

IO 241

IO module

Installation and operating instructions



IO 241 IO module
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Other languages
<http://net.grundfos.com/qr/i/99381581>

IO 241

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English (GB) Installation and operating instructions

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 Hazard statements

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

**DANGER**

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

**WARNING**

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

**CAUTION**

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

The hazard statements are structured in the following way:

SIGNAL WORD**Description of the hazard**

Consequence of ignoring the warning

- Action to avoid the hazard.

1.2 Notes

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



Observe these instructions for explosion-proof products.



A blue or grey circle with a white graphical symbol indicates that an action must be taken.



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



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



Tips and advice that make the work easier.

2. Installing the product

2.1 Location

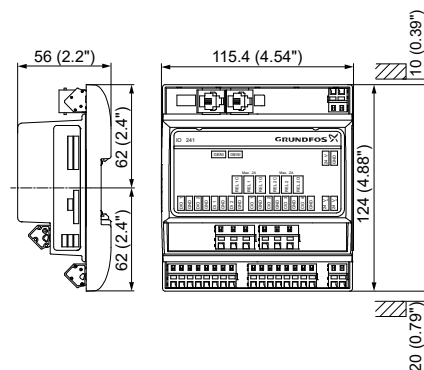
The product is intended for installation in a control panel.

2.2 Mechanical installation

2.2.1 Mounting the module

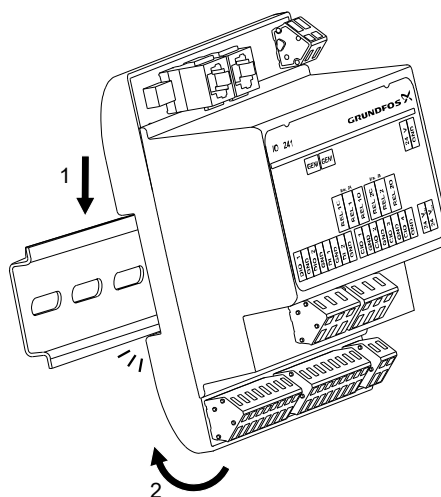
The product is prepared for horizontal mounting on a 35 mm DIN rail (EN 50022). Recommended height: 7.5 mm.

Module dimensions and required minimum clearance above and below the module are shown on the drawing.



Dimensions for IO 241

- Fit the module by hooking the top on the DIN rail (1) and pressing the bottom against the rail (2).



- Connect the cables.

2.2.2 EMC-correct installation

The panel usually contains a control unit, a module, contactors and other power equipment. Other Grundfos modules may also be fitted into the panel.

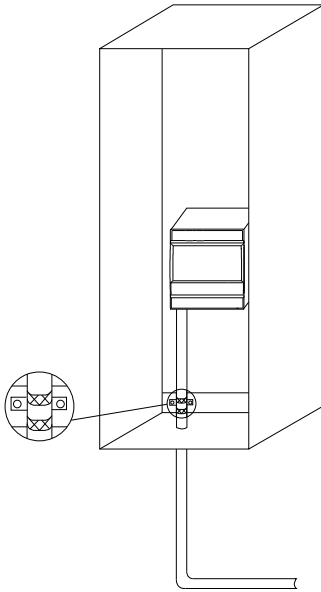
To ensure faultless operation, it is very important to install the electronic modules in an EMC-correct way.

TM072343

TM072342

2.2.2.1 How to install the product in an EMC-correct way

- Use shielded cables for external GENIbus. Connect the shield to the cable clamp.



- Connect the shield to the earth terminal inside the control cabinet.
- Do not twist shield ends, as this will destroy the shield effect at high frequencies.
- Ensure that the DIN rail has a good connection to functional earth.
The module has been designed to ensure a good electrical contact to the DIN rail.

TM075468

2.3 Electrical connection

2.3.1 Connecting the power supply

WARNING
Electric shock



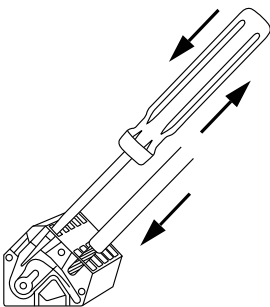
Death or serious personal injury

- Switch off the power supply before making any electrical connections.
- Make sure that the power supply cannot be switched on accidentally.



Changes or modifications not expressly approved by Grundfos may void the user's authority to operate the equipment.

- Check that the supply voltage corresponds with the needed 24 VDC, and ensure that the polarity is connected correctly according to the label on the product itself.
- Connect the power cables and pump cables according to the relevant electrical diagram.
- Tighten the terminal screws to 0.5 Nm.



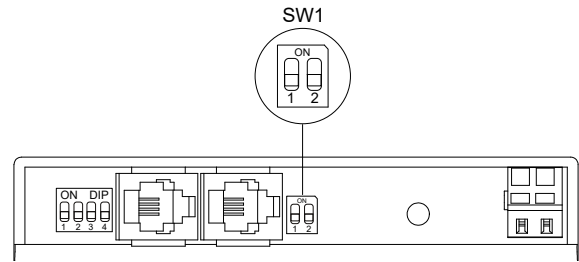
Connecting a wire to a terminal with spring clamps

TM070570

2.3.2 Setting the termination resistor

The GENIbus termination resistor DIP switch SW1 has two bits switches, SW1-1 and SW1-2.

SW1-2 is used for cutting the terminal impedance in and out.



TM082367

- Set the switches according to the table.

Status	SW1-1	SW1-2
Cut-in	-	ON
Cut-out	-	OFF

Maximum cable length

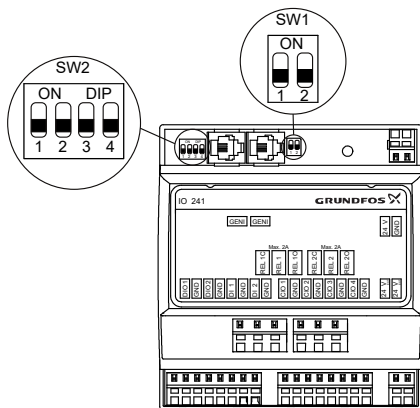
bit/s	Terminated cable m [ft]	Unterminated cable m [ft]
1200-9600	1200 [4000]	1200 [4000]
19200	1200 [4000]	500 [1700]
38400	1200 [4000]	250 [800]

2.3.3 Setting the address switches

If you connect more than one IO 241 module in the system, you must set the SW2 address switch correctly. SW2 has four bits switches, SW2-1, SW2-2, SW2-3 and SW2-4.

Slave address settings

SW2-1	SW2-2	SW2-3	SW2-4	Slave address
OFF	OFF	OFF	OFF	90, default
ON	OFF	OFF	OFF	91
OFF	ON	OFF	OFF	92
ON	ON	OFF	OFF	93
OFF	OFF	ON	OFF	94
ON	OFF	ON	OFF	95
OFF	ON	ON	OFF	96
ON	ON	ON	OFF	97
OFF	OFF	OFF	ON	98
ON	OFF	OFF	ON	99
OFF	ON	OFF	ON	100
ON	ON	OFF	ON	101
OFF	OFF	ON	ON	102
ON	OFF	ON	ON	103
OFF	ON	ON	ON	104
ON	ON	ON	ON	105



TM075096

3. Product introduction

3.1 Product description

The IO 241 module is an optional module for gaining extra input and output signals. It can be connected to the Grundfos IO 242 pump module and Grundfos control unit CU 241. Future modules and controllers may be supported.

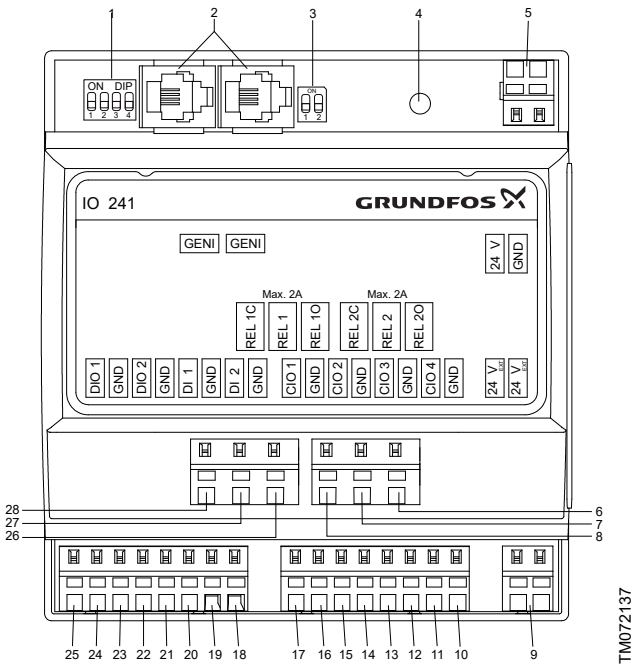
3.2 Intended use, IO 241

The product is only intended for use with Grundfos control unit CU 24X and pump module IO 242. It provides analog and digital input signals for Grundfos CU 24X. It also provides digital outputs used for external switch gear.

The product is only intended for use in control panels.

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

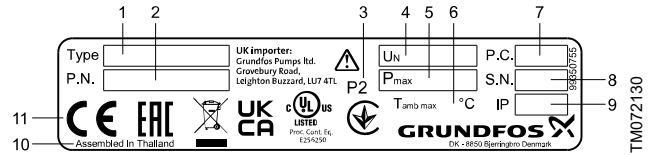
3.3 Terminals



Pos.	Description
1	Address switches for IO module.
2	GENIbus, for internal use between the modules.
3	Switch for termination resistor, SW1
4	Not for use
5	Supply voltage, 24 VDC
6	User-configurable output relay 2, normally open
7	User-configurable output relay 2, common
8	User-configurable output relay 2, normally closed
9	Supply voltage for sensors, 24 VDC, max. 400 mA
10	Ground, GND
11	User-configurable input and output 4
12	Ground, GND
13	User-configurable input and output 3
14	Ground, GND
15	User-configurable input and output 2
16	Ground, GND
17	User-configurable input and output 1
18	Ground, GND
19	Digital input 2
20	Ground, GND
21	Digital input 1
22	Ground, GND
23	User-configurable digital input and output 2
24	Ground, GND
25	User-configurable digital input and output 1
26	User-configurable output relay 1, normally open
27	User-configurable output relay 1, common
28	User-configurable output relay 1, normally closed

3.4 Identification

3.4.1 Nameplate



Pos.	Description
1	Product name
2	Version number and product number
3	Factory code
4	Supply voltage
5	Max. power consumption
6	Maximum ambient temperature
7	Production code (year and week)
8	Serial number
9	Enclosure class according to IEC
10	Production site
11	Markings and approvals

3.5 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.

4. Servicing the product

The product cannot be serviced.

- Contact Grundfos. If the product is faulty, it must be replaced.

4.1 Replacing the IO module

WARNING Electric shock

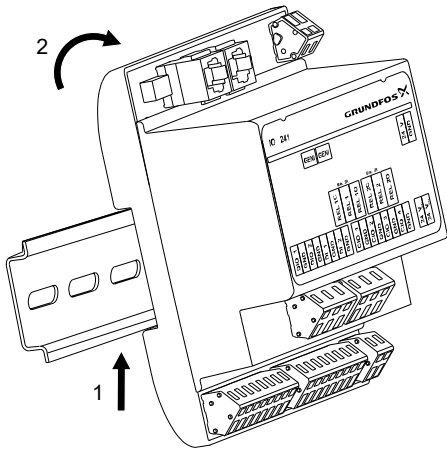


Death or serious personal injury

- Switch off the power supply before making any electrical connections.
- Make sure that the power supply cannot be switched on accidentally.

- Switch off the power supply to the product and other components with external supply.
- Write down the terminal connection of each wire to ensure correct reconnection.
- Disconnect all wires.
- Press the module up gently (1).

5. Lift the module off the rail (2).



TM072263

Removing IO 241

6. Fit the new module.
7. Connect all wires.

5. Technical data

5.1 Electrical data

Supply voltage

24 VDC \pm 10 %.

Power supply is required to be class 2.

Oversvoltage category II.

Check that the supply voltage corresponds to the values stated on the nameplate.

The wires must be rated at minimum 70 °C (158 °F), minimum 18 AWG.



Mount only copper wires in the terminals.

Power

See nameplate.

Maximum power dissipation

Object	Maximum power dissipation
99332827	4.3 W

Input/output connections

Signal excitation (excl. EMC) must be limited to -0.5 to +26 VDC or an effective clamp current less than \pm 15 mADC.

Relay output, REL 1, REL 2

250 VAC nominal and 24 VDC nominal mix use.

Nominal current: 10 mA - 2 A AC/DC.

GENIbus terminal

-7 to +12 VDC.

Nominal current condition: 4 mADC.

Short-circuit current condition: 328 mA.

Terminal impedance: 120 Ω .

CIO terminals

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

Voltage	0 - 10 V
	0 - 5 V
	0 - 3.5 V
Current	0 - 20 mA
	4 - 20 mA
Temperature	Pt100 2-wire. Pt1000 2-wire. Measurement range: -30 to +180 °C (-22 °F to +356 °F).
Digital input mode	Low logic level below 1.8 V. High logic level higher than 2.7 V.
Digital output mode	Open collector. Current sink capability: maximum 75 mA, no sourcing. Overcurrent protected.

DIO terminals

Digital input mode	Low logic level below 1.8 V. High logic level higher than 2.7 V.
Digital output mode	Open collector. Current sink capability: maximum 75 mA, no sourcing. Overcurrent protected.

DI terminal

Digital input mode	Low logic level below 1.8 V. High logic level higher than 2.7 V.
--------------------	---

5.2 Mechanical data

Altitude

Maximum 2000 m (6562 ft).

5.3 Temperature

Ambient temperature

Minimum	-30 °C (-22 °F)
Maximum	+70 °C (+158 °F)

Storage temperature

Minimum	-40 °C (-40 °F)
Maximum	+70 °C (+158 °F)

5.4 Environmental data

Humidity

5-95 %.

Enclosure class

IP20.

6. Disposing of the product

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

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



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

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

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