



User Manual 用户手册



IOL20 series IO-Link hubs (slave stations)

IO-Link Protocol

Version Information

Version Number	Modification Date	Version Description	Modifier
V1.00	2024.10.28	Release version	Liu Xiaofeng

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Document Usage Instructions

This document outlines the product's functional specifications, installation, operation, and settings, as well as information related to network protocols. This document is intended for use by well-trained electrical automation engineers only.

Patent Information

The designer of this product has obtained patent protection for its appearance and technical implementation methods. Any attempt to copy, imitate, or reverse engineer it may violate the law.

Safety Matters

This product is a professional equipment for industrial use and can only be operated by personnel with electrical operation experience. Before use, please carefully read this manual and follow the instructions to operate it. Failure to do so may result in personal injury or product damage.

This product is designed to meet the IP20 protection level.

Software download

Please log in to the official website of Wuxi Lekko Automation Technology Co., Ltd. at www.latcos.cn to download.

CATALOGUE

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1.Product Overview

Preface

IO-Link is the world's first standardized cross-vendor IO technology (IEC 61131-9), which is an open standard serial communication protocol. The IOL20 series signal hub (hereinafter referred to as "HUB") supports IO-Link communication and can support up to 16 digital input channels or 16 digital output channels.

As an IO-Link slave station, it can be connected to any brand of IO-Link master station to meet the needs of users for obtaining process data, diagnostic and configuration data transmission.

This product is a professional device for industrial use and can only be used by staff with electrical operation experience. Before use, please carefully read this manual and operate in accordance with the instructions to avoid causing personal injury or product damage. Product Features:

- IP20 protection grade

Suitable for industrial environments within or outside the cabinet without water, oil, or metal dust

- Compact size

Suitable for applications with limited space

- Fast speed

Based on high-performance communication chips

- Easy diagnosis

Innovative channel indicator design, close to the channel, clearly showing the channel status, making detection and maintenance convenient

- Communication protocol

Designed according to IO-Link v1.1 specification

- Simple wiring

Uses standard cable connections for simplicity, allowing connection to various IO-Link standard devices and standard switch quantity signals



2. Naming Rules

2.1 Naming Rules

IOL20- 0808P-HUB
 (1) (2) (3) (4) (5) (6)

Number	Meaning	Explanation
(1)	Series Number	IO20L: The abbreviation for the IP20 protection grade IO-Link module
(2)	I/O Type	None: Digital quantity
(3)	Input Points	00: 0 channel input 04: 4 channel input 08: 8 channel input 16: 16 channel input
(4)	Output Points	00: 0 channel output 04: 4 channel output 08: 8 channel output 16: 16 channel output
(5)	Signal Type	P:PNP, N:NPN
(6)	Hub	HUB: Signal Hub, also known as Signal Hub (abbreviation)

Table 1: Naming Rules for Hubs Explanation

2.2 Model list

[illegible]



3. Product Specifications

3.1 General parameters

Communication interface parameters			
Product model	IOL20-0800P-HUB	IOL20-0404P-HUB	IOL20-0008P-HUB
VendorID	0x03DC		
VendorName	LATCOS		
DeviceID	0x2008D1	0x204140	0x2008D0
IO-Link version	V1.1		
Communication rate	COM2 (38.4kbps) communication cycle: 2ms		
Process data length	Input 1 Byte	Input 1 Byte Output 1 Byte	Output 1 Byte
Interface type	M12-A 4-pin connector tip		
IO-Link cable length Working voltage	≤ 20m (between the main station and the HUB)		
Consumption	DC24V ±15%		
current	No-load 15mA		
Input/output interface	2*3-pin spring-type terminal		
Number of input channels	8	4	-
Input current	4mA	4mA	-
Input channel type	PNP	PNP	-
Input filtering	Configurable	Configurable	-
Input short-circuit protection	Yes	Yes	-
Output channel count	-	4	8
Maximum current of single channel	-	0.5A	0.5A
Total output current	-	4A	4A
Output channel type	-	PNP	PNP

Communication interface parameters			
Product model	IOL1600P-HUB	IOL0808P-HUB	IOL0016P-HUB
VendorID	0x03DC		
VendorName	LATCOS		
DeviceID	0x2016D1	0x208180	0x2016D0
IO-Link version	V1.1		
Communication rate	COM2 (38.4kbps) communication cycle: 2ms		
Process data length	Input 2 Byte	Input 1 Byte Output 1 Byte	Output 2 Byte
Interface type	M12-A 4-pin connector tip		
IO-Link cable length Working voltage	≤ 20m (between the main station and the HUB)		
Consumption	DC24V ±15%		
current	No-load 15mA		
Input/output interface	2*3-pin spring-type terminal		
Number of input channels	16	8	-
Input current	4mA	4mA	-
Input channel type	PNP	PNP	-
Input filtering	Configurable	Configurable	-
Input short-circuit protection	Yes	Yes	-
Output channel count	-	8	16
Maximum current of single channel	-	0.5A	0.5A
Total output current	-	4A	4A
Output channel type	-	PNP	PNP

Communication interface parameters			
Product model	IOL20-0800N-HUB	IOL20-0404N-HUB	IOL20-0008N-HUB
VendorID	0x03DC		
VendorName	LATCOS		
DeviceID	0x2008D1	0x204140	0x2008D0
IO-Link version	V1.1		
Communication rate	COM2 (38.4kbps) communication cycle: 2ms		
Process data length	Input 1 Byte	Input 1 Byte Output 1 Byte	Output 1 Byte
Interface type	M12-A 4-pin connector tip		
IO-Link cable length Working voltage	≤ 20m (between the main station and the HUB)		
Consumption	DC24V ±15%		
current	No-load 15mA		
Input/output interface	2*3-pin spring-type terminal		
Number of input channels	8	4	-
Input current	4mA	4mA	-
Input channel type	NPN	NPN	-
Input filtering	Configurable	Configurable	-
Input short-circuit protection	Yes	Yes	-
Output channel count	-	4	8
Maximum current of single channel	-	0.5A	0.5A
Total output current	-	4A	4A
Output channel type	-	NPN	NPN

Communication interface parameters			
Product model	IOL20-1600N-HUB	IOL20-0808N-HUB	IOL20-0016N-HUB
VendorID	0x03DC		
VendorName	LATCOS		
DeviceID	0x2016D1	0x208180	0x2016D0
IO-Link version	V1.1		
Communication rate	COM2 (38.4kbps) communication cycle: 2ms		
Process data length	Input 2 Byte	Input 1 Byte Output 1 Byte	Output 2 Byte
Interface type	M12-A 4Pin 针端		
IO-Link cable length Working voltage	≤ 20m (between the main station and the HUB)		
Consumption	DC24V ±15%		
current	空载 15mA		
Input/output interface	2*3-pin spring-type terminal		
Number of input channels	16	8	-
Input current	4mA	4mA	-
Input channel type	NPN	NPN	-
Input filtering	Configurable	Configurable	-
Input short-circuit protection	Yes	Yes	-
Output channel count	-	8	16
Maximum current of single channel	-	0.5A	0.5A
Total output current	-	4A	4A
Output channel type	-	NPN	NPN

3.2 Technical Specifications

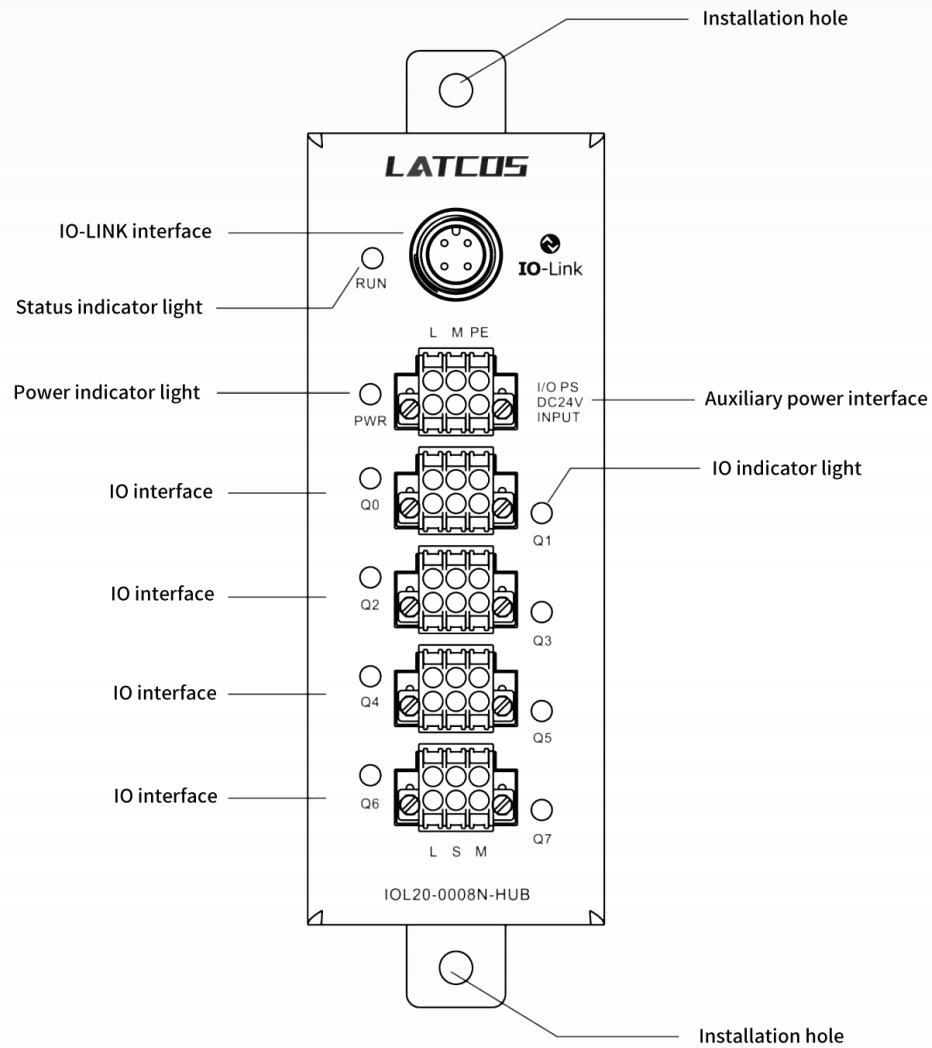
working environment	
Specification and size weight	145*37*45 mm(8-point module) 205*37*45 mm(16-point module)
Operating temperature	260g
Storage temperature	-25°C~+70°C
Relative humidity	-40°C~+85°C
Protection grade	95%, No condensation
Specification and size weight	IP67
Other	
Firmware upgrade	Support
Data storage	Support



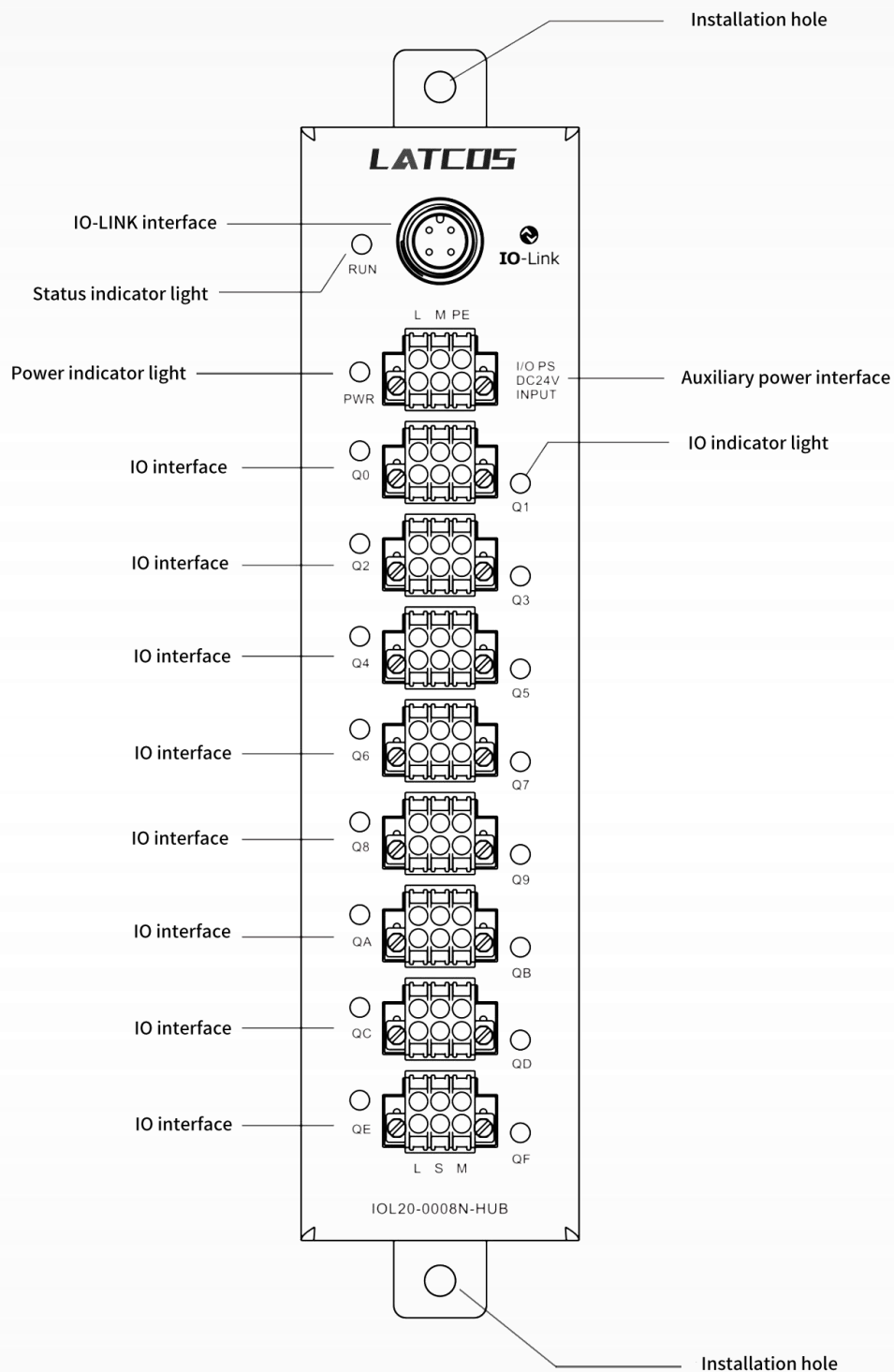
4. Product Panel Introduction

4.1 Module structure

Introduction to each part of the module (8-point module)



Introduction to each part of the module (16-point module)



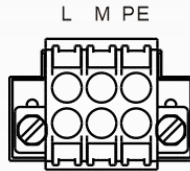
4.2 LED indicator function

Logo	Name	Color	Status	Description
RUN	Operating status indicator light	green	1S Flashes	Module is operating normally
			Turn off	Module is not operating
PWR	Load power indicator light	green	Constantly on	Power supply is normal
			Turn off	Module is not powered on or power supply is abnormal
I ₀ ~I _F	Input channel indicator light	green	Constantly on	Module channel has signal input
			Turn off	Module channel has no signal input or signal input is abnormal
Q ₀ ~Q _F	Output channel indicator light	green	Constantly on	Module channel has signal output
			Turn off	Module channel has no signal output or signal output is abnormal

4.3 Electrical connection of the interface

4.3.1 Auxiliary power interface (2 * 3-pin green)

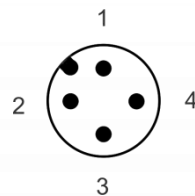
Power port definition



Pin number	Function	Description
1	L	+24V (power supply for load)
2	M	0V (power supply for load)
3	PE	Protective grounding PE

4.3.2 IO-Link Interface Class A (M12 A-code pin end)

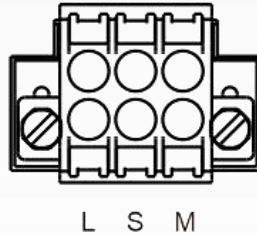
IO-Link Interface Definition



Pin number	Function	Description	Wire core color
1	Us+	+24V (power supply for load) Empty	Brown
2	NC	0V (Load Power Supply)	White
3	Us-	C/Q Data Transmission Channel	Blue
4	IO-Link	+24V (power supply for load) Empty	Black

4.3.3 IO interface (2*3-pin black)

IO Interface Definition



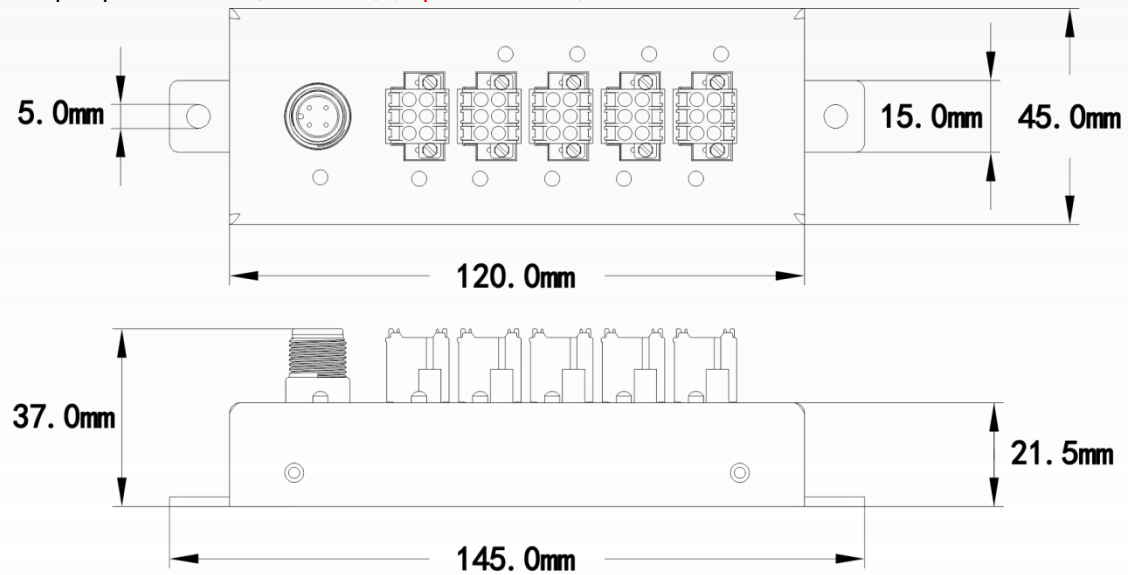
Pin number	Function	Description
1	L	+24V (power supply for load)
2	S	Signal input/output (top A, bottom B)
3	M	0V (power supply for load)



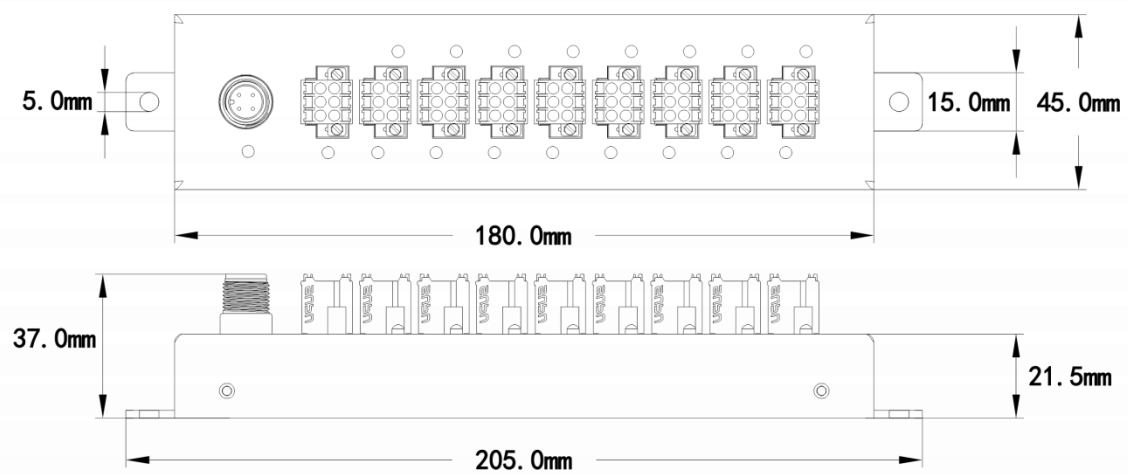
5. Installation and wiring

5.1 Dimensions drawing of the shape

Shape specifications (units: mm) (8-point module)



Shape specifications (units: mm) (16-point module)



5.2 Installation environment requirements

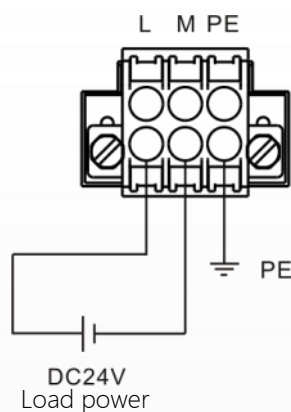
Please avoid installing in the following locations:

- Areas exposed to direct sunlight
- Locations where the environmental temperature or relative humidity exceeds the specifications of the module
- Areas with corrosive gases, flammable gases
- Areas with acid, oil, and chemical droplets
- Areas with dust, iron filings, and sparks flying
- Locations where the module body is directly subjected to severe impact and vibration
- Areas with strong electric fields, magnetic fields, radiation, and static interference
- Locations near power lines and high-voltage alternating current lines

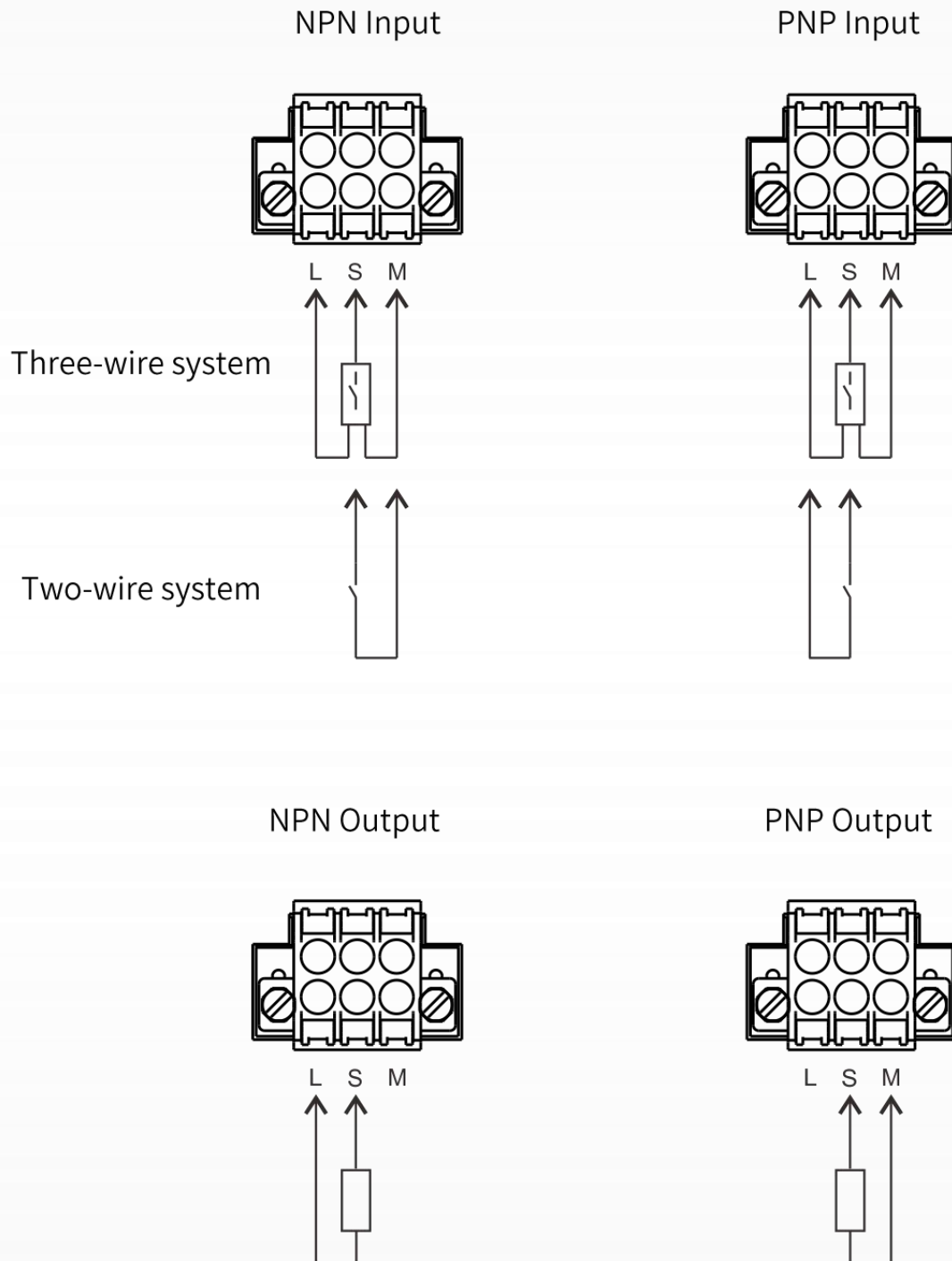
5.3 Connection instructions

- For the safety of personnel and equipment, it is recommended to disconnect the power supply when conducting wiring operations.
- IO-Link Master Station Interface: Connect the IO-Link Hub and any IO-Link Master Station product using a standardized three-core or four-core cable.
- I/O Interface: Connect the IO-Link Hub and sensors or other devices using a standardized five-core cable.

5.3.1 Power interface wiring diagram



5.3.2 IO interface wiring diagram





6. Function Description

6.1 Process data mapping

Input data mapping

Byte	0								1							
Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
Sub-index	8	7	6	5	4	3	2	1	16	15	14	13	12	11	10	9
Offset bit position	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Pin	X3-PIN2	X3-PIN4	X2-PIN2	X2-PIN4	X1-PIN2	X1-PIN4	X0-PIN2	X0-PIN4	X7-PIN2	X7-PIN4	X6-PIN2	X6-PIN4	X5-PIN2	X5-PIN4	X4-PIN2	X4-PIN4

Output data mapping

Byte	0								1							
Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
Sub-index	8	7	6	5	4	3	2	1	16	15	14	13	12	11	10	9
Offset bit position	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Pin	X3-PIN2	X3-PIN4	X2-PIN2	X2-PIN4	X1-PIN2	X1-PIN4	X0-PIN2	X0-PIN4	X7-PIN2	X7-PIN4	X6-PIN2	X6-PIN4	X5-PIN2	X5-PIN4	X4-PIN2	X4-PIN4

6.2 ISDU Parameters

ISDU		Name	Permission	Data Type	Description
Index	Sub-index				
0x10	0x00	Vendor_Name (Manufacturer Name)	R	64 String	LATCOS
0x11	0x00	Vendor_Text (Supplier Text)	R	64 String	www.latcos.cn
0x12	0x00	Product_Name (Product Name)	R	64 String	For example:LNI IOL20-D04-D04-M12
0x13	0x00	Product_ID (Product ID)	R	64 String	For example:LNI200404
0x14	0x00	Product_Text (Product Text)	R	64 String	IP20 Sensor/Actor Hub M12
0x15	0x00	Serial_Number (Serial Number)	R	64 String	-
0x16	0x00	Hardware_Revision(Hardware Version)	R	64 String	v10
0x17	0x00	Firmware_Revision(Firmware Version)	R	64 String	-
0x18	0x00	Application_specific_tag (Specific for Application)	R/W	32 String	***

6.3 Configuration parameters

IP20 4DI/4DO

Index	Sub-index	Name	Permission	Data type	Description
0x40	0x00	inversion (input reverse)	R/W	8 Unsigned	0x00
0x41	0x00	filter (input filtering value)	R/W	8 Unsigned	0x00
0x42	0x00	errmode (output error mode)	R/W	8 Unsigned	0x00
0x43	0x00	errvalue (output error value)	R/W	8 Unsigned	0x00
0x80	0x00	IsduWdtMaxCnt (watchdog timeout time)	R/W	8 Unsigned	3

IP20 8DI

Index	Sub-index	Name	Permission	Data type	Description
0x40	0x00	inversion (input reverse)	R/W	16 Unsigned	0x00
0x41	0x00	filter (input filtering value)	R/W	8 Unsigned	0x00
0x80	0x00	IsduWdtMaxCnt (watchdog timeout time)	R/W	8 Unsigned	3

IP20 8DO

Index	Sub-index	Name	Permission	Data type	Description
0x42	0x00	errmode (Output Error Mode)	R/W	16 Unsigned	0x00
0x43	0x00	errvalue (Output Error Value)	R/W	16 Unsigned	0x00
0x80	0x00	IsduWdtMaxCnt (Watchdog Timeout Time)	R/W	8 Unsigned	3

IP20 8DI/8DO

Index	Sub-index	Name	Permission	Data type	Description
0x40	0x00	inversion (input reverse)	R/W	8 Unsigned	0x00
0x41	0x00	filter (input filtering value)	R/W	8 Unsigned	0x00
0x42	0x00	errmode (output error mode)	R/W	8 Unsigned	0x00
0x43	0x00	errvalue (output error value)	R/W	8 Unsigned	0x00
0x80	0x00	IsduWdtMaxCnt (watchdog timeout time)	R/W	8 Unsigned	3

IP20 16DI

Index	Sub-index	Name	Permission	Data type	Description
0x40	0x00	inversion (input reverse)	R/W	16 Unsigned	0x00 0x00
0x41	0x00	filter (input filtering value)	R/W	8 Unsigned	0x00
0x80	0x00	IsduWdtMaxCnt (watchdog timeout time)	R/W	8 Unsigned	3

IP20 16DO

Index	Sub-index	Name	Permission	Data type	Description
0x42	0x00	errmode (Output Error Mode)	R/W	16 Unsigned	0x00 0x00
0x43	0x00	errvalue (Output Error Value)	R/W	16 Unsigned	0x00 0x00
0x80	0x00	IsduWdtMaxCnt (Watchdog Timeout Time)	R/W	8 Unsigned	3

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