LC 241
Single and dual pump unit, North America
Installation and operating instructions
LC 241

English (US)
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Original installation and operating instructions

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1. General information

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

Products manufactured by Grundfos Pumps Corporation (Grundfos) are warranted to the original user only to be free of defects in material and workmanship for a period of 24 months from date of installation, but not more than 30 months from date of manufacture. Grundfos' liability under this warranty shall be limited to repairing or replacing at Grundfos' option, without charge, F.O.B. Grundfos' factory or authorized service station, any product of Grundfos manufacture. Grundfos will not be liable for any costs of removal, installation, transportation, or any other charges that may arise in connection with a warranty claim. Products which are sold, but not manufactured by Grundfos, are subject to the warranty provided by the manufacturer of said products and not by Grundfos' warranty. Grundfos will not be liable for damage or wear to products caused by abnormal operating conditions, accident, abuse, misuse, unauthorized alteration or repair, or if the product was not installed in accordance with Grundfos' printed installation and operating instructions and accepted codes of good practice. The warranty does not cover normal wear and tear. To obtain service under this warranty, the defective product must be returned to the distributor or dealer of Grundfos' products from which it was purchased together with proof of purchase and installation date, failure date and supporting installation data. Unless otherwise provided, the distributor or dealer will contact Grundfos or an authorized service station for instructions. Any defective product to be returned to Grundfos or a service station must be sent freight prepaid; documentation supporting the warranty claim and/or a Return Material Authorization must be included if so instructed. Grundfos will not be liable for any incidental or consequential damages, losses, or expenses arising from installation, use, or any other causes. There are no express or implied warranties, including merchantability or fitness for a particular purpose, which extend beyond those warranties described or referred to above. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages and some jurisdictions do not allow limitations on how long implied warranties may last. Therefore, the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from jurisdiction to jurisdiction. Products which are repaired or replaced by Grundfos or authorized service center under the provisions of these limited warranty terms will continue to be covered by Grundfos warranty only through the remainder of the original warranty period set forth by the original purchase date.

1.2 Hazard statements

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

**DANGER**

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

**WARNING**

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

**CAUTION**

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

The hazard statements are structured in the following way:

**SIGNAL WORD**

Description of the hazard

Consequence of ignoring the warning

- Action to avoid the hazard.

1.3 Notes

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

- **FM**
  
  Observe these instructions for explosion-proof products.

- **!**
  
  A blue or gray circle with a white graphical symbol indicates that an action must be taken.

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

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

- **💡**
  
  Tips and advice that make the work easier.
2. Installing the product

2.1 Location
Install the product in a location that meets the following requirements:
- Place the product in a flood-safe place.
- Make sure that the ambient temperature is within the limits.
- Install the product as close as possible to the connected pumps, sensors, and accessories.
- The product must be easily accessible.
- Outdoor installation: enclosure, type 4X.
- Indoor installation: The product must be installed in a well-ventilated room to ensure cooling of its components.

2.2 Mechanical installation

2.2.1 Installing the control unit
The product is designed to be mounted on a flat and vertical surface. The cable glands must face downwards.

To ensure sufficient ventilation, allow at least 5.9 in (150 mm) of space on either side of the cabinet.

1. Drill holes in the surface. Use the measurements below depending on the type of cabinet.

![Diagram of three phase control box]

Dimensions [mm]

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.26</td>
<td>12 (304.8)</td>
<td>20.1 (510.5)</td>
<td>16.75 (425.45)</td>
<td>8.38 (213)</td>
</tr>
</tbody>
</table>

![Diagram of single phase control box]

Dimensions [mm]

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.47 (469.1)</td>
<td>14 (355.6)</td>
<td>22.26 (565.4)</td>
<td>18.75 (476.25)</td>
<td>11.4 (289.5)</td>
</tr>
</tbody>
</table>

2. Insert wall plugs, if applicable.
3. Fit the four screws in the mounting holes and cross-tighten the screws.

2.2.2 Installing a communication interface module
You can fit a communication interface module (CIM) in the control unit to enable communication with external systems. The module is optional and is not delivered with the product. See the installation and operating instruction for the module regarding electrical connections.

![Diagram of communication interface module]

Use an antistatic service kit when handling electronic components. This prevents static electricity from damaging the components.

1. Remove the screw in the back cover of the CU product.

2. Remove the back cover.
3. Break off the tap.

4. Fit the CIM module.

5. If supplied, place the labels on the back cover.

6. Refit the back cover to the CU product, and secure it with the mounting screw. Secure cables using the cable tie holders.

Route the low-voltage wires from the CIM module through the right side of the cable tray.

Related information
8.13 Code 159 (Communication error CIMxxx)

2.3 Electrical connection

2.3.1 Protection of control panel

Power supply circuit protection device and circuit breaker are provided by the installer. The type and size should be based upon local, state, and National Electrical Codes (NEC). Size the circuit breaker according to the maximum full load amps (FLA) of the panel. The rated conditional short-circuit current (SCCR) is 5 kA for single-phase variants and 10 kA for three-phase variants.

<table>
<thead>
<tr>
<th>Motor horsepower [Hp]</th>
<th>Number of pumps</th>
<th>Motor FLA [A]</th>
<th>Panel max. FLA [A]</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1</td>
<td>5</td>
<td>10.5</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>5</td>
<td>10.5</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>16</td>
<td>32.5</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>16</td>
<td>32.5</td>
</tr>
<tr>
<td>7.5</td>
<td>1</td>
<td>12</td>
<td>24.5</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>12</td>
<td>24.5</td>
</tr>
<tr>
<td>20</td>
<td>1</td>
<td>32</td>
<td>64.5</td>
</tr>
<tr>
<td>30</td>
<td>2</td>
<td>32</td>
<td>64.5</td>
</tr>
</tbody>
</table>

See the rated current for this specific product on the product nameplate.
2.3.2 Protection of control power transformer circuit

The controller must have overload protection. The protection must be ensured using components, such as:

- fuse, 5 mm x 20 mm, 1 Amp
- fuse, FNQ-R 0.5 Amp.

See the maximum fuse size for this specific product on the product nameplate.

2.3.3 Motor overload protection

For installation of the motor overload protection, follow the manufacturer's installation manual.

2.3.4 Connecting the multi-voltage primary transformer

**DANGER**

Electric shock

Death or serious personal injury
- Switch off the power supply before you start any work on the product.

208, 230, and 460-voltage variants require connecting the power supply to the correct voltage terminal on the primary transformer.

![Diagram of Primary Transformer Terminals](image)

**WARNING**

Electric shock

Death or serious personal injury
- If national legislation requires a Residual-Current Device (RCD), or equivalent, in the electrical installation, this must be of at least type A due to the nature of the constant DC leakage current.
- Switch off the power supply before making any electrical connections. Make sure that the power supply cannot be switched on accidentally.
- Remember to indicate where the main switch is located by placing a label, or similar, in the control unit.
- Make sure that the voltage between the phase and neutral does not exceed 277 VAC.
- Electrical connections must be implemented according to the wiring diagrams.

Cable glands and plugs should be mounted only after the installation is completed. Make sure gaskets are put on the cable glands before the control unit is mounted on the wall. Do not add components apart from those illustrated on the wiring diagram. Unused neutral pin holes must not be used for other connections.

- For the US market only, use flexible metal conduits (FMC) only.

- Do not connect the phase inputs to the IO 242 module if the input is higher than 3 x 480 VAC.

The residual-current circuit indicator must be marked as follows:

![Residual-Current Circuit Indicator](image)

Take into account the total leakage current of all the electrical equipment in the installation
1. Check that the supply voltage and frequency correspond to the values stated on the nameplate.
2. Cut the power supply and pump supply cables as short as possible.
3. Before switching the power on, check all voltages with a multimeter and ensure that the voltage between neutral and each phase does not exceed 277 VAC.
4. Connect the power cables and pump cables according to the relevant electrical diagram, including the cables from the motor temperature and moisture sensor, if any. Tighten the terminal screws to the correct torque as indicated in the table below.

Note that all wires must be secured inside the cabinet using cable ties. To ensure correct IP protection level, all cable glands must be mounted and plugged even if they are not in use.

Remember to remove the jumper from the PTC terminal if you are connecting cables from the temperature and/or moisture sensor to the PTC terminal.

Route the wires through the left side of the cable tray.

<table>
<thead>
<tr>
<th>Terminal block</th>
<th>Torque [lb-ft (Nm)]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump contactor</td>
<td>0.89 - 1.1 (1.2 - 1.5)</td>
</tr>
<tr>
<td>Power supply</td>
<td>0.89 - 1.1 (1.2 - 1.5)</td>
</tr>
</tbody>
</table>

Connecting a wire to a terminal with spring clamps

Related information

6.16.1 Thermal protection
8.2 Code 2 (Power phase missing)
8.4 Code 9 (Power phase sequence wrong)

2.3.6 Connecting a level sensor
You can either connect an analog level sensor, such as a pressure sensor, or a digital level sensor, such as a float switch.

1. Route the wires through one of the cable glands and the cable tray.

2. Depending on the type of cable, take one of the following actions:
   • For low-voltage cables, route the wires through the right side of the cable tray.
   • For low-voltage cables that in the event of a short circuit can obtain high-voltage potential, route the wires through the left side of the cable tray.

3. Depending on the type of alarm device, connect the wires to the relevant terminals. Note that all wires must be secured inside the cabinet using cable ties.
   • NO (Normally Open) and C (Common)
   • NC (Normally Closed) and C (Common).

4. Tie the wires with cable ties.

<table>
<thead>
<tr>
<th>Sensor type</th>
<th>Sensor function</th>
<th>Terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog</td>
<td>All levels</td>
<td>ADI - GND - 24 V</td>
</tr>
<tr>
<td></td>
<td>Dry-running level</td>
<td>DI1 - GND</td>
</tr>
<tr>
<td></td>
<td>Stop level</td>
<td>DI2 - GND</td>
</tr>
<tr>
<td>Digital</td>
<td>Start level, pump 1</td>
<td>DI3 - GND</td>
</tr>
<tr>
<td></td>
<td>Start level, pump 2</td>
<td>DI4 - GND</td>
</tr>
<tr>
<td></td>
<td>High level</td>
<td>ADI - GND</td>
</tr>
</tbody>
</table>

1. DI4 is not configured when S-2 designation is selected.

2.3.7 Connecting an alarm device
You can connect an alarm device, such as a buzzer or a lamp, to the output relays Alarm 1 and Alarm 2. The control unit triggers the alarm device when it detects an alarm or a warning. You can change the behavior of the outputs with Grundfos GO Remote under Relay output 1 and Relay output 2.

Default settings of the terminal blocks

<table>
<thead>
<tr>
<th>Terminal block</th>
<th>Default function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm 1</td>
<td>All alarms</td>
</tr>
<tr>
<td>Alarm 2</td>
<td>High level</td>
</tr>
</tbody>
</table>

1. Route the wires through one of the cable glands and the cable tray.

2. Depending on the type of wire, perform one of the following actions:
   • For low-voltage cables, route the wires through the right side of the cable tray.
   • For low-voltage cables that in the event of a short circuit can obtain high-voltage potential, route the wires through the left side of the cable tray.

3. Depending on the type of alarm device, connect the wires to the relevant terminals. Note that all wires must be secured inside the cabinet using cable ties.
   • NO (Normally Open) and C (Common)
   • NC (Normally Closed) and C (Common).

4. Tie the wires with cable ties.
3. Starting up the product

3.1 Connecting to Grundfos GO Remote
Before connecting the product to Grundfos GO Remote, the Grundfos GO Remote app must be downloaded to your smartphone or tablet. The app is free of charge and available for iOS and Android devices.

1. Open Grundfos GO Remote on your device. Make sure that Bluetooth is enabled.
   Your device must be within reach of the product to establish Bluetooth connection.
2. Press the Bluetooth CONNECT button on Grundfos GO Remote.
3. Press the connect button on the operating panel. The blue LED above the connect button is flashing until your device is connected. Once the connection is established, the LED will be permanently on.
   Grundfos GO Remote is now loading the data for the product.

3.2 Startup wizard on Grundfos GO Remote
The product is designed for Bluetooth communication with Grundfos GO Remote.
Once you have connected your product to Grundfos GO Remote, a startup wizard appears. Follow the instructions to make your settings.
Grundfos GO Remote enables you to set functions and gives you access to status overviews, technical product information and current operating parameters.

3.3 Startup wizard on the operating panel
The first time the control unit is switched on, a startup wizard will guide you through the basic settings. You can select the sensor type and sensor levels. For some products, you can also set the nominal pump current and number of phases.
If you have an analog sensor, select S-1 and set the height of the different liquid levels, from low level to high level.
If you have a digital sensor, select S-2 and enable or disable the dry-running level, the start level for pump 2, if available, and the high level.
To change settings, use the Up or Down button on the operating panel.
Use the OK button to confirm each setting and navigate to the next setting.

For filling applications, you must use Grundfos GO Remote.
Units can only be changed with Grundfos GO Remote.

<table>
<thead>
<tr>
<th>Designation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-1</td>
<td>Analog sensor, i.e. submersible pressure transducer</td>
</tr>
<tr>
<td>S-2</td>
<td>Digital sensor, i.e. ball float</td>
</tr>
</tbody>
</table>

Related information
3.4 How to enable Bluetooth on the operating panel
If the Bluetooth signal on the operating panel has been disabled for some reason, you are not able to connect with Grundfos GO Remote. You must enable Bluetooth first.
1. Press and hold the connect button on the operating panel for 15 seconds. Wait for the blue LED to light up.
2. Press the Bluetooth CONNECT button on Grundfos GO Remote.
3. Press the connect button on the operating panel. The blue LED above the connect button is flashing blue until your device is connected.
   Grundfos GO Remote is now loading the data for the product.

3.5 How to disable Bluetooth on the operating panel
In some installation areas, it is not allowed to have a Bluetooth signal enabled during operation. After installation, the Bluetooth signal must be disabled manually.
1. Press and hold the connect button on the operating panel for 15 seconds. Wait for the blue LED to switch off.
   Grundfos GO Remote is no longer connected to the product.

3.6 Configuring the input and output terminals using Grundfos GO Remote
The control unit is equipped with configurable input and output (IO) terminals. Using Grundfos GO Remote, you can configure the terminals for different functions, depending on the device connected to the terminals.
1. Go to SettingsIO 242.
2. Select the terminal you wish to configure, and follow on-screen instructions.
   You can find the names of the terminals inside the control unit.

For filling applications, you must use Grundfos GO Remote.
Units can only be changed with Grundfos GO Remote.

Related information
6.1 Setting the application type with Grundfos GO Remote
6.23 Starting the startup wizard with the operating panel
3.7 Testing the product

When you have made all the electrical installations and completed the startup wizard, you can test the system.

For emptying applications:

• Fill the pit with water, and check that the pump starts automatically at the defined level.
• Test the dry-running protection by starting the pump manually, and wait while the pit with the pump is emptied. Check if the control unit activates an alarm and stops the pump when the defined level is reached.
• Test the high-level by stopping the pump manually, then continue to fill the pit with water. Check if the control unit starts an alarm and stops the pump when the defined level is reached. Set the pump to Auto, and observe that the pump starts and stops when the stop level has been reached.

For filling applications:

• Start by draining the tank to be filled. When the tank is empty and the start level is reached, the pump must start. When the tank is full and the stop level is reached, the pump must stop.
• Test the high-level function by stopping the pump manually, and continue to fill the tank without the pump with water. Check if the control unit starts an alarm and stops the pump when the defined level is reached.
• Test the dry-running protection by starting the pump manually, and wait while the tank with the pump is emptied. Check if the control unit starts an alarm and stops the pump when the defined level is reached. Alternatively, pull the dry-run level switch to simulate a dry-run situation. The same can be done with a submersible pressure level sensor.

4. Product introduction

4.1 Product description

The level-control unit switches the pump on and off according to the liquid level measured by float switches or a pressure sensor. When the start level is reached, the pump starts, and when the liquid level has been lowered to the stop level, the pump is stopped by the control unit. An alarm is indicated in case of, for example, high-water level in the tank or liquid level sensor failure.

Basic settings are configured via the operating panel, and advanced settings are configured with Grundfos GO Remote. Furthermore, you can read important operating parameters with Grundfos GO Remote.

4.2 Intended use

The control unit is designed to control either one or two pumps. The product can be configured for two purposes: emptying a wastewater pit or filling a pit or tank. The product can be used for network pumping stations, main pumping stations, commercial buildings and municipal systems.

If the product is used in an explosive environment, follow local regulations. If required use additional equipment.

The product must not be exposed to strong solvents or oil containing liquids.

4.3 Features

The control unit features among others the following functions:

• support of up to two pumps
• manual and automatic control of the pump
• Bluetooth pairing with Grundfos GO Remote
• operating indication, such as power on and pump running
• alarm and warning indication, such as power phase missing and high-water level
• motor and phase failure protection
• setting of stop delays matching the actual operating conditions
• automatic alternation of pumps.
4.4 Application types

You can choose between two application types:

- Empty
- Fill

You can set the application type with Grundfos GO Remote.

Empty

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>High level</td>
</tr>
<tr>
<td>2</td>
<td>Single pump: Not in use</td>
</tr>
<tr>
<td></td>
<td>Dual pump: Start level P2: start level for pump 2</td>
</tr>
<tr>
<td>3</td>
<td>Start level P1: start level for pump 1</td>
</tr>
<tr>
<td>4</td>
<td>Stop level</td>
</tr>
<tr>
<td>5</td>
<td>Dry-running level</td>
</tr>
</tbody>
</table>

The pump will start to empty the tank or pit when Start level P1 is reached.
A second pump will start if the liquid level reaches Start level P2. The pump stops when the liquid level is lowered to Stop level. If the inflow of liquid exceeds the capacity of the installed pump, the level in the tank or pit will rise. Eventually, the High level sensor will register a high liquid level in the tank or pit. If set, the signal from the High level sensor can be used to activate an output relay which can then be used to activate a visual or acoustic alarm or send a signal to a SCADA system.

If the pump is running, and the liquid level in the tank or pit falls below the dry-running level, the dry-running protection will stop the pump to ensure that it is not damaged mechanically.
Designation | Description
--- | ---
1 | High level
2 | Stop level
3 | Start level P1: start level for pump 1
4 | Single pump: Not in use  
Dual pump: Start level P2: start level for pump
5 | Dry-running level

In the filling application, the pump is installed in a tank or well from where it pumps the liquid. The liquid is pumped into a second tank where level sensors are installed. The pump will start to fill the second tank when Start level P1 is reached. A second pump will start if the liquid level reaches Start level P2. The pump stops when the liquid level reaches Stop level.

If, for any reason, the pump does not stop at Stop level and the liquid level keeps rising, the High level sensor will eventually register this. If set, the signal from the High level sensor can be used to activate a relay output which can then be used to activate a visual or acoustic alarm or send a signal to a SCADA system via a communication interface.

If the pump is running, and the liquid level in the tank falls below the dry-running level, the dry-running protection will stop the pump to avoid any damage.

Related information
6.1 Setting the application type with Grundfos GO Remote
6.15.1 Automatic operation
4.5 Terminals

Remember to separate potentially low-voltage cables from potentially high-voltage cables when connecting them to the control unit.

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Current transformer, pump 1.</td>
</tr>
</tbody>
</table>
| 2    | **Single pump:** Not in use  
**Dual pump:** Current transformer, pump 2. |
| 3    | GENibus |
| 4    | Termination resistor |
| 5    | Not for use |
| 6    | Supply voltage, 24 VDC |
| 7    | User-configurable output relay 4, normally closed |
| 8    | User-configurable output relay 4, common |
| 9    | User-configurable output relay 4, normally open |
| 10   | User-configurable output relay 3, normally open |
| 11   | User-configurable output relay 3, common |
| 12   | User-configurable output relay 3, normally closed |
| 13   | Supply voltage for sensors, 24 VDC, max. 50 mA |
| 14   | Ground, GND |
| 15   | User-configurable analog or digital input |
| 16   | Ground, GND |
| 17   | Digital input 4 |
| 18   | Ground, GND |
| 19   | Digital input 3 |
| 20   | Ground, GND |
| 21   | Digital input 2 |
| 22   | Ground, GND |
| 23   | Digital input 1 |
| 24   | Motor-protection feedback |
| 25   | Phase monitoring |
| 26   | Temperature or moisture sensor input, pump 1 |
| 27   | Temperature or moisture sensor input, pump 1 |
| 28   | **Single pump:** Not in use  
**Dual pump:** Temperature or moisture sensor input, pump 2 |
| 29   | **Single pump:** Not in use  
**Dual pump:** Temperature or moisture sensor input, pump 2 |
| 30   | Relay output, pump 1 |
| 31   | Common |
| 32   | **Single pump:** Not in use  
**Dual pump:** Relay output, pump 2 |
| 33   | Caution. Be careful when installing these terminals. |
4.6 Identification

4.6.1 Nameplate

![Nameplate Diagram]

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Product name</td>
</tr>
<tr>
<td>2</td>
<td>Material number and Version number</td>
</tr>
<tr>
<td>3</td>
<td>Supply voltage</td>
</tr>
<tr>
<td>4</td>
<td>Control power supply voltage</td>
</tr>
<tr>
<td>5</td>
<td>Production code, year and week</td>
</tr>
<tr>
<td>6</td>
<td>Serial number</td>
</tr>
<tr>
<td>7</td>
<td>Minimum to maximum ambient temperature</td>
</tr>
<tr>
<td>8</td>
<td>Short-circuit current rating [kA]</td>
</tr>
<tr>
<td>9</td>
<td>Maximum fuse size</td>
</tr>
<tr>
<td>10</td>
<td>Number of pumps</td>
</tr>
<tr>
<td>11</td>
<td>Largest pump FLA</td>
</tr>
<tr>
<td>12</td>
<td>Total FLA</td>
</tr>
<tr>
<td>13</td>
<td>Enclosure class</td>
</tr>
<tr>
<td>14</td>
<td>Options</td>
</tr>
<tr>
<td>15</td>
<td>IP Class</td>
</tr>
<tr>
<td>16</td>
<td>Weight</td>
</tr>
<tr>
<td>17</td>
<td>WEEE mark</td>
</tr>
<tr>
<td>18</td>
<td>Markings and approvals</td>
</tr>
<tr>
<td>19</td>
<td>Country of origin</td>
</tr>
<tr>
<td>20</td>
<td>Production site</td>
</tr>
<tr>
<td>21</td>
<td>Company address</td>
</tr>
<tr>
<td>22</td>
<td>Nameplate number</td>
</tr>
<tr>
<td>23</td>
<td>QR code</td>
</tr>
</tbody>
</table>

4.6.2 Type key

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Type:</td>
</tr>
<tr>
<td>2</td>
<td>Number of pumps supported</td>
</tr>
<tr>
<td>3</td>
<td>Current range of pump(s) [A]</td>
</tr>
<tr>
<td>4</td>
<td>Starting method:</td>
</tr>
<tr>
<td>5</td>
<td>Operating capacitor [µF]</td>
</tr>
<tr>
<td>6</td>
<td>Starting capacitor [µF]</td>
</tr>
<tr>
<td>7</td>
<td>Supply voltage [V]</td>
</tr>
<tr>
<td>8</td>
<td>Panel type:</td>
</tr>
<tr>
<td>9</td>
<td>OPT: Options.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Type:</td>
</tr>
<tr>
<td>2</td>
<td>LC 241: panel version</td>
</tr>
<tr>
<td>3</td>
<td>Number of pumps supported</td>
</tr>
<tr>
<td>4</td>
<td>Current range of pump(s) [A]</td>
</tr>
<tr>
<td>5</td>
<td>Starting method:</td>
</tr>
<tr>
<td>6</td>
<td>Operating capacitor [µF]</td>
</tr>
<tr>
<td>7</td>
<td>Supply voltage [V]</td>
</tr>
<tr>
<td>8</td>
<td>Panel type:</td>
</tr>
<tr>
<td>9</td>
<td>OPT: Options.</td>
</tr>
</tbody>
</table>

4.7 Supported communication interface modules and protocols

The following Grundfos communication interface modules can be added to the product.

<table>
<thead>
<tr>
<th>Communication interface module</th>
<th>Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIM 050</td>
<td>GENibus</td>
</tr>
<tr>
<td>CIM 150</td>
<td>PROFIBUS DP</td>
</tr>
<tr>
<td>CIM 200</td>
<td>Modbus RTU</td>
</tr>
<tr>
<td>CIM 500</td>
<td>Modbus TCP</td>
</tr>
<tr>
<td></td>
<td>PROFINET IO</td>
</tr>
</tbody>
</table>

Related information

2.3.1 Protection of control panel
2.3.2 Protection of control power transformer circuit
5. Control functions

5.1 Operating panel

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Display</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>ft</td>
<td>Units</td>
</tr>
<tr>
<td>3</td>
<td>●</td>
<td>High level</td>
</tr>
</tbody>
</table>
| 4    | ●      | Single pump: Not in use  
       |         | Dual pump: Start level, pump 2  |
| 5    | ●      | Single pump: Start level  
       |         | Dual pump: Start level, pump 1  |
| 6    | ●      | Single pump: Stop level  
       |         | Dual pump: Stop level, pump 1 and 2  |
| 7    | ●      | Dry-running level |
| 8    |       | Up/Down buttons:  
       |         | • Press these buttons to navigate between submenus or change the value settings.  |
| 9    | OK     | OK button:  
       |         | • Press this button to save changed values.  |
| 10   |       | Connect button:  
       |         | • Press this button to connect the control unit to Grundfos GO Remote via Bluetooth.  |
| 11   | Reset | Reset button:  
       |         | • Press this button during startup to reset settings and start over or to reset an alarm or warning.  |
| 12   |       | Operating mode for the pump:  
       |         | • On: The pump has been switched on manually.  
       |         | • Off: The pump has been switched off manually.  
       |         | • Auto: The pump is running automatically based on settings.  |
| 13   | Display| The display shows the pump status. |
| 14   | ●      | Lock symbol:  
       |         | If the symbol is lit, the control unit is locked from making changes.  |
| 15   | ●      | Alarm and warning symbol:  
       |         | Red: Alarm  
       |         | Yellow: Warning  |

The control unit enables manual setting and monitoring of the system.
6. Setting the product

Make sure that all settings are entered according to the pump and system requirements to avoid malfunction.

6.1 Setting the application type with Grundfos GO Remote
1. Go to Settings > Level control > Application type.
2. Select the type.
   - Empty
   - Fill

Related information
3.3 Startup wizard on the operating panel
4.4 Application types

6.2 Setting the sensor type
6.2.1 Setting the sensor type with Grundfos GO Remote
1. Go to Settings > Level control > Sensor type.
2. Select the type.
   - Analog sensors
   - Digital sensors
6.2.2 Setting the sensor type with the operating panel
1. Press and hold OK until S-1 or S-2 starts flashing.
2. Select the sensor type using the Up and Down buttons.
   - S-1: Analog sensors -
   - S-2: Digital sensors -
3. Press OK to confirm the setting.
4. Continuously press OK to confirm all other settings and exit the setup.

1 Submersible pressure transducer
2 Ball floats

6.3 Setting the start level
6.3.1 Setting the start level with Grundfos GO Remote
The settings apply to analog sensors. For digital sensors, the setting is automatically activated.
1. Go to Settings > Level control > Start level P1.
2. Set the start level for pump 1.
3. Go to Settings > Level control > Start level P2.
4. Set the start level for pump 2.
6.3.2 Setting the start level with the operating panel
The settings apply to analog liquid level sensors. For digital sensors, the setting is automatically activated.
1. Press and hold OK until the display and dry-running light start flashing.
2. Continuously press OK until the indicator light for the start level for pump 1 starts flashing.
3. Set the start level for pump 1 by using the Up and Down buttons.
4. Press OK.
   The indicator light for the start level for pump 2 starts flashing.
5. Set the start level for pump 2 by using the Up and Down buttons.
6. Continuously press OK until the display stops flashing.
   The settings have now been saved.

6.4 Setting the stop level
6.4.1 Setting the stop level with Grundfos GO Remote
The settings apply to analog liquid level sensors. For digital sensors, the setting is automatically activated.
The stop level is the same for pump 1 and pump 2.
1. Go to Stop level > Settings > Level control Settings
2. Set the stop level.
   If you use the same level for start and stop, remember to set a stop delay. This will prevent the pump from starting and stopping too frequently.
6.4.2 Setting the stop level with the operating panel
The settings apply to analog liquid level sensors. For digital sensors, the setting is automatically activated.
The stop level is the same for pump 1 and pump 2.
1. Press and hold OK until the display starts flashing.
2. Press OK once. The current stop level is indicated on the display.
3. Set the stop level using the Up and Down buttons.
4. Continuously press OK to confirm all other settings and to exit the setup.

If you are using the same level for the start and stop level, remember to set a stop delay. This will prevent the pump from starting and stopping too frequently.

6.5 Setting the high level

6.5.1 Setting the high level with Grundfos GO Remote
For analog sensors - 
1. Go to Settings > Level control > High level
2. Set the high level.
For digital sensors - a :
1. Go to SettingsLC 231 IO terminals
2. Select which terminal to configure.

6.5.2 Setting the high level with the operating panel
The settings apply to analog sensors
1. Press and hold OK until the display starts flashing.
2. Press OK four times. The current high level is indicated on the display.
3. Set the high level using the Up and Down button.
For digital sensors, enable or disable the setting.
1. Press OK once to complete the setting.

6.6 Stop delay
The stop delay is the time from when the stop level is reached until the pump stops. The stop delay prevents the pump from starting and stopping too frequently and reduces water hammer in long pipes.

6.6.1 Setting the stop delay with Grundfos GO Remote
1. Select Settings > Level control > Stop delay > State
2. Select Stop delay time.
3. Set the Stop delay time.

6.7 Power-on delay
With this function it is possible to delay the startup of the pump after the power supply has been switched on. The purpose is to avoid disturbing the main power network which could happen if several pumps start up immediately when the power supply is switched on.

6.7.1 Setting the power-on delay with Grundfos GO Remote
1. Go to Settings > Power-on delay.
2. Set the function to Enabled.
3. Set the time delay.

6.8 Dry-running protection
If the pump is running and the liquid level in the tank or pit becomes lower than the dry-running level, the dry-running protection will stop the pump to ensure that it is not damaged.
Dry-running protection is dependent on a feedback signal from a level sensor installed in the tank or pit.

6.8.1 Setting the dry-running level with Grundfos GO Remote
1. Go to Settings > Level control > Dry-running level.
2. Set the dry-running level.

The dry-running level must be set to a value which ensures that the pump is not damaged due to dry-running. The specific level depends on the installed pump type. See the installation and operating instructions for the product.

6.8.2 Setting the dry-running level with the operating panel
1. Press and hold OK until the display starts flashing.
2. Set the dry-running level using the Up or Down button.
3. Continuously press OK to confirm all other settings and to exit the setup.

6.9 Multipump settings
The control unit enables start and stop of the two pumps alternately. The pump with the lowest number of running hours is always started first. The function ensures that the running hours of the pumps are the same. It is possible to set a time delay before the next pump is started.

6.9.1 Setting "multipump settings" with Grundfos GO Remote
1. Go to Settings > Multi pump settings
2. Set Inter pump delay.
   - This is the starting delay between the pumps ensuring that they do not start at the same time.
3. Set Max number of running pumps.
   - This is the maximum number of pumps which are allowed to run at the same time.

6.10 Using the same level switch for the start and stop level
1. Set one digital input to Start pump 1 or Stop. All other digital inputs must be disabled.
2. Set a stop delay.
   - This will prevent the pump from starting and stopping too frequently.

6.11 Antiseizing
The Anti-seizing function prevents a pump from choking or seizing up as a result of deposits buildup. Anti-seizing is used in pits that have had no inlet flow for a long period. The Anti-seizing function ensures that the pump starts as often as set in Anti-seizing > interval. The pump will operate for the number of seconds indicated by the user.

6.11.1 Setting the "Anti-seizing" function with Grundfos GO Remote
1. Go to Settings > Anti-seizing.
2. Set the function to Enabled.
3. Set the time interval.
4. Set the operating time.

6.12 Signal-detection time
The signal-detection time is the minimum time a level has to be active before the control unit initiates an action, such as starting or stopping a pump.

6.12.1 Setting the signal-detection time with Grundfos GO Remote
1. Go to Settings > Level control > Signal detection time > Signal detection time.
2. Set the signal-detection time.
6.13 Setting the maximum number of restarts with Grundfos GO Remote

If the pump is seized up as a result of deposits buildup, it will be stopped automatically due to overheating, provided that the motor protection has been set. When the motor has cooled down, the control unit will unsuccessfully try to restart the pump and this scenario will be repeated.

In order to prevent this, it is possible to set a maximum number of restart attempts within a set interval.

1. Go to Settings > Max number of restarts.
2. Enable the function.
3. Set the interval within which the allowed number of restarts are to be counted.
4. Set the maximum number of pump restarts which are allowed during the set interval.

Related information
6.16.1 Thermal protection
6.16.2 Overload protection
8.3 Code 4 (Too many motor restarts)

6.14 Setting the service interval with Grundfos GO Remote

You can set a time in Grundfos GO Remote in order to get a reminder that the pump needs service when the time comes.

1. Go to Settings > Service > State
2. Select Enable and press OK.
3. Select the pump.
4. Enter the number of hours until next service and press OK.

6.15 Operating the product
6.15.1 Automatic operation

In automatic operating mode, the control unit starts and stops the pump based on the signals it receives from the connected level sensors and the corresponding level settings within the control unit.

Related information
4.4 Application types
6.15.2 Manual operation

6.15.2.1 Starting and stopping the pump manually with Grundfos GO Remote

1. Go to Settings > Control, pump 1.
2. Go to Settings > Control, pump 1 or Control, pump 2.
3. Start the pump by selecting On and pressing OK.
4. Stop the pump by selecting Off and pressing OK.

Related information
6.15.2.3 Choosing what the pump must do after manual start

6.15.2.2 Starting and stopping the pump manually with the operating panel

1. To start a pump manually, press and hold the Pump button until the pump starts.
   The On indicator light is lit when the pump is operating in manual mode.
2. Stop the pump by pressing the Pump button.
   The Off indicator light is lit when the pump is stopped.

Related information
6.15.2.3 Choosing what the pump must do after manual start

6.15.2.3 Choosing what the pump must do after manual start

The following can be configured:
• Automatic return
   Here you select if the pump must automatically return to a defined operating mode when the manual start ends.
• Return to
   Here you select whether the pump must return to automatic operating mode or stop when the manual start ends and Automatic return has been enabled.
• Forced start time
   Here you set the time period in which the pump must run in manual operating mode.

1. Go to Settings > Manual start.
2. Select Automatic return and choose one of the following options:
   • Disabled
   • Enabled.
3. Go one step back in the menu and select Return to.
4. Choose one of the following options:
   • Auto
   • Off.
5. Go one step back in the menu and select Forced start time.
6. Set the time period in which the pump must run in manual operating mode.

Related information
6.15.2.1 Starting and stopping the pump manually with Grundfos GO Remote
6.15.2.2 Starting and stopping the pump manually with the operating panel

6.16 Motor protection

Make sure that all settings are entered according to the pump and system requirements to avoid malfunction.

6.16.1 Thermal protection

The control unit offers thermal protection for the connected motors. Two types of thermal-protection sensor can be connected to the control unit: a positive temperature coefficient (PTC) sensor, analog, and a thermal switch, digital.

Under normal running conditions, the sensor will act as a short circuit, but when its temperature limit is reached, it will open and tell the control unit that the temperature is too high, and the pump is stopped. When the temperature has dropped to the sensor-trigger level, the pump will return to normal running conditions. It will not be possible to start the pump manually as long as the temperature is too high.

Related information
2.3.5 Connecting the pump supply and power supply
6.13 Setting the maximum number of restarts with Grundfos GO Remote
8.10 Code 69 (Winding temperature too high)
6.16.2 Overload protection
The pump is protected by a motor-protection relay. The nominal current draw must be set manually on the motor-protection relay. See the specific documentation for the relay on how to set the trigger level. If the current exceeds the trigger level, the relay will switch off the pump and the controller will give an alarm. The alarm has to be manually reset directly on the motor protection relay.

Related information
6.13 Setting the maximum number of restarts with Grundfos GO Remote
8.8 Code 48 (Motor is overloaded)

6.16.3 Moisture protection
When a moisture sensor is installed in series with the temperature sensor, the control unit needs to know how to determine whether there is a high temperature or moisture in the pump. If the temperature is too high, normally the temperature sensor will go back to its normal stage when the temperature has dropped to its trigger level. If there is moisture in the pump, then the moisture sensor will keep the series connection open until the pump is opened and serviced.

To determine which sensor has been active, a cool down time must be entered. This is the time that will normally pass until the temperature has dropped enough for the temperature sensor to return to its normal stage. If the cool down time is exceeded, the control unit will assume that there is moisture in the pump, and it will send a moisture alarm.

6.17 Alarm reset
6.17.1 Resetting alarms and warnings manually with Grundfos GO Remote
1. Go to Alarms and warnings.
2. Press Reset alarm.
   All current alarms and warnings have been reset. However, if the fault causing the alarm or warning has not been removed, the alarm or warning will appear again.
3. If you want to delete all alarms and warnings from the history log, press Show log > Reset alarm and warning logs.

6.17.2 Setting the automatic alarm reset with Grundfos GO Remote
1. Go to Settings > Automatic alarm reset.
2. Select one of the following:

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>No automatic reset</td>
<td>The control unit does not reset any alarm or warning. You must do it manually.</td>
</tr>
<tr>
<td>All except pump critical</td>
<td>The control unit resets alarms and warnings unless the related fault can damage the pump.</td>
</tr>
<tr>
<td>All alarms</td>
<td>The control unit resets alarms and warnings, regardless of the fault.</td>
</tr>
</tbody>
</table>

6.17.3 Resetting alarms and warnings on the operating panel
You can manually reset alarms and warnings on the operating panel. However, if the fault causing the alarm or warning has not been removed, the alarm or warning will appear again.
1. Press Reset on the operating panel to reset the alarm or warning.

6.18 Setting the buzzer with Grundfos GO Remote
The internal buzzer is used to give an acoustic sound if there is a warning or an alarm.
1. Go to Settings > Buzzer settings.

2. Select when the buzzer is to be activated:
   - All alarms
   - All alarms and warnings.

6.19 Setting units for Grundfos GO Remote
Changing units as described here will only change the units shown in Grundfos GO Remote. It will not affect the units shown on the operating panel of products connected to Grundfos GO Remote.
1. Press the Menu button in the upper left corner of Grundfos GO Remote.
2. Go to General > Settings > Products > Units.
3. Select US or Grundfos default units.

6.20 Setting units for the operating panel with Grundfos GO Remote
Changing units as described below changes the units shown in the operating panel of the product connected to Grundfos GO Remote. It does not affect the units shown in Grundfos GO Remote.
1. Go to Settings > Display units.
2. Select the units to be used on the operating panel.
   - SI Units
   - US Units

6.21 GENIbus
GENIbus, the Grundfos Electronics Network Intercommunications bus, is a fieldbus developed by Grundfos to meet the need for data transfer in all typical Grundfos motor or pump applications. Grundfos devices with GENIbus can be wired together in networks and integrated in automation systems. Each device on the network must have a unique GENIbus address. GENIbus is based on the RS485 hardware standard and typically operates at a baud rate of 9600 bits/s.

6.21.1 Setting the GENIbus address with Grundfos GO Remote
1. Go to Settings > GENI bus address.
2. Set the GENIbus address.
   The GENIbus address is a unique identifier for the product on the network.

6.22 Security
6.22.1 Locking the operating panel
The operating panel can only be locked with Grundfos GO Remote.
1. Go to Settings > Security > Lock Display.
2. Enable the setting and press Done.
3. Select if you want to restrict access to Settings only or Settings and operation.
4. Press Done.

The lock symbol on the operating panel is now lit.
6.22.2 Unlocking the operating panel
The operating panel can only be unlocked with Grundfos GO Remote.
1. Go to Settings > Security > Lock Display.
2. Disable the setting and press Done.
The lock symbol on the operating panel is switched off.

6.22.3 Locking Grundfos GO Remote
2. Enable the setting and press Done.
3. Enter a four digit PIN code and press CONFIRM.
A lock symbol indicates which menus are locked. To view or change settings, you must enter the PIN code.

6.22.4 Unlocking Grundfos GO Remote
1. Go to Settings > Security.
2. Enter the four digit PIN code.
4. Disable the setting and press Done.
All menus in Grundfos GO Remote are unlocked.

6.23 Starting the startup wizard with the operating panel
• Press and hold the OK button for 8 seconds until S-1 or S-2 starts flashing.

Related information
3.3 Startup wizard on the operating panel

7. Servicing the product

7.1 Updating the product software
New features and functions can be made available during the product's life cycle.
1. Contact Grundfos to get your product software updated.

7.2 Replacing the battery

7.3 Replacing the control unit

Related information
9. Technical data

WARNING
Electric shock
Death or serious personal injury
- Switch off the incoming power supply before you start any work on the product or connected pumps.
- Make sure that the power supply cannot be switched on accidentally.

WARNING
Fire and chemical leakage
Minor or moderate personal injury
- Risk of explosion if the battery is replaced by an incorrect type.

To replace the battery, do the following:
1. Remove the back cover.
2. Gently grab around the battery without touching it too much.
3. Pull the battery up.
4. Insert a new battery of the correct type.

Remember to save the controller's settings in Grundfos GO Remote under Settings. The settings can then be transferred to the new control unit when installed.
1. Switch off the power supply to the product and other components with external supply.
2. Write down the terminal connection of each wire to ensure correct re-connection.
3. Disconnect all wires.
4. Remove the control unit from the panel or cabinet.
5. Fit the new unit.
6. Connect all wires.
7. Configure the new control unit using Grundfos GO Remote.
7.4 Replacing the CIM module

WARNING
Electric shock
Death or serious personal injury
- Switch off the power supply before making any electrical connections.
- Make sure that the power supply cannot be switched on accidentally.

1. Switch off the power supply to the product and other components with external supply.
2. Write down the terminal connection of each wire to ensure correct re-connection.
3. Disconnect all wires connected to the CIM module.
4. Remove the screws that holds the module.
5. Remove the module from the control unit.
6. Fit the new module.
7. Connect all wires.

7.5 Replacing the fuse

DANGER
Electric shock
Death or serious personal injury
- Switch off the power supply before making any electrical connections.
- Make sure that the power supply cannot be switched on accidentally.
1. Open the tap (1).
2. Remove the fuse.
3. Insert the new fuse.
4. Close the tap (1).

8. Fault finding the product

WARNING
Electric shock
Death or serious personal injury
- Switch off the power supply before you start any work on the product.
- Make sure that the power supply cannot be switched on accidentally.

Fault finding and fault correction must be carried out by qualified persons.

8.1 Overview of alarm and warning codes

<table>
<thead>
<tr>
<th>Code number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code 2</td>
<td>The power phase is missing.</td>
</tr>
<tr>
<td>Code 4</td>
<td>Too many motor restarts.</td>
</tr>
<tr>
<td>Code 9</td>
<td>The power-phase sequence is wrong.</td>
</tr>
<tr>
<td>Code 12</td>
<td>Service is needed.</td>
</tr>
<tr>
<td>Code 22</td>
<td>Moisture in motor of pump.</td>
</tr>
<tr>
<td>Code 25</td>
<td>Wrong configuration.</td>
</tr>
<tr>
<td>Code 48</td>
<td>The motor is overloaded.</td>
</tr>
<tr>
<td>Code 57</td>
<td>Missing water in the application.</td>
</tr>
<tr>
<td>Code 69</td>
<td>The winding temperature is too high.</td>
</tr>
<tr>
<td>Code 84</td>
<td>The memory-storage media is faulty.</td>
</tr>
<tr>
<td>Code 117</td>
<td>The door is opened.</td>
</tr>
<tr>
<td>Code 159</td>
<td>Communication error CIMxxx.</td>
</tr>
<tr>
<td>Code 165</td>
<td>Signal fault.</td>
</tr>
<tr>
<td>Code 191</td>
<td>High water level.</td>
</tr>
<tr>
<td>Code 205</td>
<td>Level-switch inconsistency.</td>
</tr>
<tr>
<td>Code 225</td>
<td>Communication error pump module.</td>
</tr>
<tr>
<td>Code 226</td>
<td>Communication error IO module.</td>
</tr>
<tr>
<td>Code 229</td>
<td>Water on the floor.</td>
</tr>
</tbody>
</table>

8.2 Code 2 (Power phase missing)

- Alarm code 2 is shown on the display.
- The alarm symbol on the display turns red and the pump stops.
- Alarm code Power phase missing is displayed in Grundfos GO Remote.

Cause
One of the power supply phases is not connected.

Remedy
- Connect the phase.

Cause
The fuse is blown or the circuit breaker is tripped somewhere on the incoming power line.

Remedy
- Replace the fuse.
- Reset the circuit breaker.

Related information
9. Technical data
2.3.5 Connecting the pump supply and power supply

8.3 Code 4 (Too many motor restarts)
- Alarm code 4 is shown on the display.
- The alarm symbol on the display turns red and the pump stops.
- Alarm code Too many motor restarts is displayed in Grundfos GO Remote.

Cause
The pump has been blocked or partly blocked causing overload in the motor.

Remedy
- Remove the blockage from the pump.

Related information
6.13 Setting the maximum number of restarts with Grundfos GO Remote

8.4 Code 9 (Power phase sequence wrong)
- Alarm code 9 is shown on the display.
- The alarm symbol on the display turns red and the pump stops.
- Alarm code Power phase sequence wrong is displayed in Grundfos GO Remote.

Cause
The power supply phase is set incorrectly.

Remedy
- Interchange two phases.

Related information
2.3.5 Connecting the pump supply and power supply

8.5 Code 12 (Service needed)
- Warning code 12 is shown on the display if you press the Up or Down button.
- The warning symbol on the display turns yellow and the pump's operating mode is unchanged.
- Warning code Service needed is displayed in Grundfos GO Remote.

Cause
The pump requires service based on time to next service countdown.

Remedy
- Contact Grundfos or an authorized service workshop.
- In order for the product to determine the service time, you must have enabled the service countdown with Grundfos GO Remote: Settings > Service

Related information
6.16.2 Overload protection

8.6 Code 22 (Moisture in motor of pump)
- Alarm code 22 is shown on the display.
- The alarm symbol on the display turns red and the pump stops.
- Alarm code Moisture in motor of pump is displayed in Grundfos GO Remote.

Cause
Moisture is detected in the motor of the pump.

Remedy
- Service is needed on the pump. Contact Grundfos.

Related information
3.6 Configuring the input and output terminals using Grundfos GO Remote

8.7 Code 25 (Wrong configuration)
- Alarm code 25 is shown on the display.
- The alarm symbol on the display turns red and the pump stops.
- Alarm code Wrong configuration is displayed in Grundfos GO Remote.

Cause
The level control is not configured correctly.

Remedy
- Check and adjust the level control configuration with Grundfos GO Remote.

Related information
6.13 Setting the maximum number of restarts with Grundfos GO Remote

8.8 Code 48 (Motor is overloaded)
- Alarm code 48 is shown on the display.
- The alarm symbol on the display turns red and the pump stops.
- Alarm code Motor is overloaded is displayed in Grundfos GO Remote.

Cause
The pump is clogged. The blockage causes the motor current to rise, which could damage the pump.

Remedy
- Remove the blockage.
- Check the pit conditions to ensure blockage is not possible again.

Related information
6.16.2 Overload protection

8.9 Code 57 (Missing water in the application)
- Alarm code 57 is shown on the display.
- The alarm symbol on the display turns red and the pump stops.
- Alarm code Dry run is displayed in Grundfos GO Remote.

Cause
Low water level in the pit and the pump stops due to the dry-running function.

Remedy
- Check and configure the sensor for stop level.

8.10 Code 69 (Winding temperature too high)
- Alarm code 69 is shown on the display.
- The alarm symbol on the display turns red and the pump stops.
- Alarm code Winding temperature too high is displayed in Grundfos GO Remote.

Cause
The pump is clogged, causing the pump to use more current and thereby overheat.

Remedy
- Remove the blockage.
Cause
The pump has run for too long.

Remedy
• Allow the pump to cool down.
• Adjust the distance between start and stop levels.

Related information
6.16.1 Thermal protection

8.11 Code 84 (Memory storage media faulty)
• Warning code 84 is shown on the display if you press the Up or Down button.
• The warning symbol on the display turns yellow and the pump’s operating mode is unchanged.
• Warning code Memory storage media faulty is displayed in Grundfos GO Remote.

Cause
An error in the internal memory has been detected.

Remedy
• Replace the control unit.
• Contact Grundfos or an authorized service workshop.

8.12 Code 117 (Door opened)
• Warning code 117 is shown on the display if you press the Up or Down button.
• The warning symbol on the display turns yellow and the operating mode of the pump is unchanged.
• Warning code Door opened is displayed in Grundfos GO Remote.

Cause
The door to the control-unit room has been opened.

Remedy
• Check the room with the control unit.

8.13 Code 159 (Communication error CIMxxx)
• Warning code 159 is shown on the display if you press the Up or Down button.
• The warning symbol on the display turns yellow and the pump’s operating mode is unchanged.
• Warning code Communication error CIMxxx is displayed in Grundfos GO Remote.
• The CIM module is unable to communicate with the product.

Cause
The CIM module is installed incorrectly.

Remedy
• Ensure that the module, including cables, is fitted correctly.

Cause
The CIM module is defective.

Remedy
• Contact Grundfos.

Related information
2.2.2 Installing a communication interface module

8.14 Code 165 (Signal fault)
• Alarm code 165 is shown on the display.
• The alarm symbol on the display turns red and the pump stops.
• Alarm code Signal fault is displayed in Grundfos GO Remote.

Cause
The signal from the sensor is out of the configured range.

Remedy
• Go to Settings > Level control in Grundfos GO Remote and ensure that the configured range corresponds to the physical application type.
• Change the sensor, if needed.

8.15 Code 191 (High water level)
• Alarm code 191 is shown on the display.
• The alarm symbol on the display turns red, but the pump’s operating mode is unchanged.
• Alarm code High water level is displayed in Grundfos GO Remote.

Cause
The defined start level did not start the pump.

Remedy
• Check and configure the sensor for start level.

Cause
The pump is not big enough to remove the water.

Remedy
• Contact Grundfos or an authorized service workshop.

8.16 Code 205 (Level switch inconsistency)
• Alarm code 205 is shown on the display.
• The alarm symbol on the display turns red and the pump stops.
• Alarm code Level switch inconsistency is displayed in Grundfos GO Remote.

Cause
A float switch could be defective or stuck.

Remedy
• Check the functionality of each float switch.

Related information
3.6 Configuring the input and output terminals using Grundfos GO Remote

8.17 Code 225 (Communication error pump module)
• Alarm code 225 is shown on the display.
• The alarm symbol on the display turns red and the pump stops.
• Alarm code Communication error is displayed in Grundfos GO Remote.
• The pump module is unable to communicate with the product.

Cause
The connection to GENIbus is missing.

Remedy
• Check the GENIbus connection cable between CU 241 and IO 242.
### 9. Technical data

#### Supply voltage

<table>
<thead>
<tr>
<th>Ratings</th>
<th>Value</th>
</tr>
</thead>
</table>

| Ratings                  | Overvoltage, category III |

#### Rated current

<table>
<thead>
<tr>
<th>Current</th>
<th>Value</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Rated current of a circuit [Inc]</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated current value divided by number of circuits.</td>
<td>Single-phase: 5 kA, Three-phase: 10 kA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rated conditional short-circuit current [SCCR]</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-phase: 5 kA, Three-phase: 10 kA</td>
<td></td>
</tr>
</tbody>
</table>

#### Rated frequency

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated frequency</td>
<td>50/60 Hz</td>
</tr>
</tbody>
</table>

#### Maximum number of pump starts and stops per hour

250.

#### Relay output, REL 3, REL 4

277 VAC nominal and 24 VDC nominal mix use.
Nominal current: 10 mA - 2 A AC/DC.

#### PTC terminals

Performance level C, category 1, according to ISO 13849.
Trip resistance: greater than 2.2 kΩ +/-5 %.
Automatic reset resistance: less than 1 kΩ +/-5 %.

#### Digital input

<table>
<thead>
<tr>
<th>Digital input mode</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital input mode</td>
<td>Low logic level below 1.8 V, High logic level higher than 2.7 V</td>
</tr>
</tbody>
</table>

#### Analog, digital input

All analog signals have an out-of-range alarm.

<table>
<thead>
<tr>
<th>Voltage</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10 V</td>
<td></td>
</tr>
<tr>
<td>0-5 V</td>
<td></td>
</tr>
<tr>
<td>0 - 3.5 V</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Current</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0-20 mA</td>
<td></td>
</tr>
<tr>
<td>4-20 mA</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temperature</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PT100 2-wire</td>
<td></td>
</tr>
<tr>
<td>PT1000 2-wire</td>
<td></td>
</tr>
<tr>
<td>Measurement range: -22 to 356 °F (-30 to 180 °C)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Digital input mode</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Low logic level below 1.8 V, High logic level higher than 2.7 V</td>
<td></td>
</tr>
</tbody>
</table>

#### Enclosure class

- Type 4X

#### EMC classification

- Environment B

#### Weight

See nameplate.
Material
PVC or metal depending on variant. See nameplate.

Dimensions
- Three phase panel: 16.26” x 8.38” x 20.1” (413 x 213 x 510.5 mm)
- Single phase panel: 18.47” x 11.4” x 22.26” (469.1 x 289.5 x 565.4 mm)

Ambient temperature

<table>
<thead>
<tr>
<th>Model</th>
<th>Minimum temperature</th>
<th>Maximum temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct-on-line</td>
<td>-4 °F (-20 °C)</td>
<td>Single pump: 122 °F (50 °C)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dual pump: 113 °F (45 °C)</td>
</tr>
</tbody>
</table>

Fuse miniature link

Fuse miniature link, 1 A, 500 VAC, 5 kA
Size: 5 x 20 mm

Battery
Size CR2032.

Related information
- 3.6 Configuring the input and output terminals using Grundfos GO Remote
- 7.2 Replacing the battery
- 7.5 Replacing the fuse

10. Disposing of the product
This product or parts of it must be disposed of in an environmentally sound way.
1. Use the public or private waste collection service.
2. If this is not possible, contact the nearest Grundfos company or service workshop.
3. Dispose of the waste battery through the national collective schemes. If in doubt, contact your local Grundfos company.

See also end-of-life information at www.grundfos.com/product-recycling.
A.1. Standard option

Option M: IO 241