

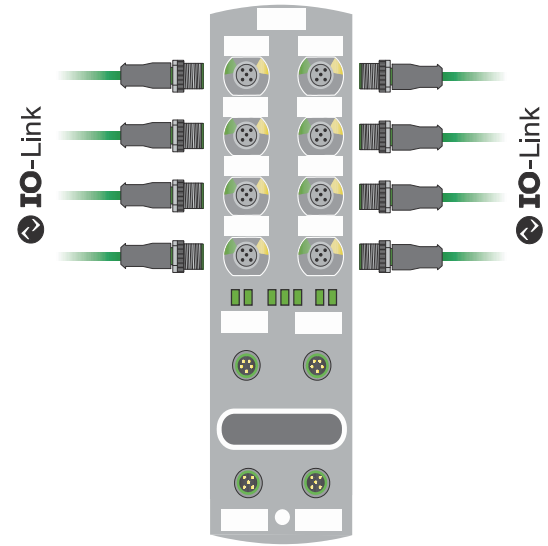
IO-Link Field I/O

IO-Link Overview

IO-Link is a standardized protocol that enables connection of intelligent devices (sensors and actuators) to an automation system.

Communication takes place between an IO-Link master and one or more IO-Link devices. IO-Link is a point-to-point communication system and is not a fieldbus. A master module has one or more ports and one device can be connected to each port.

The IO-Link master module is the interface between the controller and the IO-Link system, using EtherNet/IP or EtherCAT.



Features

- No field wiring is typically required. IO-Link devices plug into M12 ports.
- Rich sensor data can add diagnostics, history, and engineering units automatically, all delivered over one cable.
- Automatic device configuration can speed up and simplify field replacement.
- IO-Link Masters support daisy-chaining for easy installation of many devices.
- Premiere integration with Productivity PLC and BRX via EDS files

IO-Link Masters		
Part Number	Description	Price
<u>SIOL-EI8B</u>	STRIDE Basic EtherNet/IP IO-Link master, (8) IO-Link capable I/O points, up to (16) discrete I/O points, IO-Link v1.1, 8A, 1A/port, plastic housing, IP65 and IP67, -25 to 70 deg C.	\$05a48:
<u>54631</u>	Murrelektronik Premium EtherNet/IP IO-Link master, (8) IO-Link capable I/O points, up to (16) discrete I/O points, IO-Link v1.1, 16A, 2A/port, plastic housing, IP65 and IP67, -25 to 70 deg C.	\$05a49:
<u>54632</u>	Murrelektronik Premium EtherCAT IO-Link master, (8) IO-Link capable I/O points, up to (16) discrete I/O points, IO-Link v1.1, 16A, 2A/port, plastic housing, IP65 and IP67, -25 to 70 deg C.	\$,-06fdl:
<u>BNI008M</u>	Balluff EtherNet/IP IO-Link master, (8) IO-Link capable I/O points, up to (16) discrete I/O points, IO-Link v1.1.3, 9A, 2A/port, plastic housing, IP67, -5 to 70 deg C, multi-line LCD display.	\$,-06j[6:
<u>BNI00HM</u>	Balluff EtherNet/IP IO-Link master, (8) IO-Link capable I/O points, up to (16) discrete I/O points, IO-Link v1.1.3, 9A, 2A/port, die-cast zinc nickel-plated housing, IP67, -25 to 70 deg C.	\$,-06j[5:
<u>BNI006A</u>	Balluff EtherNet/IP IO-Link master, (8) IO-Link capable I/O points, up to (16) discrete I/O points, IO-Link v1.1.3, 9A, 2A/port, die-cast zinc nickel-plated housing, IP67, -5 to 70 deg C, multi-line LCD display.	\$,-06j[4:

IO-Link Hubs		
Part Number	Description	Price
<u>59507</u>	Murrelektronik IO-Link hub, up to (8) discrete I/O points, (8) 3-pin M8 ports, 24 VDC, IO-Link v1.1.2 (compatible with v1.1.3), IO-Link Class A Device, 4A, 0.5A/port, IP68. Requires IO-Link master.	\$05a4a:
<u>59710</u>	Murrelektronik IO-Link hub, up to (16) discrete input points, (8) 5-pin M12 A-coded ports, 24 VDC, IO-Link v1.1.2 (compatible with v1.1.3), IO-Link Class A Device, IP68. Requires IO-Link master.	\$05a4b:
<u>59712</u>	Murrelektronik IO-Link hub, up to (16) discrete I/O points, (8) 5-pin M12 A-coded ports, 24 VDC, IO-Link v1.1.2 (compatible with v1.1.3), IO-Link Class B Device, 4A, 2A/port, IP68. Requires IO-Link master.	\$,06fdn:
<u>59719</u>	Murrelektronik IO-Link hub, up to (16) discrete I/O points, (8) 5-pin M12 A-coded ports, 24 VDC, IO-Link v1.1.2 (compatible with v1.1.3), IO-Link Class A Device, 4A, 0.5A/port, IP68. Requires IO-Link master.	\$05a4c:
<u>59738</u>	Murrelektronik IO-Link hub, up to (16) discrete I/O points, (8) 5-pin M12 A-coded ports, 24 VDC, IO-Link v1.1.2 (compatible with v1.1.3), IO-Link Class A Device, 12A, 4A/port, IP68. Requires IO-Link master.	\$,06fdo:
<u>59840</u>	Murrelektronik IO-Link hub, up to (4) analog input channel(s), (4) 5-pin M12 A-coded port(s), current/voltage, 24-bit, IO-Link v1.1.2 (compatible with v1.1.3), IO-Link Class A Device, IP65, IP67 and IP68. Requires IO-Link master.	\$05zuz:
<u>59841</u>	Murrelektronik IO-Link hub, up to (4) temperature input channel(s), (4) 5-pin M12 A-coded port(s), RTD, 24-bit, IO-Link v1.1.2 (compatible with v1.1.3), IO-Link Class A Device, IP65, IP67 and IP68. Requires IO-Link master.	\$,06fdx:
<u>BNI00F4</u>	Balluff IO-Link hub, up to (16) discrete I/O points, up to (16) discrete input points, (8) 5-pin M12 A-coded ports, 24 VDC, IO-Link v1.1, IO-Link Class A Device, 4A, 0.2A/port, IP67. Requires IO-Link master.	\$,-06j[7:
<u>BNI00CP</u>	Balluff IO-Link hub, up to (16) discrete I/O points, up to (16) discrete input points, (8) 5-pin M12 A-coded ports, 24 VDC, IO-Link v1.1, IO-Link Class A Device, 9A, 2A/port, IP67. Requires IO-Link master.	\$,-06j[8:
<u>BNI00AJ</u>	Balluff temperature/analog IO-Link hub, up to (8) analog input channel(s), current/voltage/RTD/thermocouple, 16-bit, input RTD type(s): Pt100 and Pt1000, input thermocouple type(s): J, K, IO-Link v1.1, IP67. Requires IO-Link master.	\$,-06j[b:

IO-Link Signal Converters		
Part Number	Description	Price
<u>BNI00C6</u>	Balluff temperature/analog combo converter, 1-channel, current/voltage/RTD/thermocouple, 16-bit, input RTD type(s): Pt100 and Pt1000, input thermocouple type(s): J, K, IO-Link v1.1, stainless steel housing, IP65 and IP67. Requires IO-Link master.	\$,-06j[3:

BALLUFF IO-Link Hubs

Features

- Metal case for extreme environment
- New universal analog inputs
- Support for high current I/O devices



BNI00F4



BNI00CP



BNI00AJ

Interface

Part Number	BNI00F4	BNI00CP	BNI00AJ
Cycle time min.	5.6 ms		55 ms
Digital inputs	16x PNP, Type 3		NA
Digital outputs	16x PNP		NA
Analog inputs	NA		8x Analog, voltage/analog, current/analog, temperature (0–10V/–10–10V/0–5V/–5–5V/5–10V/4–20mA/0–20mA/Pt100/Pt1000/ Thermocouple Type J/ Thermocouple Type K)
Input resolution	NA		≤ 16 bit adjustable
Extension port	Yes		No
IO-Link version	1.1		
Interface	IO-Link 1.1		
Process data IN	6 bytes		22 bytes
Process data OUT	2 bytes		1 byte
Process data cycle min.	5.6 ms		55 ms
Single-channel monitoring	Yes		NA
Transfer rate	COM2 (38.4 kBaud)		

Electrical Connection

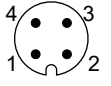
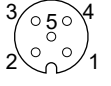
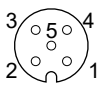
Part Number	BNI00F4	BNI00CP	BNI00AJ
Ethernet (COM 1)	(1) 4-pin M12 A-coded plug		
Supply voltage IN	NA	7/8" plug, 4-pin	NA
Connection slots	(8) 5-pin M12 A-coded socket		
Contact, surface protection	Nickel-plated 2 µm/gold plated 0.4 µm		

Electrical Data

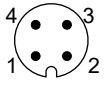
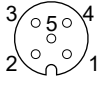
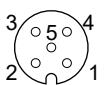
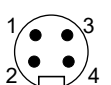
Part Number	BNI00F4	BNI00CP	BNI00AJ
Configurable inputs/outputs	Yes		NA
Current consumption without load, max.	50mA		80mA
Current sum UA, actuator	4A	9A	4A
Current sum US, sensor	4A	9A	4A
IO-Link function	Device		
IO-Link ports, number	1		
Operating voltage Ub	18–30.2 VDC		
Rated operating voltage Ue	24 VDC		
Switching current	16x 200mA	16x 2A	NA

BALLUFF IO-Link Hubs

BN100F4 Pin Assignments

IO-Link	M12 A-coded plug	
	Pin 1	24 VDC US1 (module voltage)
	Pin 2	24 VDC UA (actuator voltage)
	Pin 3	GND, reference potential
	Pin 4	C/Q, IO-Link data transmission channel
Digital I/O	M12 A-coded sockets	
	Pin 1	24 VDC, 200mA
	Pin 2	PNP Input 2 / PNP Output 2
	Pin 3	0V, GND
	Pin 4	PNP Input 1 / PNP Output 1
	Pin 5	FE
Extension Port	M12 A-coded socket	
	Pin 1	24 VDC US (sensor/module voltage), 2A
	Pin 2	24 VDC US (actuator voltage), 2A
	Pin 3	0V, GND
	Pin 4	Communication
	Pin 5	FE

BN100CP Pin Assignments

IO-Link	M12 A-coded plug	
	Pin 1	24 VDC US1 (module voltage), max 4A
	Pin 2	n.c.
	Pin 3	GND, reference potential
	Pin 4	C/Q, IO-Link data transmission channel
Digital I/O	M12 A-coded sockets	
	Pin 1	24 VDC, 200mA (powered by US2)
	Pin 2	PNP Input 2 / PNP Output 2 (2A)
	Pin 3	0V, GND
	Pin 4	PNP Input 1 / PNP Output 1 (2A)
	Pin 5	FE
Extension Port	M12 A-coded socket	
	Pin 1	24 VDC (sensor/module voltage), 2A
	Pin 2	24 VDC (actuator voltage), 2A
	Pin 3	0V, GND
	Pin 4	C/Q, IO-Link data transmission channel
	Pin 5	FE
Power IN	7/8" plug	
	Pin 1	24 VDC UA (actuator), max 9A
	Pin 2	24 VDC US2 (sensor), max 9A
	Pin 3	0V, GND (common ground)
	Pin 4	0V, GND (common ground)

BN100AJ Pin Assignments

IO-Link		M12 A-coded plug			
	Pin 1	24 VDC US1 (module voltage), 1.1 A			
	Pin 2	n.c.			
	Pin 3	GND, reference potential			
	Pin 4	C/Q, IO-Link data transmission channel			
Analog Input	M12 A-coded sockets				
		Voltage/Current	TC	RTD	
	Pin 1	24 VDC, 150mA	n.c.	Pt-	
	Pin 2	Input	TC+	Pt-	
	Pin 3	GND	TC-	Pt+	
	Pin 4	Input	n.c.	Pt+	
	Pin 5	n.c.			

Materials

Part Number	BN100F4	BN100CP	BN100AJ
Housing material	Die-cast zinc, nickel-plated		
Gasket material	FKM 75		
Housing shield	Yes		
Surface protection	Cu 15µm, Ni 15µm		

Environmental Conditions

Part Number	BN100F4	BN100CP	BN100AJ
Operating temperature	-5°C to +55°C [+23°F to +131°F]		-5°C to +70°C [+23°F to +158°F]
Ambient temperature UL max.	45°C [113°F]		
Storage temperature	-25°C to +70°C [-13°F to +158°F]		
EN 60068-2-6, Vibration	5-61 Hz, constant amplitude 1mm 61-500 Hz, constant acceleration 15 g		
IP rating	IP67, when threaded in		

Functional Safety

Part Number	BN100F4	BN100CP	BN100AJ
MTTF (40 °C)	38.7 years		31 years

Mechanical Data

Part Number	BN100F4	BN100CP	BN100AJ
Weight (net)	Approx. 530g [18.7 oz]	Approx. 540g [19.0 oz]	Approx. 500g [17.6 oz]
Dimensions (W x D x H)	68 x 31.8 x 181.5 mm [2.68 x 1.25 x 7.15 in]	68 x 32.4 x 181.5 mm [2.68 x 1.28 x 7.15 in]	68 x 31.8 x 181.5 mm [2.68 x 1.25 x 7.15 in]
Mounting ground strap	M4 internal thread		
Mount type	2-hole screw mount		
Drawing	PDF	PDF	PDF

Agency Approvals

Part Number	BN100F4	BN100CP	BN100AJ
CE	Yes	Yes	Yes
WEEE	Yes	Yes	Yes
UKCA	Yes	Yes	Yes
cULus	Yes	Yes	Yes

Display & Indicators

Part Number	BN100F4	BN100CP	BN100AJ
Actuator supply UA, indicator	Green LED		NA
IO-Link communication indicator	Green LED		
Module supply indicator	Green LED		
Sensor supply US indicator	Green LED		NA
Switching function display	Yellow LED		