



► IndustrialPI DIO/DI/DO

PILZ
THE SPIRIT OF SAFETY

Operating Manual-1006971-EN-02
- IndustrialPI



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SD means Secure Digital

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1 Introduction

1.1 Validity of documentation

This documentation is valid for the product IndustrialPI DIO/DI/DO. It is valid until new documentation is published.

This operating manual explains the function and operation, describes the installation and provides guidelines on how to connect the product.

1.2 Using the documentation

This document is intended for instruction. Only install and commission the product if you have read and understood this document. The document should be retained for future reference.

1.3 Definition of symbols

Information that is particularly important is identified as follows:



DANGER!

This warning must be heeded! It warns of a hazardous situation that poses an immediate threat of serious injury and death and indicates preventive measures that can be taken.



WARNING!

This warning must be heeded! It warns of a hazardous situation that could lead to serious injury and death and indicates preventive measures that can be taken.



CAUTION!

This refers to a hazard that can lead to a less serious or minor injury plus material damage, and also provides information on preventive measures that can be taken.



NOTICE

This describes a situation in which the product or devices could be damaged and also provides information on preventive measures that can be taken. It also highlights areas within the text that are of particular importance.



INFORMATION

This gives advice on applications and provides information on special features.

1.4

Symbols used on the product

	Functional earth (FE)
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2 Overview

You can use these expansion modules to connect digital sensors and actuators to an IndustrialPI 4.

The following digital IO-modules are available:

Product	Available inputs	Available outputs
IndustrialPI DIO	14	14
IndustrialPI DI	16	–
IndustrialPI DO	–	16

2.1 Product features

- ▶ Expansion module for the IndustrialPI 4
- ▶ 14/16 digital inputs, which can be configured as counters or encoders
- ▶ Selectable low-pass filter to debounce inputs
- ▶ 14/16 digital outputs, which can be configured as PWM outputs
- ▶ Outputs can be configured as a high-side switch or push-pull outputs
- ▶ Galvanic isolation from PiBridge.

3 Safety

3.1 Intended use

IndustrialPI DIO/DI/DO is a digital I/O module of the automation system IndustrialPI. IndustrialPI DIO/DI/DO is designed for use in non-safety-related applications.

Intended use includes making the electrical installation EMC-compliant. Please refer to the guidelines stated in the "PSSuniversal Installation Manual". The module is designed for use in an industrial environment. It is not suitable for use in a domestic environment, as this can lead to interference.

The following is deemed improper use in particular:

- ▶ Any component, technical or electrical modification to the module
- ▶ Use of the module outside the areas described in this manual
- ▶ Any use of the module that is not in accordance with the technical details.

Guidelines for UL approval

UL Markings

- ▶ If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

3.1.1 Third-party manufacturer licence information

The product contains open source software, whose terms of use could further limit the product's application area. It is essential to refer to the third-party manufacturer licence information "IndustrialPI_Third-party_manufacturer_license_information_-_1007005-EN-01.txt" in the /boot directory on the IndustrialPI.

3.2 Safety regulations

3.2.1 Use of qualified personnel

The products may only be assembled, installed, programmed, commissioned, operated, de-commissioned and maintained by persons who are competent to do so.

A competent person is a qualified and knowledgeable person who, because of their training, experience and current professional activity, has the specialist knowledge required. In order to inspect, assess and handle products, devices, systems, plant and machinery, this person must be familiar with the state of the art and the applicable national, European and international laws, directives and standards.

It is the company's responsibility only to employ personnel who

- ▶ Are familiar with the basic regulations concerning health and safety / accident prevention,
- ▶ Have read and understood the information provided in the section entitled Safety
- ▶ Have a good knowledge of the generic and specialist standards applicable to the specific application.

3.2.2 Warranty and liability

All claims to warranty and liability will be rendered invalid if

- ▶ The product was used contrary to the purpose for which it is intended,
- ▶ Damage can be attributed to not having followed the guidelines in the manual,
- ▶ Operating personnel are not suitably qualified,
- ▶ Any type of modification has been made (e.g. exchanging components on the PCB boards, soldering work etc.).

3.2.3 Disposal

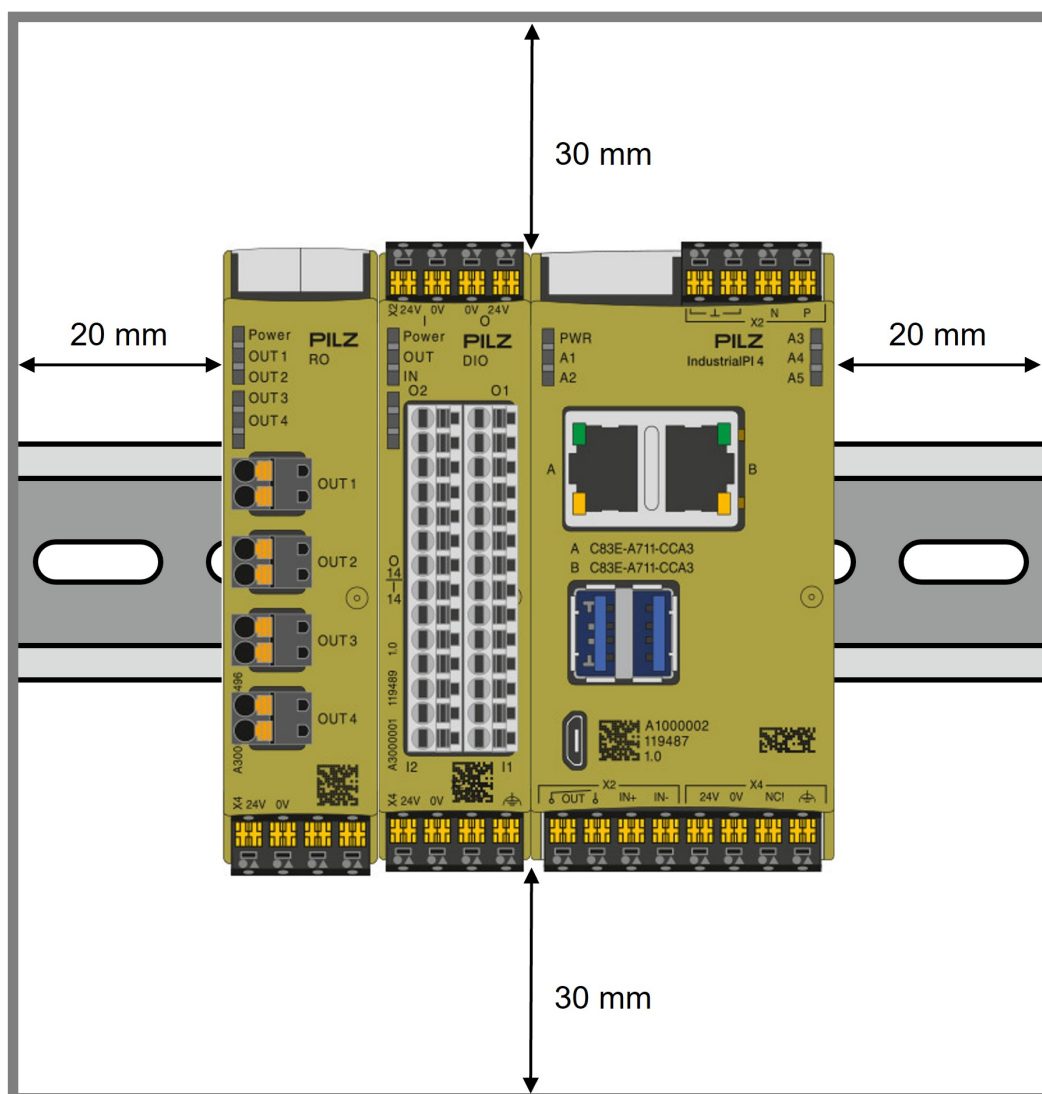
- ▶ When decommissioning, please comply with local regulations regarding the disposal of electronic devices, such as the Electrical and Electronic Equipment Act.

4 Function description

The digital inputs can record input signals, can be configured as counter or encoder inputs, and have a selectable low-pass filter for debouncing. The digital outputs can switch digital output signals. They can also be configured as PWM outputs and can be used as a high-side switch or as push-pull outputs. There is galvanic isolation from PiBridge.

The configuration of the inputs and outputs is carried out using the browser-based application PiCtory (see [Configuration](#)  17).

- ▶ The protection type and protection class of the control cabinet or housing must comply with the standards provided for the intended use.
- ▶ For control cabinet installation you will need a mounting rail 35 x 7.5 mm (EN 50022).
- ▶ Install the mounting rail horizontally in the control cabinet, in accordance with the manufacturer's instructions. Only when installed horizontally is it guaranteed that air flows through the IndustrialPI modules from bottom to top, and can thereby cool the electronics (stack effect).
- ▶ Ensure that the IndustrialPI is at a sufficient distance from other products to guarantee sufficient airflow.



Procedure:

- ▶ Hold the latching element on the IndustrialPI module up to the mounting rail.
- ▶ Press the locking mechanisms towards the IndustrialPI module.
- ▶ Ensure that the IndustrialPI module is firmly connected to the mounting rail.



NOTICE

Excessive temperatures can damage the module!

Ensure that the ambient temperature in the control cabinet is less than 55 °C.

6 Wiring

The PiBridge is a backplane bus, which you can use to connect together all the modules from the IndustrialPI range.

The following expansion modules can be connected using the PiBridge:

Up to ten expansion modules (e.g. our IO modules); five of these expansion modules on the left and five on the right.

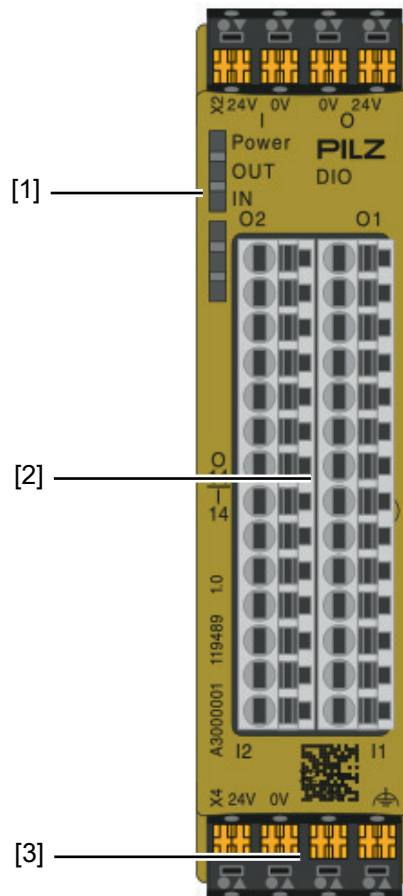
Insert PiBridge, as shown [1], on to the PiBridge connections of the products you wish to connect.

Data is transmitted by signal lines from one module to the other via the PiBridge.

Use copper wiring with a temperature stability of 75 °C.



6.1 Terminal configuration



Position	Connection
1	Status LED The Power LED indicates whether the IndustrialPI DIO is working correctly (green) or if a problem exists (red).
2	GPIO interface to read and/or output signals. The assignment of the GPIO pins varies depending on the product type.
3	Mains connection Do not switch on the supply voltage until all the required connections are plugged in and the product is mounted on the top-hat rail.

GPIO pins are available on the IndustrialPI. GPIO is an interface that forwards signals, such as those detected by a sensor, to the controller. This interface consists of 28 individual pins, 14/16 of which can be used to read or output signals.

Pin assignment of the GPIO interface

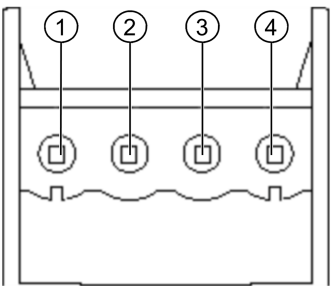
Pin	IndustrialPI DIO	IndustrialPI DI	IndustrialPI DO
1	IN1	IN1	-
2	IN2	IN2	-
3	IN3	IN3	-
4	IN4	IN4	-
5	IN5	IN5	-
6	IN6	IN6	-
7	IN7	IN7	-
8	IN8	IN8	-
9	IN9	IN9	-
10	IN10	IN10	-
11	IN11	IN11	-
12	IN12	IN12	-
13	IN13	IN13	OUT15
14	IN14	IN14	OUT16
15	OUT13	IN15	OUT13
16	OUT14	IN16	OUT14
17	OUT11	-	OUT11
18	OUT12	-	OUT12
19	OUT9	-	OUT9
20	OUT10	-	OUT10
21	OUT7	-	OUT7
22	OUT8	-	OUT8
23	OUT5	-	OUT5
24	OUT6	-	OUT6
25	OUT3	-	OUT3
26	OUT4	-	OUT4
27	OUT1	-	OUT1
28	OUT2	-	OUT2

6.2 Supply voltage

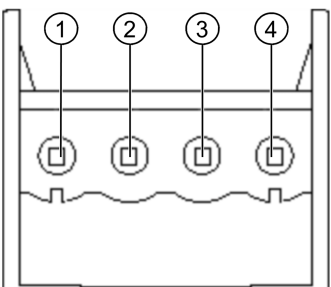
The supply voltage of the IndustrialPI DIO, IndustrialPI DI and IndustrialPI DO operates via the X4 connector. The supply voltage of the digital inputs/outputs operates via the X2 connector on the I/O module. The modules have galvanically isolated inputs and outputs. There is the option to operate them via an independent 12-24 V supply voltage. If possible, use the same supply voltage (the same ground potential) as that which supplies the connected sensors or actuators. This can be the supply voltage connected to the X4 connector.

Connector pin assignment X2:

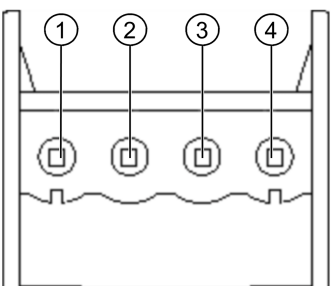
► IndustrialPI DIO

Pin	Assignment	
1	24 V infeed for the outputs	
2	0 V infeed for the outputs	
3	0 V infeed for the inputs	
4	24 V infeed for the inputs	

► IndustrialPI DI

Pin	Assignment	
1	24 V infeed for the inputs	
2	0 V infeed for the inputs	
3	Do not connect	
4	Do not connect	

► IndustrialPI DO

Pin	Assignment	
1	Do not connect	
2	Do not connect	
3	0 V infeed for the outputs	
4	24 V infeed for the outputs	

UL Markings



INFORMATION

The device may only be supplied by circuits that comply with Class 2 or Safety Extra Low Voltage (SELV) in accordance with UL 61010-1.

7 Configuration

7.1 Configure inputs

You can use PiCtory to configure the IndustrialPI DIO/DI/DO. This section describes the setting values of the Value Editor.

In the Input area you can make settings for all the parameters that the IndustrialPI module receives.

You can select how the inputs are to be evaluated in the [Memory area](#)  21].

As an option you can also configure the inputs as encoders (rotary encoders) and connect a counter function.

Name	Data type	Number	Offset	IndustrialPI DIO	IndustrialPI DI	IndustrialPI DO	Description
Input	WORD	1	0	X	X		Current values at the inputs. Bits 0 – 15 (DI) and 0-13 (DIO), indicate the current values of inputs 1 – 16 (DI) and 1-14 (DIO).
							Bits 0 – 15 (DI) and 0-13 (DIO), indicate the current values of inputs 1 – 16 (DI) and 1-14 (DIO).
Output status	WORD	1	2	X		X	Bit-coded status of the outputs. Bits 0 – 15 (DO) and 0-13 (DIO) indicate the current error state of outputs 1 – 16 (DO) or 1-14 (DIO). 1: Error at the output (shutdown due to overtemperature, overload). 0: No error

Name	Data type	Number	Offset	IndustrialPI DIO	IndustrialPI DI	IndustrialPI DO	Description
Status	WORD	1	4	X	X	X	Module status The values of Bit 0-7 are valid for IndustrialPI DIO and DI. The bits are not assigned for IndustrialPI DO because it has no input module. Bit 0: No communication with the input module Bit 1: UV1* on input 1 – 8 Bit 2: UV2* on input 1 – 8 Bit 3: Overtemperature** for input 1 – 8 Bit 4: UV1* on input 9 – 16 Bit 5: UV2* on input 9 – 16 Bit 6: Overtemperature** for input 9 – 16 Bit 7: Error message on the input module The values of Bit 8-16 are valid for RevPi DIO and DO. The bits are not assigned for IndustrialPI DI because it has no output module. Bit 8: No communication with the output module Bit 9: The output block signals a CRC error. Bit 10: Error message on the output module Bit 11 – 15: Undefined
Counter	DINT	16	6	X	X		Current values of counter or encoder function.

* UV1: The supply voltage for the input modules has dropped below 7 V. The alarm is cancelled when the value rises above 9 V.

* UV2: The supply voltage for the input modules has dropped below 14 V. The alarm is cancelled when the value rises above 16.5 V.

Channels 1-8 and 9-16 have separate bits for UV1 and UV2 because there are two individual components in the module that generate this signal. However, the voltage at both modules is always identical. As a result, both modules set their error bit at UV1 or UV2.

**The input modules signal an overtemperature alarm when 135 °C is exceeded.

Counter function

With PiCtory you have the option to activate a counter function for each of the 14 inputs. How often a turnstile or a button has been operated, for example.

A 32 Bit value is then available in the process image for each counter.

The current counter value is returned as a signed 32 Bit value.

Encoder function

You can use PiCtory to configure all the inputs as encoders (rotary encoders). In combination with the PWM function, this is useful if you want to control parts of quantities, for example. This allows you to regulate a water supply or dim lights.

You can use a maximum of five encoders.

You need two inputs per encoder. To do this, you must always use the inputs in pairs, e.g.: input 1 and 2, input 3 and 4 ... input 13 and 14 (or input 15 and 16 for IndustrialPI DI)



INFORMATION

It is important that you always connect the first encoder channel to an odd input. If you don't do this, and use input 2 and 3 for example, the encoder will not be detected.

The current encoder value is returned as a signed 32 Bit value for the first channel.

7.2 Configure outputs

In the Output area you can make settings for all process values that the IndustrialPI module sends.

You can select how the outputs are set in the [Memory area](#)  21].

You can connect a PWM function as an option.

Name	Data type	Number	Offset	IndustrialPI DIO	IndustrialPI DI	IndustrialPI DO	Description
Output	WORD	1	70	X		X	Current values at the outputs Bits 0 – 15 (DO) and 0-13 (DIO) indicate the current values of outputs 1 – 16 (DO) and 1-14 (DIO).
PWM (1 -16)	USINT	116	72	X		X	Current PWM values as % for outputs 1 – 16 (DO) and 1-14 (DIO). These values are valid if the PWM function is activated for the respective output.

Configure PWM outputs

With PiCtory you have the option to activate a PWM function for each of the 14 outputs.

The PWM function is useful if parts of quantities are to be controlled, for example. This allows you to regulate a water supply or dim lights, for example.

When PWM is switched on, instead of one bit per channel, a whole byte value from 0 to 100 is transmitted, which defines the pulse width at the output as a percentage. Via the configuration you can define one of the following PWM frequencies per module:

PWM frequency	Resolution of the smallest step size as a percentage (duty cycle)
40 Hz	1%
80 Hz	2%
160 Hz	4%
200 Hz	5%
400 Hz	10%

The current duty cycle as a % is set via an unsigned 8 Bit value.

7.3 Memory area

In the memory area you can define how the individual inputs are evaluated and how the outputs are set.

Name	Data type	Number	Offset	IndustrialPI DIO	IndustrialPI DI	IndustrialPI DO	Description
Input-Mode	BYTE	16	88	X	X		Selection of mode for the respective input. Direct: The current value of the input can be retrieved. Counter, rising edge: The rising edges at the input are counted. Counter, falling edge: The falling edges at the input are counted. Encoder: This input is used for the encoder function. ATTENTION: The encoder function always requires 2 inputs (see section entitled "Encoder").
InputDebounce	WORD	1	104	X	X		This is where you state a time for the debounce filter for all inputs. This time indicates when a changing state at the input is considered stable. Potential values are Off, 25 µs, 750 µs and 3 ms.
Output-PushPull	WORD	1	106	X		X	This is where you define whether the outputs are operated in push-pull or high-side mode.

Name	Data type	Number	Offset	IndustrialPI DIO	IndustrialPI DI	IndustrialPI DO	Description
OutputOpen-LoadDetect	WORD	1	108	X		X	This is where you define whether open-load detection is active for the outputs.
OutputP-WMActive	WORD	1	110	X		X	This is where you define whether the output is to be operated in PWM mode.
OutputP-WMFrequency	BYTE	1	112	X		X	For all outputs that are to be operated in PWM mode, this is where you define the frequency at which the PWM signal should be generated. In general: the higher the frequency, the larger the step size in which the clock ratio can be set.

8 Operation

8.1 Display elements and messages



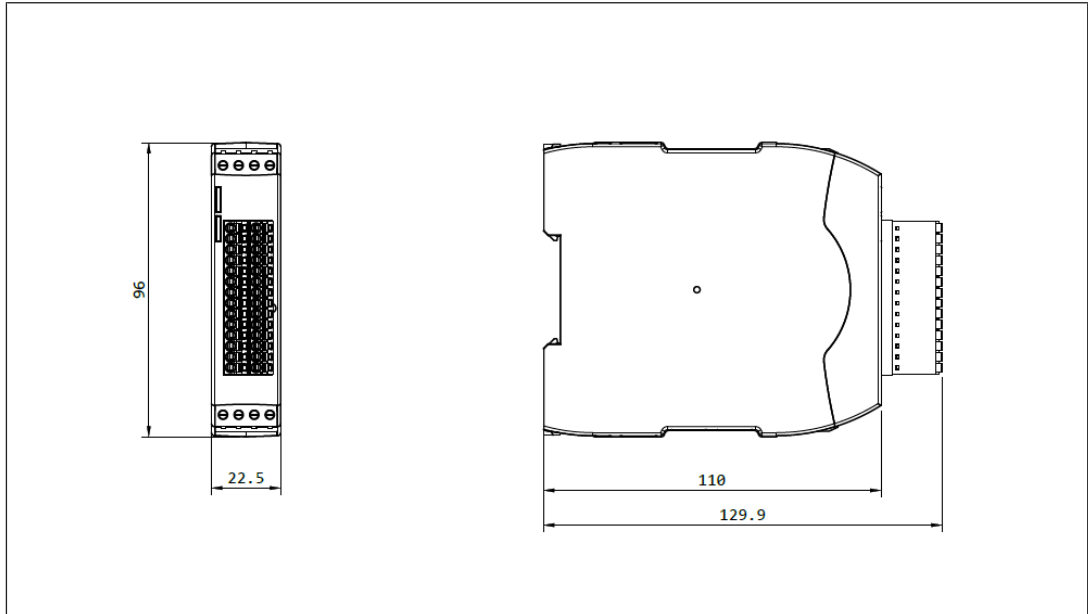
INFORMATION

Flashes, red!

This LED does not indicate an error. The module is being operated with a supply voltage below 19 V.

LED	Signal	Meaning
Pwr(Power)	On, green	The connection to IndustrialPI 4 has been established.
	Flashes, red	The connection to IndustrialPI 4 has not yet been established (initialisation phase).
	On, red	The connection to IndustrialPI 4 was interrupted. Check that the PiBridge is inserted correctly.
Out	Off	The connection to IndustrialPI 4 has not yet been established (initialisation phase).
	On, green	Outputs are ready for operation.
	Flashes, red	Error at the outputs. Check that the supply voltage is connected.
	On, red	No supply voltage or supply voltage is too low. Check that your product is supplied within the approved voltage range (10.7 V – 28.8 V).
In	On, green	Inputs are ready for operation.
	Off	The connection to IndustrialPI 4 has not yet been established (initialisation phase).
	On, red	No supply voltage to the inputs at X2 connector. Check that the supply voltage is connected.

9 Dimensions



10 Technical details

10.1 IndustrialPI DIO

Housing dimensions (H x W x D)	96 x 22.5 x 110.5 mm
Housing type	Top-hat rail housing (EN 50022 for top-hat rail type)
Housing material	Plastic
Weight	Approx. 100 g/130 g (incl. connector)
Protection type	IP20 Self Declared
Voltage supply	12-24 VDC -5 % / +20 % (X2 und X4) ¹
Maximum power consumption	1.5 Watt (X4/main supply)
Permitted operating temperature	-40 °C to +55 °C
Permitted storage temperature	-40 °C to +85 °C
Max. relative humidity (at 40 °C)	93 % (non-condensing)
Plug-in connector	2 x 4-pin screw connector for supply voltage 24-12 AWG 2 x 14-pin spring-loaded plug-in connector (0.2 - 1.5 mm ²) for IOs, 3.5 mm spacing 24-16 AWG
Optical display	3 x multi-colour status LEDs
Number of digital inputs	14
Type of inputs	Galvanically isolated from the system bus and outputs, individually configurable as direct digital input, counter on rising edge, counter on falling edge or together with an adjacent input as an encoder. ²
Current limitation at the inputs	2.4 mA (with 24 V supply voltage)
Input thresholds	At 24 V compatible with Type I and III sensors in accordance with EN 61131-2.
Digital debounce circuit	Can be set for all inputs together: off, 25 µs, 750 µs or 3 ms
Maximum frequency resolution of the counter inputs	2 kHz (corresponds to 500 Hz encoder sequence)
Alarm	For auxiliary voltages below 19 V and below 9 V, overtemperature
Protection of the inputs	In accordance with EN 61131-2 (IEC 61000-4-4, -6) against burst, RF coupling, external voltages from -3 V to +36 V
Number of digital outputs	14

Type of outputs	Galvanically isolated from the system bus and inputs, individually configurable as direct digital output with high-side or push-pull drivers as well as PWM output. ³
Maximum current per output	500 mA (high-side mode), 100 mA (push-pull mode)
PWM frequency	Can be selected for all outputs together: 40 Hz, 80 Hz, 160 Hz, 200 Hz, 400 Hz ³
Alarm	Thermal shutdown or short circuit of the outputs (separate for each output).
Dual watchdog function	If communication with the controller fails (after 50 ms or 500 ms ⁴) or if internal communication with the CPU fails (after 9 ms, hardware-controlled), the outputs are reset to zero.
Protection of the outputs	In accordance with EN 61131-2 (IEC 61000-4-4, -5, -6, and -2) against short circuit, overload, burst and ESD
Compatible modules for system expansion	IndustrialPI base modules can be connected via a Jumper.
Protection of the supply voltage inputs	Reverse polarity protected, transient over-voltages
EMC emission	In accordance with EN 61000-6-4
EMC immunity	In accordance with EN 61000-6-2
Conformity	RoHS
Marking	CE
UL certification	UL Listed.

¹For galvanic isolation of the inputs and outputs, three independent supply voltage sources must be available.

²Per DIO module, a maximum of six inputs can be defined as six counters, or twelve inputs as six decoders. Counters and decoders are stored in the process image as 32 Bit integers. The counters/encoders are reset via ioctl calls from the kernel driver piControl.

³The PWM pulse width is stored in 1 Byte in the process image as a value from 0 to 100. The maximum resolution for implementation of this value as a % by the DIO module depends on the PWM frequency: 40 Hz / 1%, 80 Hz / 2%, 160 Hz / 4%, 200 Hz / 5%, 400 Hz / 10%.

⁴50 ms on all IndustrialPI DIO with software version 1.4 or later. 500 ms on all IndustrialPI DIO with software version 1.5 or earlier.

10.2 IndustrialPI DI

Housing dimensions (H x W x D)	96 x 22.5 x 110.5 mm
Housing type	Top-hat rail housing (EN 50022 for top-hat rail type)
Housing material	Plastic
Weight	Approx. 100 g/130 g (incl. connector)
Protection type	IP20 Self Declared
Voltage supply	12-24 VDC -5 % / +20 % (X2 und X4) ¹
Maximum power consumption	1.5 Watt (X4/main supply)
Permitted operating temperature	-40 °C to +55 °C
Permitted storage temperature	-40 °C to +85 °C
Max. relative humidity (at 40 °C)	93 % (non-condensing)
Plug-in connector	2 x 4-pin screw connector for supply voltage 24-12 AWG 2 x 14-pin spring-loaded plug-in connector (0.2 - 1.5 mm ²) for IOs, 3.5 mm spacing 24-16 AWG
Optical display	3 x multi-colour status LEDs
Number of digital inputs	16
Type of inputs	Galvanically isolated from the system bus, individually configurable as direct digital input, counter on rising edge, counter on falling edge or together with an adjacent input as an encoder. ²
Current limitation at the inputs	2.4 mA (with 24 V supply voltage)
Input thresholds	At 24 V compatible with Type I and III sensors in accordance with EN 61131-2.
Digital debounce circuit	Can be set for all inputs together: off, 25 µs, 750 µs or 3 ms
Maximum frequency resolution of the counter inputs	2 kHz (corresponds to 500 Hz encoder sequence)
Alarm	For auxiliary voltages below 19 V and below 9 V, overtemperature
Protection of the inputs	In accordance with EN 61131-2 (IEC 61000-4-4, -6) against burst, RF coupling, external voltages from -3 V to +36 V
Compatible modules for system expansion	IndustrialPI 4 base modules can be connected via a jumper.
Protection of the supply voltage inputs	Reverse polarity protected, transient over-voltages
Surge / burst tests	Passed (in accordance with EN 61131-2 and IEC 61000-6-2)
Conformity	CE, RoHS

UL certification	UL Listed.
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¹For galvanic isolation of the inputs, two independent supply voltage sources must be available.

²Per module, a maximum of six inputs can be defined as six counters, or twelve inputs as six decoders. Counters and decoders are stored in the process image as 32 Bit integers. The counters/encoders are reset via ioctl calls from the kernel driver piControl.

10.3 IndustrialPI DO

Housing dimensions (H x W x D)	96 x 22.5 x 110.5 mm
Housing type	Top-hat rail housing (EN 50022 for top-hat rail type)
Housing material	Plastic
Weight	Approx. 100 g/130 g (incl. connector)
Protection type	IP20 Self Declared
Voltage supply	12-24 VDC -5 % / +20 % (X2 und X4) ¹
Maximum power consumption	1.5 Watt (X4/main supply)
Permitted operating temperature	-40 °C to +55 °C
Permitted storage temperature	-40 °C to +85 °C
Max. relative humidity (at 40 °C)	93 % (non-condensing)
Plug-in connector	2 x 4-pin screw connector for supply voltage 24-12 AWG 2 x 8-pin spring-loaded plug-in connector (0.2 - 1.5 mm ²) for IOs, 3.5 mm spacing 24-16 AWG
Optical display	3 x multi-colour status LEDs
Number of digital outputs	16
Type of outputs	Galvanically isolated from the system bus, individually configurable as direct digital output with high-side or push-pull drivers as well as PWM output. ²
Maximum current per output	500 mA (high-side mode), 100 mA (push-pull mode)
PWM frequency	Can be selected for all outputs together: 40 Hz, 80 Hz, 160 Hz, 200 Hz, 400 Hz ²
Alarm	Thermal shutdown or short circuit of the outputs (separate for each output).
Dual watchdog function	If communication with the controller fails (after 50 ms or 500 ms ³) or if internal communication with the CPU fails (after 9 ms, hardware-controlled), the outputs are reset to zero.

Protection of the outputs	In accordance with EN 61131-2 (IEC 61000-4-4, -5, -6, and -2) against short circuit, overload, burst, ESD
Compatible modules for system expansion	IndustrialPI base modules can be connected via a jumper.
Protection of the supply voltage inputs	Reverse polarity protected, transient over-voltages
EMC emission	In accordance with EN 61000-6-4
EMC immunity	In accordance with EN 61000-6-2
Conformity	CE, RoHS
UL certification	UL Listed.

¹For galvanic isolation of the outputs, two independent supply voltage sources must be available.

²The PWM pulse width is stored in 1 Byte in the process image as a value from 0 to 100. The maximum resolution for implementation of this value as a % by the DO module depends on the PWM frequency: 40 Hz / 1%, 80 Hz / 2%, 160 Hz / 4%, 200 Hz / 5%, 400 Hz / 10%.

³50 ms on all IndustrialPI DO with software version 1.4 or later. 500 ms on all IndustrialPI DO with software version 1.5 or earlier.

11 Order reference

IndustrialPI DIO	Expansion module for the Industrial PI 4, 14 digital inputs, 14 digital outputs, max. current per output: 500 mA (high-side mode), 100 mA (push-pull mode)	A3000001
IndustrialPI DI	Expansion module for the Industrial PI 4, 16 digital inputs	A3000002
IndustrialPI DO	Expansion module for the Industrial PI 4, 16 digital outputs, max. current per output: 500 mA (high-side mode), 100 mA (push-pull mode)	A3000003

► Support

Technical support is available from Pilz round the clock.

Americas

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Pilz develops environmentally-friendly products using ecological materials and energy-saving technologies. Offices and production facilities are ecologically designed, environmentally-aware and energy-saving. So Pilz offers sustainability, plus the security of using energy-efficient products and environmentally-friendly solutions.



We are represented internationally. Please refer to our homepage www.pilz.com for further details or contact our headquarters.

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