

GRUNDFOS MAGNA

Series 2000

GENI Module











- Ⓜ Installation and operating instructions
- Ⓜ Montage- und Betriebsanleitung
- Ⓜ Notice d'installation et d'entretien
- Ⓜ Istruzioni di installazione e funzionamento
- Ⓜ Instrucciones de instalación y funcionamiento
- Ⓜ Οδηγίες εγκατάστασης και λειτουργίας
- Ⓜ Installatie- en bedieningsinstructies
- Ⓜ Monterings- och driftsinstruktion
- Ⓜ Asennus- ja käyttöohjeet
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1. General



Before fitting the terminal box module, these installation and operating instructions should be studied carefully. The installation and operation should also be in accordance with local regulations and accepted codes of good practice.

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The GENI module is an expansion module for circulator pumps GRUNDFOS MAGNA Series 2000.

In addition to bus communication via GENIbus, the module offers the following functions:

- **External analog 0-10 V control**, see section 3.
- **External forced control**, see section 4.
- **Control of twin-head pumps**, see section 5.

2. Electrical connection

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



Never make any connections in the pump terminal box unless the electricity supply has been switched off for at least 5 minutes.

Carry out the electrical connection as shown in fig. 1.

Note:

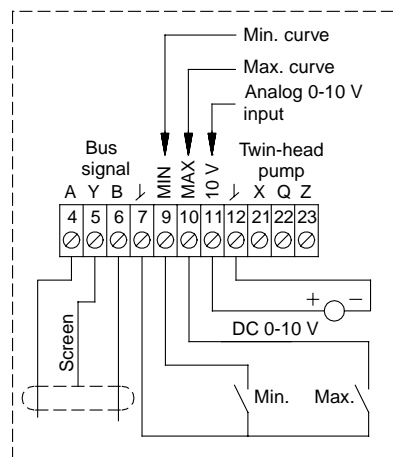
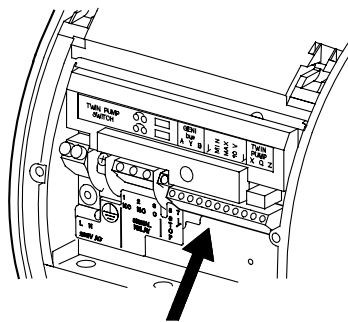
- If the 0-10 V input is used, there must be a connection across terminals MIN and ↘ (input for min. curve must be closed).
- All cables used must be heat-resistant up to at least +85°C.
- All cables used must be installed in accordance with EN 60 204-1.
 - Wires connected to
 - outputs NC, NO, C,
 - inputs Start/stop, A, Y, B, MIN, MAX, 10 V, X, Q, Z and
 - supply terminals



must be separated from each other and from the supply by reinforced insulation.

- All wires connected to a terminal block must be tied up at the terminals.

Fig. 1



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Connection examples can be found on pages 103 to 106.

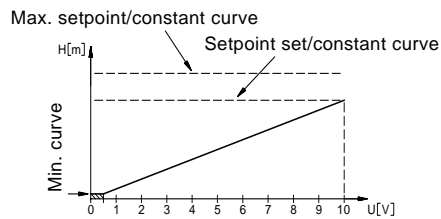
3. External analog 0-10 V control

The GENI module has an input for an external 0-10 VDC analog signal transmitter. Via this input, the pump can be controlled by an external controller if the pump has been set to one of the following control modes:



- **Constant curve.**
The external analog signal will control the pump curve within the range from the min. curve to the constant curve selected according to the characteristic in fig. 2.
 - **Proportional-pressure or constant-pressure control.**
The external analog signal will control the setpoint for the pump head between the setpoint corresponding to the min. curve and the setpoint selected according to the characteristic in fig. 2.
- At an input voltage lower than 0.5 V, the pump will operate according to the min. curve. The setpoint cannot be changed.
The setpoint can only be changed when the input voltage is higher than 0.5 V.

Fig. 2



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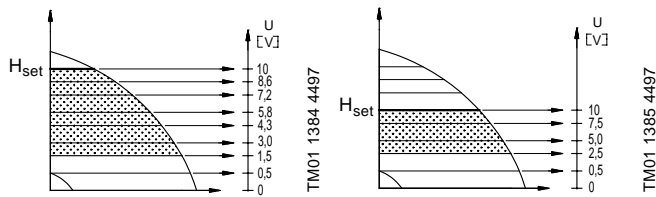
Note:

- The max. curve input must be open.
- The min. curve input must be closed.

See connection examples on pages 103 to 106.

The examples below illustrate the use of an analog control voltage in connection with a pump in constant-pressure control mode:

Fig. 3



Note: As will appear from the above figure, the control range will be reduced if the setpoint of the pump, H_{set} , is set to a lower value.

4. External forced control

The GENI module incorporates inputs for external signals for the forced-control functions:

- Max. curve duty.
- Min. curve duty.

See connection examples on pages 103 to 106.



Functional diagram: Max. curve input:

The max. curve input is only active if the terminals of the start/stop input are connected.

Max. curve		
		Normal duty
		Max. curve

Functional diagram: Min. curve input:

The min. curve input is only active if the terminals of the start/stop input are connected and the input for max. curve is open.

Min. curve		
		Normal duty
		Min. curve

5. Control of twin-head pumps

It is possible to connect two single-head pumps so that they operate as a twin-head pump.

Fit a GENI module in the terminal box of each of the two single-head pumps and connect the modules using a wire.

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Master pump (the pump which is going to start first) connection: Connect a jumper across terminals "X" and "Q", see example on page 105.

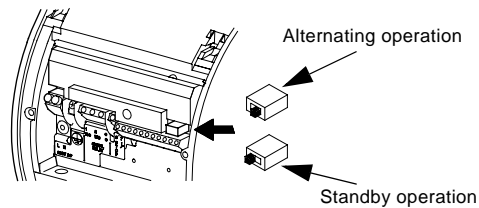
Slave pump connection: Connect the pump as shown in the example on page 106.

The pumps can be set to one of the following operating modes:

- **Alternating operation.** Pump operation alternates every 24 hours. If the duty pump stops due to a fault, the other pump will start.
- **Standby operation.** One pump is operating continuously. In order to prevent seizing-up, the other pump will start at a fixed frequency. If the duty pump stops due to a fault, the other pump will start.

The operating mode is selected by means of a mechanical contact in each module. The contacts in the two modules must be set to the same position. If the contacts are positioned differently, "Standby operation" is selected.

Fig. 4



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Operating the pump:

The connected pumps can be set and operated in the same way as single-head pumps. The duty pump uses its setpoint setting, whether it was made by means of the control panel, via the R100 or via bus.

Note: Both pumps should be set to the same setpoint and control mode. Different settings will result in different operation when changing between the two pumps.

6. Bus communication via GENibus

The GENI module enables serial communication via an RS-485 input. The communication is carried out according to the Grundfos bus protocol, GENibus, and enables connection to the GRUNDFOS Pump Management System 2000, a building management system or another type of external control system.

Via the bus signal, it is possible to set pump operating parameters, such as desired setpoint, temperature influence, operating mode, etc. At the same time, the pump can provide status information about important parameters, such as actual head, actual flow, power input, fault indications, etc.

For further details, consult the operating instructions for the GRUNDFOS Pump Management System 2000 or contact Grundfos.

Note: When the pump is controlled via a bus signal, the number of settings available on the pump control panel or via the R100 will be reduced.

The setpoint and the control mode can only be set via the bus signal. The pump control panel and the R100 can only set the pump to max. curve and to stop. However, an R100 is required if a number is to be allocated to the pump.

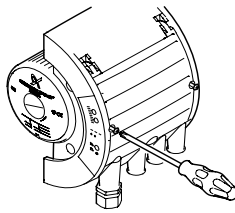


7. Fitting the module

1. Switch off the electricity supply by means of the external mains switch.
2. Open the terminal box cover and remove the label "MODULE".

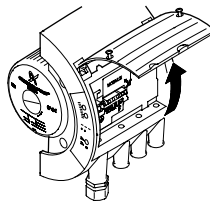
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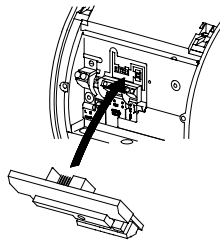
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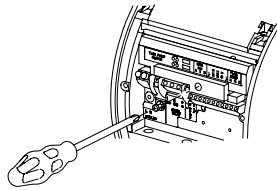
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3. Fit the module.

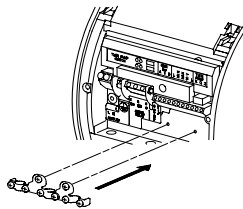
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❷



❸



-
4. Connect the relevant cables.
Examples of cable connections can be found on pages 103 to 106.
Cable specifications are stated in section 8. *Technical data*.

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5. Switch on the electricity supply.
-




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8. Technical data

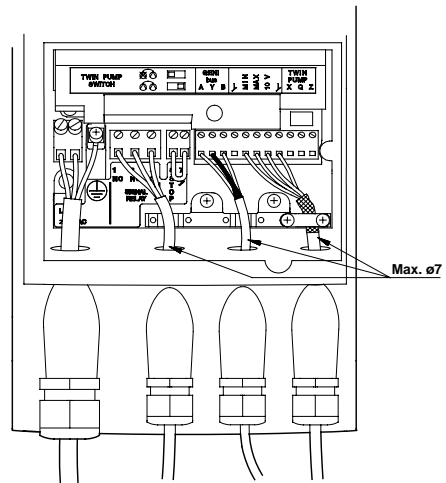
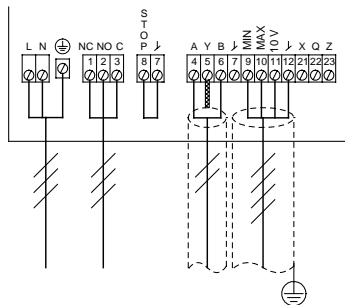
	Inputs for max. and min. curves	External potential-free switch. Contact load: 5 V, 1 mA. Screened cable. Loop resistance: Maximum 130 Ω .
	Input for analog 0-10 V signal	External signal: 0-10 VDC. Maximum load: 1 mA. Screened cable.
	Input for control of twin-head pumps	Screened cable. Wire cross section: 0.25 - 1 mm ² . Cable length: Maximum 1 m.
	Bus input	Grundfos bus protocol, GENIbus protocol, RS-485. Screened cable. Wire cross section: 0.25 - 1 mm ² . Cable length: Maximum 1200 m.

9. Fault finding chart

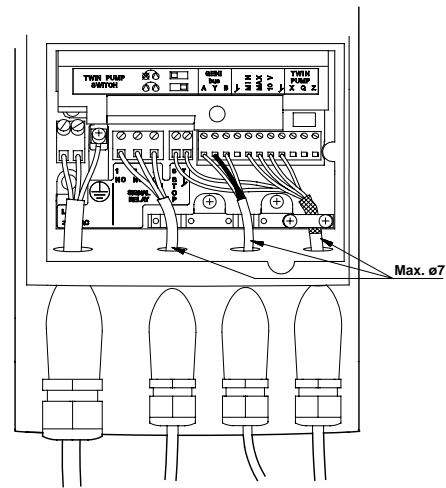
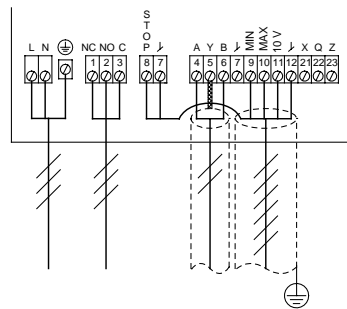
Fault	Cause	Remedy
The pump does not react to the input signal MIN, MAX or 10 V.	The wires are not connected correctly to the terminal block.	Connect the wires correctly.
	The plug connection between the terminal box and the module is faulty.	Correct the fault.
	The terminal box or the module is defective. No internal communication between the terminal box and the module. An R100 remote control will indicate "Fault in module communication".	Replace the module. Replace the terminal box. Contact Grundfos.
The pump does not react to the GENI-bus signal.	The wires are not connected correctly to the terminal block.	Connect the wires correctly.
	The plug connection between the terminal box and the module is faulty.	Correct the fault.
	The terminal box or the module is defective.	Replace the module. Replace the terminal box. Contact Grundfos.



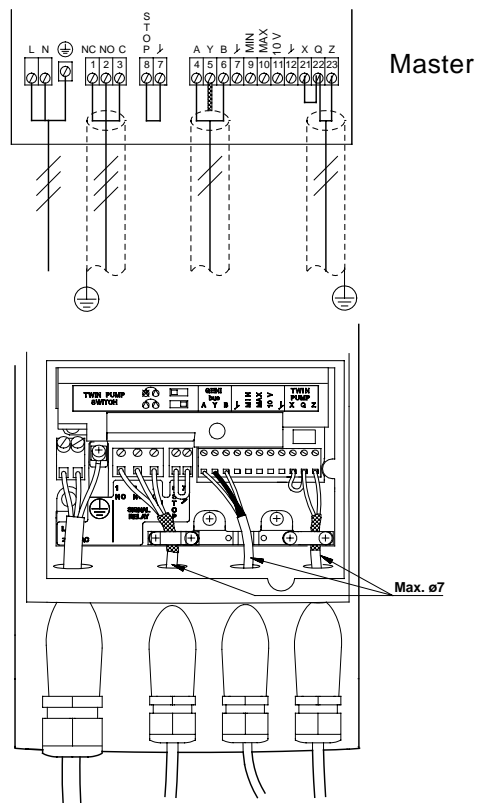
Subject to alterations.



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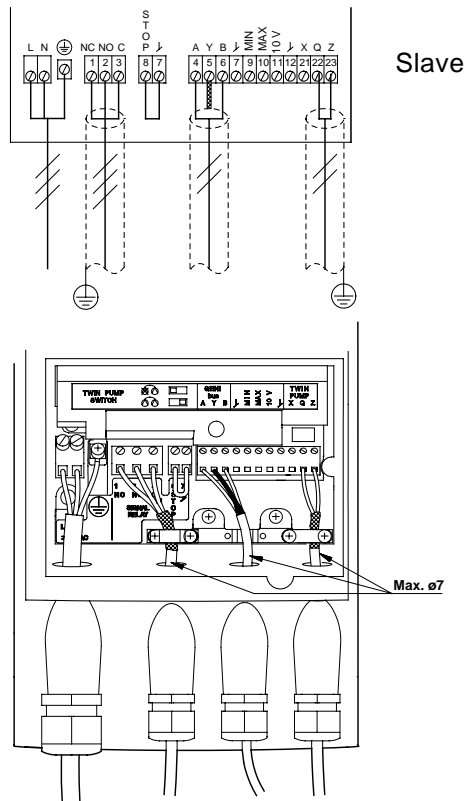


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Master

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Being responsible is our foundation
Thinking ahead makes it possible
Innovation is the essence

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