

Simple solutions for complex applications





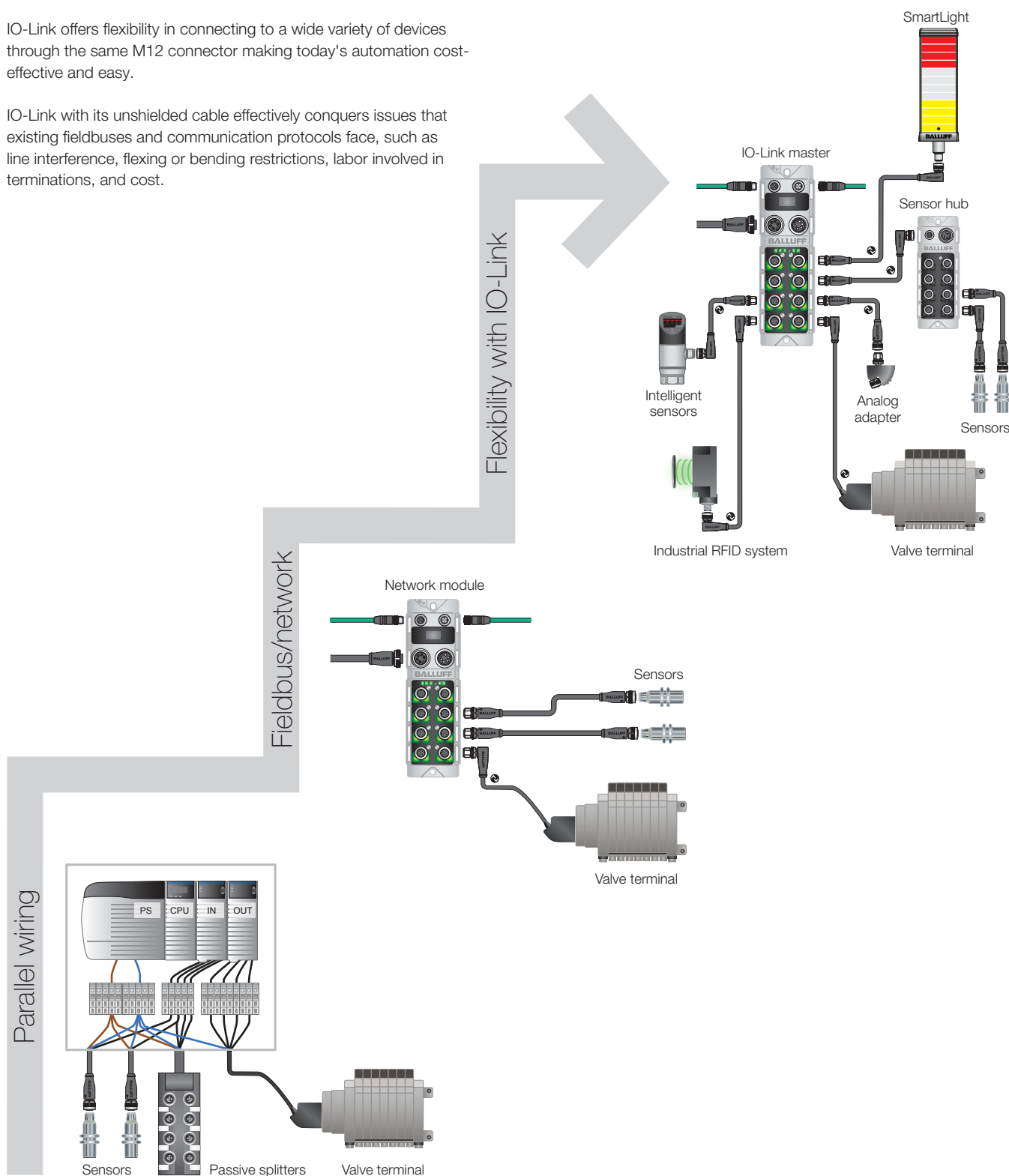
Modular Control Concepts

More flexibility has never been easier

IO-Link is the first established standard for sensor/actuator communication. Simply put, IO-Link is the USB of automation.

IO-Link offers flexibility in connecting to a wide variety of devices through the same M12 connector making today's automation cost-effective and easy.

IO-Link with its unshielded cable effectively conquers issues that existing fieldbuses and communication protocols face, such as line interference, flexing or bending restrictions, labor involved in terminations, and cost.



Fieldbus Migration

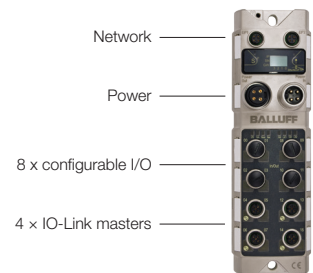
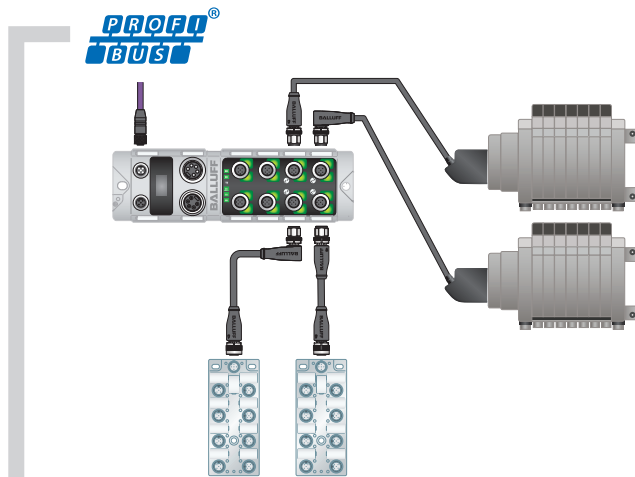
High standardization factor

No matter which countries systems and machine builders are active in: with IO-Link one single concept for field installation satisfies every market. To adapt the bus system, simply change out the master. Everything else remains the same. Just keep running seamlessly with the identical wiring diagrams and the same fieldbus installation – without any additional effort.



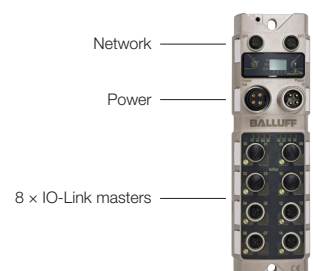
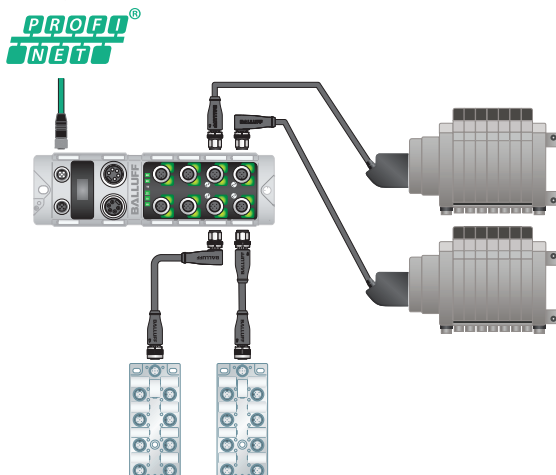




Network table: 4-port master

Profibus	BNI005R
Profinet	BNI004U
Ethernet/IP	BNI004A
Devicenet	BNI005A
CC-Link	BNI0040



Network table: 8-port master

Profinet	BNI005H
EtherCAT	BNI0077
Ethernet/IP	BNI006A

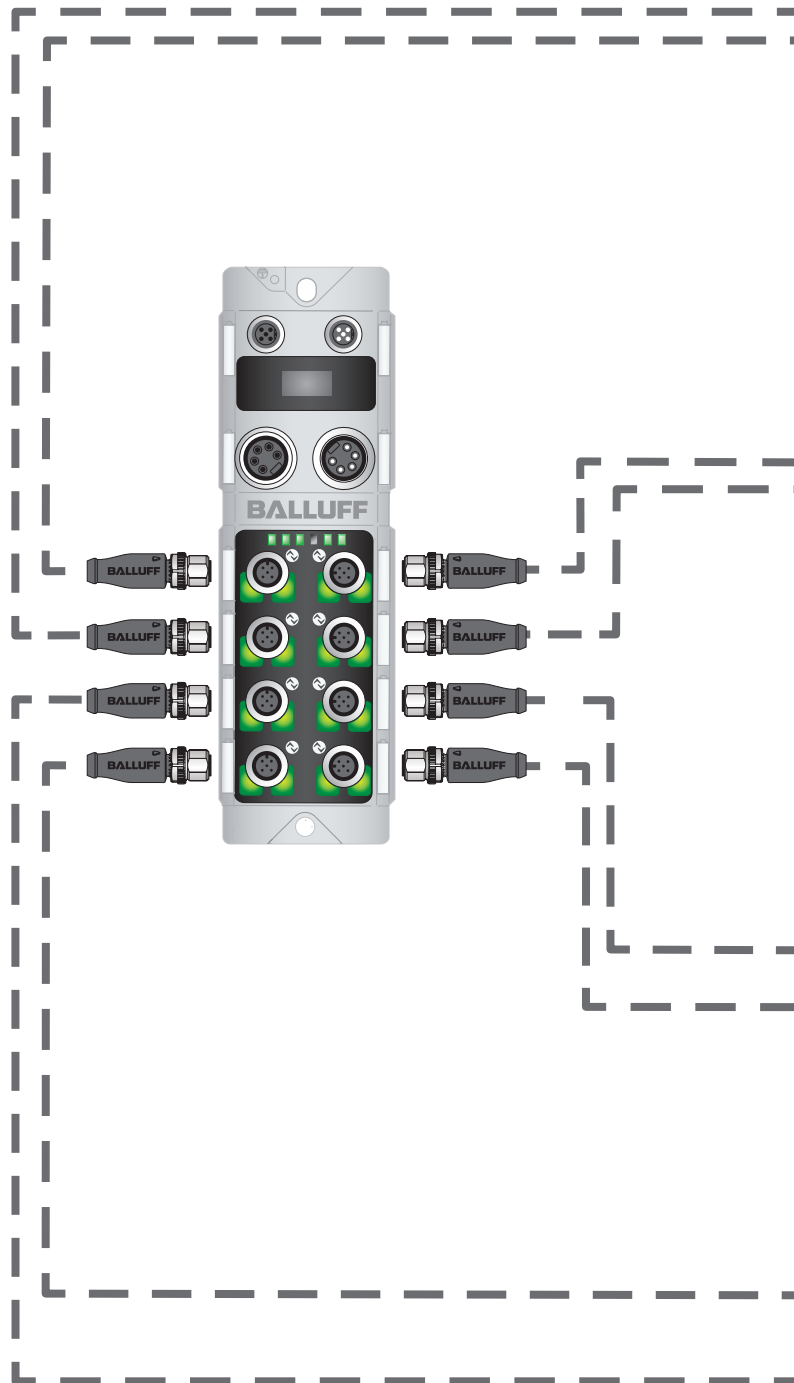
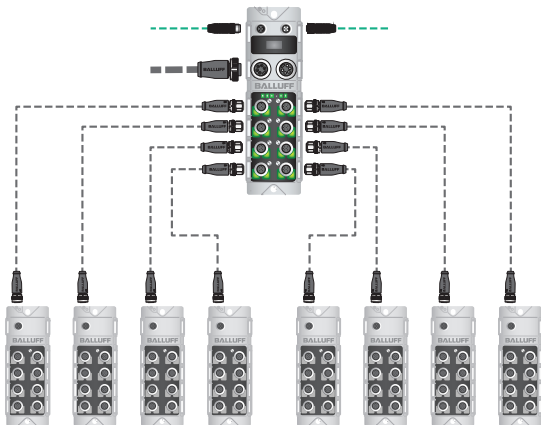


Consolidate Signals

One IP address for 136 I/Os

Whether sensor hubs, valve terminal plugs, analog adapters, signal lamps or intelligent devices – with IO-Link all you need is one node/IP address for connecting wide variety of devices. By consolidating the data, valuable addresses are saved and critical installation minimized.

- One fieldbus/IP address for up to 136 I/O-diagnostics points
- Control of up to 192 solenoids
- Simple linking of intelligent function blocks and sensors as well as analog signals





M8 sensor hubs (plastic)



Order code	Description	I
BNI000P	PNP inputs, 3-pin	4
BNI000R	PNP inputs, 3-pin	8
BNI0022	PNP inputs, 4-pin	16



Valve terminal connectors



Order code	Description	O
BNI006N	SUB-D, 25-pin (Bosch Rexroth, Festo)	24
BNI006M	SUB-D, 25-pin (MAC)	16
BNI006P	SUB-D, 25-pin (SMC, Parker, Norgren)	24
BNI006R	SUB-D, 25-pin (Numatics)	22



M12 sensor hubs (plastic)



Order code	Description	I	O
BNI0006	PNP inputs	16	
BNI0074	NPN inputs	16	
BNI005L	Configurable, I/O 1.1 A	≤ 16	≤ 16
BNI007Z	Configurable, I/O with expansion	≤ 16	≤ 16



M12 sensors hubs (metal)



Order code	Description	I	O
BNI0032	PNP inputs	16	
BNI0062	NPN inputs	16	
BNI003U	Configurable, I/O 1.1 A	≤ 16	≤ 16
BNI0035	Configurable, I/O 9 A Aux., 5-pin	≤ 16	≤ 16



Universal hubs



Order code	Description	I	O
BNI004K	IP20, configurable I/O, clamp terminals	≤ 8	≤ 8
BNI004L	IP20, configurable I/O, clamp terminals	≤ 16	≤ 16
BNI005M	IP54, configurable I/O, single leads	≤ 16	≤ 16
BNI005N	IP54, configurable I/O, single leads	≤ 8	≤ 8



SmartLight



Order code	Description
BNI007T	1 segment
BNI0087	1 segment and horn
BNI007F	3 segments
BNI0086	3 segments and horn
BNI0072	5 segments
BNI0083	5 segments and horn



M12 sensor hub (analog)



Order code	Description	I
BNI0007	Analog inputs, 4...20 mA / digital	4 / 8
BNI0008	Analog inputs, 0...10 V / digital	4 / 8



Analog adapter



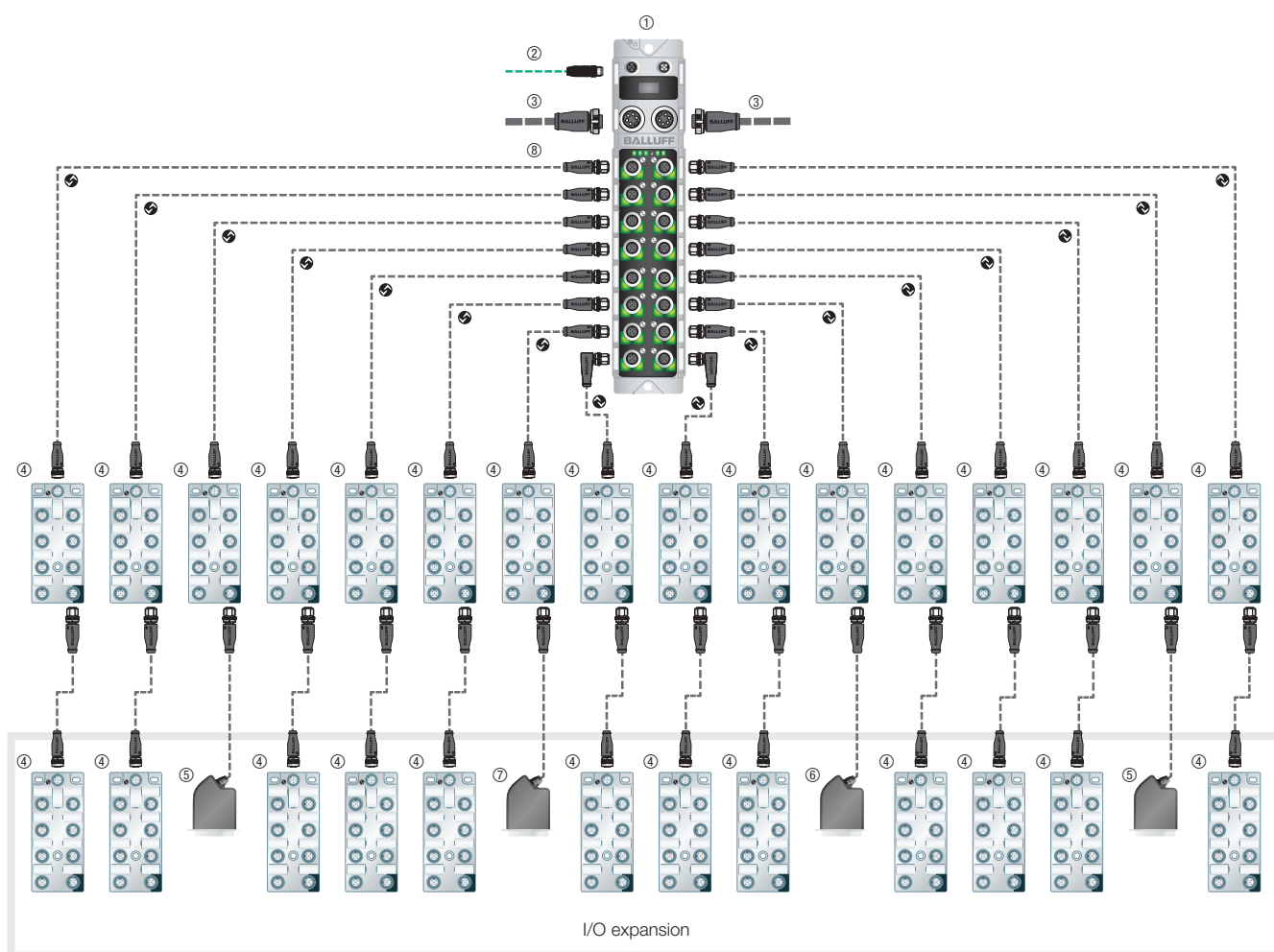
Order code	Description	I	O
BNI0041	Analog input, 4...20 mA	1	
BNI0042	Analog input, 0...10 V	1	
BNI004T	Analog input, PT100	1	
BNI004C	Analog output, 4...20 mA		1
BNI004E	Analog output, 0...10 V		1



Consolidate I/O Signals

Expand decentralization

A 16 × IO-Link master allows up to 496 I/Os to be configured – up to 496 binary inputs and 640 binary outputs. Here the IO-Link actuator/sensor hub with its expansion port sets the standard. Valve terminal plugs or an additional sensor hub can be connected to the port. The range is doubled and exponential cost savings are realized. IO-Link opens up new possibilities for the decentralized structure of the network topology.



Parts list

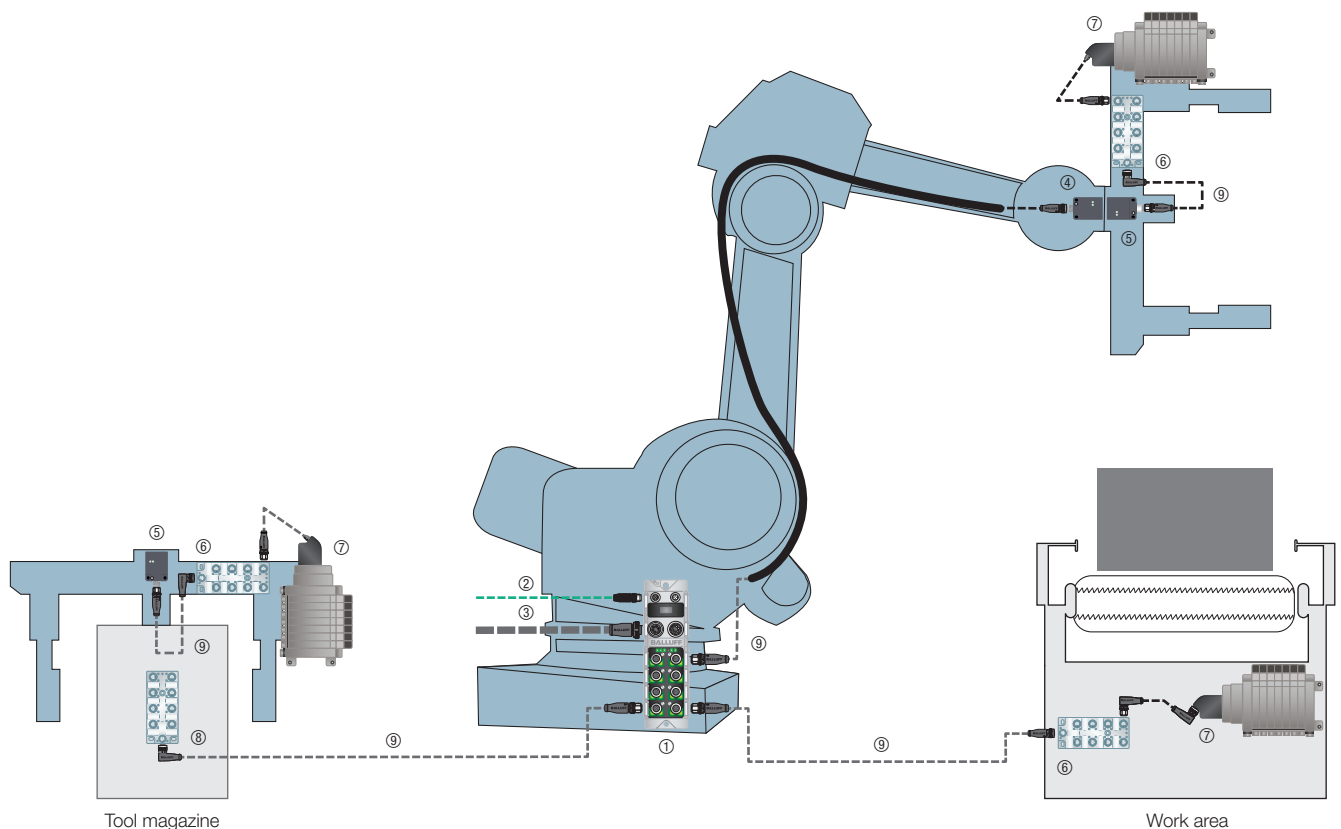
	Order code	Description	Number	I	O
①	BNI007M	Profinet, 16 × IO-Link masters	1	≤ 32	≤ 32
②	BCC04K7*	Profinet cable, M12 → RJ45, shielded, 2 m	1		
③	BCC09CK*	Power cable, 7/8", 5-conductor, 2 m	2		
④	BNI007Z	M12 sensor hub, configurable, I/O with expansion	≤ 32	≤ 16	≤ 16
⑤	BNI006N	Valve terminal plug (Festo, Bosch Rexroth)	≤ 16		24
⑥	BNI006P	Valve terminal plug (SMC, Parker, Norgren)	≤ 16		16
⑦	BNI006R	Valve terminal plug (Numatics)	≤ 16		22
⑧	BCC039M*	Connection cable, M12 → M12, 4-conductor, 2 m	≤ 32		

* For available lengths see Industrial Networking and Connectivity catalog or visit www.balluff.com

Robotic Automation

With a single M12 connection

A standard M12 connection is all you need to ensure the function of the end of arm tooling – no need for special connectors. I/O, module and valve terminal are simply linked and complexity is reduced. Inductive couplers guarantee fast tool changing. Plug-and-play means the new tool is fitted and automatically parameterized by the controller thanks to IO-Link. This ensures the greatest possible flexibility. Cable breaks are a thing of the past. Downtime is minimized.



Parts list

Order code	Description	Number	I	O
① BNI005H	Profinet, 8 × IO-Link masters	1	≤ 16	≤ 16
② BCC04K7*	Profinet cable, M12 → RJ45, shielded, 2 m	1		
③ BCC06HU*	Power cable, 7/8", 4-conductor, 2 m	1		
④ BIC0070	Inductive coupler 40 × 40 mm, base, IO-Link, bi-directional	1		
⑤ BIC0071	Inductive coupler 40 × 40 mm, remote, IO-Link, bi-directional	2		
⑥ BNI007Z	M12 sensor hub, configurable, I/O with expansion	3	≤ 16	≤ 16
⑦ BNI006N	Valve terminal plug (Festo, Bosch Rexroth)	3		24
⑧ BNI0006	M12 sensor hub, 16 inputs, PNP	1	16	
⑨ BCC039M*	Connection cable, M12 → M12, 4-conductor, 2 m	5		

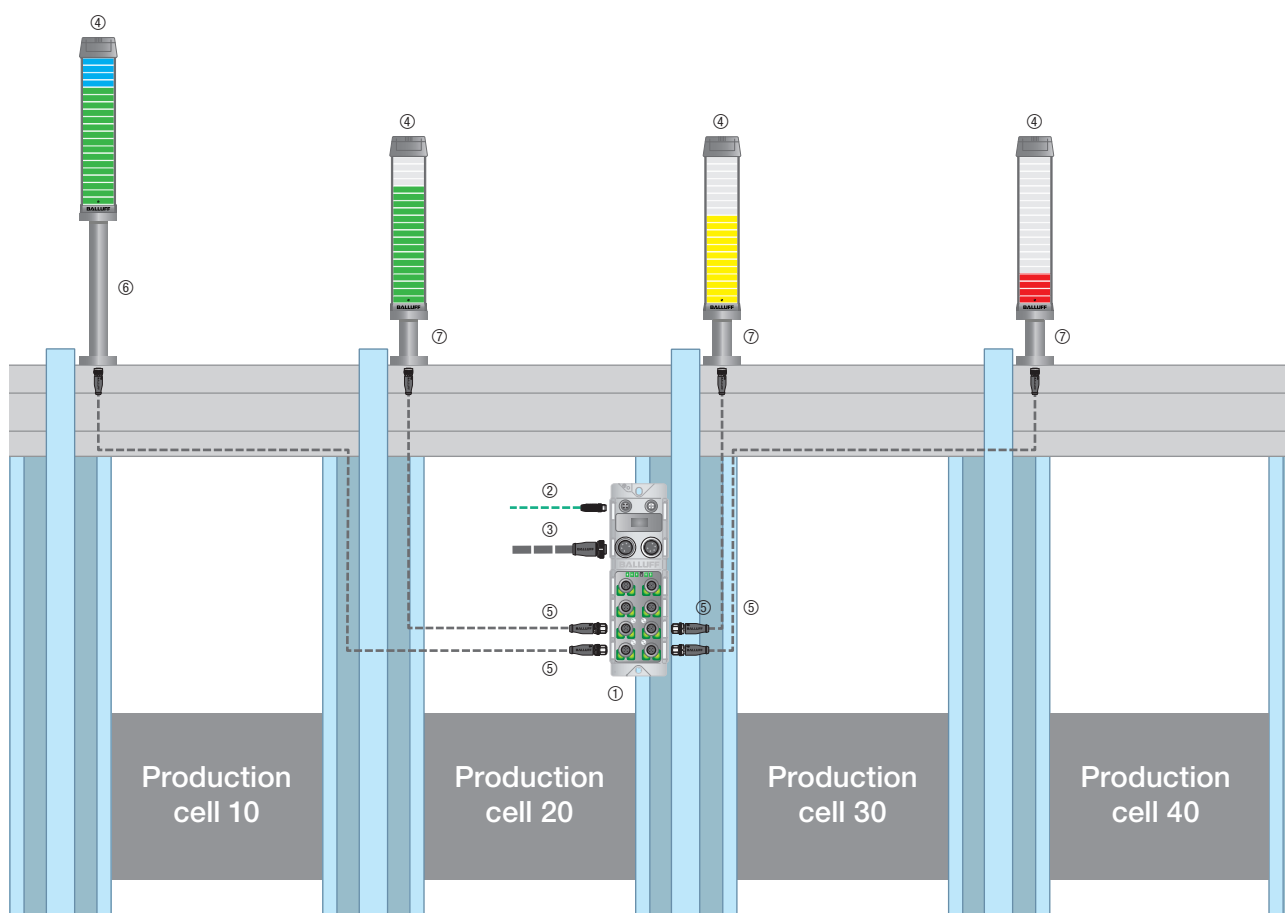
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Signaling

Continuous diagnostics of the operating states

If you need seamless visualization of the production sequence on your production line, the SmartLight signal tower light provides the perfect solution. The SmartLight displays trends and tendencies, so that you can continually monitor various stages. This optimizes cycle times and give early indication of any possible bottlenecks or maintenance duties. Another plus: The SmartLight is simple to retrofit.



Parts list

	Order code	Description	Number	I	O
①	BNI004U	Profinet, 4 x IO-Link masters	1	≤ 16	≤ 16
②	BCC04K7*	Profinet cable, M12 → RJ45, shielded, 2 m	1		
③	BCC06HU*	Power cable, 7/8", 4-conductor, 2 m	1		
④	BNI0083	SmartLight, 5 segments and horn	4		
⑤	BCC039M*	Connection cable, M12 → M12, 4-conductor, 2 m	4		
⑥	BAM026L	Stand for SmartLight, 400 mm high	1		
⑦	BAM026K	Stand for SmartLight, 100 mm high	3		

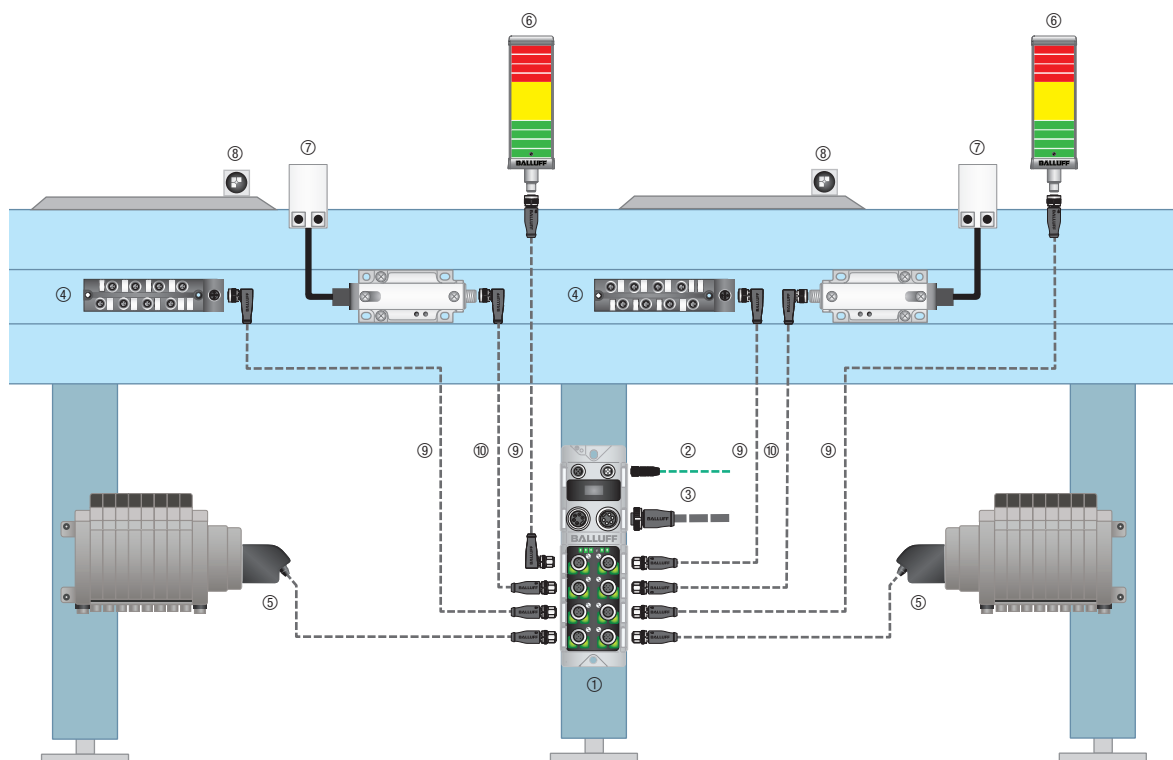
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Handling and Assembly

A network distributor for complex tasks

Whether you are bundling signals, switching pneumatics, recording and tracking data or displaying operating states with the SmartLight tower – a network distributor solves complex tasks: all analog functions, RFID applications, valve control and signaling or the use of decentralized I/O.

One IO-Link master per production segment is all you need. The result is a reduced number of modules. Plus equipment options can be enabled and disabled. You profit from greatly increased flexibility.



Parts list

Order code	Description	Number	I	O
① BNI005H	Profinet, 8 × IO-Link masters	1	≤ 16	≤ 16
② BCC04K7*	Profinet cable, M12 → RJ45, shielded, 2 m	1		
③ BCC06HU*	Power cable, 7/8", 4-conductor, 2 m	1		
④ BNI0022	M8 sensor hub, 16 inputs, PNP	2	16	
⑤ BNI006N	Valve terminal plug (Festo, Bosch Rexroth)	2		24
⑥ BNI007F	SmartLight, 3 segments	2		
⑦ BIS00M1	Industrial RFID, read/write head	2		
⑧ BIS0044	Industrial RFID, data carrier	2		
⑨ BCC039M*	Connection cable, M12 → M12, 4-conductor, 2 m	4		
⑩ BCC0C00*	RFID connection cable, M12 → M14, shielded, 4-conductor, 2 m	2		

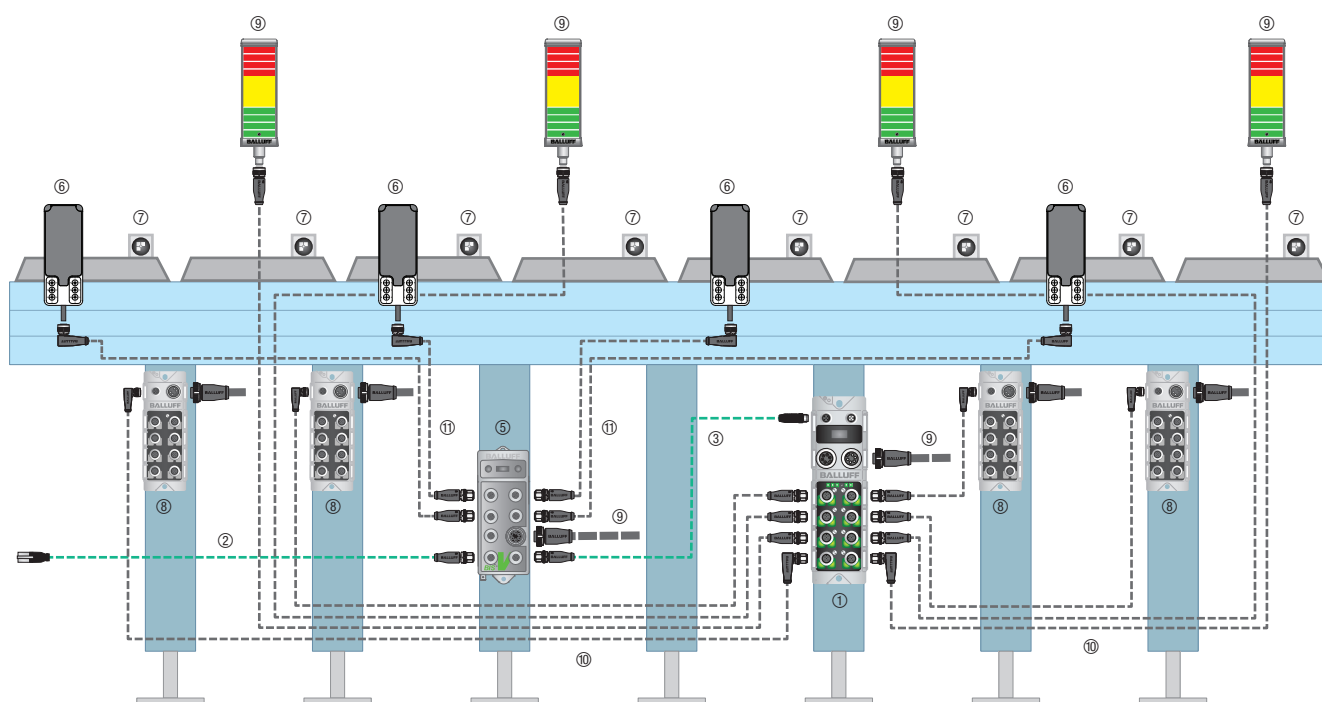
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Track and Trace

Maximum transparency for the optimal process

When it comes to quality assurance, RFID systems record the entire production sequence and make it traceable in real time. All the data are documented directly on the workpiece or pallet. Various devices can be used depending on the amount of data and the process speed: BIS V processors for fast processing of large data amounts. For standard ID tasks an IO-Link master is the right choice. Each individual production step can also be displayed using the SmartLight tower.



Parts list

Order code	Description	Number	I	O
① BNI005H	Profinet, 8 × IO-Link masters	1	≤ 16	≤ 16
② BCC04K7*	Profinet cable, M12 → RJ45, shielded, 2 m	1		
③ BCC04K1*	Profinet cable, M12 → M12, shielded, 2 m	1		
④ BCC06HU*	Power cable, 7/8", 4-conductor, 2 m	6		
⑤ BIS013U	Industrial RFID, 4 × Profinet processor, 1 × IO-Link master	4		
⑥ BIS0131	Industrial RFID, read/write head	4		
⑦ BIS013C	Industrial RFID, data carrier	8		
⑧ BNI0035	M12 sensor hub (metal), 16 I/O, configurable	4	≤ 16	≤ 16
⑨ BNI007F	SmartLight, 3 segments	4		
⑩ BCC039M*	Connection cable, M12 → M12, 4-conductor, 2 m	8		
⑪ BCC0C00*	RFID connection cable, M12 → M14, shielded, 4-conductor, 2 m	4		

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Processor Units BIS V

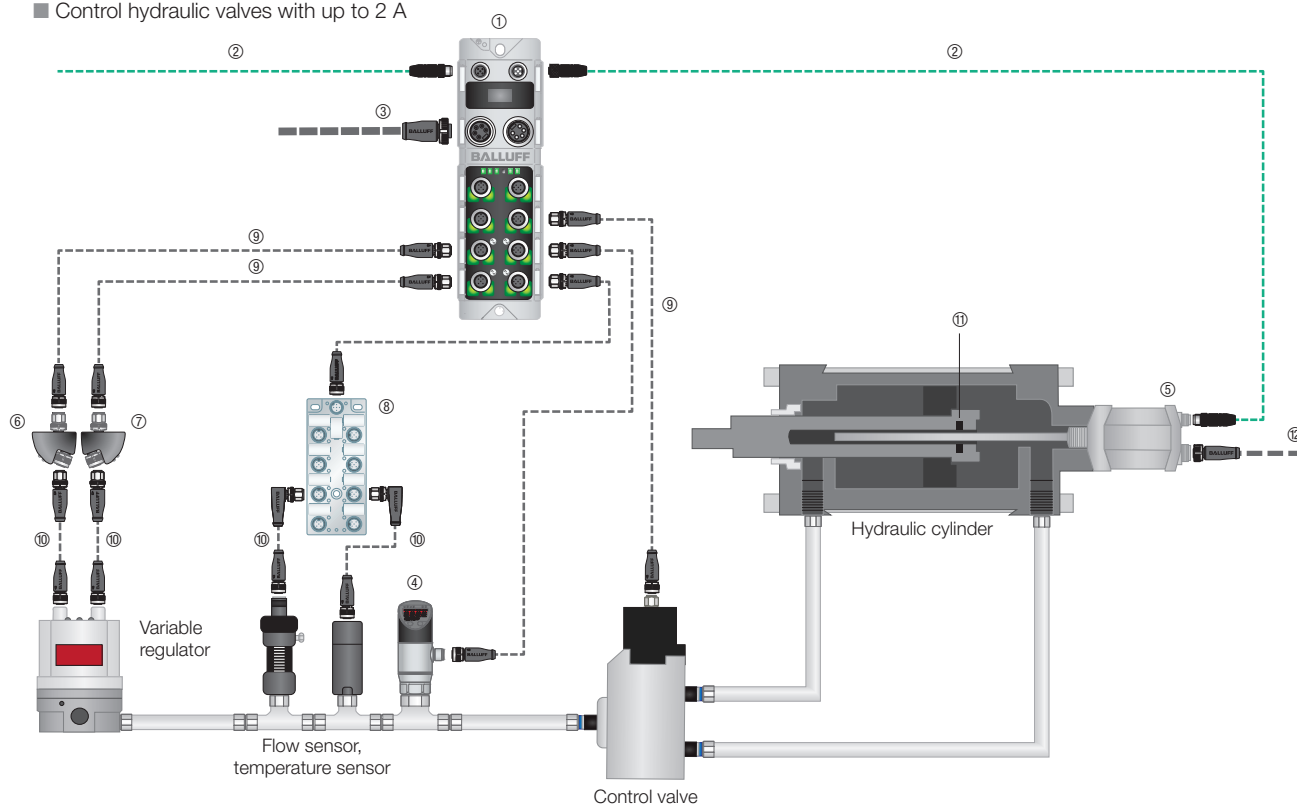
Profibus	BIS00T3
Profinet	BIS013U
Ethernet/IP	BIS0122
EtherCAT	BIS00U9
CC-Link	BIS010P

Measure, Control and Regulate

Correctly feed process media

IO-Link and simple unshielded standard cables ensure correct feeding of process media. The hydraulic cylinder, control valve, flow and temperature are for example automatically measured, controlled and regulated for the oil feed.

- Digitized analog values instead of analog signals
- Additional diagnostic information directly from the sensors/actuators
- Control hydraulic valves with up to 2 A



Parts list

Order code	Description	Number	I	O
① BNI004U	Profinet, 4 × IO-Link masters	1	≤ 16	≤ 16
② BCC04K1*	Profinet cable, M12 → M12, shielded, 2 m	2		
③ BCC06HU*	Power cable, 7/8", 4-conductor, 2 m	1		
④ BSP008A	Pressure sensor	1		
⑤ BTL_____	Profinet transducer BTL7-V50T-M____-B-C003, max. stroke length 7620 mm	1		
⑥ BNI0042	Analog adapter, input 0...10 V DC	1	1	
⑦ BNI004E	Analog adapter, output 0...10 V DC	1		1
⑧ BNI0008	M12 sensor hub, analog 0...10 V DC, digital	1	4 U, 8 DI	
⑨ BCC039M*	Connection cable, M12 → M12, 4-conductor, 2 m	5		
⑩ BCC0C00*	Connection cable, M12 → M12, shielded, 4-conductor, 2 m	4		
⑪ BAM013L	Magnet for transducer	1		
⑫ BCC02NH*	Power cable, M12, 4-conductor, 2 m	1		

* For available lengths see Industrial Networking and Connectivity catalog or visit www.balluff.com



Systems and Service



Industrial Networking and Connectivity



Industrial Identification



Object Detection



Linear Position Sensing and Measurement



Condition Monitoring and Fluid Sensors



Accessories

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