GRUNDFOS **INSTRUCTIONS**

Multi-purpose IO module in CIU 27X

Installation and operating instructions

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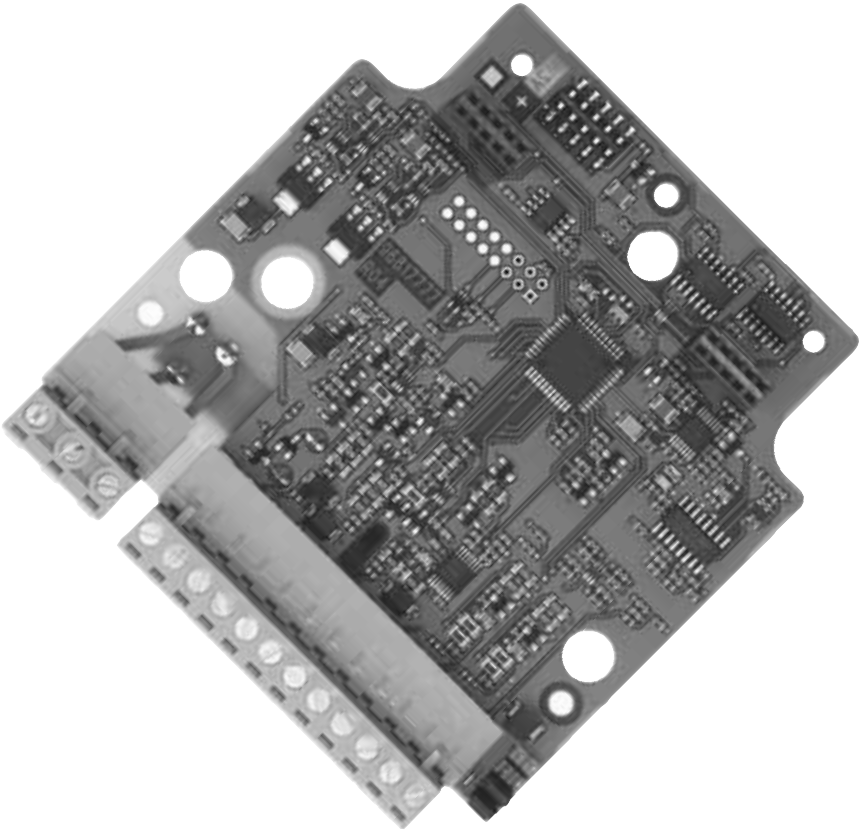

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GRUNDFOS

(GB) Declaration of Conformity

We, Grundfos, declare under our sole responsibility that the product IO module, to which this declaration relates, is in conformity with these Council directives on the approximation of the laws of the EC member states:

– Low Voltage Directive (2006/95/EC).
  Standard used: EN 61010-1: 2001.
– EMC Directive (2004/108/EC).
  Standard used: EN 61326-1: 2006.

(D) Konformitätserklärung

Wir, Grundfos, erklären in alleiniger Verantwortung, dass das Produkt IO-Modul, auf das sich diese Erklärung bezieht, mit den folgenden Richtlinien des Rates zur Angleichung der Rechtsvorschriften der EU-Mitgliedsstaaten übereinstimmt:

– Niederspannungsrichtlinie (2006/95/EG).
  Norm, die verwendet wurde: EN 61010-1: 2001.
– EMV-Richtlinie (2004/108/EG).
  Norm, die verwendet wurde: EN 61326-1: 2006.

(F) Déclaration de Conformité

Nous, Grundfos, déclarons sous notre seule responsabilité, que le produit Module IO, auquel se réfère cette déclaration, est conforme aux Directives du Conseil concernant le rapprochement des législations des Etats membres CE relatives aux normes énoncées ci-dessous :

– Directive Basse Tension (2006/95/CE).
  Norme utilisée : EN 61010-1 : 2001.
– Directive Compatibilité Electromagnétique CEM (2004/108/CE).
  Norme utilisée : EN 61326-1 : 2006.

(I) Dichiarazione di Conformità

Grundfos dichiara sotto la sua esclusiva responsabilità che il prodotto Modulo IO, al quale si riferisce questa dichiarazione, è conforme alle seguenti direttive del Consiglio riguardanti il riavvicinamento delle legislazioni degli Stati membri CE:

– Direttiva Bassa Tensione (2006/95/CE).
  Norma applicata: EN 61010-1: 2001.
– Direttiva EMC (2004/108/CE).
  Norma applicata: EN 61326-1: 2006.

(E) Declaración de Conformidad

Nosotros, Grundfos, declaramos bajo nuestra propia responsabilidad que el producto Módulo IO, al cual se refiere esta declaración, está conforme con las Directivas del Consejo en la aproximación de las leyes de los Estados Miembros del EM:

– Directiva de Baja Tensión (2006/95/CE).
  Norma aplicada: EN 61010-1: 2001.
– Directiva EMC (2004/108/CE).
  Norma aplicada: EN 61326-1: 2006.

(P) Declaração de Conformidade

A Grundfos declara sob sua única responsabilidade que o produto Módulo IO, ao qual diz respeito esta declaração, está em conformidade com as seguintes Directivas do Conselho sobre a aproximação das legislações dos Estados Membros da CE:

– Directiva Baixa Tensão (2006/95/CE).
  Norma utilizada: EN 61010-1: 2001.
– Directiva EMC (compatibilidade electromagnética) (2004/108/CE).
  Norma utilizada: EN 61326-1: 2006.

(NL) Overeenkomstigheidsverklaring

Wij, Grundfos, verklaren geheel onder eigen verantwoordelijkheid dat het product IO module waarop deze verklaring betrekking heeft, in overeenstemming is met de Richtlijnen van de Raad in zake de onderlinge aanpassing van de wetgeving van de EG lidstaten betreffende:

– Laagspannings Richtlijn (2006/95/EC).
  Gebruikte norm: EN 61010-1: 2001.
– EMC Richtlijn (2004/108/EC).
  Gebruikte norm: EN 61326-1: 2006.

(S) Försäkran om överensstämmelse

Vi, Grundfos, försäkrar under ansvar att produkten IO-modul, som omfattas av denna försäkran, är i överensstämmelse med rådets direktiv om inbördes närmande till EU-medlemsstaternas lagstiftning, avseende:

– Lågspänningsdirektivet (2006/95/EG).
  Tillämpad standard: EN 61010-1: 2001.
– EMC-direktivet (2004/108/EG).
  Tillämpad standard: EN 61326-1: 2006.

(DK) Overensstemmelseserklæring

Vi, Grundfos, erklærer under ansvar at produktet IO-modul som denne erklæring omhandler, er i overensstemmelse med disse af Rådets direktiver om indbyrdes tilnærmelse til EF-medlemsstaternes lovgivning:

– Lavspændingsdirektivet (2006/95/EF).
  Anvendt standard: EN 61010-1: 2001.
– EMC-direktivet (2004/108/EF).
  Anvendt standard: EN 61326-1: 2006.

(RU) Декларация о соответствии

Мы, компания Grundfos, со всей ответственностью заявляем, что изделия Модуль IO, к которым относится настоящая декларация, соответствуют следующим Директивам Совета Евросоюза об унификации законодательных предписаний стран-членов ЕС:

– Низковольтное оборудование (2006/95/EC).
  Применявшийся стандарт: EN 61010-1: 2001.
– Электромагнитная совместимость (2004/108/EC).
  Применявшийся стандарт: EN 61326-1: 2006.

(TR) Uygunluk Bildirgesi

Grundfos olarak bu beyannameye konu olan IO modülü ürünlerinin, AB Üyesi Ülkelerin kanunlarını birbirine yaklaştırma üzerine Konsey Direktifleriyle uyumlu olduğunun yalnızca bizim sorumluluğumuz altında olduğunu beyan ederiz:

– Düşük Voltaj Yönetmeliği (2006/95/EC).
  Kullanılan standart: EN 61010-1: 2001.
– EMC Diretifi (2004/108/EC).
  Kullanılan standart: EN 61326-1: 2006.

(ZH) 产品合格声明书

我们格兰富在我们的全权责任下声明，产品 IO 模块，即该合格证所指之产品，符合欧共体使其成员国法律趋于一致的以下欧共理事会指令：

– 低电压指令 (2006/95/EC)。
  所用标准 : EN 61010-1: 2001。
– 电磁兼容性指令 (2004/108/EC)。
  所用标准 : EN 61326-1: 2006。

Bjerringbro, 15th December 2009

Jan Strandgaard
Technical Director

Multi-purpose IO module in CIU 27X

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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 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!

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. Introduction

This manual describes the installation and configuration of the multi-purpose IO module incorporated in the CIU 27X unit (CIU = Communication Interface Unit).

The CIU 27X is a data collection and communication unit. The CIU 27X is designed for use in the Grundfos Remote Management system.

3. Applications

The CIU 27X unit incorporates two modules:

- CIM 27X GSM module
- multi-purpose IO module, I/O functionality.

For further information about the CIM 27X GSM module, see installation and operating instructions for the CIM 2XX GSM module.

Sensors connected to the digital input/analog input of the IO module will be monitored remotely via Grundfos Remote Management.

The analog output and relay output on the IO module can be set or activated remotely via the Grundfos Remote Management web user interface.

Caution ***If the IO module is used in a manner not specified by the manufacturer, the protection provided by the IO module may be impaired.***

4. Installation

Warning

Before beginning installation, make sure that the power supply has been switched off and that it cannot be accidentally switched on.

We recommend you to carefully follow the order of installation below to ensure easy and correct installation:

- Install the CIU 27X unit. See installation and operating instructions for the CIU unit.
- Connect all relevant conductors to the IO module. See section *5. IO module*.
- Connect the GSM antenna, SIM card, etc. to the CIM 27X GSM module. See installation and operating instructions for the CIM 2XX GSM module.

4.1 EMC-correct installation

In order to ensure correct and stable function, it is very important to follow the guidelines below.

Grundfos recommendations

Use only signal cables with screen for all inputs and outputs.

Note ***Any isolating plastic tape between screen and sheath must be removed before mounting the cable in the earth clamp.***

Note ***Do not twist screen ends, as this will destroy the screen effect at high frequencies.***

5. IO module

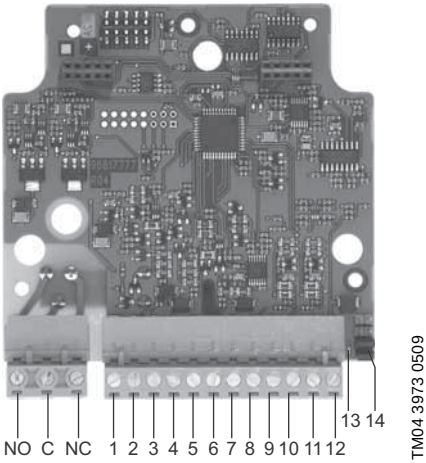

Fig. 1 IO module

Pos.	Designation	Description	Section
NO	NO	Terminals for relay output	*5.1 Relay output*
C	C		
NC	NC		
1	-	24 V supply for AI1	*5.2 Inputs AI1/DI1 and AI2/DI2*
2	AI1/DI1	• Analog input 1 or • digital input 1	
3	-	24 V supply for AI2	
4	AI2/DI2	• Analog input 2 or • digital input 2	
5	GND	Earth terminal	
6	AO	Analog output 0-10 V	*5.3 Analog output*
7	GND	Earth terminal	
8	DI3	Digital input 3	*5.4 Digital inputs*
9	GND	Earth terminal	
10	DI4	Digital input 4	
11	GND	Earth terminal	*5.5 Pt100/Pt1000 input*
12	Pt100/Pt1000	Pt100 or Pt1000 input	
13	LED	Power indicator	*5.6 Power indicator LED*
14	J1-J4	Jumpers	*5.2.1 Jumper settings*

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5.1 Relay output

The relay of the IO module has two functions. It can be used either as a normally open (NO) relay or as a normally closed (NC) relay.

For connections, see fig. 2 and section *6. Overview of inputs and outputs*.

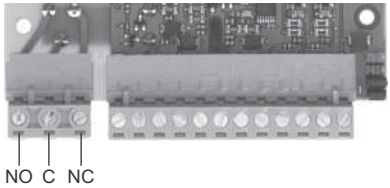

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Fig. 2 Relay output

Pos.	Description
NO	Use this terminal when the relay is to be used as a normally open relay.
C	Common terminal.
NC	Use this terminal when the relay is to be used as a normally closed relay.

5.2 Inputs AI1/DI1 and AI2/DI2

The IO module has two configurable inputs. Each of the inputs can be used either as an analog input or as a digital input. See fig. 1, pos. 2 and 4. The configuration is done by setting two jumpers for each input.

The user has to select which type of control signal to be used.

The control signal can be set to

- analog control signal 0-10 V
- analog control signal 0-20 mA
- analog control signal 4-20 mA
- digital control signal (factory setting).

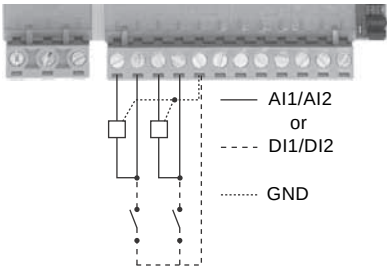

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Fig. 3 AI1/AI2 and DI1/DI2

For further information, see section *6. Overview of inputs and outputs*.

5.2.1 Jumper settings

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Fig. 4 Jumpers

Symbol	Status	Jumpers
	Open Closed	J1 J2 AI1/DI1 J3 J4 AI2/DI2

Configuration, AI1/DI1

	J1	J2	Control signal
	Open	Open	Analog 0-10 V
	Open	Closed	Analog 0-20 mA
	Closed	Open	Analog 4-20 mA
	Closed	Closed	Digital

Configuration, AI2/DI2

	J3	J4	Control signal
	Open	Open	Analog 0-10 V
	Open	Closed	Analog 0-20 mA
	Closed	Open	Analog 4-20 mA
	Closed	Closed	Digital

Note ***The factory setting of the jumpers is "closed". This means that both configurable inputs are set to digital control signal.***

5.3 Analog output

The analog output can be activated, changed or set remotely via the Grundfos Remote Management web user interface.

For connections, see fig. 5 and section *6. Overview of inputs and outputs*.

Note ***Connect the cable screen under the earth clamp in the CIU unit.***

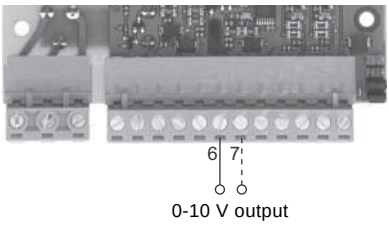

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Fig. 5 Analog output

5.4 Digital inputs

The IO module has two dedicated digital inputs.

For connections, see fig. 6 and section *6. Overview of inputs and outputs*.

Note ***Connect the cable screen under the earth clamp in the CIU unit.***

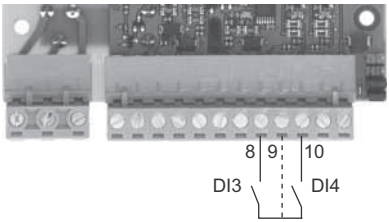

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Fig. 6 Digital inputs DI3 and DI4

Caution ***Only potential-free devices must be connected to the digital inputs.***

5.5 Pt100/Pt1000 input

The IO module automatically detects the type of Pt sensor connected.

For connections, see fig. 7 and section *6. Overview of inputs and outputs*.

Note ***Connect the cable screen under the earth clamp in the CIU unit.***

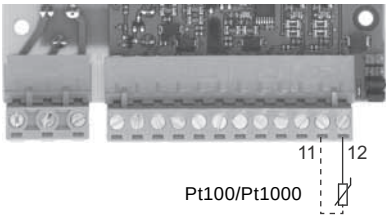

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Fig. 7 Pt100/Pt1000 input

Note ***Cable length compensation is not supported by the IO module.***

5.6 Power indicator LED

See fig. 8.

If the LED (pos. 13) is permanently green when the power supply has been switched on, the power supply to the IO module is OK.
If the LED remains off after the power supply has been switched on, see section *9. Service*.

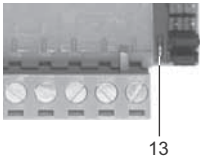

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Fig. 8 Power indicator LED

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6. Overview of inputs and outputs

AI	Analog input
AO	Analog output
C	Common
DI	Digital input
NC	Normally closed contact
NO	Normally open contact

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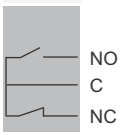
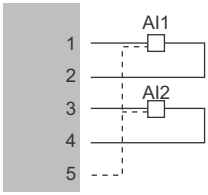
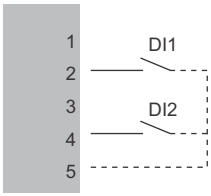
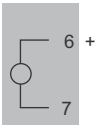
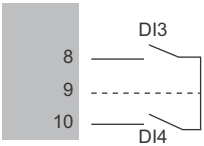
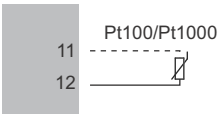
Terminal	Designation	Data	Diagram
Relay output			**IO module**
NO	Normally open contact	Maximum contact load: 240 VAC, 2 A Minimum contact load: 5 VDC, 10 mA	
C	Common		
NC	Normally closed contact		
Configurable inputs AI1/DI1* and AI2/DI2*			**IO module**
1	+ 24 V for AI1	24 V ± 10 %, maximum 30 mA, short-circuit-protected	
2	AI1/DI1	• 0-20 mA • 4-20 mA • 0-10 V • digital	
3	+ 24 V for AI2	24 V ± 10 %, maximum 30 mA, short-circuit-protected	
4	AI2/DI2	• 0-20 mA • 4-20 mA • 0-10 V • digital	or 
5	GND	-	

* Configure these inputs by use of jumpers. See section *5.2.1 Jumper settings*.
Note: Each input is to be configured according to the sensor connected.

Terminal	Designation	Data	Diagram
Analog output			**IO module**
6	AO	• 0-10 V ± 2 % of full scale • Maximum output current: 1 mA	
7	GND	-	
Digital inputs			**IO module**
8	DI3	Digital input	
9	GND	-	
10	DI4	Digital input	
Pt100/Pt1000 sensor input			**IO module**
11	GND	-	
12	Pt100/Pt1000	-	

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7. Technical data

Supply voltage	24 VDC ± 10 % and 5 VDC ± 5 %
Power consumption	Maximum 3.5 W
Cables	Cross-section: 0.5 to 2.5 mm^2 or AWG 20-13
	Length: The above values apply to cable lengths not exceeding 30 metres.

7.1 Relay output

Normally open contact	C, NO
Normally closed contact	C, NC
Maximum contact load	240 VAC, 2 A
Minimum contact load	5 VDC, 10 mA

7.2 Analog inputs

Input current and voltage	0-20 mA 4-20 mA 0-10 V
Tolerance	± 3 % of full scale
Repetitive accuracy	± 1 % of full scale
Input resistance, current	< 250 Ω
Input resistance, voltage	> 50 kΩ ± 10 %
Frequency range	0-16 Hz
Supply to sensor	24 V ± 10 %, maximum 30 mA, short-circuit-protected

7.3 Analog output

Output signal	0-10 V ± 2 % of full scale
Repetitive accuracy	± 1 % of full scale
Maximum output current	1 mA

7.4 Digital inputs

Open-circuit voltage	5 VDC
Closed-circuit current	10 mA
Frequency range	0-16 Hz
Logic "0" Logic "1"	< 1.5 V > 4.0 V

Caution ***Only potential-free devices must be connected to the digital inputs.***

7.5 Pt100/Pt1000 input

Pt100/Pt1000 supply current	1 mA
Temperature range	-50 °C to +200 °C (-58 °F to +392 °F)
Update interval	2000 ms

Note ***Cable length compensation is not supported by the IO module.***

8. Maintenance

The IO module is maintenance-free during normal use and operation. The IO module must only be cleaned with a dry dust-free cloth.

9. Service

The IO module cannot be serviced. If the IO module is faulty, the CIU 27X unit must be replaced.

10. Disposal

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

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

Subject to alterations.

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