

# Grundfos MAGNA, Relay Module

Installation and operating instructions

US





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**Installation and operating  
instructions**

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## Original installation and operating instructions.

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### **Warning**

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

## 1. Symbols used in this document



**Warning**

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



**Warning**

*If these instructions are not observed, it may lead to electric shock with consequent risk of serious personal injury or death.*

**Caution**

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

**Note**

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

## 2. General description

The relay module is an expansion module for circulator pumps GRUNDFOS MAGNA 32-100.

The relay module is used for the control and monitoring of the pump. The pump can be started/stopped via an external relay and give fault, ready or operating indication. The functions can be utilized via an external control system, e.g. a building management system.

The relay module offers the following functions:

- **External start/stop**, see section 5.
- **Fault, ready and operating indication via signal relay**, see section 6.

### 3. Connection

The electrical connection and protection must be carried out in accordance with local regulations.

The relay module is powered wirelessly from the pump.

To ensure correct function, follow the instructions in section 4.2 *Mounting the module*.

Connect the module as shown in fig. 1.

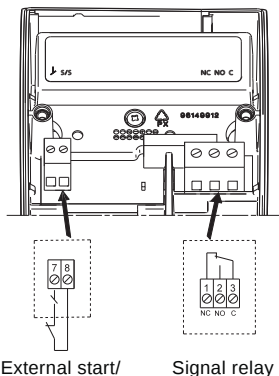
**Caution**

- **All cables must be heat-resistant up to +185 °F (+85°C).**
- **All cables must be installed in accordance with National Electric Code.**



**Wires connected to**

- **the outputs NC, NO, C and**
  - **the start/stop input**
- must be electrically isolated from each other.**

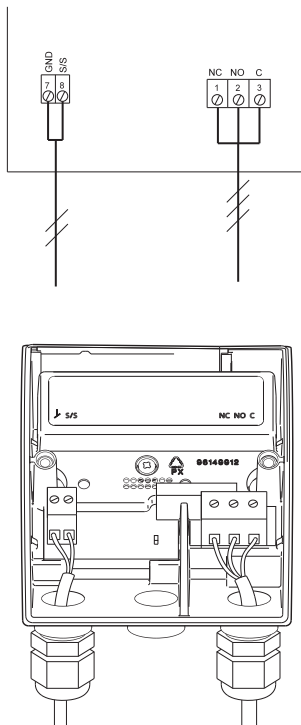


**Fig. 1** Connection terminals

A connection example is shown on page 8.

## 4. Mounting

### 4.1 Connecting the cables

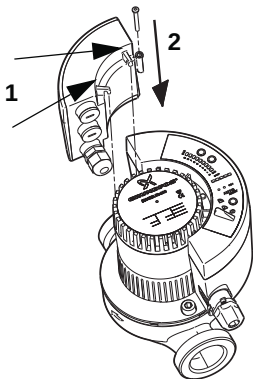


**Fig. 2** Cable connection

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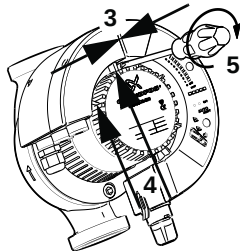
## 4.2 Mounting the module

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1. Align the two hooks on the module.
2. Gently push the module into place so that the hooks engage with the control box.

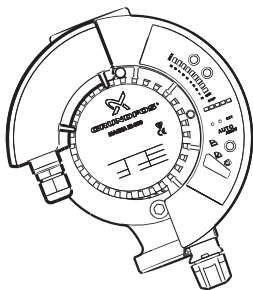
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3. Check that the module and the control box touch each other.
4. Check that the two hooks of the module engage correctly with the control box.
5. Fasten the module with the screw.

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6. Correctly mounted module.

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## 5. External start/stop

The relay module incorporates a digital input for an external contact. The pump can be started and stopped via this input.

When started, the pump will operate with the setpoint set on the control panel or with the R100.

**Note**

*If the external contact is used, the connection between terminals 7 and 8 must be replaced by the external connection.*

### Functional diagram: Start/stop input

| Contact position | Function      |
|------------------|---------------|
|                  | Stop of pump  |
|                  | Start of pump |

## 6. Signal relay

The function of the signal relay can be set with the R100.

Possible functions:

- *Fault*
- *Ready*
- *Operation.*

### 6.1 Fault indication

The signal relay is activated in case of

- *Pump blocked*
- *Internal fault*
- *Undervoltage.*

See section 6.4 *Functional diagram.*

When the fault disappears, the signal relay is deactivated. The fault cause is stored in the pump alarm log. The last five faults can be called up with the R100.

|      |
|------|
| Note |
|------|

***In case of a fault, the red indicator light on the control panel is on.***

***See installation and operating instructions for GRUNDFOS MAGNA 32-100.***

## 6.2 Ready indication

The signal relay is active when the pump is in operation or ready for operation.

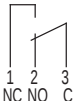
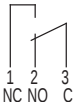
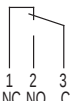
See section 6.4 *Functional diagram*.

## 6.3 Operating indication

The signal relay is active as long as the pump is operating. If the pump is stopped on the control panel, with the R100 or because of a fault, the signal relay is deactivated and consequently gives a signal to an external control system, e.g. a building management system.

See section 6.4 *Functional diagram*.

## 6.4 Functional diagram

| Setting   | Relay                                                                                                   | Description                         |
|-----------|---------------------------------------------------------------------------------------------------------|-------------------------------------|
| Fault     | <br>1 2 3<br>NC NO C   | Pump fault                          |
| Ready     | <br>1 2 3<br>NC NO C   | In operation<br>Ready for operation |
| Operation | <br>1 2 3<br>NC NO C  | In operation                        |
| —         | <br>1 2 3<br>NC NO C | Relay inoperable                    |

## 7. Priority of settings

The external forced-control signals will influence the settings available on the pump control panel and with the R100. However, the pump can always be set to max. curve duty or to stop on the control panel or with the R100.

If two or more functions are activated at the same time, the pump will operate according to the setting with the highest priority.

The priority of the settings is as shown in the table:

| Priority | Possible settings             |                  |
|----------|-------------------------------|------------------|
|          | Pump control panel<br>or R100 | External signals |
| 1        | Stop                          | –                |
| 2        | Max. curve                    | –                |
| 3        | –                             | Stop             |
| 4        | Min. curve                    | –                |
| 5        | Setpoint setting              | –                |

**Example:** If the pump has been forced to stop via an external signal, the pump control panel or the R100 can only set the pump to max. curve.

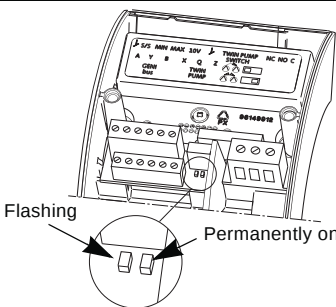
## 8. Fault finding chart



***Before starting any work on the module, make sure that the electricity supply to the pump and the module has been switched off and that it cannot be accidentally switched on.***

| <b>Fault</b>                                                     | <b>Cause</b>                                                                             | <b>Remedy</b>                                                                              |
|------------------------------------------------------------------|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| The pump does not react to external start/stop.                  | The wires are not connected correctly to the terminal block.                             | Connect the wires correctly.                                                               |
|                                                                  | The pump was stopped on the control panel or with the R100.                              | Set the pump back to normal duty.                                                          |
|                                                                  | Relay module not mounted correctly.<br>Relay module defective.<br>Control box defective. | Mount the relay module correctly.<br>Replace the relay module.<br>Replace the control box. |
| The pump does not send the correct signal from the signal relay. | The wires are not connected correctly to the terminal block.                             | Connect the wires correctly.                                                               |
|                                                                  | Signal relay not configured correctly.                                                   | Configure the signal relay correctly.<br>The R100 can be used.                             |
|                                                                  | Relay module not mounted correctly.<br>Relay module defective.<br>Control box defective. | Mount the relay module correctly.<br>Replace the relay module.<br>Replace the control box. |

## 8.1 Checking the module

| Illustration                                                                      | Action                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ol style="list-style-type: none"> <li>1. Remove the module cover.</li> <li>2. Check the LEDs. When the pump is switched on and the module is correctly mounted, the left LED must be flashing and the right LED must be permanently on.</li> <li>3. Refit the module cover.</li> </ol> |

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## 9. Technical data

|                         |                                                                                                                                                                           |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input for start/stop    | <p>External potential-free contact.<br/>         Contact load: 5 V, 1 mA.<br/>         Screened cable.<br/>         Loop resistance: Maximum 130 <math>\Omega</math>.</p> |
| Output for signal relay | <p>Potential-free changeover contact.<br/>         400 VAC, 6 A AC1.<br/>         30 VDC, 6 A.</p>                                                                        |

Subject to alterations.

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**L-MAG-TL-05 0910**

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