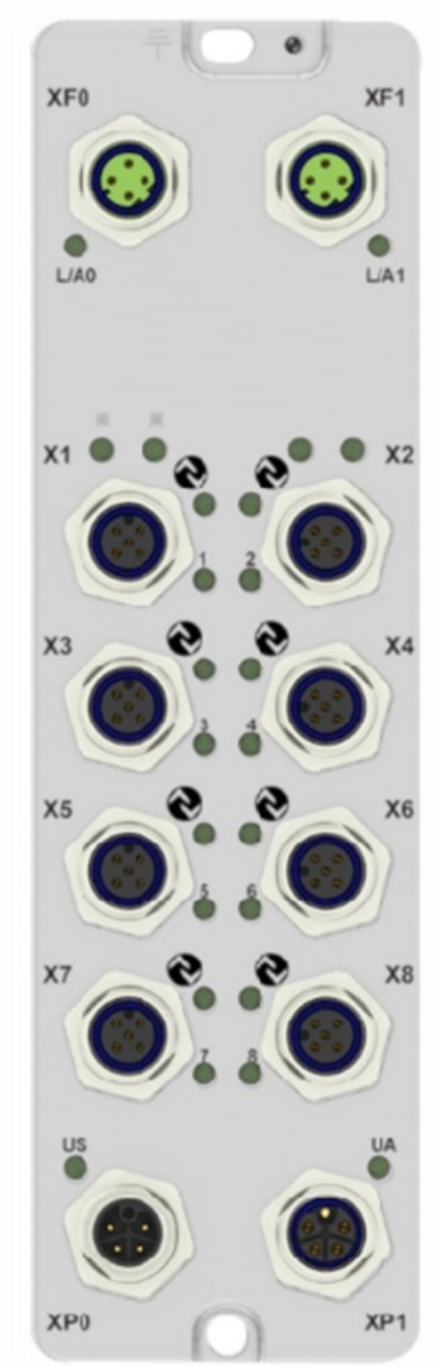
SensorGruppen ULK-EIP-4A4BP6 Ethernet/IP, 8 portow IO-Link User Guide

SensorGruppen

User Guide
UG_ULK-EIP-4A4BP6
(IO-Link MASTER,4A4B,EIP,IP67)



Contents

Introduction

1.1 Agreement

The following terms/abbreviations are used synonymously in this document:
IOL: IO-Link.
LSB: least significant bit.

MSB: most significant bit.
This device: equivalent to “this product”, refers to the product model or series described in this manual.

1.2 Purpose

This manual contains all the information required to use the device correctly, including information on necessary functions, performance, usage, etc.
It is suitable both for programmers and test/debugging personnel who debug the system themselves and interface it with other units (automation systems, other programming devices), as well as for service and maintenance personnel who install extensions or perform fault/error analysis.
Please read this manual carefully before installing this equipment and putting it into operation.
This manual contains instructions and notes to help you step-by-step through installation and commissioning. This ensures trouble-free.
use of the product. By familiarizing yourself with this manual, you will gain.

The following benefits:

❖ ensuring safe operation of this device.
❖ take advantage of the full capabilities of this device.
❖ avoid errors and related failures.
❖ reduce maintenance and avoid cost waste.

1.3 Valid Scope

The descriptions in this document apply to the IO-Link device module products of the ULKEIP series.

1.4 Declaration of Conformity

This product has been developed and manufactured in compliance with applicable European standards and guidelines (CE, ROHS).
You can obtain these certificates of conformity from the manufacturer or your local sales representative.

Safety Instructions

2.1 Safety Symbols

Read these instructions carefully and inspect the equipment before attempting to install, operate, repair, or maintain it. The following special messages may appear throughout this document or on the equipment to indicate status information or to warn of potential hazards.
We divide the safety prompt information into four levels: “Danger”, “Warning”, ” Attention”, and “Notice”.

DANGER	indicates a severely hazardous situation which, if not avoided, will result in death o r serious injury.
WARNING	indicates a hazardous situation which, if not avoided, could result in death or serious injury.
ATTENTION	indicates a hazardous situation which, if not avoided, could result in minor or mode rate injury.
NOTICE	used to prompt information not related to personal injury

⚠ DANGER

This is the DANGER symbol, which indicates an electrical hazard exists which, if instructions are not followed, will result in personal injury.

⚠ WARNING

This is a WARNING symbol, which indicates an electrical hazard exists which, if instructions are not followed, could result in personal injury.

Attentio

This is the “Attention” symbol. Used to warn you of a potential personal injury hazard. Observe all safety instructions following this symbol to avoid injury or death.

Notice

This is the “Notice” symbol, which is used to warn the user of possible risks. Failure to observe this regulation may result in faulty of device.

2.2 General Safety

This equipment should only be installed, operated, serviced and maintained by qualified personnel. Qualified person is a person who has skills and knowledge concerning the construction and operation of electrical equipment, and its installation, and has received safety training to recognize and avoid the hazards involved.
There shall be a statement in the instructions that if the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Notice

User modifications and/or repairs are dangerous and will void the warranty and release the manufacturer from any liability.

Attentio

Product maintenance can only be carried out by our personnel. Unauthorized opening and improper servicing of the product can result in extensive equipment damage or possibly personal injury to the user.
In the event of a serious malfunction, discontinue use of the equipment. Prevent accidental operation of the device. If repairs are required, please return the device to your local representative or sales office.
It is the operating company's responsibility to comply with locally applicable safety regulations.
Store unused equipment in its original packaging. This provides the best protection against impact and moisture for the device. Please ensure that the ambient conditions comply with this relevant regulation.

2.3 Special Safety

⚠ **WARNING**

A process started in an uncontrolled manner may endanger or be exposed to other equipment, therefore, before commissioning, make sure that the use of the equipment does not involve risks that may endanger other equipment or be endangered by other equipment risks of.

Power Supply

This device can only be operated with a current source of limited power, that is, the power supply must have overvoltage and overcurrent protection functions. In order to prevent the power failure of this equipment, affecting the safety of other equipment;
or the failure of external equipment, affecting the safety of this equipment.

Product Overview

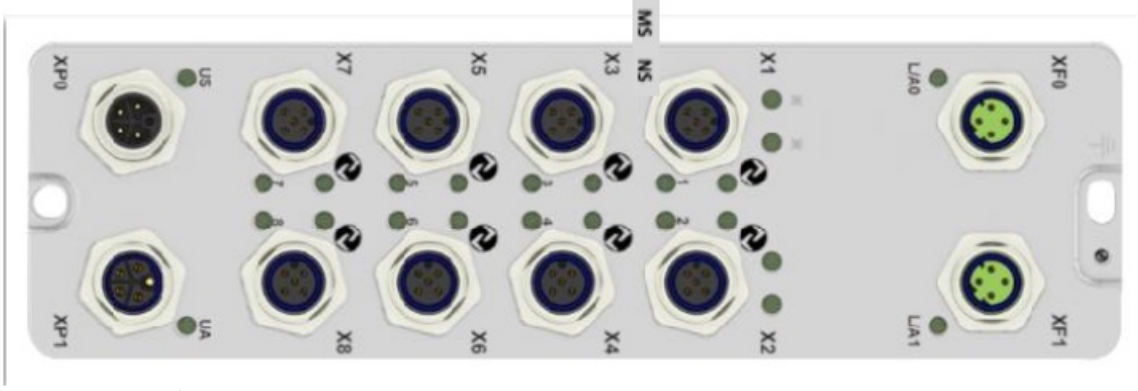
The IO-Link master establishes the connection between the IO-Link device and the automation system. As an integral part of the I/O system, the IO-Link master station is either installed in the control cabinet, or directly installed on site as a remote I/O, and
its encapsulation level is IP65/67.

❖ Designed for industrial environments, it is a system applied to automated lines.
❖ Compact structure, suitable for usage scenarios with limited installation conditions.
❖ IP67 high protection level, anti-interference design, suitable for demanding application environments.

As a special reminder, IP rating is not part of UL certification.

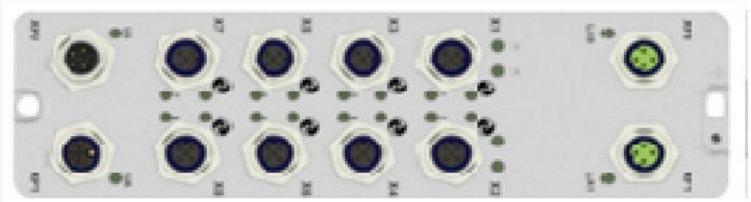
Technical Parameters

4.1 ULK-EIP-4A4BP6

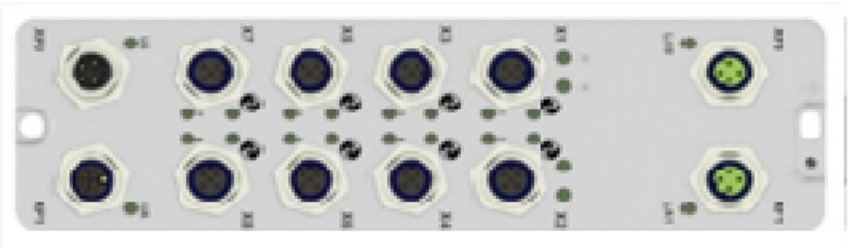


4.1.1 ULK-EIP-4A4BP6 Specification

The technical specifications of ULK-EIP-4A4BP6 are as follows:

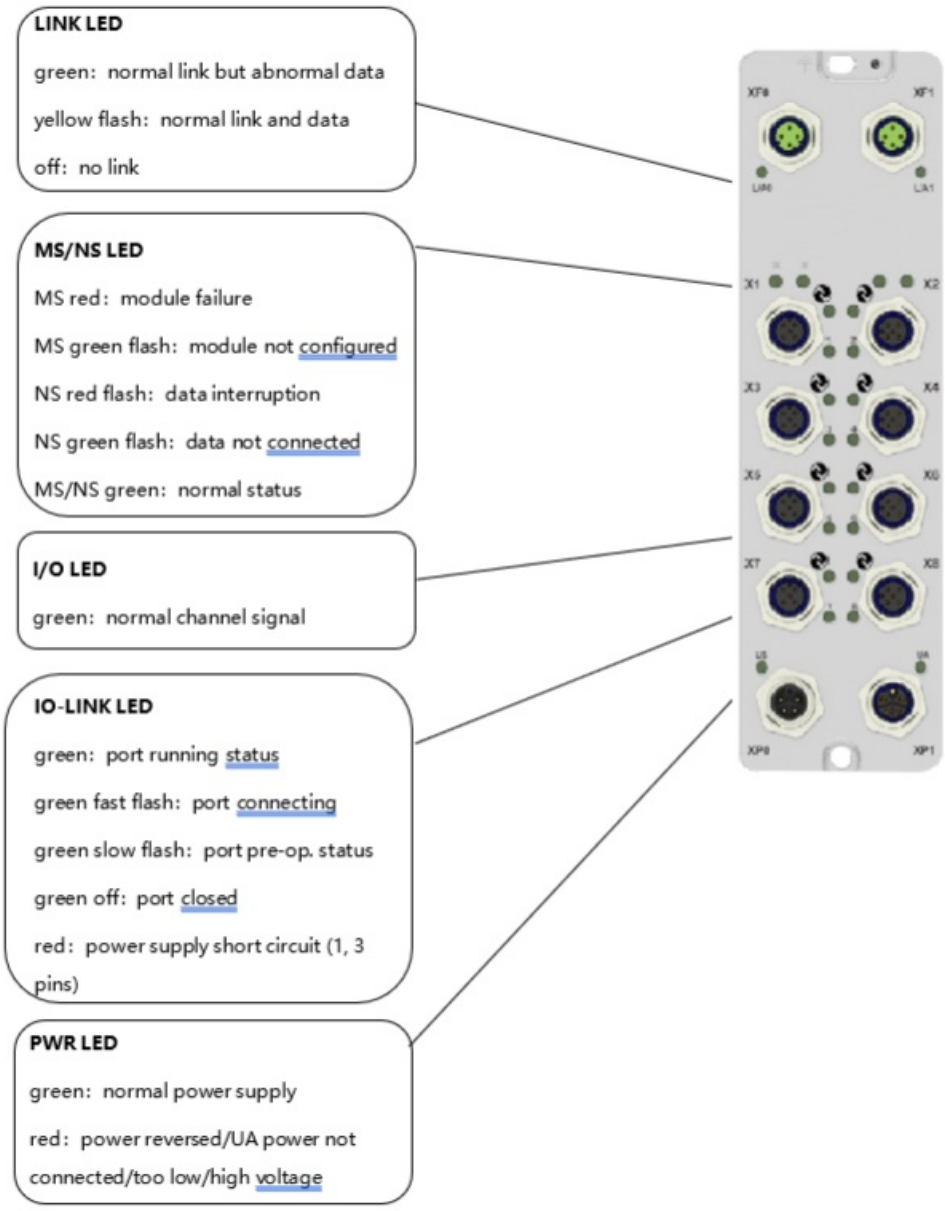
10-Link Master 1P67 U LK- E1P-4A4B P6 4xCLASS A 4xCLASS B	Ethernet/ IP 
Basic Panuneters	
liaising Material	Alumna Alloy
lousing Color	Metallic Silva
Protection Level	1P67.epoxy MI potting
Ihninsiont (Wx11210)	205reans60mnix34.4mm
Writ**	515g
Operating lemperature	-25T.70T
Morns Tamicrature	40t.85•C
Operating Bunichty	5%.95%
Storage 1 tumidity	5%.95%
opciating Attnnplicric Presstac	80KPa..106KPa
Storage Atmospheric Procure	801Ch.106KP*
Mum&	0..2000m
Pollution Ikgree	3
Tightening forqu$110)	M12:0.5Nm
Application Environment	conforms b EN-61131
Vitiation Test	conform to IEC60068-2
Impact rest	conforms so IFC60068-27
Free Drop test	suntans to IEC60068.32
EMC	corium. to IEC610004-2.-3.4
Certification	Cr…R.11S
Mounting llole Sin	s4 5mn. 14)5 .5min. 1
Data Transfer	
Connection Type	24112 Dadc: 4-pin Female
Physical layer	Ethernet
Transfer Kate	10’100 MINK. Full Duplex
Characteristic	anima to protocol features
Mann Ftmetion	diagnosis alarm process alarm
Min Cycle Tune	Ins

10w-sing lorque(data port)	M12.0.5N5n
Power Supply	
Connection Ewe	M12. 5 pins. l.-code. Maki:task
System voltage Us	18..30 VIX(type .24VDC)
Auxiliary voltage lla	18…30 VDC(typc.24VDC)
Total (Anent slit	12A
Static Working Curicsit1C	<150mA
Overvoltagg Protection	VCs
Power Reverie Polarity Protection	Ves
riebnins Torquopowa supply pan)	M12:0.5Nm

10-Link Master IP67 ULK-EIP-4A4BP6 4xCLASS A 4xClASS B	EtherOet/IP 
IO-UNK Parameters	
Port Number	8×10-UNK
IO UNK Connection Type	0412.Sn-code.femalt
IO-UNIC Version	1.1
Communication Rate	COM1(4.13flps),COM2(384X8ps),COM1(230.4KBps)
Poet Voltage	type24VDC (follow US)
Port Current	2A (follow US)
Pon Class	4 x CLASS& 4 v CLASS 13
Port Maximum Data Length	My',
Max. Data Transfer Distance	1100 m
10-UNK Max Distance	s20 m
Digital Input/Output	4N PNP (selfeadaptive)
Port Parameters (Input)	
Input Number	up to 4
Input Port Position	x1…x4
Input Polarity	PNP
Input Signal 0′	low level 0.3-SV DC
Input Signal '1'	high level 12-30V DC
Port Parameters (Output)	
Output Number	up to 4
Output Port Position	X1…X4
Output Polarity	PNP
Output Current	single channel maximum 2A
Port Protection	poet power short circuit protection (P1N1. P1N3)/ port overload protection
Load Type	Resistive. Pilot Duty, Tungsten

4.1.2 ULK-EIP-4A4BP6 LED Definition

ULK-EIP-4A4BP6 is shown in the below figure.



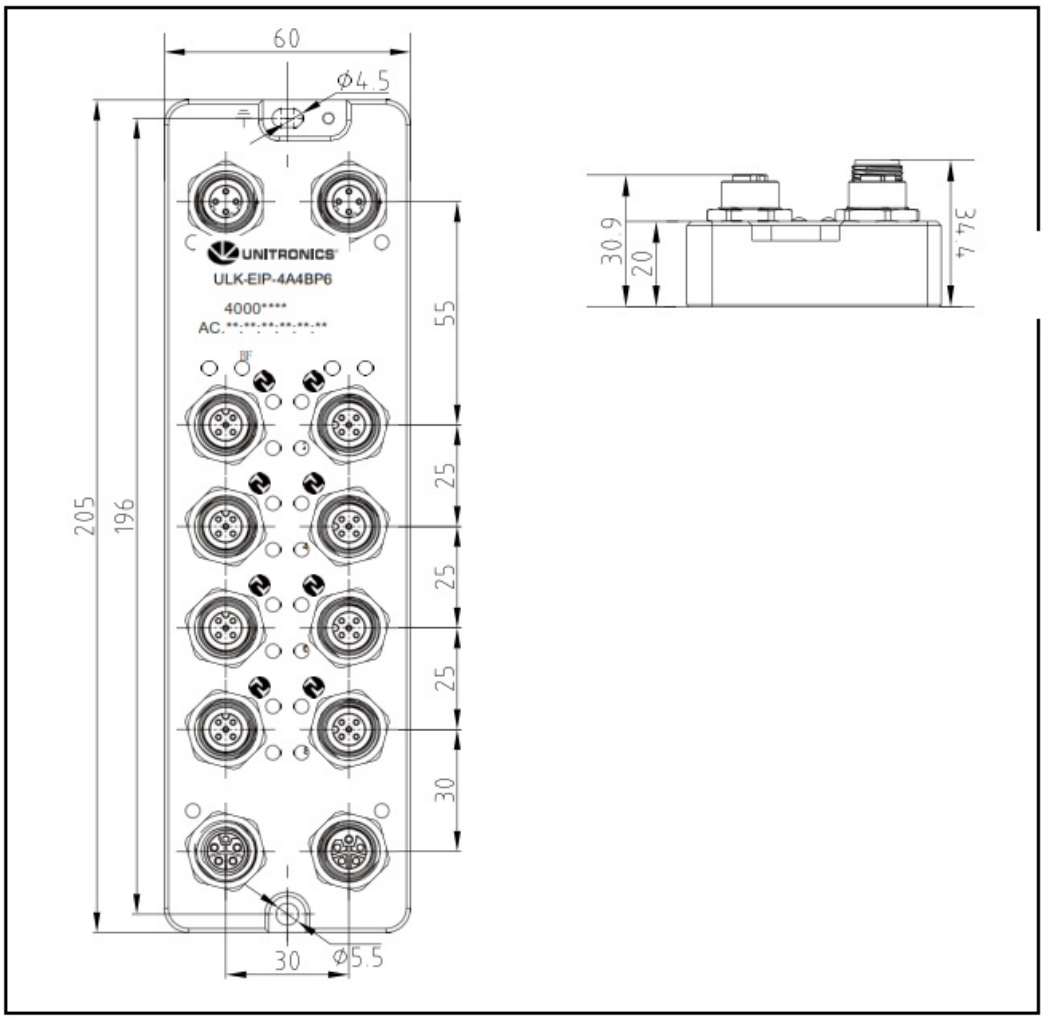
Module Indicator		
	Status	Solution
PWR	green: normal power supply	
	red power reversed/UA power not connected/too low/high voltage	check power wiring
IO	green: normal channel signal	
	red: port power supply short circuit (2, 3 pins)	check pin 2 and pin 3

LINK	green normal link but abnormal dat a	check the network configuration
	yellow flash normal link and data	
	off no link	check cable/network configuration
MS	red module failure	check damage/IO-Link device conn ected or not
	green flash module not configured	check configuration in the program and PLC download status
NS	red flash data interruption	check network cable status
	green flash data not connected	
MS/NS	green normal status	
IO-LINK	green port running status	
	green fast flash port connecting	
	green slow flash port preoperaion s tatus	pre-operational / port configured but no device connected
	green off port closed	port not configured
	red power supply short circuit (1, 3 pins)	check whether the 1 and 3 pins are short circuited

Note: When the Link indicator is always off, if there is no abnormality in the cable inspection and replacement of other modules, it indicates that the product is working abnormally.
Please contact the manufacturer for technical consultation.

4.1.3 ULK-EIP-4A4BP6 Dimension

The size of the ULK-EIP-4A4BP6 is 205mm×60mm×34.5mm, including one φ4.5mm and one φ5.5mm mounting hole, the depth of the mounting hole is 20mm, as shown in the figure below:



Product Installation

5.1 Installation Precautions

To prevent product malfunction, malfunction, or negative impact on performance and equipment, please observe the following items.

5.1.1 Installation Site

Notice

Please avoid installing near devices with high heat dissipation (heaters, transformers, large-capacity resistors, etc.)

Notice

Please avoid installing it near equipment with serious electromagnetic interference (large motors, transformers, transceivers, frequency converters, switching power supplies, etc.).

This product uses PN communication.

Radio waves (noise) generated by transceivers, motors, inverters, switching power supplies, etc. may affect the communication between the product and other modules.

When these devices are around, it may affect the communication between the product and the module or damage the internal components of the module.

When using this product near these devices, please confirm the effects before use.

Notice

When multiple modules are installed close to each other, The service life of the modules may be shortened due to the inability to dissipate heat.

Please keep more than 20mm between the modules.

5.1.2 Application

⚠ **DANGER**

Do not use AC power. Otherwise, there is a risk of rupture, seriously affecting the safety of personal and equipment.

Attentio

Please avoid wrong wiring. Otherwise, there is a risk of rupture and burnout. It may affect the safety of personal and equipment.

5.1.3 Usage

Attentio

Do not bend the cable within a radius of 40mm. Otherwise there is a risk of disconnection.

Attentio

If you feel that the product is abnormal, please stop using it immediately and contact the company after cutting off the power.

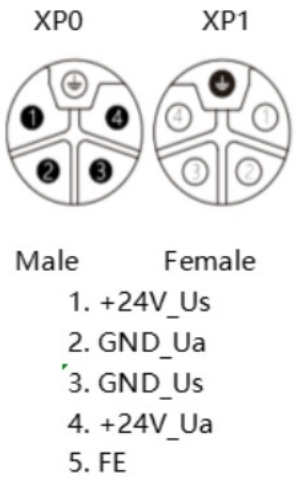
5.2 Hardware Interface

5.2.1 ULK-EIP-4A4BP6 Interface Definition

Power Port Definition

1. ULK-EIP-4A4BP6 Port Definition

   The power port uses a 5-pin connector, and the pins are defined as follows:

Port M12 L-code Female &Male Pin Definition	Connection Type	M12, 5 pins, L-code, Male/Female	
	System Supply Voltage us	18…30 VDC (type.24VDC)	
	Auxiliary Supply Voltage ua	18…30 VDC (type.24VDC)	
	Total Current Is	12A	
	Total Current Ia	12A	
	Static Working Current Ic	150mA	
	Power Reverse Polarity Protection	Yes	
	Tightening Torque (power port)	M12:0.5Nm	

Note: Us is the system power and input power, and Ua is the output power.

The power supply must be a limiting power source or class 2 power supply.

Data Port Definition

The data port uses a 4-pin connector, and the pins are defined as follows:

Data Port Pin Definition			
M12 D-code Female	Connection Type	2 × M12 D-code; 4 pins, Female	M12(J1~J8)  1. TX+ 2. RX+ 3. TX- 4. RX-
	Physical Layer	Ethernet	
	Transfer Speed	10/100 Mbps, full duplex	
	Characteristic	conforms to the protocol features	
	Alarm Function	diagnostic alarm, process alarm	
	Min. Cycle Time	1ms	
	Tightening Torque (data port)	M12:0.5Nm	

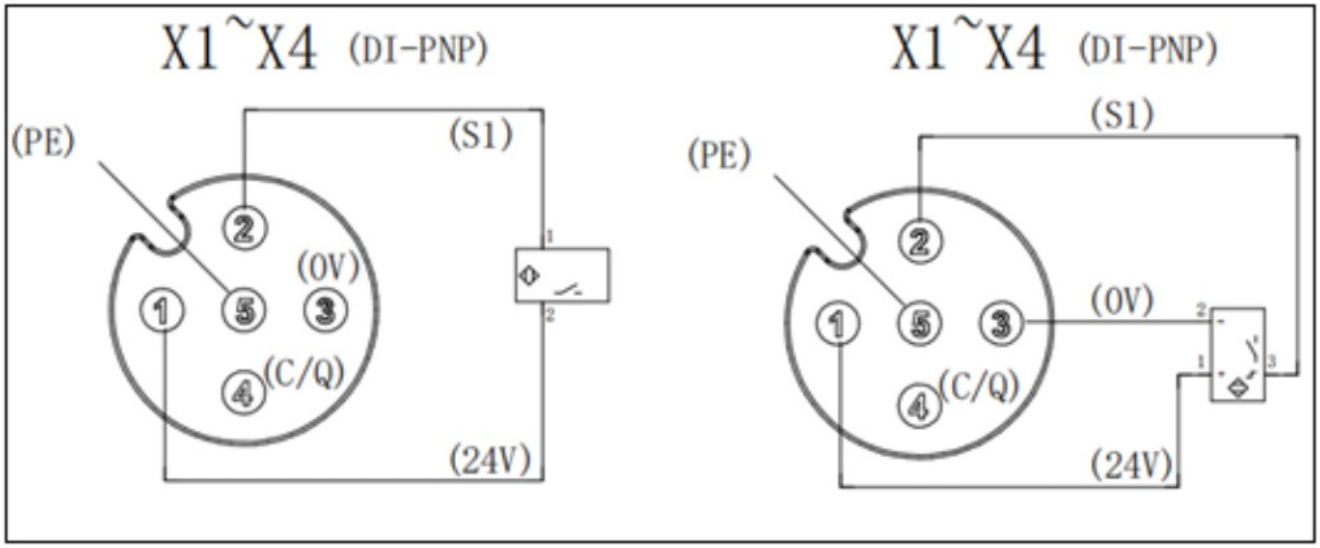
IO-Link Port Definition
The IO-Link port uses a 5-pin connector, and the pins are defined as follows:

I/O Port Pin Definition		
	Pin Definition	**Address Distribution**
Port M12 A-code Female	M12(J1~J8)  **Class A** 1. 24 VDC+ 2. Input/Output 3. 0 V 4. C/Q 5. N/C **Class B** 1. 24 VDC+ 2. P24V 3. 0 V 4. C/Q 5. N24V	Byte 0 Bit0 X1P2 Bit1 X2P2 Bit2 X3P2 Bit3 X4P2

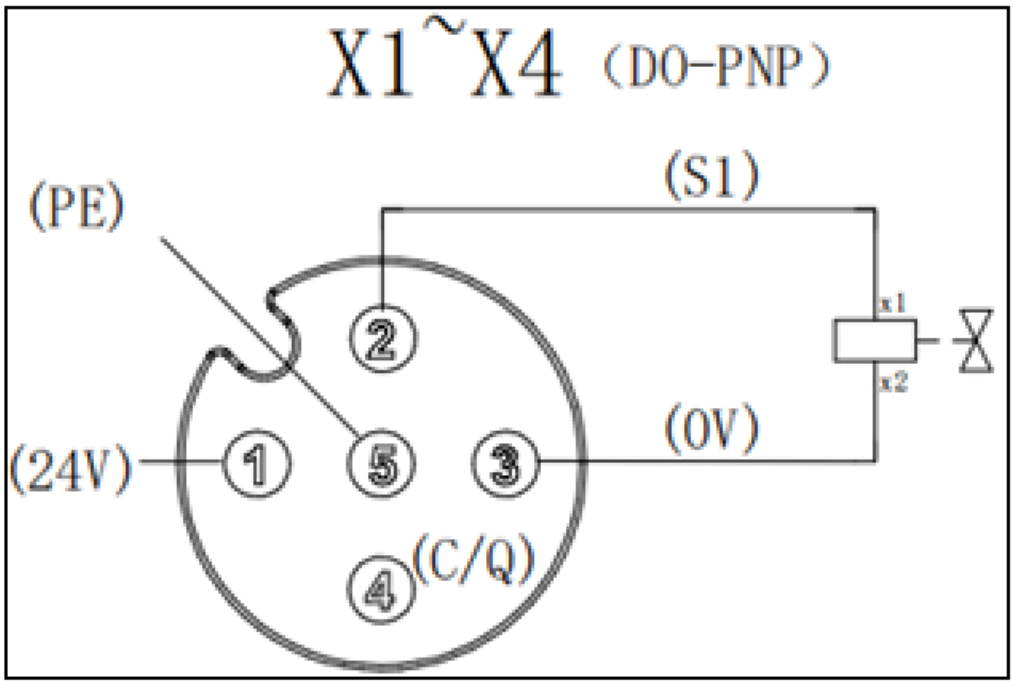
⚠ **WARNING**
Use Copper Conductors Only.
The maximum input current per port load is 200mA .
The voltage range of the output signal and Ua has always been 18~30Vdc .

5.2.2 ULK-EIP-4A4BP6 Wiring Diagram

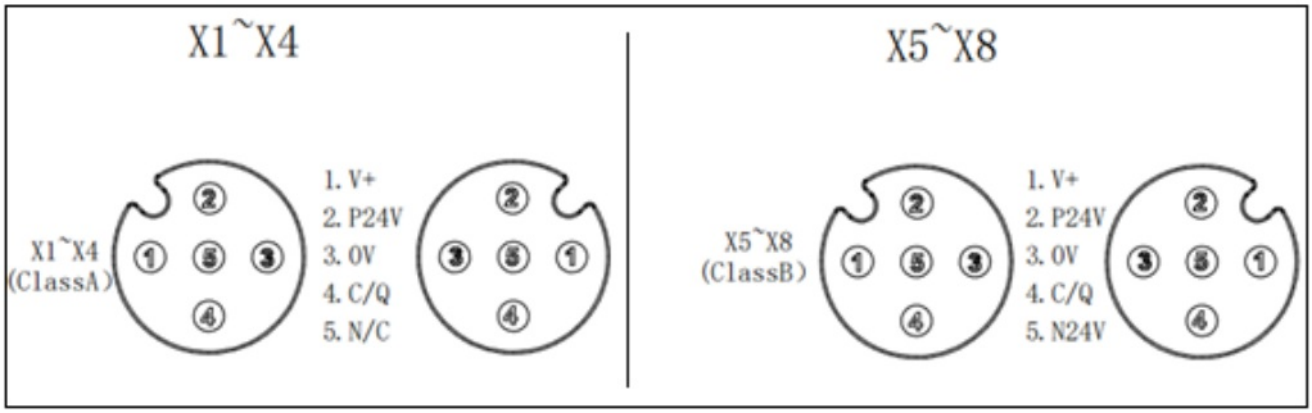
1. PNP type input signal, that is, the jack is connected to 1 input sensor, which is divided into two-wire sensor and three-wire sensors



2. PNP type output signal, that is, the jack is connected to the actuator



3. The IO-Link port is connected to the ULK-EIP-4A4BP6 substation. (When the IO-Link device is an input type, the 2 pins allow no wiring.



5.2.3 ULK-EIP-4A4BP6 IO Process Image Area Allocation 8-way IO-Link Interface (4 Class-A, 4 Class-B

Ether's: et/P Pro to co 1P rocess 0 ut put Data									
Byte	Functipn D escrip tipn								
	Descrt tiln	BE7 I	BUG 1	BUS	1 BU4	BE3	13E2	BIII	BUO
0	Standard I) 0 utp ut 0= off 1= on	em pty				X4P2	X3P2	X2P2	X 1P2
1	no	reserve	reserve	reserve	reserve	reserve	reserve	reserve	reserve
2-33	port 1 process output data								
34-65	port2 process output data								
66`97	port3 process output data								
98%129	p ort 4 pro cess output data								
130-161	pons process output data								
162-193	port6 process output data								
194-225	port7 process output data								
226-257	p ort 8 process output data								

EtherN et P Proto co 1Pro cess hputData									
Byte	Function D escrttion								
	D e scrip tip n	BEr	I BIM	I BUS	I BII4	BE3	8E2	B111	3E0
0	Stand ard D hpu t 0= no signal 1= have signal	empty				14P2	X3P2	X2P2	vh.1P2
1	C lass B pow er supply shortcituk 0=Ph 2,5 short c itu it 1= non al	empty				port5	port6	port .	pon8
2	Port 1 process com m unicatbn status (0x03 connected, Oxa4 not connected, Ox00 not configured)								
3	Po rt 2 process corn m unicatbn status (0x03 connected, Oxa4 not connected, Ox00 not configured)								
4	Port 3 process corn m unicatbn status (0x03 connected, Oxa4 not connected, Ox00 not configured)								
S	Port 4 process corn m unicatbn status (0x03 connected, Oxa4 not connected, Ox00 not configured)								
6	Pons process com in unicatbn status (0x03 connected, Oxa4 not connected, Ox00 not configured)								
7	Po rt 6 process com in unicatbn status (0x03 connected, Oxa4 not connected, Ox00 not configured)								
8	Port 7 process corn m unicatbn status (0x03 connected, Oxa4 not connected, Ox00 not configured)								
9	Port 8 process com in unicatbn stands (0x03 connected, Oxa4 not connected, Ox00 not configured)								
10-41	port]. process hput data								
42-.73	p ort 2 process hput data								
74– 105	port 3 process hput data								
106137	p ort 4 process hput data								
138-‘16 9	ports process hput data								
170– 20 1	port6 process hput data								

Note: When the IO-Link master port is connected to a slave station with output function, it is necessary to set the Pin2 output point to ON to provide power for the IO-Link device. Otherwise, the output point of the IO-Link device will light up in red when outputting.

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Documents / Resources

	SensorGruppen ULK-EIP-4A4BP6 Ethernet/IP, 8 portow IO-Link [pdf] User Guide ULK-EIP-4A4BP6 Ethernet IP 8 portow IO-Link, ULK-EIP-4A4BP6, Ethernet IP 8 portow IO-Link, 8 portow IO-Link, IO-LinkIO-Link

References

- User Manual