundfos GO display "Setpoint".

8. CU 300 with sensors

8.1 General

CU 300 can be used in systems with one to three sensors connected.

Figure 20 shows an example of an installation incorporating sensors.

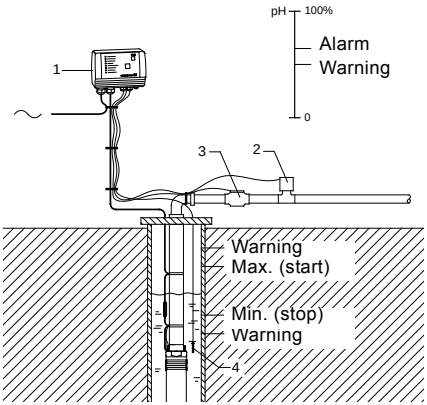


Fig. 20

Pos.	Description
1	CU 300
2	pH sensor Detects the water quality.
3	Pulse flow meter Detects the water quantity.
4	Level sensor

You can set the alarm, warning and stop limits individually for all sensors connected. The limit settings do not influence each other, and each setting offers its own functioning.

Figure 21 shows a schematic presentation of the setting of maximum and minimum limits for alarm, warning and stop respectively.

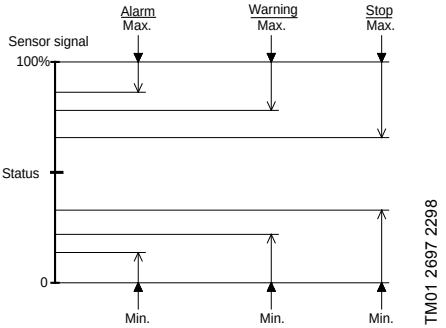


Fig. 21

You must only set the limits applying to the selected sensor.

These settings are made in the displays *15.2.4 Analog inputs* and *15.2.5 Limits, sensor 1 and 2* to *15.2.5 Limits, sensor 1 and 2*.

8.2 Sensor functioning

8.2.1 Alarm limits

When an alarm limit is exceeded, the following takes place:

1. The pump is stopped.
2. The alarm signal relay operates.
3. The "Sensor alarm" indicator light on CU 300 is on.
4. The alarm appears in the Grundfos GO display "Alarms and warnings".

If the pump has stopped already or if the alarm signal relay has operated, this condition is maintained.

8.2.2 Warning limits

When a warning limit is exceeded, the following takes place:

1. The alarm signal relay operates.
2. Pump operation is continued. No "Sensor alarm" indication.
3. The warning appears in the Grundfos GO display "Alarms and warnings".

8.2.3 Start and stop limits

Start and stop limits must be used in connection with the emptying and filling of e.g. water tanks.

The start and stop function depends on the application, i.e. emptying or filling.

- Emptying means that the pump must start at a given maximum water level and stop at a given minimum water level. See fig. 22.

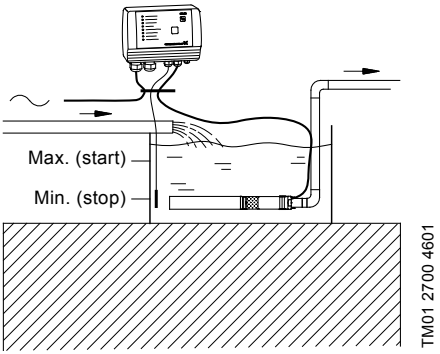


Fig. 22

- Filling means that the pump must start at a given minimum water level and stop at a given maximum water level. See fig. 23.

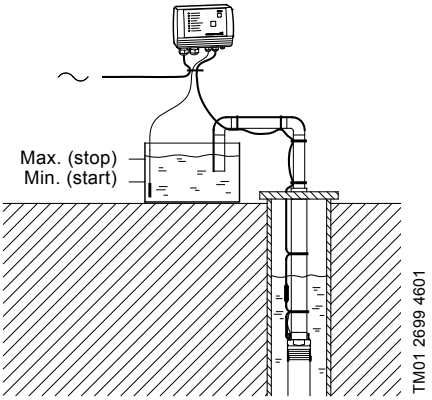


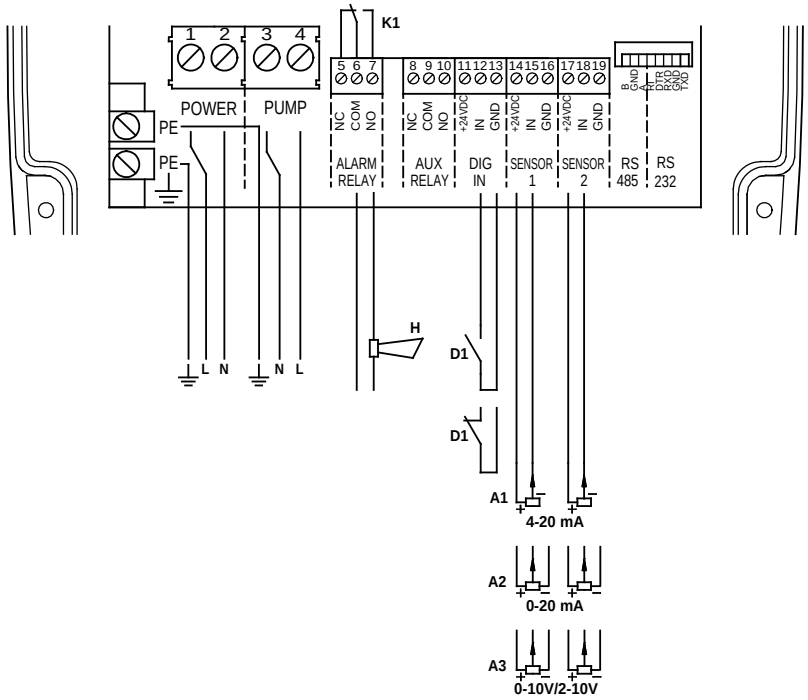
Fig. 23

8.3 Electrical installation

Warning

Never make any connections in the CU 300 unit unless the power supply has been switched off. CU 300 must be connected in accordance with the rules and standards in force for the application in question.

The supply voltage and frequency are marked on the nameplate. Make sure that CU 300 is suitable for the power supply on which it will be used.



TM01 3088 2500

Fig. 24

Pos.	Description
A1	Analog sensor, output signal 4-20 mA
A2	Analog sensor, output signal 0-20 mA
A3	Analog sensor, output signal 0-10/2-10 V
D1	Digital sensor, NO (normally open)
D1	Digital sensor, NC (normally closed)
H	Alarm signal transmitter (optional)
K1	Internal alarm signal relay Relay data: 250 VAC, 1 A, AC1

8.3.1 Mains supply

POWER, terminals 1, 2 and PE

Connect terminals 1 and 2 to the phase and neutral leads of the mains supply. You can connect each terminal to any of the two leads.

Connect the PE terminal to the green/yellow earth lead. You must connect each PE terminal to an earth lead of its own.

Maximum cross-section of the leads to be connected is 6 mm^2.

Backup fuse: Maximum 16 A.

Note You must not connect the leads of the mains supply to terminals 3 and 4.

8.3.2 Pump supply

PUMP, terminals 3, 4 and PE

Connect terminals 3 and 4 to the phase and neutral leads of the pump. You can connect each terminal to any of the two leads.

Connect the PE terminal to the green/yellow earth lead. You must connect each PE terminal to an earth lead of its own.

Maximum cross-section of the leads to be connected is 6 mm^2.

8.3.3 Alarm signal relay

ALARM RELAY, terminals 5, 6 and 7

Connect terminals 5, 6 and 7 to the internal alarm signal relay as follows:

- Terminal 5 NC (normally closed).
- Terminal 6 COM (common).
- Terminal 7 NO (normally open).

The relay operates when the alarm and warning limits are exceeded.

You can select manual or automatic restarting in the Grundfos GO display "Automatic restarting".

Manual restarting is carried out by means of the On/Off button on CU 300.

8.3.4 Sensors

SENSOR 1 and SENSOR 2, terminals 14, 15, 16, 17, 18 and 19:

Terminals 14, 15 and 16 (SENSOR 1) and terminals 17, 18 and 19 (SENSOR 2) are used for external sensors, e.g. a pressure gauge, a flow meter or another type of sensor.

You set the limits for the signal from an external sensor in the Grundfos GO in the "Analog input 1" and "Analog input 2" displays.

You can use the signal to do the following:

- To start and stop the motor.
- To operate the alarm signal relay, without stopping the motor.

The sensors must give signals within the ranges 0-20 or 4-20 mA, 0-10 or 2-10 VDC. Changeover between current and voltage signals is carried out by means of the Grundfos GO.

The total load of terminals 11, 14 and 17 (+24 VDC) must not exceed 100 mA.

8.3.5 Required Grundfos GO settings

You must make the following Grundfos GO settings:

1. Set "Analog input 1".
   – sensor output signal (4-20 mA)
   – setting range unit (m)
   – setting range - head min.: 0.0
   max.: 50.
2. Set "Analog input 2" to "Not active".
3. Set the minimum stop value for sensor 1 in display "Min. stop value, sensor 1".
4. Set the maximum stop value for sensor 1 in display "Max. stop value, sensor 1".
5. Set the "Warning limits" and "Alarm limits" for sensor 1 in display "Limits, sensor 1".
6. Set the desired stop type in display "Stop type, sensor 1:
   Example:
   – "Fill".

9. CU 300 connected to potentiometer

9.1 Description

Using an external potentiometer enables:

- Manual control of the motor speed, and thereby of pump performance.

Manual starting/stopping of the pump.

Note To stop the pump, turn the potentiometer (SPP 1) to "STOP".

Figure 25 shows an example of an installation with a potentiometer.

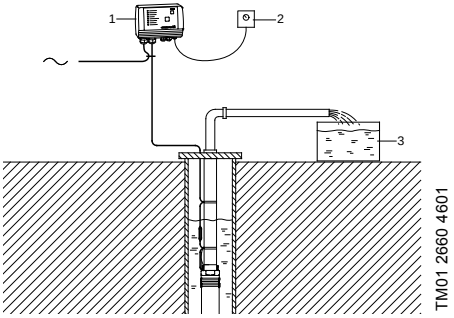


Fig. 25

Pos.	Description
1	CU 300
2	External Grundfos potentiometer, SPP 1 The required flow is obtained by changing the motor speed manually using the external potentiometer.
3	Water tank

9.2 Electrical installation

Warning

Never make any connections in the CU 300 unit unless the power supply has been switched off. CU 300 must be connected in accordance with the rules and standards in force for the application in question.

The supply voltage and frequency are marked on the nameplate. Make sure that CU 300 is suitable for the power supply on which it will be used.

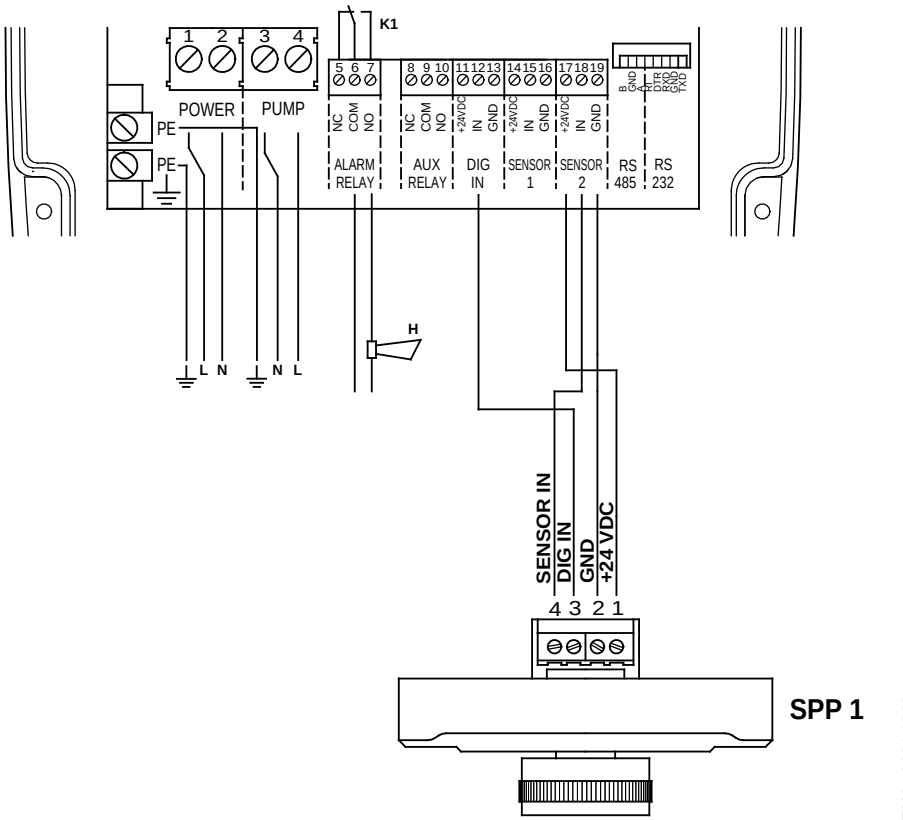


Fig. 26

Pos.	Description
K1	Internal alarm signal relay Relay data: 250 VAC, 1 A, AC1
H	Alarm signal transmitter (optional)
SPP 1	External Grundfos potentiometer, SPP 1

9.2.1 Mains supply

POWER, terminals 1, 2 and PE

Connect terminals 1 and 2 to the phase and neutral leads of the mains supply. You can connect each terminal to any of the two leads.

Connect the PE terminal to the green/yellow earth lead. You must connect each PE terminal to an earth lead of its own.

Maximum cross-section of the leads to be connected is 6 mm^2.

Backup fuse: Maximum 16 A.

Note

You must not connect the leads of the mains supply to terminals 3 and 4.

9.2.2 Pump supply

PUMP, terminals 3, 4 and PE

Connect terminals 3 and 4 to the phase and neutral leads of the pump. You can connect each terminal to any of the two leads.

Connect the PE terminal to the green/yellow earth lead. You must connect each PE terminal to an earth lead of its own.

Maximum cross-section of the leads to be connected is 6 mm^2.

9.2.3 Alarm signal relay

ALARM RELAY, terminals 5, 6 and 7

Connect terminals 5, 6 and 7 to the internal alarm signal relay as follows:

- Terminal 5 NC (normally closed).
- Terminal 6 COM (common).
- Terminal 7 NO (normally open).

The relay operates when the alarm and warning limits are exceeded.

You can select manual or automatic restarting in the Grundfos GO display "Automatic restarting".

Manual restarting is carried out by means of the On/Off button on CU 300.

9.2.4 Potentiometer SPP 1

Connections between the SPP 1 and CU 300:

SPP 1	CU 300
1	17 (SENSOR 2 +24 VDC)
2	19 (SENSOR 2 GND)
3	12 (DIG IN)
4	18 (SENSOR 2 IN)

9.2.5 Required Grundfos GO settings

You must make the following Grundfos GO settings:

1. In display "Control mode" select "Open loop".
2. Set the external setpoint to "SPP 1", enabling speed control using the SPP 1. "Analog input 2" is set to "SPP 1".
3. Set "Digital input 1" to "Start"

10. CU 300 connected to water meter

10.1 Description

Using a water meter (pulse flow meter) enables:

- Monitoring of the flow.
- Stop of pump after a given quantity of water has been pumped.
- Indication of accumulated flow and the energy consumption required to pump 1 m^3.

Figure 27 shows an example of an irrigation system incorporating a water meter.

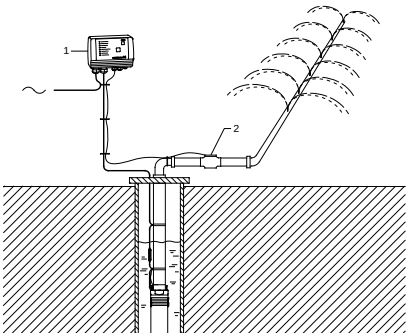


Fig. 27

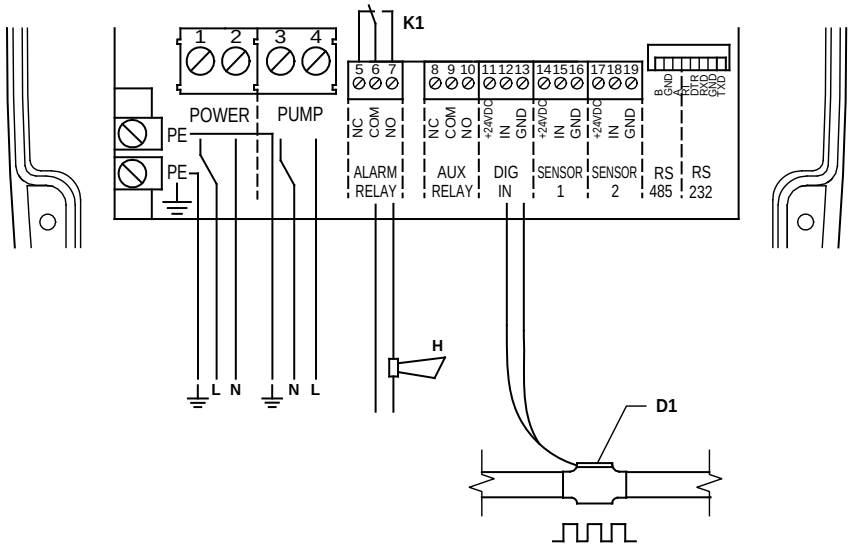
Pos.	Description
1	CU 300
2	Water meter (pulse flow meter)

10.2 Electrical installation

Warning

Never make any connections in the CU 300 unit unless the power supply has been switched off. CU 300 must be connected in accordance with the rules and standards in force for the application in question.

The supply voltage and frequency are marked on the nameplate. Make sure that CU 300 is suitable for the power supply on which it will be used.



TM01 6223 1899

Fig. 28

Pos.	Description
D1	Water meter (pulse flow meter)
H	Alarm signal transmitter (optional)
K1	Internal alarm signal relay Relay data: 250 VAC, 1 A, AC1

10.2.1 Mains supply

POWER, terminals 1, 2 and PE

Connect terminals 1 and 2 to the phase and neutral leads of the mains supply. You can connect each terminal to any of the two leads.

Connect the PE terminal to the green/yellow earth lead. You must connect each PE terminal to an earth lead of its own.

Maximum cross-section of the leads to be connected is 6 mm^2.

Backup fuse: Maximum 16 A.

Note

You must not connect the leads of the mains supply to terminals 3 and 4.

10.2.2 Pump supply

PUMP, terminals 3, 4 and PE

Connect terminals 3 and 4 to the phase and neutral leads of the pump. You can connect each terminal to any of the two leads.

Connect the PE terminal to the green/yellow earth lead. You must connect each PE terminal to an earth lead of its own.

Maximum cross-section of the leads to be connected is 6 mm^2.

10.2.3 Alarm signal relay

ALARM RELAY, terminals 5, 6 and 7

Connect terminals 5, 6 and 7 to the internal alarm signal relay as follows:

- Terminal 5 NC (normally closed).
- Terminal 6 COM (common).
- Terminal 7 NO (normally open).

The relay operates when the alarm and warning limits are exceeded.

You can select manual or automatic restarting in the Grundfos GO display "Automatic restarting".

Manual restarting is carried out by means of the On/Off button on CU 300.

10.2.4 Water meter (pulse flow meter)

DIG IN, terminals 12 and 13

Connect terminals 12 and 13 to the water meter:

- Terminal 12 IN (signal input).
- Terminal 13 GND (earth).

10.2.5 Required Grundfos GO settings

You must make the following Grundfos GO settings:

1. Set "Digital input 1".
   – Function: "Pulse-flow meas."
2. Set "Flow per pulse":
   Example**:** "10 l/pulse".

When you have set a value in this display, the actual flow will appear in status display "Digital input".

You must only set a value in the display "Stop limit, accum. flow" if stop of pump after a given quantity of water has been pumped is required.

Example:

- Stop limit, accum. flow: "7.5 m^3".
- Sensor, accum. flow stop: "Digital input".

When you have set a value in this display, the "Accumulated flow" and "Energy per m^3" will appear in the status displays "Accumulated flow" and "Specific energy".

11. Constant water level

11.1 Description

The water level can be kept constant by connecting an analog level sensor.

Figure 29 shows an example of an installation designed for maintaining a constant water level in the borehole.

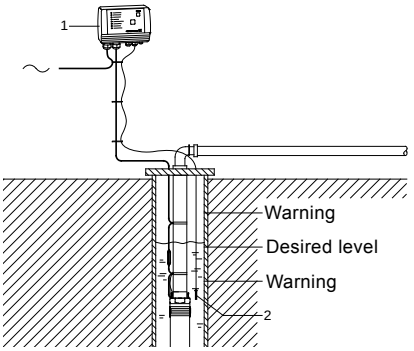


Fig. 29

Pos.	Description
1	CU 300
2	Level sensor

11.2 Function

CU 300 controls the pump speed and consequently adjusts the pump performance to the borehole yield.

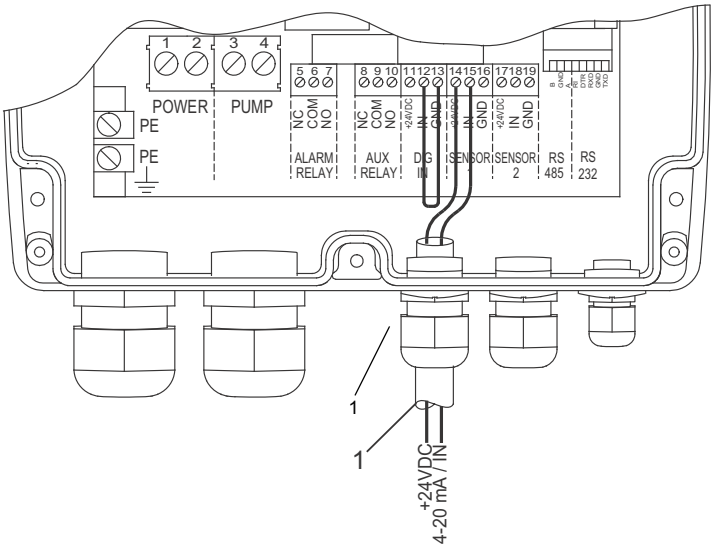
1. When the water level is much higher than the desired level (setpoint), the pump is running at maximum performance.
2. When the level is coming closer to the desired level, the pump performance will be reduced.
3. When the desired level is reached, the pump speed will be so low that the pump performance is zero. After further 60 seconds, the pump will stop.

11.3 Electrical installation

Warning

Never make any connections in the CU 300 unit unless the power supply has been switched off. CU 300 must be connected in accordance with the rules and standards in force for the application in question.

The supply voltage and frequency are marked on the nameplate. Make sure that CU 300 is suitable for the power supply on which it will be used.



TM01 6213 2400

Fig. 30

Pos.	Description
1	Connection of level sensor: • Terminal 14, 24 VDC supply • Terminal 15, signal input

11.3.1 Mains supply

POWER, terminals 1, 2 and PE

Connect terminals 1 and 2 to the phase and neutral leads of the mains supply. You can connect each terminal to any of the two leads.

Connect the PE terminal to the green/yellow earth lead. You must connect each PE terminal to an earth lead of its own.

Maximum cross-section of the leads to be connected is 6 mm^2.

Backup fuse: Maximum 16 A.

Note

You must not connect the leads of the mains supply to terminals 3 and 4.

11.3.2 Pump supply

PUMP, terminals 3, 4 and PE

Connect terminals 3 and 4 to the phase and neutral leads of the pump. You can connect each terminal to any of the two leads.

Connect the PE terminal to the green/yellow earth lead. You must connect each PE terminal to an earth lead of its own.

Maximum cross-section of the leads to be connected is 6 mm^2.

11.3.3 Alarm signal relay

ALARM RELAY, terminals 5, 6 and 7

Connect terminals 5, 6 and 7 to the internal alarm signal relay as follows:

- Terminal 5 NC (normally closed).
- Terminal 6 COM (common).
- Terminal 7 NO (normally open).

The relay operates when the alarm and warning limits are exceeded. See section *15.2.5 Limits, sensor 1 and 2*.

11.3.4 Digital input

Connect terminals 12 and 13 with a short piece of wire to create a short circuit between them.

11.3.5 Level sensor

Connect terminals 14 and 15 to the level sensor:

- Terminal 14, 24 VDC (voltage supply).
- Terminal 15, IN (signal input).

11.3.6 Required Grundfos GO settings

You must make the following Grundfos GO settings:

1. In display "Control mode" select "Closed loop".
2. Set "Analog input 1".
   Example:
   – sensor output signal (4-20 mA),
   – setting range unit (m)
   – setting range - head
   Min.: 0.0
   Max.: 60.
   Set the stop type.
   – Sensor 1: "Empty".
3. Set the "Setpoint" e.g. desired water level (m).
   Example: 55 m.
   – Rule: The maximum setting of the setpoint corresponds to the maximum value set in display "Analog input 1" less 5 m.
   In this case, 60 less 5 = 55 m.
   The water level can be kept within a tolerance of ± 1 % of the setting range.
4. Set "Digital input 1".
   – "Start".

12. CU 300 connected to RS-485

12.1 Description

Using the RS-485 input enables:

- communication via Grundfos fieldbus GENIbus
- connection to the Grundfos Remote Management (CIU 270) gateway for communication over long distances.

12.2 CU 300 connected to a PC directly

Figure 31 shows an example of an installation which is connected to a PC directly via the PC Tool link and GENIbus.

The installation shown in the example enables configuration, fault finding and servicing of the installation by means of a PC with a PC Tool CU 300 software. See fig. 31.

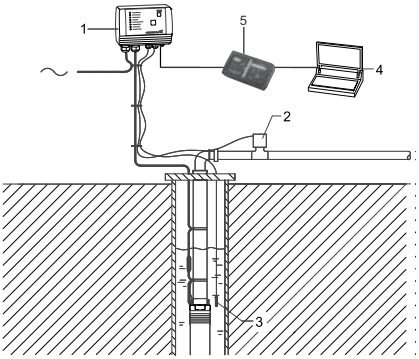


Fig. 31

Pos.	Description
1	CU 300
2	E.g. a pH sensor for monitoring of water quality
3	Level sensor
4	PC
5	PC Tool Link

CU 300 connected to GENIbus network:

Figure 32 shows an example of an installation connected to a GENIbus network with two CU 300 installations via the RS-485 input. The GENIbus network is connected to Grundfos Remote Management (CIU 270) through a PC with internet access.

The installation shown in the example enables configuration, fault finding, servicing, data logging of the connected installations over long distances. See fig. 32.

You can connect and communicate with up to 32 GENIbus units on one network.

The units can be:

- CU 300 units only
- CU 300 units in combination with other Grundfos products with GENIbus connection.

Contact Grundfos for further details.

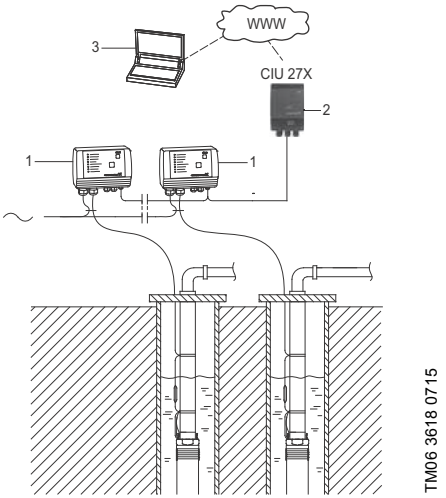


Fig. 32

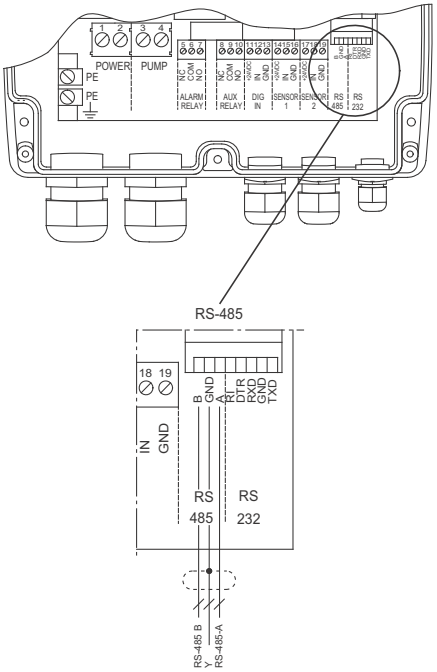
Pos.	Description
1	CU 300
2	CIU 270
3	PC

12.3 Electrical installation

Warning

Never make any connections in the CU 300 unit unless the power supply has been switched off. CU 300 must be connected in accordance with the rules and standards in force for the application in question.

The supply voltage and frequency are marked on the nameplate. Make sure that CU 300 is suitable for the power supply on which it will be used.



TM06 3600 0615

Fig. 33

Pos.	Description
RS-485	Connection of RS-485, GENIbus

12.3.1 Mains supply

POWER, terminals 1, 2 and PE

Connect terminals 1 and 2 to the phase and neutral leads of the mains supply. You can connect each terminal to any of the two leads.

Connect the PE terminal to the green/yellow earth lead. You must connect each PE terminal to an earth lead of its own.

Maximum cross-section of the leads to be connected is 6 mm^2.

Backup fuse: Maximum 16 A.

Note You must not connect the leads of the mains supply to terminals 3 and 4.

12.3.2 Pump supply

PUMP, terminals 3, 4 and PE

Connect terminals 3 and 4 to the phase and neutral leads of the pump. You can connect each terminal to any of the two leads.

Connect the PE terminal to the green/yellow earth lead. You must connect each PE terminal to an earth lead of its own.

Maximum cross-section of the leads to be connected is 6 mm^2.

12.3.3 Alarm signal relay

ALARM RELAY, terminals 5, 6 and 7

Connect terminals 5, 6 and 7 to the internal alarm signal relay as follows:

- Terminal 5 NC (normally closed).
- Terminal 6 COM (common).
- Terminal 7 NO (normally open).

The relay operates when the alarm and warning limits are exceeded.

You can select manual or automatic restarting in the Grundfos GO display "Automatic restarting".

Manual restarting is carried out by means of the On/Off button on CU 300.

12.3.4 RS-485 input

The RS-485 input, terminals A, Y (GND) and B, is for external bus communication.

The communication is effected according to the Grundfos bus protocol, GENIbus, and is two-way communication.

CU 300 can communicate with a PC with the PC Tool CU 300 installed.

You need a PC Tool link adapter to communicate with a PC. Connect the adaptor to CU 300, terminals A, Y (GND) and B, for direct communication with a PC on a GENIbus network.

The PC Tool CU 300 enables configuration, monitoring and fault finding of the actual installation.

The RS-485 input is a low-voltage circuit. Therefore, you must separate all connections to terminals A, Y (GND) and B from network circuits by means of double or reinforced insulation.

A screened, twisted-pair cable is required. The maximum cable length is 1200 m.

13. Alarm functions

13.1 No contact

The connection and/or communication between CU 300 and the motor is not established.

"No contact" is permanently on. See fig. 34.

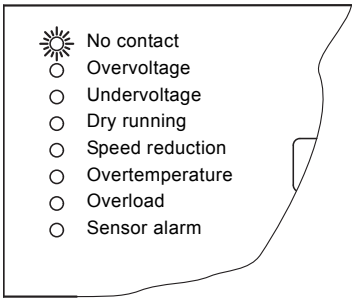


Fig. 34

Possible cause	Remedy
Motor is not an MSE 3 motor.	Install an MSE 3 motor.
Motor is not connected.	Check connections.
Cable breakage.	Check cable.
Poor or no connection.	Check connections.
The cable length exceeds 200 m.	Reduce cable length.
CU 300 is defective.	Replace CU 300.
The motor is defective.	Replace motor.

Important:

The alarm indication "No contact" will also appear if the pump and CU 300 do not have the same number (allocated by the Grundfos GO). The problem may occur e.g. in connection with replacing a motor or a CU 300.

Solution:

The pump and CU 300 must be allocated the same number via the Grundfos GO display "Number".

The alarm "No contact" makes the On/Off button on CU 300 inactive, and actual operating parameters cannot be called up. However, installation parameters can be called up.

"No contact" does not cause a pump stop.

13.2 Overvoltage

The supply voltage to the motor exceeds the maximum value allowed.

For more information about factory settings, see section *16. Technical data*.

The motor is stopped and "Overvoltage" is permanently on. See fig. 35.

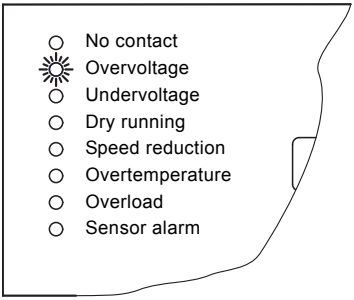


Fig. 35

Possible cause	Remedy
Unstable power supply.	Contact the power supply authorities.
Too high supply voltage.	Contact the power supply authorities. Check installation.
Supply voltage outside voltage range of motor.	Check installation.

Restarting

When the supply voltage lies within the voltage range of the motor, the motor will restart automatically.

13.3 Undervoltage

The supply voltage to the motor is lower than the minimum value allowed.

For more information about the factory setting, see section *16. Technical data*.

The motor is stopped and "Undervoltage" is permanently on. See fig. 36.

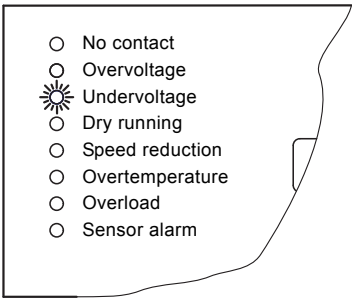


Fig. 36

Possible cause	Remedy
Unstable power supply.	Contact the power supply authorities.
Supply voltage outside voltage range of motor.	Check installation.
Voltage drop in mains is too big.	Increase wire cross-section.

Restarting

When the supply voltage lies within the voltage range of the motor, the motor will restart automatically.

13.4 Dry running

The purpose of the dry-running protection is to protect the pump in case of insufficient water flow.

The dry-running protection makes the conventional dry-running protection unnecessary.

No additional cables to the motor are required.

The dry-running alarm is activated when the load has been below the dry-running power limit for an accumulated time of 5 seconds.

The motor is stopped and "Dry running" is permanently on. See fig. 37.

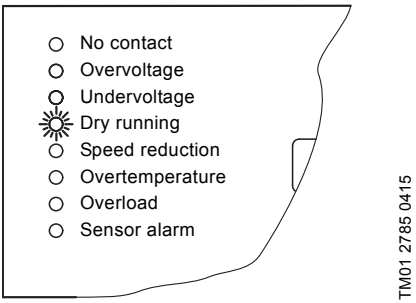


Fig. 37

Possible cause	Remedy
The pump performance is too high compared to the borehole yield.	Replace pump with a smaller one.
	Reduce pump performance using the Grundfos GO display "Maximum speed".
Borehole filter is blocked.	Borehole service is required.

Restarting

After 5 minutes (factory setting), or the period set by means of the Grundfos GO display "Automatic restarting", the motor will restart automatically.

13.5 Speed reduction

At a moderate undervoltage or overload of the motor, the speed is reduced, but the motor is not stopped. The speed reduction indicator light is on, and at the same time the undervoltage or overload light is on.

"Speed reduction" and "Undervoltage" or "Overload" are permanently on.

In fig. 38, the "Speed reduction" alarm was caused by undervoltage.

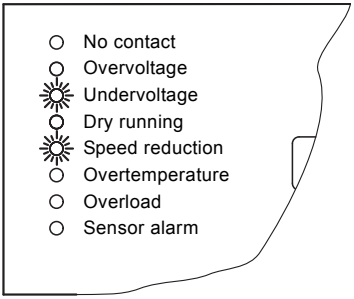


Fig. 38

Possible cause	Remedy
Pump is worn, causing overload.	Pump must be serviced.
Wrong combination of pump and motor, causing overload.	Replace pump or motor.
Unstable power supply, causing undervoltage.	Contact the power supply authorities.
Too big voltage drop over the cable, causing undervoltage.	Size cable to avoid too big voltage drop.

Speed resuming

When the supply voltage lies within the voltage range of the motor again and the cause of the overload has disappeared, the motor resumes normal speed.

13.6 Overtemperature

The motor temperature is monitored continuously during operation.

The motor is factory-set to a maximum value. See section *16. Technical data*.

The motor temperature has exceeded the maximum temperature limit. If the temperature is too high, there is a risk that the motor electronics will be damaged.

The motor is stopped and "Overtemperature" is permanently on. See fig. 39.

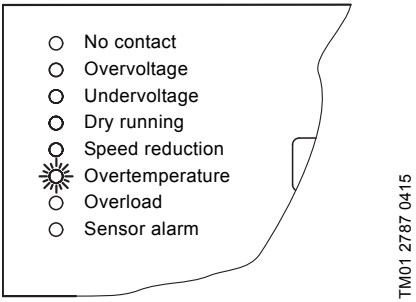


Fig. 39

A too high operating temperature may indicate that the installation needs service.

Possible cause	Remedy
Insufficient cooling or flow velocity along motor.	Take out pump and install flow sleeve.
Insufficient cooling due to incrustation of the motor.	Clean motor. Install flow sleeve.

Restarting

When the motor electronics has cooled sufficiently, the motor will restart automatically. See section *16. Technical data*.

13.7 Overload

The motor is overloaded, i.e. the current consumption of the motor exceeds the limit value.

For more information about the factory setting, see section *16. Technical data*.

The motor is stopped and "Overload" is permanently on. See fig. 40.

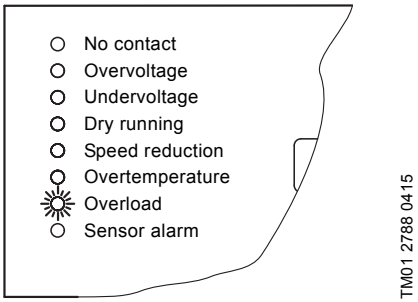


Fig. 40

Possible cause	Remedy
Pump is defective.	Pump must be serviced.
Sand or gravel in pump.	Pump must be serviced.
Wrong combination of pump and motor.	Replace pump or motor.

Restarting:

After 5 minutes (factory setting), or the period set by means of the Grundfos GO display "Automatic restarting", the motor will restart automatically.

13.8 Sensor alarm

The sensor alarm is activated in two incidents:

- If a connected sensor has detected that an alarm limit has been exceeded.
- If the sensor signal has fallen outside the measuring range set.

The motor is stopped and the "Sensor alarm" is permanently on. See fig. 41.

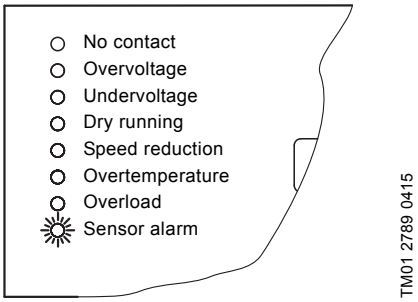


Fig. 41

Restarting

After 5 minutes (factory setting), or the period set by means of the Grundfos GO display "Automatic restarting", the motor will restart automatically.

14. CU 300 with Grundfos GO

The remote control Grundfos GO is used for wireless infra-red communication with CU 300. During communication, there must be visual contact between CU 300 and the Grundfos GO. See fig. 42.

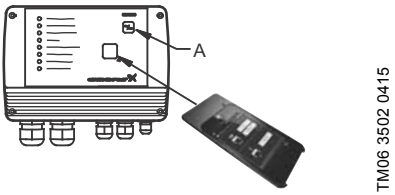


Fig. 42 CU 300 communicating with Grundfos GO

The Grundfos GO offers possibilities of setting and status displays for CU 300.

When the communication between the Grundfos GO and CU 300 has been established, the red indicator light (A) in the On/Off button will flash.

For general use of the Grundfos GO, see the operating instructions for this unit.

The menu structure for the Grundfos GO and CU 300 is divided into three main menus, each containing a number of displays.

- Status
- Settings
- Alarms and warnings

See *14.1 Menu overview* on page 38.

14.1 Menu overview

Status	Section	Page
External setpoint	*15.1.1 External setpoint*	40
Controlled from	*15.1.2 Controlled from*	40
Value, sensor 1	*15.1.3 Value, sensor 1 and 2*	40
Value, sensor 2		
Motor temperature	*15.1.4 Motor temperature*	40
Motor speed	*15.1.5 Motor speed*	40
Digital input	*15.1.6 Digital input*	40
Specific energy	*15.1.7 Specific energy*	40
Accumulated flow	*15.1.8 Accumulated flow*	40
Power consumption	*15.1.9 Power consumption*	40
Energy consumption	*15.1.10 Energy consumption*	40
Operating hours	*15.1.11 Operating hours*	40
Number of starts	*15.1.12 Number of starts*	40

Settings	Section	Page
Operating mode	*15.2.1 Operating mode*	40
Control mode	*15.2.2 Control mode*	40
Setpoint	*15.2.3 Setpoint*	41
Analog input 1	*15.2.4 Analog inputs*	41
Analog input 2		
Limits, sensor 1	*15.2.5 Limits, sensor 1 and 2*	41
Min. stop value, sensor 1	*15.2.6 Min. stop value, sensor 1 and 2*	41
Max. stop value, sensor 1	*15.2.7 Max. stop value, sensor 1 and 2*	41
Limits, sensor 2	*15.2.5 Limits, sensor 1 and 2*	41
Min. stop value, sensor 2	*15.2.6 Min. stop value, sensor 1 and 2*	41
Max. stop value, sensor 2	*15.2.7 Max. stop value, sensor 1 and 2*	41
External setpoint	*15.2.8 External setpoint*	41
Warning temperature	*15.2.9 Warning, temperature*	42
Digital input 1	*15.2.10 Digital input*	42
Flow per pulse	*15.2.11 Flow per pulse*	42
Stop limit, accum. flow	*15.2.12 Stop limit, accumulated flow*	42
Sensor, accum. flow stop	*15.2.13 Sensor, accumulated flow stop*	42
Stop type, sensor 1	*15.2.14 Stop type, sensor 1 and 2*	42
Stop type, sensor 2		
Automatic restarting	*15.2.15 Automatic restarting*	42
Double restarting time	*15.2.16 Double restarting time*	42
Start delay	*15.2.17 Start delay*	43
Dewatering	*15.2.18 Dewatering*	43
Dewatering max. on time	*15.2.19 Dewatering, maximum "On" and "Off" time*	43
Dewatering max. off time		

Continues on page 39.

Continued from page 38.

Settings	Section	Page
Dry-running protection	*15.2.20 Dry-running protection*	43
Dry-running stop	*15.2.21 Dry-running stop*	43
Maximum speed	*15.2.22 Maximum speed*	43
Buttons on product	*15.2.23 Buttons on product*	44
Number	*15.2.24 Number*	44
Store settings	*15.2.25 Store settings*	44
Recall settings	*15.2.26 Recall settings*	44
Undo	*15.2.27 Undo*	44
Unit configuration	*15.2.28 Unit configuration*	44

Alarms and warnings	Section	Page
Alarm log	*15.3.1 Alarm and warning logs*	45
Warning log		

15. Description of functions

15.1 Status

The "Status" menu for CU 300 offers the possibility of reading operating parameters.

15.1.1 External setpoint

You can read the value of the external setpoint in this display.

15.1.2 Controlled from

This display shows the control source:

- CU 300
- external.

15.1.3 Value, sensor 1 and 2

You can read the values measured by sensor 1 and 2 in these displays.

15.1.4 Motor temperature

The actual temperature of the motor electronics stated in "° C" or "° F".

Tolerance: ± 5 %.

Relation to other displays:

To select "° F", choose this in display *15.2.28 Unit configuration*.

15.1.5 Motor speed

The actual speed stated in min^{-1} (rpm).

Tolerance: ± 1 %.

15.1.6 Digital input

You can read the value measured by the digital input in this display. For instance, the actual flow is shown if the digital input has been connected to a pulse flowmeter and is setup to monitor the flow.

15.1.7 Specific energy

You can read the specific energy in this display.

15.1.8 Accumulated flow

You can read the pumped water quantity in this display.

15.1.9 Power consumption

You can read the actual power consumption in this display.

15.1.10 Energy consumption

You can read the total energy consumption in this display.

15.1.11 Operating hours

The value of operating hours is accumulated from the pump's birth and it cannot be reset.

The value is stored in the motor electronics, and it is kept even if CU 300 is replaced.

The value is updated in the software every 2 minutes of continuous operation. The displayed value is updated every two hours.

15.1.12 Number of starts

The value of number of starts is accumulated from the pump's birth and it cannot be reset.

The value is stored in the motor electronics, and it is kept even if CU 300 is replaced.

15.2 Settings

The "Settings" menu for CU 300 offers the possibility of setting operating parameters.

15.2.1 Operating mode

Select one of the following operating modes:

- *Max*.
  Pump operation is set to maximum speed, irrespective of setpoint. The maximum speed is set in display *15.2.22 Maximum speed* (default: 10,700 min^{-1}).
- *Normal*.
  Normal operating mode, i.e. pump operation is based on the setpoint set in display *15.2.3 Setpoint*.
  Examples: Speed set in display *15.2.3 Setpoint* or sensor control.
- *Min*.
  Pump operation is set to minimum speed, 3000 min^{-1}, irrespective of setpoint.
- *Stop*.
  The pump is stopped.

Factory setting

"Stop".

15.2.2 Control mode

The following settings are available:

- *Open loop*.
  The speed is set to normal operation based on the setpoint set in display *15.2.3 Setpoint* (e.g. 10,700 min^{-1}) or controlled by means of a signal connected to analog input 2.
  See section *9. CU 300 connected to potentiometer*.
- *Closed loop*.
  Controlling according to sensor 1 (type and unit).
  Example: Constant-pressure control.
  See section *6. CU 300 with constant-pressure control - 0 to 10 bar*.

Relation to other displays:

The unit (min^{-1}) of display *15.2.3 Setpoint* is changed according to the unit of the sensor installed.

Factory setting

"Open loop"

15.2.3 Setpoint

Setting range: *3000-10,700 min^{-1}* (100 min^{-1} intervals).

Dry-running protection

If you use "Setpoint" to reduce the speed, the dry-running protection will apply only in the "maximum speed" range, i.e. maximum speed less than 1000 min^{-1}. See section *4.3.1 Function*.

Relation to other displays

The setting in display *15.2.3 Setpoint* is overridden by the "Max." and "Min." settings in display *15.2.1 Operating mode*.

If you select "Closed loop" in display *15.2.2 Control mode*, the setpoint is set within the setting range of the installed sensor.
Example: If the analog input 1 is connected to a pressure sensor using the unit metre (m) and the measuring range (0-60), you can set the setpoint between 0 and 55 m in display *15.2.3 Setpoint*.

Factory setting

"10,700 min^{-1}"

15.2.4 Analog inputs

Make the following settings according to sensor type:

- Sensor output signal: **"-"** (not active), *0-20 mA, 4-20 mA, 0-10 V, 2-10 V.*
- Setting range unit: m^3/h, m, %, GPM, ft.

Setting range:

- Minimum value: 0-249 (0, 1, 2, ...249).
- Maximum value: 1-250 (1, 2, ...250).

Factory setting

Sensor output signal: "Not active"

Setting range unit: "m".

15.2.5 Limits, sensor 1 and 2

In these displays, you can set the warning and alarm limits for sensor 1 and 2.

15.2.6 Min. stop value, sensor 1 and 2

In these displays, you can set the minimum value at which the pump must stop for sensor 1 and 2.

15.2.7 Max. stop value, sensor 1 and 2

In these displays, you can set the maximum value at which the pump must stop for sensor 1 and 2.

15.2.8 External setpoint

Set the pump performance control by means of an external signal.

To be used in the following two situations:

- For installations including a potentiometer.
- In large SCADA systems.
  In SCADA systems, this function makes it possible to control pump performance via remote controlling (e.g. via a PC).

The following settings are available:

- SPP 1.
  Grundfos potentiometer.
  See section *2.1 Expansion possibilities*.
- 4-20 mA.
- 0-20 mA.
- 2-10 V.
- 0-10 V.
- "Not active"
  No external setpoint setting made.

Description

By connecting a current or voltage signal to analog input 2, you can control the motor speed between the setpoint set in display *15.2.3 Setpoint* and the lowest speed of 3000 min^{-1}.

If the setpoint is set to 10,700 min^{-1} in display*15.2.3 Setpoint*, the motor speed can be changed between 3000 and 10,700 min^{-1}.

The actual setpoint is calculated by CU 300 and shown in display *15.2.3 Setpoint*.

If an SPP 1 potentiometer is connected, the internal voltage supply of CU 300 is used to generate the signal.

See section *9. CU 300 connected to potentiometer*.

Relation to other displays

If you have set display *15.2.2 Control mode* to "Closed loop" instead of "Open loop" (factory setting), the controlling is based on signals from analog input 1. Therefore, the unit in display *15.2.3 Setpoint* is changed from min^{-1} to the unit of sensor 1 (m^3/h, m, %, GPM, ft).

Factory setting

"Not active".

15.2.9 Warning, temperature

Set the temperature warning limit of the motor.

Setting range: "-" (not active), 2, 4, 6, ...85 °C.

Note

The maximum temperature depends on the motor type.

Set the temperature warning limit between normal operating temperature and maximum temperature.

Relation to other displays

You find the actual operating temperature in display *15.1.4 Motor temperature*.

If the temperature warning limit is exceeded, the alarm signal relay operates.

Advantage

Instead of a sudden stop without a warning, you get the following:

- Information that the motor temperature is rising.
- The possibility of planning service of the installation.

Usage

You can use this function e.g. if the pumped liquid contains a relatively high level of ochre.

Factory setting

"Not active".

15.2.10 Digital input

Select one of the following functions:

- The digital sensor connected to the digital input (flow measuring).
- The external on/off switch for the pump.

The following functions are available:

- *Not active*.
- *Stop*.
  The pump is stopped when a switch connected to terminals 12 and 13 is closed. No l/pulse to be set.
  See section *15.2.10 Digital input*.
- *Start*.
  The pump is started when a switch connected to terminals 12 and 13 is closed. No l/pulse to be set.
  See section *15.2.10 Digital input*.
- *Flow*.
  If you have selected "Flow", the l/pulse value must also be set.
  Setting range: **"-"** (not active), 0.1, 0.2, 0.3,....20, 21, 22, ...100 l/pulse.

Relation to other displays:

The selection of "Flow" in this display makes display *15.2.10 Digital input* available, i.e. status of digital input.

Factory setting

"Not active".

15.2.11 Flow per pulse

In this display the pumped volume per pulse is set.

Setting range: 0.0, 0.1, 0.2, 0.3, ...20, 21, 22, ...100 l/pulse.

For more information, see section *15.2.10 Digital input*.

Factory setting

"0.0 l/pulse"

15.2.12 Stop limit, accumulated flow

In this display, you can set a limit at a specific amount of pumped water where the pump must stop.

Factory setting

"Disabled".

15.2.13 Sensor, accumulated flow stop

In this display, you can select the sensor for monitoring the accumulated flow.

Factory setting

"Disabled".

15.2.14 Stop type, sensor 1 and 2

In these displays, you can set the stop type for sensor 1 and 2. For further information, see *8.2.3 Start and stop limits*.

Factory setting

"Disabled".

15.2.15 Automatic restarting

Set the automatic restart time from stop to restart attempt.

The following settings are available:

- "Enabled"
- "Disabled"
- 0 to 254 minutes.

Factory setting

"5 minutes".

15.2.16 Double restarting time

The following settings are available:

- enabled
- disabled.

When you have selected "Enabled", the restart time set will be doubled automatically for every 10 motor stops caused by an alarm. The time is doubled up to a stop time of 4 hours. After 10 hours of operation without an alarm, the restart time is automatically set to:

- The time set in the "Time" field.
- 5 minutes (factory setting) if no setting was made in the "Time" field.

Relation to other displays:

If you have selected "Double", the dewatering function is disabled.

15.2.17 Start delay

Set a start delay.

This function is used in installations where several pumps are connected to the same pipeline and where it is required that the pumps do not start up at the same time.

The SQE pumps have a built-in soft starter, which takes the starting current into account.

Setting range: *0-60 s*.

Factory setting

"0 s"

15.2.18 Dewatering

For more information about the dewatering function, see *4.5 Description of the dewatering function*.

The following settings are available:

- enabled
- disabled.

Relation to other displays

You can set the pump on and off times in the displays *15.2.19 Dewatering, maximum "On" and "Off" time*.

Factory setting

"Disabled".

15.2.19 Dewatering, maximum "On" and "Off" time

In these displays, you set the maximum "On" and "Off" time for the pump for the dewatering function.

For more information, see section *4.5 Description of the dewatering function*.

Operating indication

The dry-running alarm indication on CU 300 is automatically disabled, when this display setting is made.

When you select the setting "Disabled", the dewatering function is disabled, and the dry-running alarm indication can be activated again.

Relation to other displays:

If you select "Double" in display *15.2.15 Automatic restarting*, the dewatering function is disabled.

Factory setting

"Disabled"

15.2.20 Dry-running protection

The following settings are available:

- enabled
- disabled.

The setting in this display applies to both the dewatering function and the dry-running protection.

In certain installations, it may be necessary to disable the dry-running protection.

For further information, see section *4.3 Description of dry-running protection*.

Factory setting

"Enabled".

15.2.21 Dry-running stop

The dry-running stop value (dry-running power limit) is factory-set.

The value depends on the actual motor.

The factory setting depends on the power rating of the motor. See section *16. Technical data*.

When the dry-running protection or the dewatering function is to be enabled, the minimum value of the pump power input must be set in this display.

For further information, see section *4.5 Description of the dewatering function*.

Setting range: *0-2500 W*.

Relation to other displays

15.2.20 Dry-running protection must be set to "Enabled".

If you have enabled "Double" in display *15.2.16 Double restarting time*, the dewatering function is disabled.

You can read the actual pump power input in display *15.1.9 Power consumption*.

Factory setting

Motor size	Dry-running stop
0.7 kW	300 W
0.7 kW (SQ/SQE 2-55)	550 W
1.15 kW	680 W
1.55 kW	800 W
1.85 kW	900 W

15.2.22 Maximum speed

Set the maximum speed.

Setting range: 3000 - 10,700 min^{-1}.

Factory setting

10,700 min^{-1}.

15.2.23 Buttons on product

In this display, you can disable the On/Off button on the control unit for protective reasons.

You can set the On/Off button to:

- "Active"
- "Not active".

Factory setting

"Active".

15.2.24 Number

Allocate a number to CU 300 and the pump connected. CU 300 and the pump must have the same number.

Note

When allocating a number, the power supply to other CU 300 units, if any, must be switched off.

Setting range: "Not active", 1, 2, ...199.

Once a number setting has been made, the factory setting (not active) is no longer available.

In connection with bus communication, you must allocate a number to CU 300 and the pump.

If CU 300 and the pump do not have the same number, the alarm "No contact" will be indicated.

Factory setting

"Not active".

15.2.25 Store settings

You can store the actual settings for later use in this display.

15.2.26 Recall settings

You can recall the last stored settings that the pump will then use in this display.

15.2.27 Undo

You can undo previously made settings in this display.

15.2.28 Unit configuration

You can select between SI and US units in this display. The setting can be made generally for all parameters or customised for each individual parameter.

15.3 Alarms and warnings

15.3.1 Alarm and warning logs

These displays show the types of warnings and alarms that may have appeared.

Possible warnings and alarms are described in the following table:

Indication	Description
No fault indication	No alarms are registered by CU 300.
No contact to pump	No communication between CU 300 and the pump.
Overvoltage	The supply voltage exceeds the limit value.
Undervoltage	The supply voltage is below the limit value.
Dry running	The dry-running protection of the pump has been activated.
Overtemperature	The motor temperature exceeds the limit value.
Overload	The current consumption of the motor exceeds the limit value.
Alarm, sensor 1	The sensor 1 signal has fallen outside the measuring range set. Note: The sensor number refers to the terminal connection input number.
Alarm, sensor 2	The sensor 2 signal has fallen outside the measuring range set. Note: The sensor number refers to the terminal connection input number.
Sensor 1 defective	The sensor signal of a 4-20 mA or 2-10 V sensor is below 2 mA or 1 V respectively.
Sensor 2 defective	The sensor signal of a 4-20 mA or 2-10 V sensor is below 2 mA or 1 V respectively.
Warning, sensor 1	The sensor 1 warning limit has been exceeded.
Warning, sensor 2	The sensor 2 warning limit has been exceeded.
Warning, temperature	The temperature warning limit has been exceeded.

Relation to other displays:

The setting in display *15.2.3 Setpoint* is overridden by the "Max." and "Min." settings in display *15.2.1 Operating mode*.

If you select "Closed loop" in display *15.2.2 Control mode*, the setpoint is set within the setting range of the installed sensor.
Example: If the analog input 1 is connected to a pressure sensor using the unit metre (m) and the measuring range (0-60), you can set the setpoint between 0 and 55 m in display *15.2.3 Setpoint*.

16. Technical data

Supply voltage

1 x 100-240 V - 10 %/+ 6 %, 50/60 Hz, PE.

Power consumption

5 W.

Backup fuse

Maximum 16 A.

Current consumption

Maximum 130 mA.

Mains borne signalling

Frequency shift keying (FSK).
(132.45 kHz, ± 0.6 kHz).

Enclosure class

IP55.

Maximum difference between CU 300 and pump

200 metres.

Ambient temperature

- During operation: -30 to 50 °C
  (must not be exposed to direct sunlight).
- During storage: -30 to 60 °C.

Weight

2.0 kg.

Relative air humidity

Maximum 95 %.

Materials

The CU 300 box is made of black PPO.

EMC (Electromagnetic compatibility)

See *Declaration of conformity* on page 48.

Dimensional sketch

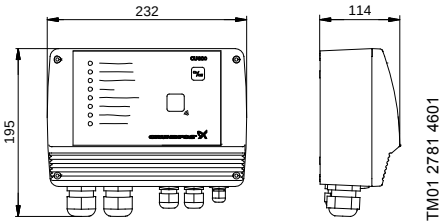


Fig. 43

Inputs/output

Alarm relay	Potential-free changeover contact. Maximum contact load: 250 VAC. Maximum current: 1 A. Minimum contact load: 5 VDC, 10 mA. Specifications: 250 VAC, 8 A, AC1.
Auxiliary relay	Potential-free changeover contact. Maximum contact load: Safety extra-low voltage to be used only. Maximum current: 1 A. Minimum contact load: 5 VDC, 10 mA. Specifications: 250 VAC, 8 A, AC1.
Digital input	External potential-free contact. Logic "0": U_{in} > 3.2 V. Logic "1": U_{in} < 0.9 V.
Sensor 1	Voltage signal: 0-10 VDC/2-10 VDC, R_i = 11 kΩ. Tolerance: at maximum voltage signal. Screened cable is recommended. Maximum cable length: 500 m. Current signal: DC 0-20 mA/4-20 mA, R_i = 500 Ω. Tolerance: ± 3 % at maximum current signal. Screened cable is recommended. Maximum cable length: 500 m.
Sensor 2	Potentiometer SPP 1: 0-24 VDC, 10 kΩ (via internal voltage supply). Screened cable is recommended. Maximum cable length: 100 m. Voltage signal: 0-10 VDC/2-10 VDC, R_i = 11 kΩ. Tolerance: ± 3 % at maximum voltage signal. Screened cable is recommended. Maximum cable length: 500 m. Current signal: DC 0-20 mA/4-20 mA, R_i = 500 Ω. Tolerance: ± 3 % at maximum current signal. Screened cable is recommended. Maximum cable length: 500 m.
RS-485	Grundfos fieldbus, GENIbus. 0.25 - 1 mm^2 screened 2-core cable. Maximum cable length: 1200 m.

Factory settings

Alarm	200-240 V motors				100-115 V motors
	0.7 kW	**1.15 kW**	**1.55 kW**	**1.85 kW**	**0.7 kW**
Overvoltage[1)]	320 VAC	320 VAC	320 VAC	320 VAC	185 VAC
Undervoltage	Speed reduction: 190 V	Speed reduction: 190 V	Speed reduction: 210 V	Speed reduction: 210 V	Speed reduction: 90 V
	Stop limit: 150 V	Stop limit: 150 V	Stop limit: 150 V	Stop limit: 150 V	Stop limit: 75 V
Dry-running stop	300 W 550 W[2)]	680 W	800 W	900 W	300 W
Dry-running protection	"Active" (Grundfos GO setting). See section *15.2.20 Dry-running protection*)				
Speed reduction	In connection with undervoltage or overload				
Electronics temperature	Stop limit: 65 °C	Stop limit: 75 °C	Stop limit: 85 °C	Stop limit: 85 °C	Stop limit: 85 °C
	Restart: 55 °C	Restart: 65 °C	Restart: 75 °C	Restart: 75 °C	Restart: 75 °C
Overload	5.2 A	8.4 A	11 A	12.3 A	12.1 A
Sensor alarm	"No sensor used" (Grundfos GO setting). See section *15.2.4 Analog inputs*)				

1) 200-240 V motors: Operation is guaranteed up to 280 VAC.
100-115 V motors: Operation is guaranteed up to 150 VAC.
In order to avoid unnecessary stops, the overvoltage stop limit is as stated.

2) Applies only to SQ/SQE 2-55.

Accuracy of Grundfos GO readings

Display	Accuracy
External setpoint	± 5 %
Motor temperature	± 5 %
Motor speed	± 1 %
Power input	± 5 %
Power consumption	± 5 %
Energy consumption	± 5 %

Sensors

The sensor signal accuracy depends on the sensor type. See the sensor specifications in question.

17. Disposal

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.

Subject to alterations.

Declaration of conformity

GB: EC/EU declaration of conformity

We, Grundfos, declare under our sole responsibility that the product CU 300, to which the declaration below relates, is in conformity with the Council Directives listed below on the approximation of the laws of the EC/EU member states.

Note: There are two sets of Council Directives and standards listed below. One set applies until and including 19th April 2016. The other set applies from 20th April 2016 and onwards.

These Directives and standards apply until and including 19th April 2016:

– Low Voltage Directive (2006/95/EC).
  Standards used:
  EN 60335-1:2012
– EMC Directive (2004/108/EC).
  Standards used:
  EN 55014-1:2006 + A1:2009 + A2:2011
  EN 55014-2:1997 + A1:2001 + A2:2008

These Directives and standards apply from 20th April 2016 and onwards:

— Low Voltage Directive (2014/35/EU).
  Standards used:
  EN 60335-1:2012
— EMC Directive (2014/30/EU).
  Standards used:
  EN 55014-1:2006 + A1:2009 + A2:2011
  EN 55014-2:1997 + A1:2001 + A2:2008

This EC/EU declaration of conformity is only valid when published as part of the Grundfos installation and operating instructions (publication number 96427972 0915).

Bjerringbro, 15th June 2015

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