



IO-Link HUB User Guide AIOLD8M12B010



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Imprint

Below is a brief description of the current version and previous versions.

The status of each version is indicated by a code in the Notes column.

The status codes in the "Version" column are:

- A New files
- B No changes, but reprinted with a new order number
- C There are changes and reissue

Issue Data	Order No.	Version
2024.08.08	AIOLD8M12B010	PRE

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After review, the content of this document is consistent with the software and hardware it describes. However, there may still be some differences. Therefore, we cannot guarantee that they are exactly the same. We will review this document regularly and make any necessary changes in the next edition. Suggestions and suggestions for improvement are welcome.

Technical changes are subject to change without prior notice.

Amissiontech Co.,Ltd

Safety

Installation and Startup



Attention!

Installation and startup must only be carried out by trained technical personnel. Qualified personnel are people who are familiar with installation and operation of the product and have the necessary qualifications for these tasks. Any damage resulting from unauthorized tampering or improper use voids the manufacturer's guarantee and warranty. The operator must ensure that appropriate safety and accident prevention regulations are observed.

General Safety Instructions

Commissioning and inspection

Before commissioning, carefully read the user's guide.

The system must not be used in applications in which the safety of persons is dependent upon proper functioning of the device.

Authorized personnel

Installation and startup must only be carried out by trained technical personnel.

Intended use

Warranty and liability claims against the manufacturer are rendered void by:

- Unauthorized tampering
- Improper use
- Use, installation or handling contrary to the instructions provided in this user's manual.

Obligations of the operating company

The device is a piece of equipment in accordance with EMC Class A. This device can produce RF noise. The operator must take appropriate precautionary measures. The device may only be used with an approved power supply. Only use approved cables.

Malfunctions

In the event of defects and device malfunctions that cannot be rectified, the device must be taken out of operation and protected against unauthorized use.

Intended use is ensured only when the housing is fully installed.



Attention!

The modules generally have a good chemical and oil resistance. When used in aggressive media (eg chemicals, oils, lubricants and coolants each in high concentration (ie, low water content)) must be checked prior application-related material compatibility. In the event of failure or damage to the modules due to such aggressive media are no claims for defects.



Attention!

Before maintenance, disconnect the device from the power supply.



In the interests of product improvement, Amissiontech reserves the right to change the technical data of the product and the content of this manual at any time without notice.

1 Description

This Manual describes the Amissiontech IO-Link Hub module. The HUB acts as a decentralized input/output sensor module, which is connected to a higher-level IO-Link master module through an IO-Link interface.

Abbreviations

GND	Ground
I/O Port	Digital input/output port
IOL	IO-Link
ISDU	Indexed Service Data Unit (former SPDU)
EMC	Electromagnetic compatibility
FE	Function earth

16DI/DO HUB

Overview

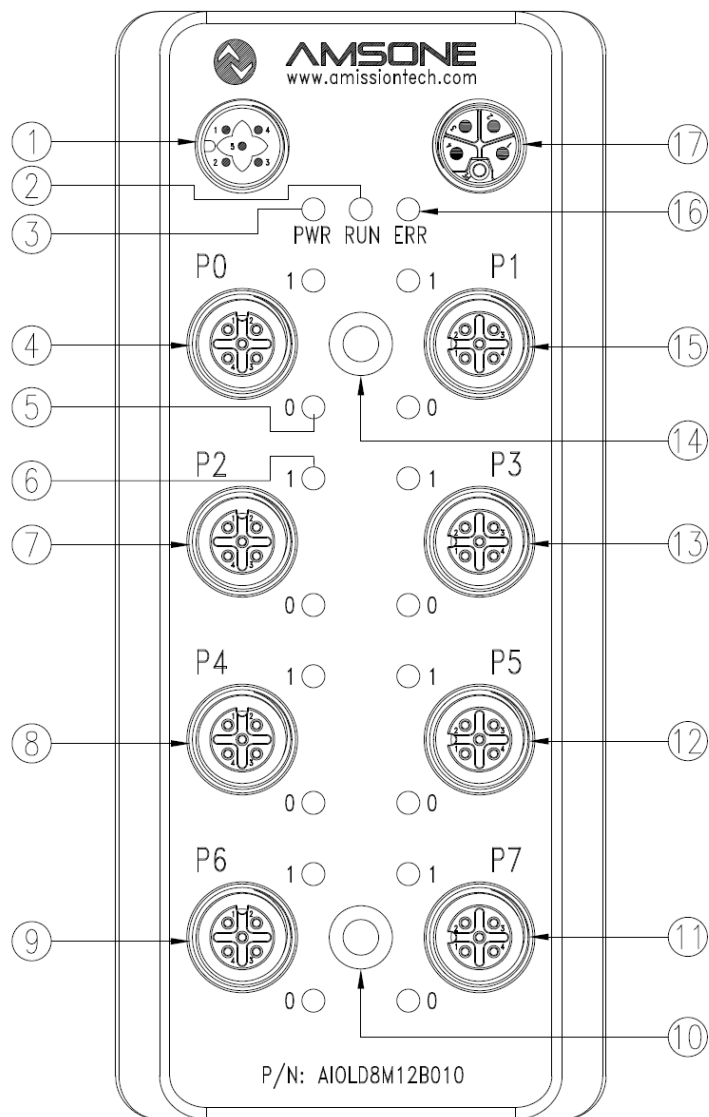


Figure 1 Device and Connection Overview

- 1 IO-Link Port
- 2 Run LED
- 3 Power LED
- 4 Port 0
- 5 Indicator light 0: Pin2
- 6 Indicator light 1: Pin4
- 7 Port 2
- 8 Port 4
- 9 Port 6

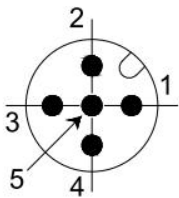
- 10 Installation holes
- 11 Port 7
- 12 Port 5
- 13 Port 3
- 14 Installation holes
- 15 Port 1
- 16 Error LED
- 17 Aux supply port

2. Installation

Tools Use 2 sets of M4 screws and gaskets

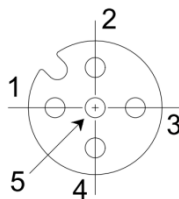
Power The IO-Link HUB get power from the IO-Link Master station.

IO-Link Port IO-Link (M12, A-Code, Male)



Pin	Function
1	24V DC, US
2	N.A
3	GND
4	C\Q, IO-Link DC-Channel
5	FE, Function Earth

IO Port IO (M12, A-Code, Female)



Pin	Function
1	24VDC, 200mA
2	DI/DO 1
3	GND
4	DI/DO 0
5	FE, Function Earth

Aux Port Aux Power supply (M12, L-Code, Male)



Pin	Function
1	24V DC, UA1
2	GND
3	GND
4	24V DC, UA2
5	FE, Function Earth

LED Lamp



LED	Status	Function
PWR	Green	Power supply Us and Ua OK
	Yellow	Us is OK, Ua <11V
	Green flash	Us<18V, Ua is OK
	Yellow flash	Us is OK, Ua<18V
	Green/Yellow falsh	Us<18V, Ua<18V
	Off	Us<11V
RUN	Green, flashing	IO-Link Communication is OK
	Green	IO-Link Communication is not OK
ERR	Red	Error occurs(e.g. Shortcircuit)
	Off	No Error



LED	Status	Function
0	Green	DI is 1 (Pin4 get +24V)
	Yellow	DO is 1(Pin4 supply +24V)
	off	Pin 4 is 0V (DI/DO is 0)
	Yellow flash	Pin 4/DO shortcircuit
1	Green	DI is 1 (Pin4 get +24V)
	Yellow	DO is 1(Pin4 supply +24V)
	off	Pin 2 is 0V (DI/DO is 0)
	Yellow flash	Pin 2/DO shortcircuit

3. IO-Link Interface

IO-Link

AIOLD8M12B010 / IOL-16DI/DOB-M12A-FLM	
Data transmission rate	COM2 (38,4 kBaud)
Frame type	2.V
Minimal cycle time	3 ms
Process data cycle time	5 ms, at minimal cycle time
Process data length	2 Byte/2 Byte

Process Data Output data

Byte	1								0							
Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
Description	Output port 7 pin 2	Output port 7 pin 4	Output port 6 pin 2	Output port 6 pin 4	Output port 5 pin 2	Output port 5 pin 4	Output port 4 pin 2	Output port 4 pin 4	Output port 3 pin 2	Output port 3 pin 4	Output port 2 pin 2	Output port 2 pin 4	Output port 1 pin 2	Output port 1 pin 4	Output port 0 pin 2	Output port 0 pin 4

Process Data Input data

Byte	1								0							
Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
Description	Input port 7 pin 2	Input port 7 pin 4	Input port 6 pin 2	Input port 6 pin 4	Input port 5 pin 2	Input port 5 pin 4	Input port 4 pin 2	Input port 4 pin 4	Input port 3 pin 2	Input port 3 pin 4	Input port 2 pin 2	Input port 2 pin 4	Input port 1 pin 2	Input port 1 pin 4	Input port 0 pin 2	Input port 0 pin 4

ISDU

Parameter

	DPP	ISDU		Object name	Length	Access Right	Default value	
	Index	Index	Sub index					
Identification Data	07hex 07			Vendor ID	2 Byte	Read only	0x26F	
	08hex 08							
	09hex 09			Device ID	3 Byte		0x010501	
	0Ahex 10							
	0Bhex 11							
		10hex 16	0	Vendor name	24 Byte			LOYST
		11hex 17	0	Vendor text	32 Byte			www.loystnetwork.com
		12hex 18	0	Product name	32 Byte			IOL-16DI/DOB-M12A-FLM
		13hex 19	0	Product ID	24 Byte			"0x010501"
		14hex 20	0	Product text	22 Byte			
		16hex 22	0	Hardware Revision	24 Byte			HW-V2.01
		17hex 23	0	Firmware Revision	24 Byte			FW-V2.01
		64hex40	0	Configuration of inputs/ outputs	2 Byte	Read/ write		0x0000
		65hex41	0	Output state feedback	2 Byte	Read		0x0000
		66hex42	0	Inversion of the inputs	2 Byte	Read/ write		0x0000
		67hex43	0	Short Circuit	3 Byte	Read		0x0000
		68hex44	0	Input filter	16 Byte	Read/ write		0x0000
		69hex45	0	Actuator warning	2 Byte	Read		0x0000
		70hex46	0	PS monitoring	2 Byte	Read		0x0000
		71hex47	0	Safe state of outputs	4 Byte	Read/ write		0xFFFFFFFF
		72hex48	0	Alarm	2 Byte	Read		0x0000

Error Code

Error Code	Description
0x8011	Index not available
0x8012	Subindex not available
0x8023	Access denied
0x8033	Parameter length overrun
0x8034	Parameter length underrun
0x8035	Function not available
0x5111	Low sensor voltage (US)
0x5112	Low actuator voltage (UA)
0x7710	Short circuit

Configuration of inputs/ outputs

40hex

Byte	1								0							
Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
Description	Direction Port 7 pin 2	Direction Port 7 pin	Direction Port 6 pin	Direction Port 6 pin	Direction Port 5 pin	Direction Port 5 pin	Direction Port 4 pin	Direction Port 4 pin	Direction Port 3 pin	Direction Port 3 pin	Direction Port 2 pin	Direction Port 2 pin	Direction Port 1 pin	Direction Port 1 pin	Direction Port 0 pin	Direction Port 0 pin

Direction of port (x): 0 - Input, 1 - Output

Output state feedback

41hex

Byte	1								0							
Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
Description	Output port 7 pin 2	Output port 7 pin 4	Output port 6 pin 2	Output port 6 pin 4	Output port 5 pin 2	Output port 5 pin 4	Output port 4 pin 2	Output port 4 pin 4	Output port 3 pin 2	Output port 3 pin 4	Output port 2 pin 2	Output port 2 pin 4	Output port 1 pin 2	Output port 1 pin 4	Output port 0 pin 2	Output port 0 pin 4

Inversion of the inputs

42hex

Byte	1								0							
Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
Description	Input port 7 pin 2	Input port 7 pin 4	Input port 6 pin 2	Input port 6 pin 4	Input port 5 pin 2	Input port 5 pin 4	Input port 4 pin 2	Input port 4 pin 4	Input port 3 pin 2	Input port 3 pin 4	Input port 2 pin 2	Input port 2 pin 4	Input port 1 pin 2	Input port 1 pin 4	Input port 0 pin 2	Input port 0 pin 4
0 = Disable reverse; 1 = Enable reverse																

Short Circuit

43hex

Byte	1								0							
Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
Description	Port 7 pin 4 Short Circuit	Port 6 pin 4 Short Circuit	Port 5 pin 4 Short Circuit	Port 4 pin 4 Short Circuit	Port 3 pin 4 Short Circuit	Port 2 pin 4 Short Circuit	Port 1 pin 4 Short Circuit	Port 0 pin 4 Short Circuit	Port 7 pin 1 Short Circuit	Port 6 pin 1 Short Circuit	Port 5 pin 1 Short Circuit	Port 4 pin 1 Short Circuit	Port 3 pin 1 Short Circuit	Port 2 pin 1 Short Circuit	Port 1 pin 1 Short Circuit	Port 0 pin 1 Short Circuit
Byte									2							
Bit									7	6	5	4	3	2	1	0
Description									Port 7 pin 2 Short Circuit	Port 6 pin 2 Short Circuit	Port 5 pin 2 Short Circuit	Port 4 pin 2 Short Circuit	Port 3 pin 2 Short Circuit	Port 2 pin 2 Short Circuit	Port 1 pin 2 Short Circuit	Port 0 pin 2 Short Circuit

Input filter

44hex

Byte	1								0							
Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
SubIndex	2								1							
Des.	Port 0 Pin 2 Input Filter Time								Port 0 Pin 4 Input Filter Time							
Byte	3								2							
Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
SubIndex	4								3							
Des.	Port 1 Pin 2 Input Filter Time								Port 1 Pin 4 Input Filter Time							
Byte	5								4							
Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
SubIndex	6								5							
Des.	Port 2 Pin 2 Input Filter Time								Port 2 Pin 4 Input Filter Time							
Byte	7								6							
Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
SubIndex	8								7							
Des.	Port 3 Pin 2 Input Filter Time								Port 3 Pin 4 Input Filter Time							
Byte	9								8							
Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
SubIndex	10								9							
Des.	Port 4 Pin 2 Input Filter Time								Port 4 Pin 4 Input Filter Time							
Byte	11								10							
Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
SubIndex	12								11							
Des.	Port 5 Pin 2 Input Filter Time								Port 5 Pin 4 Input Filter Time							
Byte	13								12							
Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
SubIndex	14								13							
Des.	Port 6 Pin 2 Input Filter Time								Port 6 Pin 4 Input Filter Time							
Byte	15								14							
Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
SubIndex	16								15							
Des.	Port 7 Pin 2 Input Filter Time								Port 7 Pin 4 Input Filter Time							
It is Input Filter Time, its range is 0~250, unit is ms.																
When input > Input Filter Time, the signal will be “1”.																

Actuator warning

45hex

Byte	1								0							
Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
Description	Warning port 7 pin 2	Warning port 7 pin 4	Warning port 6 pin 2	Warning port 6 pin 4	Warning port 5 pin 2	Warning port 5 pin 4	Warning port 4 pin 2	Warning port 4 pin 4	Warning port 3 pin 2	Warning port 3 pin 4	Warning port 2 pin 2	Warning port 2 pin 4	Warning port 1 pin 2	Warning port 1 pin 4	Warning port 0 pin 2	Warning port 0 pin 4
When DO is 0, but realated Pin is 24V, Warning.																

PS monitoring

46hex

Byte	1								0							
Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
Description				Current of Ua2 > 10A		Current of Ua1 > 10A		Current of US > 4A				Undervoltage Ua<18V		Undervoltage Ua<18V		Undervoltage US<18V

Safe state of outputs

47hex

Byte	1								0							
Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
Description	Safe state Port 3 Pin 2		Safe state Port 3 Pin 4		Safe state Port 2 Pin 2		Safe state Port 2 Pin 4		Safe state Port 1 Pin 2		Safe state Port 1 Pin 4		Safe state Port 0 Pin 2		Safe state Port 0 Pin 4	
Byte	3								2							
Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
Description	Safe state Port 7 Pin 2		Safe state Port 7 Pin 4		Safe state Port 6 Pin 2		Safe state Port 6 Pin 4		Safe state Port 5 Pin 2		Safe state Port 5 Pin 4		Safe state Port 4 Pin 2		Safe state Port 4 Pin 4	
When IO-Link communication is off, Output State:																
00, Output is 0V;																
01, Output is 24V;																
10, Current status is maintained;																
11, default.																

Alarm

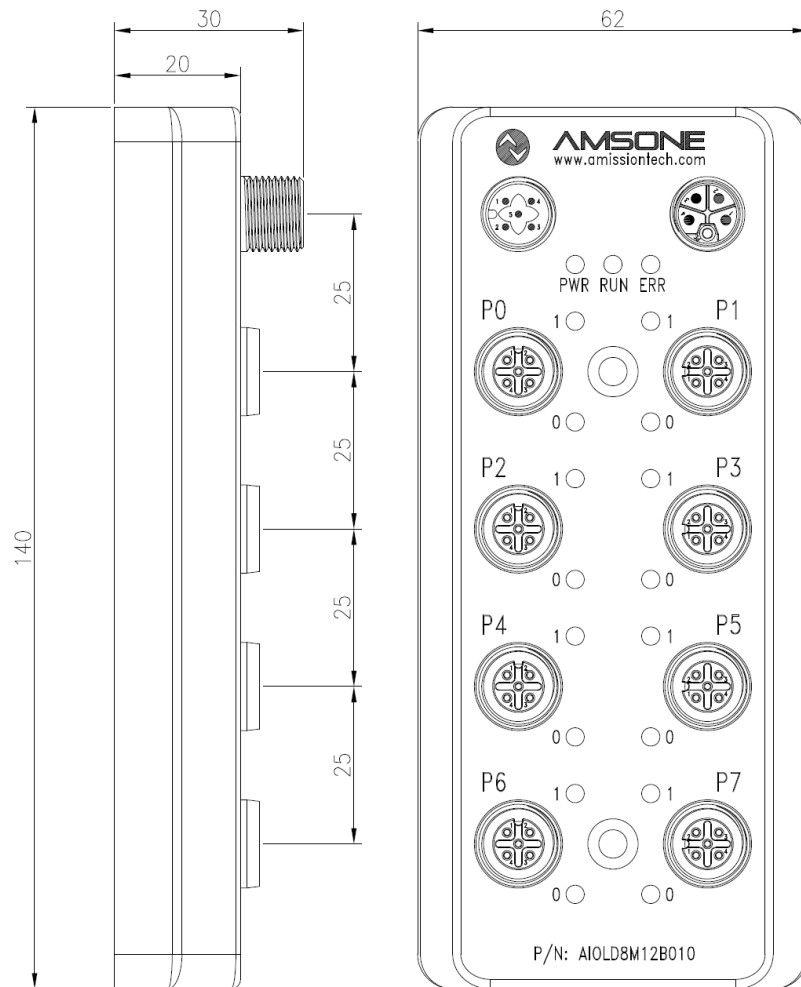
48hex

Byte	1								0							
Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
Description																MCU Temp too High

4. Parameter

Dimension

Mechanical Data



Material	Zinc, Die casting
Weight	≈430 g
Dimension(L × B × H)	62 x 30 x 140 mm

Operating conditions

Ambient temperature	-25 °C ... +55 °C
Storage temperature	-40 °C ... +70 °C
Degree of protection	IP67 (only in plugged-in and screwed state)

Electrical Data

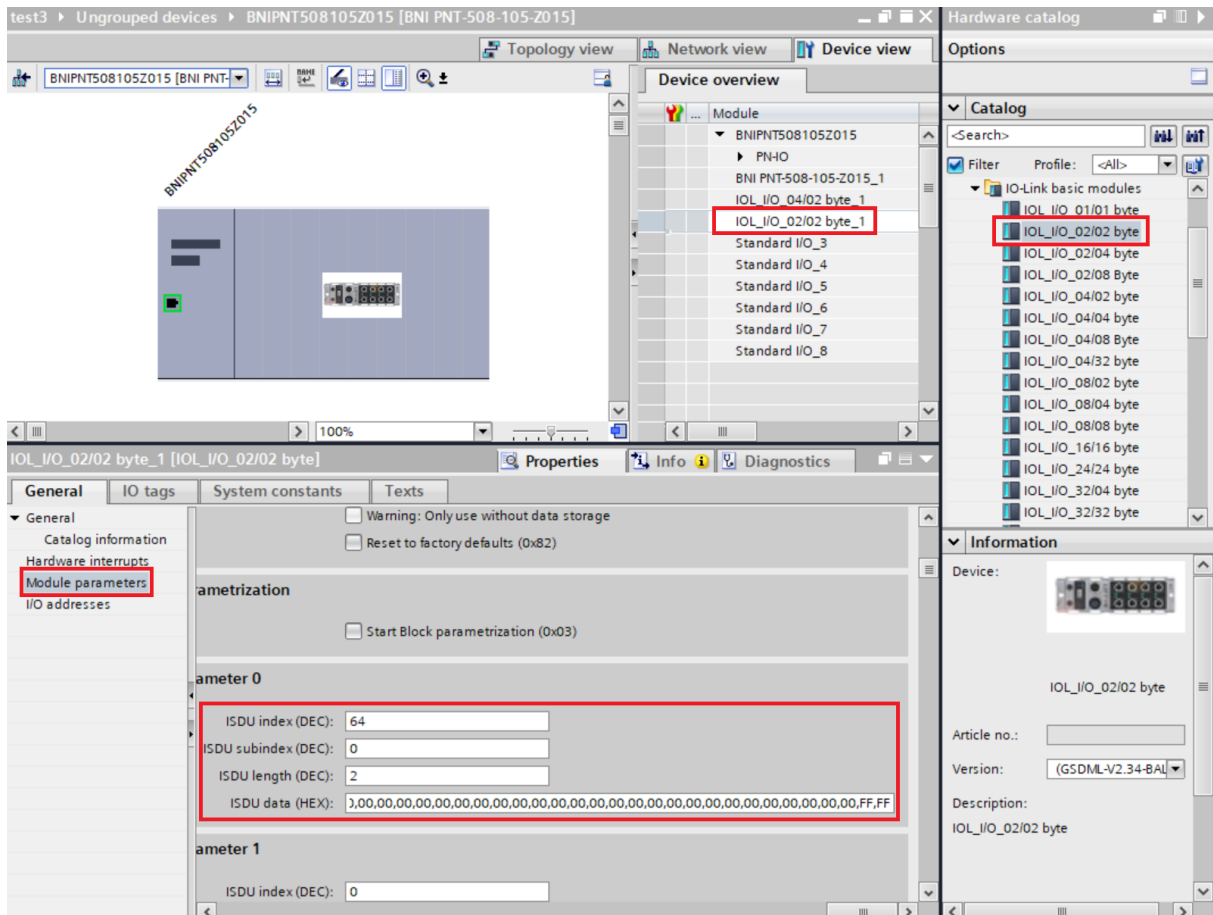
Supply voltage	18 ... 30,2 V DC, corresponding to EN 61131-2
Ripple	< 1 %
No-load Current	≤ 100 mA
US Current	4A
UA Current	10Ax2
Input	PNP, type 3
Output	PNP

5. Configuration

1) Configured with submodule IOL_I/O_02/02_byte

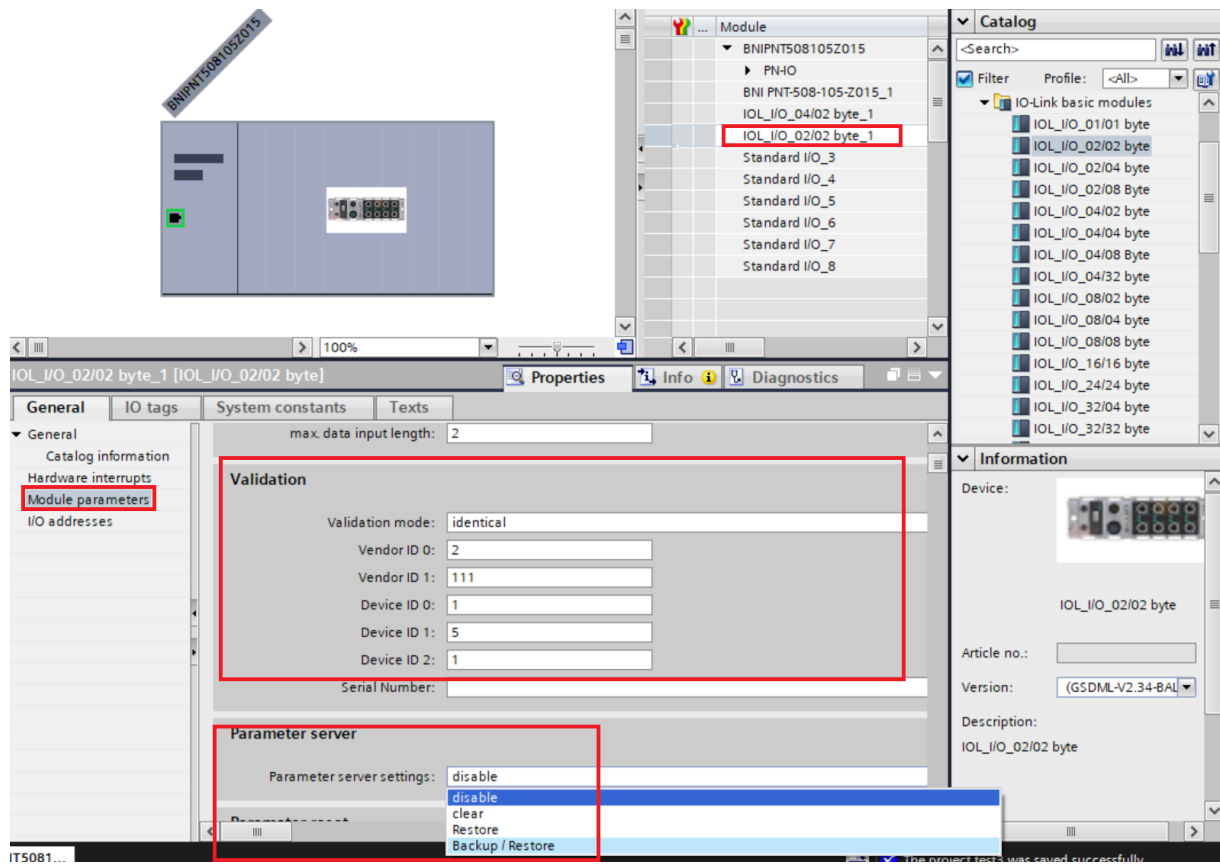
As shown in the figure below, first enter the device to delete the default module Digital I/O_x on the slot, and then drag the module column on the right IOL_I/O_02/02_byte to the specified slot.

Click **Properties**, in the **regular > module parameters > ISDU Parameter 0**, assign the ISDU index address 64 (0x40) 、subindex 0、 ISDU length 2 (bytes) , 0xFF for each byte. Total of 16 bits correspond to 16 digital signals in turn.



If the configuration parameter of the corresponding IO port is set to 1, the port can be used as both DO output and DI input.

In IOL_I/O_02/02_byte submodules, the validation function and Data Storage function (Parameter server) could be used as below



2) Configured via webserver of IO-Link Master

We could upload the IODD In Balluff Webserver as below:

BALLUFF
BNI PNT-508-105-Z015

Home
Parts
IODD
Logout
Config
Log
Info

Identification Data

Vendor ID: 0x026F (623)

Device ID: 0x010501 (66817)

Vendor Name: Hosta

Vendor Text: www.hostamc.com

Product Name: LNI IOL-H16DI/DOP-S02

Product ID: 0x010501

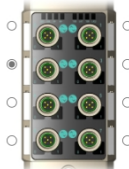
Product Text: IOL-16DI/DOP-M12A-FLP

Serial Number: 202405301500

Hardware Revision: HW-V2.01

Firmware Revision: FW-V2.01

Application specific tag: ****



Process Data

Inputs (hex): 00 00

Outputs (hex): 00 00

Related Parametre as below, We could operate It directly.

Parameters

				Read All
2 (0)	Standard Command (wo)	Device Reset	Write	
12 (0)	Device Access Locks (rw)	See child elements	Write	Read
12 (2)	Data Storage Lock	☐ True ☐ False		
24 (0)	Application Specific Tag (rw)		Write	Read
36 (0)	Device Status (ro)	Device is OK		Read
64 (0)	Configuration(Output) (rw)	See child elements		
64 (1)	Port 1 - Pin 4	☐ Not Inverted ☐ Inverted	Write	Read
64 (2)	Port 1 - Pin 2	☐ Not Inverted ☐ Inverted	Write	Read
64 (3)	Port 2 - Pin 4	☐ Not Inverted ☐ Inverted	Write	Read
64 (4)	Port 2 - Pin 2	☐ Not Inverted ☐ Inverted	Write	Read
64 (5)	Port 3 - Pin 4	☐ Not Inverted ☐ Inverted	Write	Read
64 (6)	Port 3 - Pin 2	☐ Not Inverted ☐ Inverted	Write	Read
64 (7)	Port 4 - Pin 4	☐ Not Inverted ☐ Inverted	Write	Read
64 (8)	Port 4 - Pin 2	☐ Not Inverted ☐ Inverted	Write	Read
64 (9)	Port 5 - Pin 4	☐ Not Inverted ☐ Inverted	Write	Read
64 (10)	Port 5 - Pin 2	☐ Not Inverted ☐ Inverted	Write	Read
64 (11)	Port 6 - Pin 4	☐ Not Inverted ☐ Inverted	Write	Read
64 (12)	Port 6 - Pin 2	☐ Not Inverted ☐ Inverted	Write	Read
64 (13)	Port 7 - Pin 4	☐ Not Inverted ☐ Inverted	Write	Read
64 (14)	Port 7 - Pin 2	☐ Not Inverted ☐ Inverted	Write	Read
64 (15)	Port 8 - Pin 4	☐ Not Inverted ☐ Inverted	Write	Read
64 (16)	Port 8 - Pin 2	☐ Not Inverted ☐ Inverted	Write	Read

65 (0)	OutRead(Output mode) (rw)	See child elements		
65 (1)	Port 1 - Pin 4	☐ Level Low ☐ Level High	Write	Read
65 (2)	Port 1 - Pin 2	☐ Level Low ☐ Level High	Write	Read
65 (3)	Port 2 - Pin 4	☐ Level Low ☐ Level High	Write	Read
65 (4)	Port 2 - Pin 2	☐ Level Low ☐ Level High	Write	Read
65 (5)	Port 3 - Pin 4	☐ Level Low ☐ Level High	Write	Read
65 (6)	Port 3 - Pin 2	☐ Level Low ☐ Level High	Write	Read
65 (7)	Port 4 - Pin 4	☐ Level Low ☐ Level High	Write	Read
65 (8)	Port 4 - Pin 2	☐ Level Low ☐ Level High	Write	Read
65 (9)	Port 5 - Pin 4	☐ Level Low ☐ Level High	Write	Read
65 (10)	Port 5 - Pin 2	☐ Level Low ☐ Level High	Write	Read
65 (11)	Port 6 - Pin 4	☐ Level Low ☐ Level High	Write	Read
65 (12)	Port 6 - Pin 2	☐ Level Low ☐ Level High	Write	Read
65 (13)	Port 7 - Pin 4	☐ Level Low ☐ Level High	Write	Read
65 (14)	Port 7 - Pin 2	☐ Level Low ☐ Level High	Write	Read
65 (15)	Port 8 - Pin 4	☐ Level Low ☐ Level High	Write	Read
65 (16)	Port 8 - Pin 2	☐ Level Low ☐ Level High	Write	Read
66 (0)	Inversion(input mode) (rw)	See child elements		
66 (1)	Port 1 - Pin 4	☐ Not Inverted ☐ Inverted	Write	Read
66 (2)	Port 1 - Pin 2	☐ Not Inverted ☐ Inverted	Write	Read
66 (3)	Port 2 - Pin 4	☐ Not Inverted ☐ Inverted	Write	Read
66 (4)	Port 2 - Pin 2	☐ Not Inverted ☐ Inverted	Write	Read
66 (5)	Port 3 - Pin 4	☐ Not Inverted ☐ Inverted	Write	Read
66 (6)	Port 3 - Pin 2	☐ Not Inverted ☐ Inverted	Write	Read
66 (7)	Port 4 - Pin 4	☐ Not Inverted ☐ Inverted	Write	Read
66 (8)	Port 4 - Pin 2	☐ Not Inverted ☐ Inverted	Write	Read
66 (9)	Port 5 - Pin 4	☐ Not Inverted ☐ Inverted	Write	Read
66 (10)	Port 5 - Pin 2	☐ Not Inverted ☐ Inverted	Write	Read
66 (11)	Port 6 - Pin 4	☐ Not Inverted ☐ Inverted	Write	Read
66 (12)	Port 6 - Pin 2	☐ Not Inverted ☐ Inverted	Write	Read
66 (13)	Port 7 - Pin 4	☐ Not Inverted ☐ Inverted	Write	Read
66 (14)	Port 7 - Pin 2	☐ Not Inverted ☐ Inverted	Write	Read
66 (15)	Port 8 - Pin 4	☐ Not Inverted ☐ Inverted	Write	Read
66 (16)	Port 8 - Pin 2	☐ Not Inverted ☐ Inverted	Write	Read
67 (0)	Port_Event(fault) (rw)	See child elements		
67 (1)	Port 1 - Pin 1	☐ Not Fault ☐ Fault	Write	Read
67 (2)	Port 2 - Pin 1	☐ Not Fault ☐ Fault	Write	Read
67 (3)	Port 3 - Pin 1	☐ Not Fault ☐ Fault	Write	Read
67 (4)	Port 4 - Pin 1	☐ Not Fault ☐ Fault	Write	Read
67 (5)	Port 5 - Pin 1	☐ Not Fault ☐ Fault	Write	Read
67 (6)	Port 6 - Pin 1	☐ Not Fault ☐ Fault	Write	Read
67 (7)	Port 7 - Pin 1	☐ Not Fault ☐ Fault	Write	Read
67 (8)	Port 8 - Pin 1	☐ Not Fault ☐ Fault	Write	Read
80 (0)	Serial Number Setting (rw)		Write	Read
252 (0)	Test Parameter 252 (wo)	A Appear	Write	
253 (0)	Test Parameter 253 (rw)		Write	Read
16382 (0)	Test Parameter 16382 (rw)		Write	Read

6. Contact

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