Smart

Portfolio

4-Port Ethernet **IO-Link Master**

Smart Connector

PNEUMATICS
Form A, Form B Industry
IO-Link CLASS A

HYDRAULICS
Form A
IO-Link CLASS B

More insights, better control and effortless integration

Innovative solutions since 1925

Company group nass magnet

nass magnet is a leading manufacturer of electromagnetic components and valve technology — with 100 years of experience, a spirit of innovation, and a global presence. As a medium-sized, family-owned company based in Hanover, Germany, we develop and produce modular system solutions, customized products, a smart portfolio and a forward-looking hydrogen product line for demanding applications worldwide.

With five locations in Germany, the USA, Hungary, China and India as well as a global dealer and logistics network, we are close to our customers — locally rooted, globally capable.

Our principle: Customer benefit before standardization. With technological expertise, “Made in Germany” quality, and deep in-house manufacturing, we deliver solutions that work — reliably, economically, and future-ready.

Innovation by nass magnet — our commitment to every customer.

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Introduction

IO-Link

IO-Link is the first standardised IO technology worldwide (IEC 61131-9) for communication with sensors and also actuators.

The powerful point-to-point communication is based on the long established 3-wire sensor and actuator connection without additional requirements regarding the cable material.

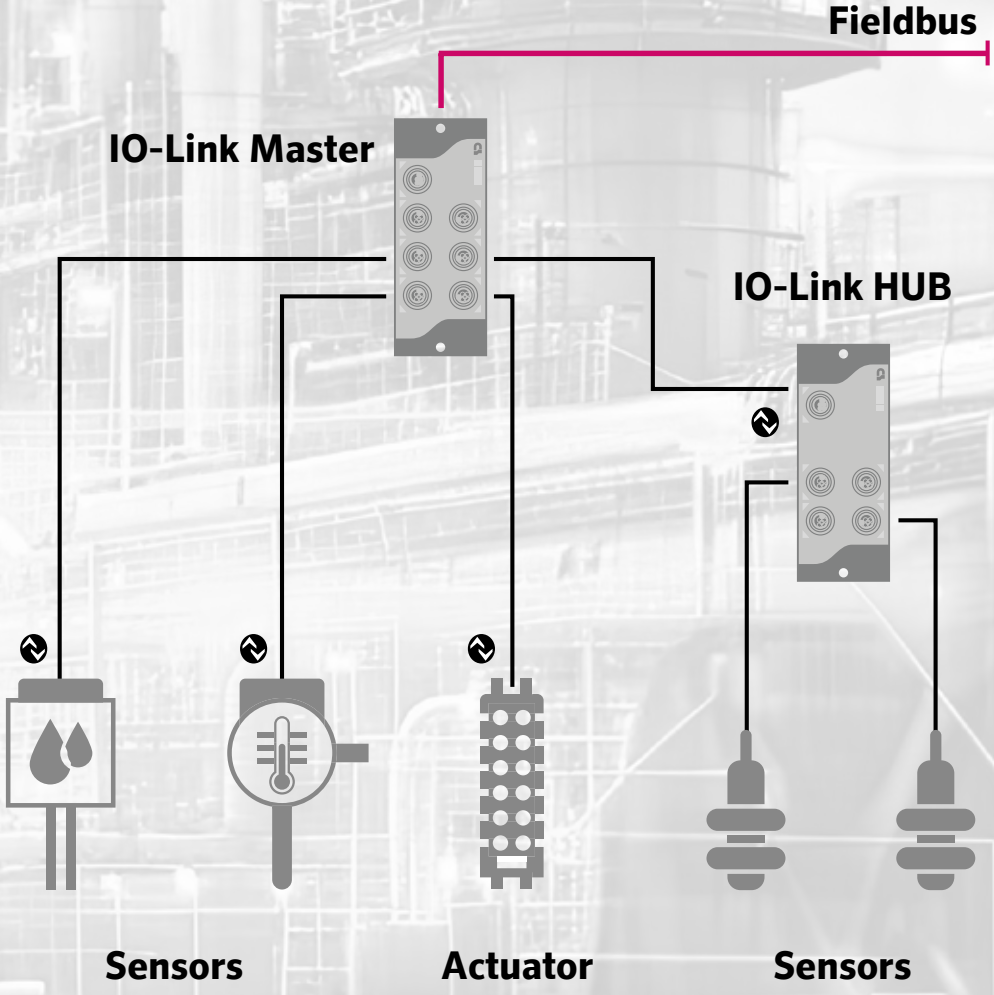
So, IO-Link is no fieldbus but the further development of the existing, tried-and-tested connection technology for sensors and actuators.

How it works

On the upper level is a high-bandwidth fieldbus directly connected to the PLC and/or other production support platforms.

The IO-Link Master is located “below” the fieldbus. It connects devices via its IO-Link ports. Sensors, actuators or other active distribution elements can be connected here.

By decentralising the placement of many IO-Link Masters, a cost-effective cabling and a more manageable control structure can be created.



Valve connector innovation

Smart Conn

Features

- IO-Link interface
- DIN norm interface valve connector
- Quick and easy connection
- Status monitoring, RGB LED
- Power saving with PWM mode
- Parameterization via software
- Double switching cycle counter
- Diagnostic data
- Event messages
- Data storage
- Offline mode
- Pre-programmed timer and/or PWM
- IP67

According to the digitization of the „last meters“ in the automation technology, nass magnet as an expert in pneumatic valve actuators, presents the innovative valve driver with IO-Link interface, implemented in a DIN interface connector.

ector

Form A and Form B Industry

IO-Link Class A

Product number:

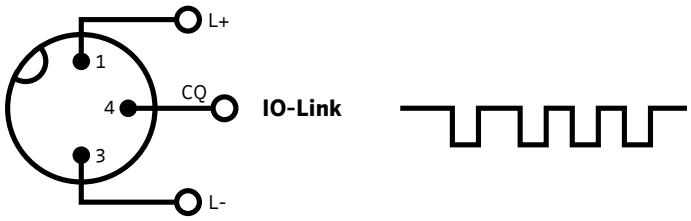
611-202-0507 ..... Form A
612-202-0357 ..... Form B Industry

Technical data

IO-Link master port type ..... Class A
Connection M12-connector (3-pin)
Nominal voltage ..... 24 V DC (10-30 V DC)
Output current ..... max. 500 mA
Internal consumption ..... < 10 mA
Interface ..... IO-Link V1.1
Cycle time ..... 2.8 ms
Process data ..... 1/1 byte

Pin layout:

Pin 1 - 24 V
Pin 3 - 0 V
Pin 4 - C/Q (switching and communication power)



Form A

IO-Link Class B

Product number:

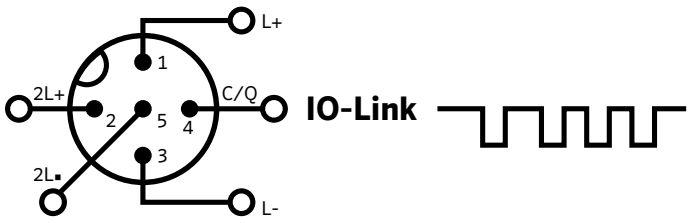
611-202-0544 ..... Form A

Technical data

IO-Link master port type ..... Class B
Connection M12-connector (5-pin)
Nominal voltage ..... 24 V DC (18-30 V DC)
Output current ..... max. 2 A
Internal consumption ..... < 10 mA
Interface ..... IO-Link V1.1
Cycle time ..... 2.8 ms
Process data ..... 1/1 byte

Pin layout:

Pin 1 - 24 V
Pin 2 - 24 V (UA)
Pin 3 - 0 V
Pin 4 - C/Q (switching and communication power)
Pin 5 - 0 V (UA)



Energy saving

Optimized energy manageme

The Smart Connector has an advanced energy management that can be parameterized. The connected actuator receives full power from the connector for a short period of time for safe switching, then the connector switches to PWM energy saving mode for holding until the next switching. In this mode, the Solenoid Coil only receives a significantly lower power during operation.

Benefits

- Immediate energy/cost savings
- Significant reduction in coil operating temperature
- Extended coil lifetime
- Smaller supply cable diameter can be used

Thanks to smart energy management, the temperature of the solenoid system can be significantly reduced.

This decreases the impact on the environment and can prevent accidental burn injuries.

COST SAVING TECHNOLOGY BY NASS MAGNET

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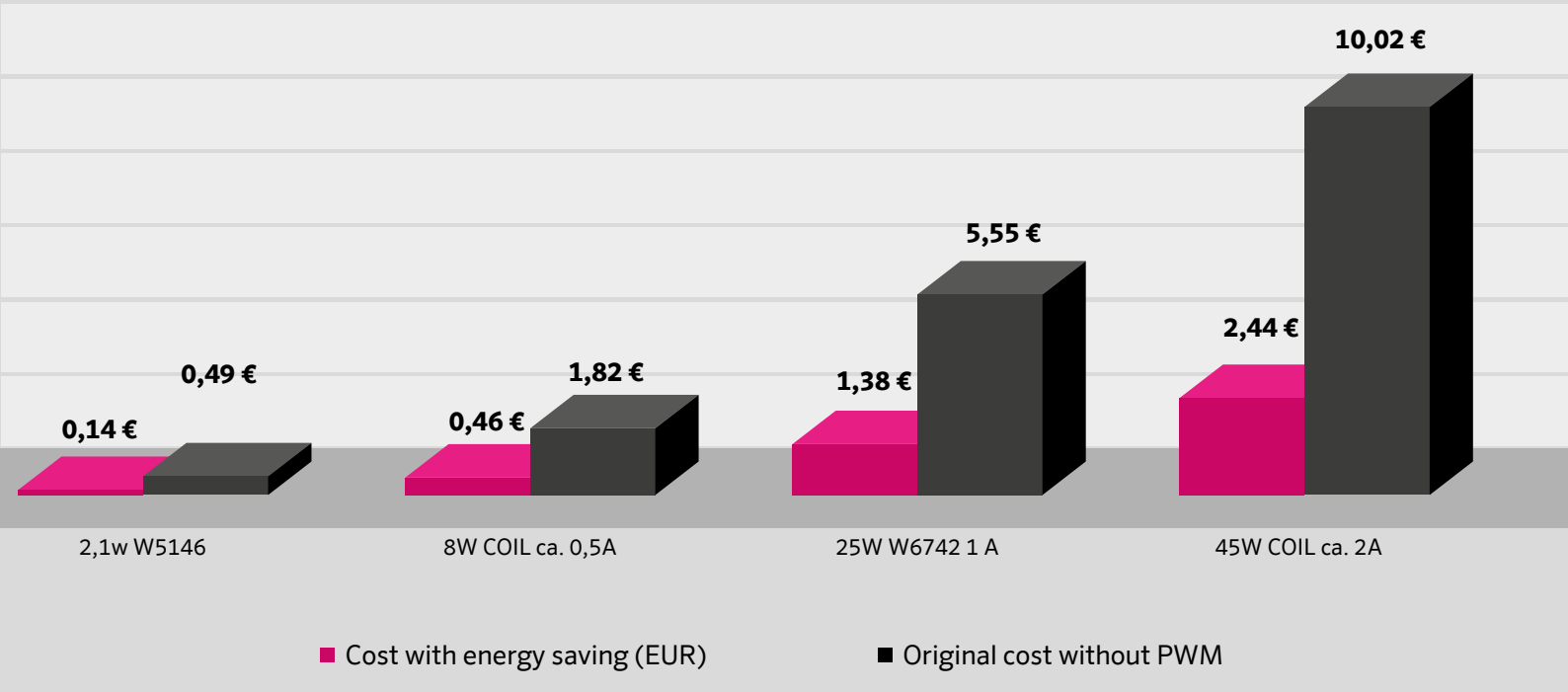
3in1 Concept 1 2 3

Specific measurement results of possible cost savings - per 1000 hours.



Predictive maintenance

Condition monitoring

Condition monitoring and predictive maintenance are a requirement for many factories today.

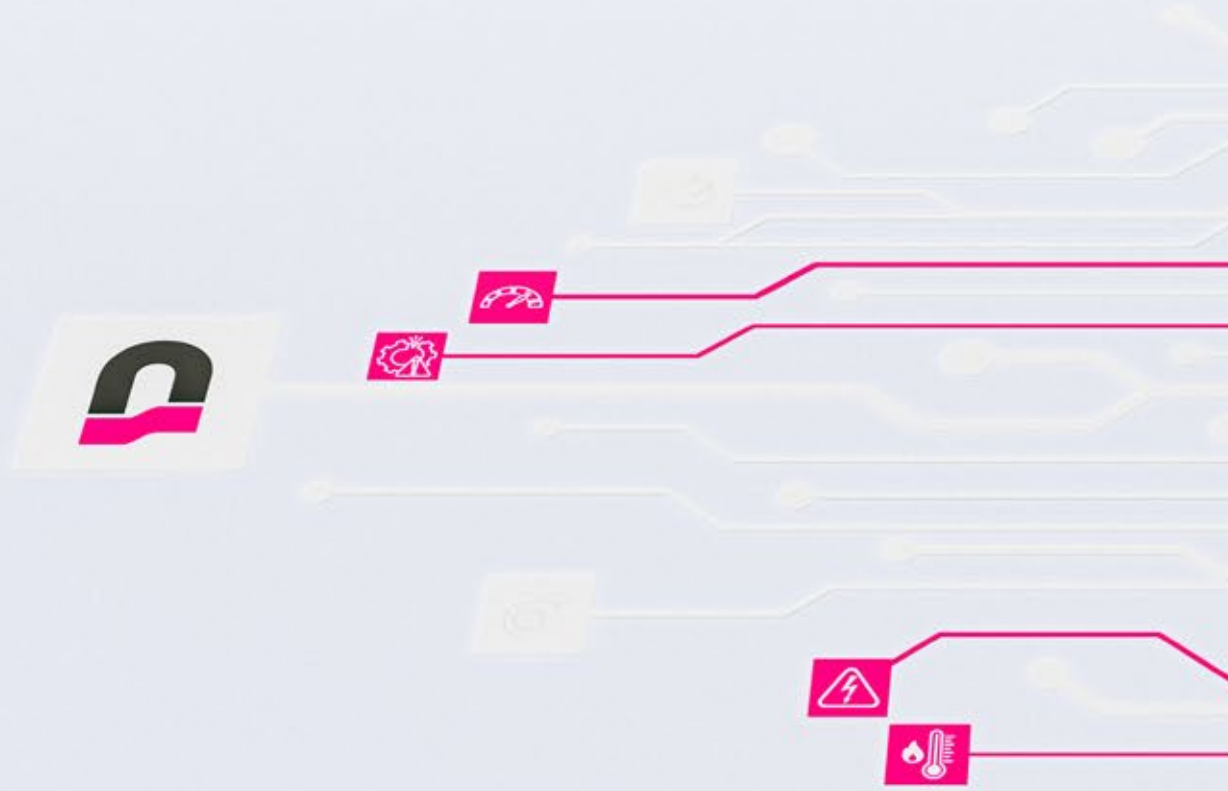
The functions of the Smart Connector - together with other industrial sensor signals - can fully cover this area. In many cases, condition monitoring will be installed on existing equipment at a later stage — this is where retrofit capability can be important.

Mechanical break

In case of mechanical failure of the armature, the connector generates a warning signal.

Maximum cycle lifetime

Set an upper limit for maximum cycles. As soon as it is exceeded a fault signal is generated.



3in1 Concept

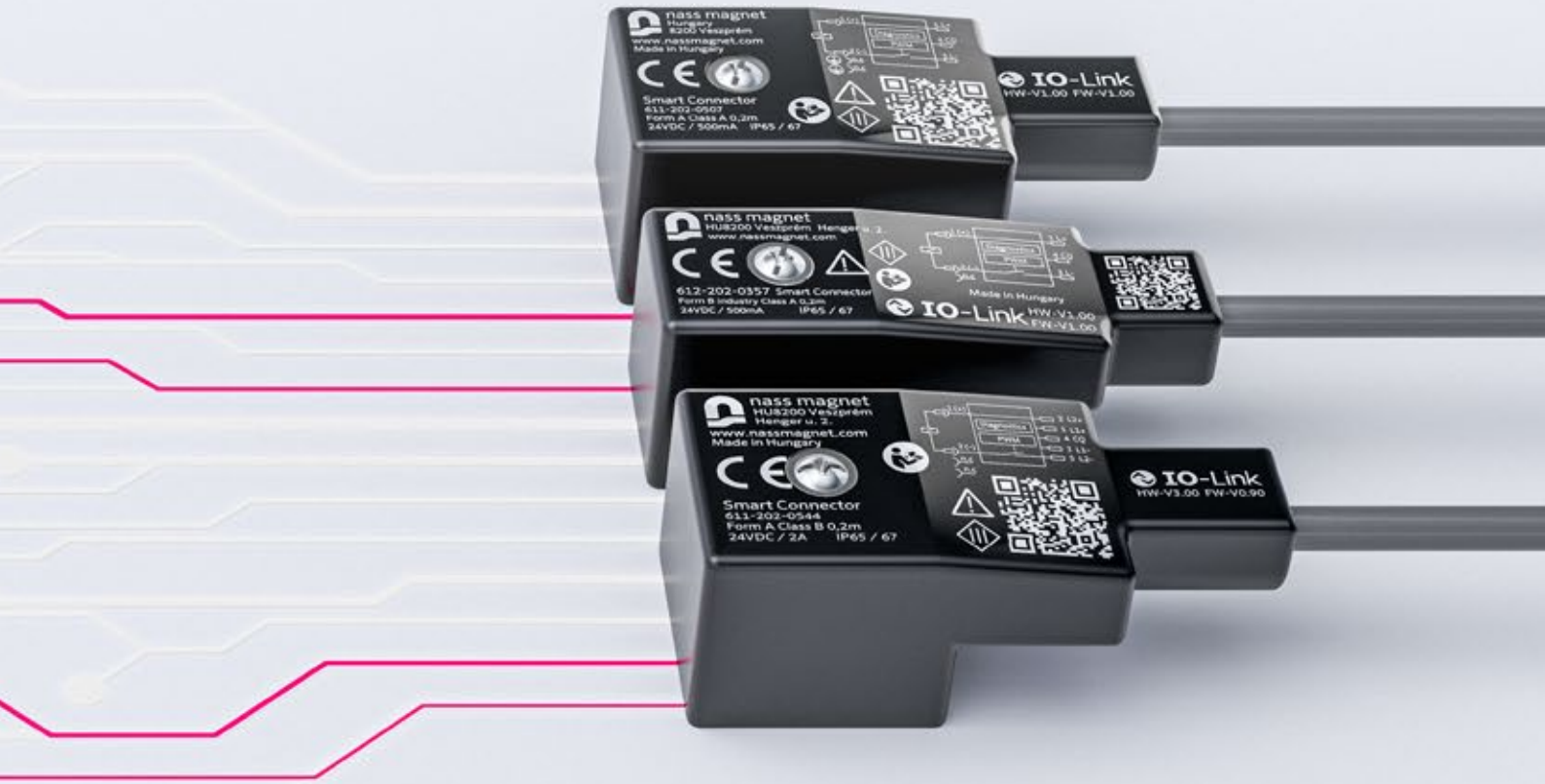
1
2
3

Coil overload

Set an upper limit for current monitoring. As soon as it is exceeded a fault signal is generated.

Coil temperature

In case of coil malfunction, the connector detects the increased temperature and sends a warning signal.



Programmability

Smart autonomous connector

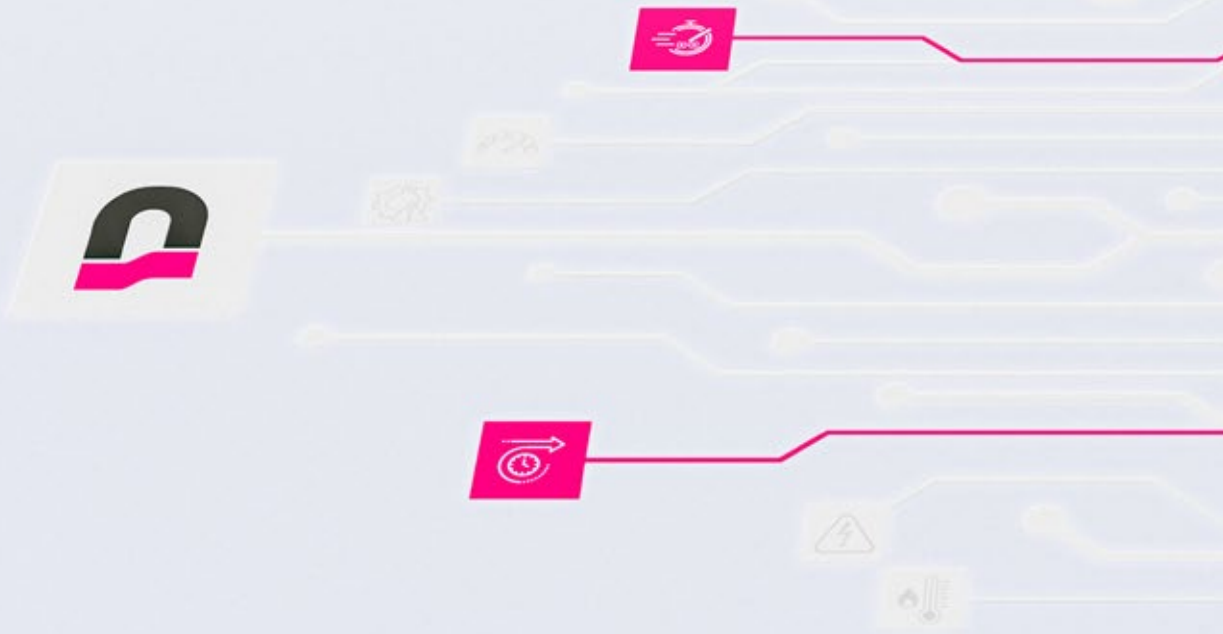
The Smart Connector is equipped with a programmable microcontroller, which is suitable for independent control tasks. With this function the connector can be used for simple tasks/applications (e.g. drain valve) without central control. Programming can be done via IO-Link but is no longer needed during operation.

Delayed switching

Set a delay if you want to synchronize a valve or use one signal to start several valves in sequence.

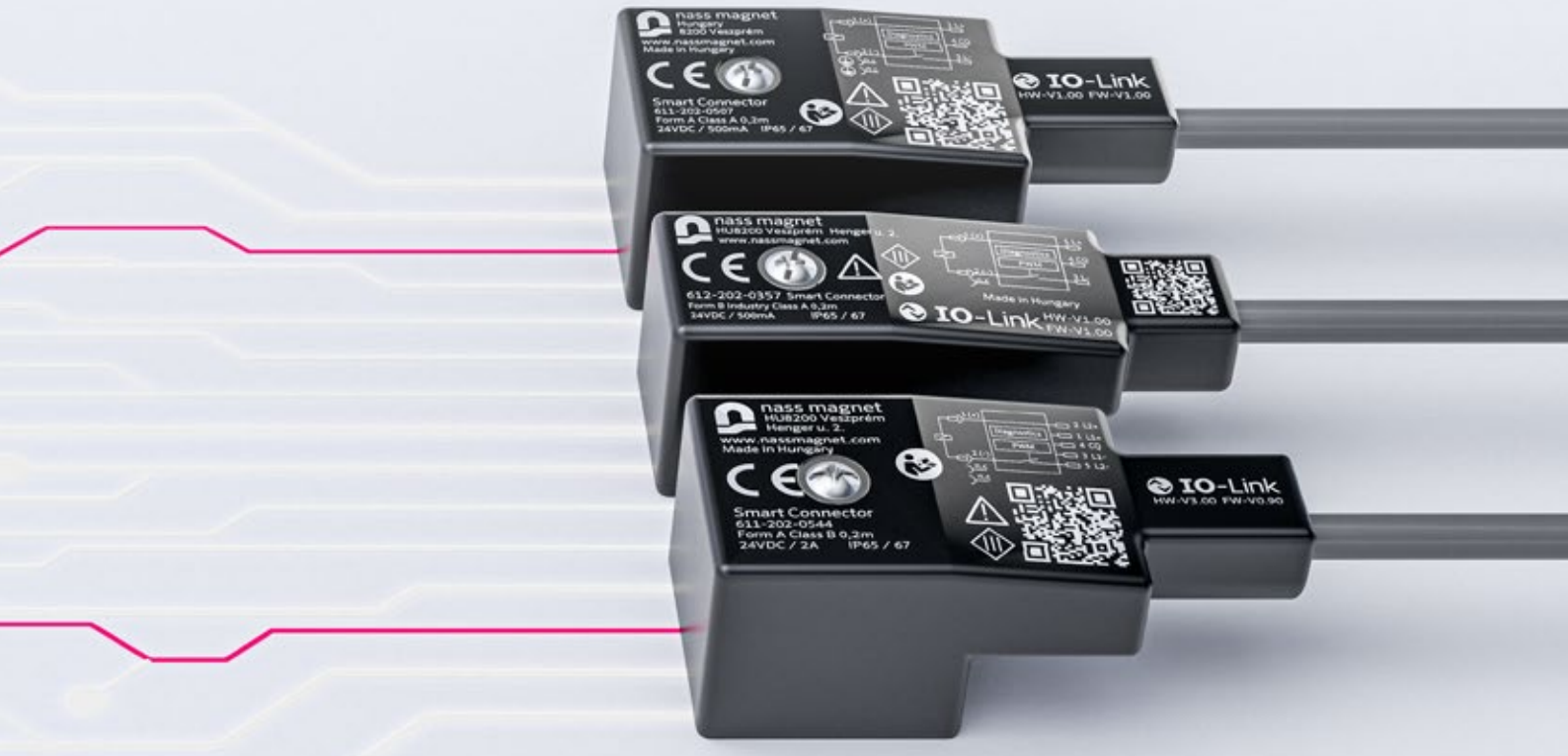
Timer switch on/off

Set a timer to operate in automatic mode, no external control device needed.



3in1 Concept

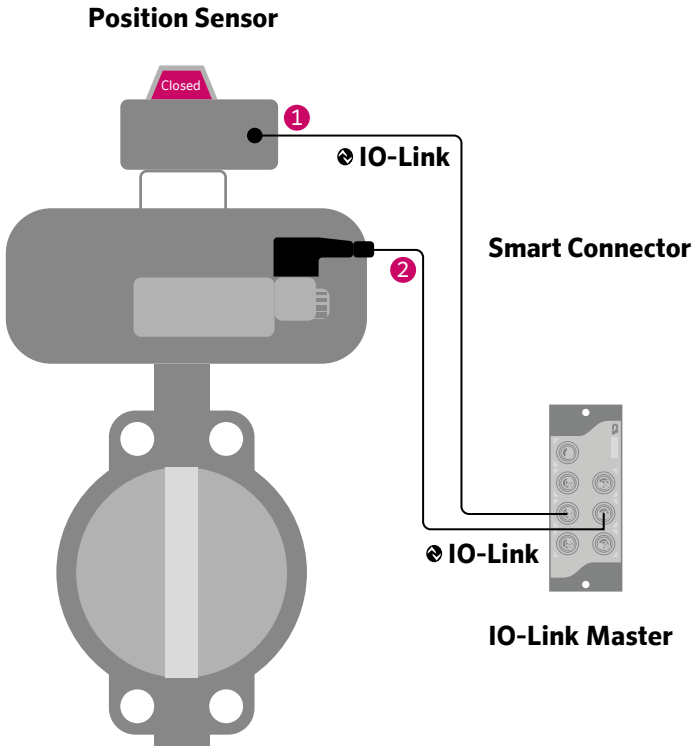
1
2
3



Full control & condition monitoring

Butterfly valve application

Butterfly valves are a very important components for the safe transfer of fluids through pipelines. By using the Smart Connector, unwanted failures can be prevented and predictive maintenance can be easily planned.



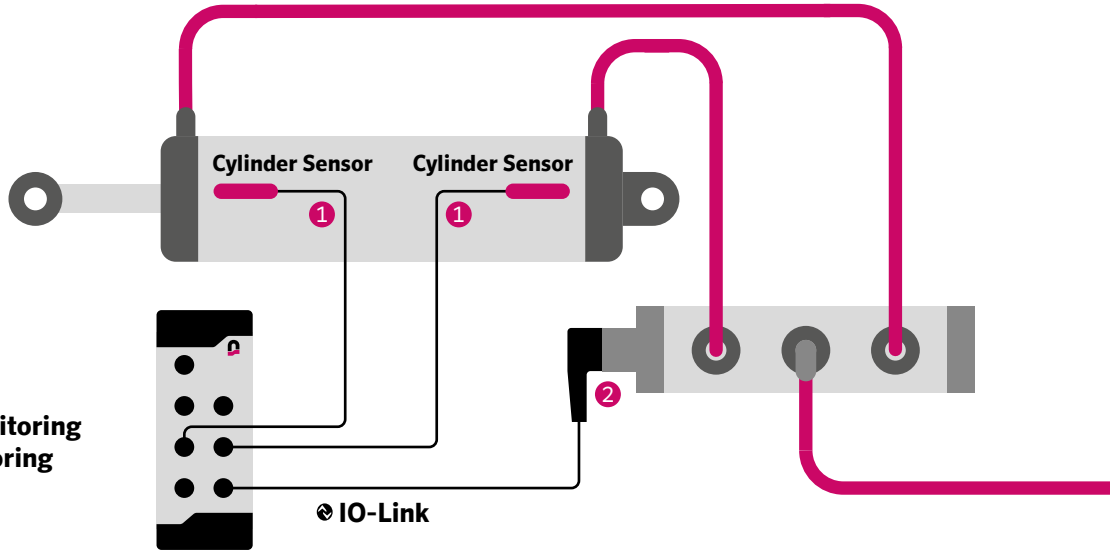
1. **Valve position monitoring**

2. **Actuator control**
   Energy saving feature
   Solenoid coil condition monitoring
   Pilot valve condition monitoring

Full control & condition monitoring

Pneumatic or hydraulic cylinder application

Monitoring the proper functioning of the cylinders can be critical for any machine unit. With the Smart Connector, in addition to intelligent control, the pilot valve units are continuously monitored.



1. **Valve position monitoring**

2. **Actuator control**
   Energy saving feature
   Solenoid coil condition monitoring
   Pilot valve condition monitoring

Focused on Industry 4.0 and IIoT

4-Port Ether
IO-Link Mas

Features

- IO-Link V1.1.3 compatible Master
- Ethernet/TCP-IP interface
- DHCP or static IP address configuration
- Standardized JSON mapping
- Node-RED integration supported
- 4 independent powered IO-Link Class A ports
- IP67 Protection
- MQTT supported

IO-Link V 1.1.3. fully backward IO-Link compatibility

Ethernet/TCP-IP interface, which is globally accepted and highly supported, making it easy to integrate with existing systems or to build a new system.

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ster


POWER
X20
STATUS
DIAG
LINK
FAULT
LINK
LINK
ETH
X10
X11
SPEED
MODE
SPEED
MODE
IOL
X00
X02
COM
MODE
COM
MODE
IOL
X01
X03
COM
COM
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Focused on Industry 4.0 and IIoT

4-Port Ethernet IO-Link Master

Product number

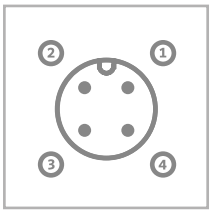
202-725-0001	Ethernet / 4 x IO-Link port

Technical data

Operating voltage	24 V DC (20-30 V DC)
Interface	Ethernet
Protocol	HTTP, TCP/IP, JSON, MQTT (optional)
Number of ports	4 x M12 - IO-Link
Max. input / output	Programmable 8 / 4
IO-Link Master port type	Class A / COM 1, COM 2, COM 3
Output power	500 mA / port
Output power - total max.	2A
IP rating	IP65/67
Housing material	PA6 GF20 FR
Ambient temperature	-20° C to +60° C
Protocol	Ethernet TCP/IP
Voltage	24 V DC (20-30 V DC)
Current max.	500 mA / port
IO-Link port	Class A
IO-Link revision	V. 1.1.3.
Protection	IP65/67

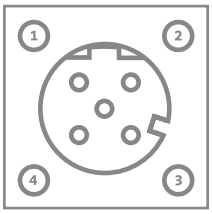
Connector drawings

Power



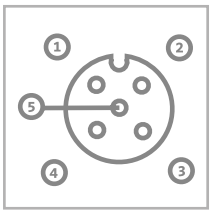
1: +24 VDC1
2: -
3: GND
4: -

Ethernet

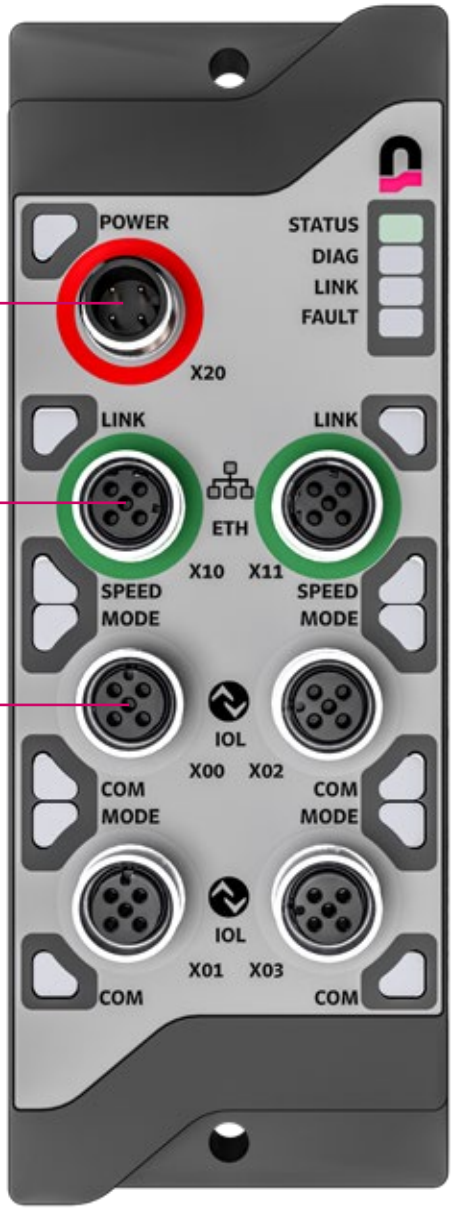


1: TX +
2: RX +
3: TX -
4: RX -
5: -

IO-Link (Class A)



1: +24 VDC
2: DI
3: GND
4: C/Q IO-Link
5: -



The All-Rounder IO-Link Master

with Ethernet JSON/MQTT interface

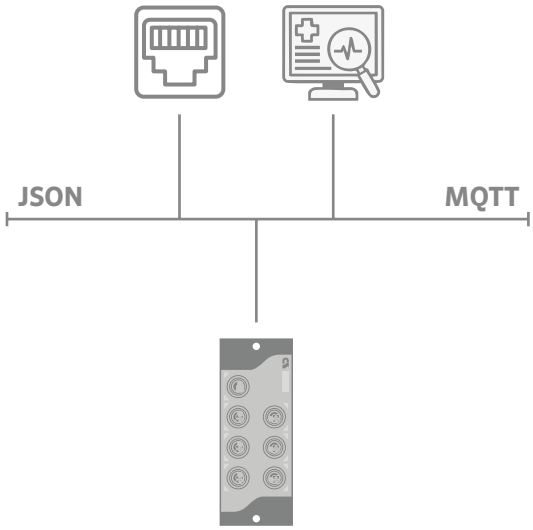
Many industrial-level applications do not require a PLC.
For industrial data collection or control from an IT platform, the Ethernet IO-Link Master provides a cost-effective way to design networks with all the benefits of using IO-Link sensors and actuators.

Advantages

- efficient integration of robust industrial sensors and actuators into IIoT
- independent operation from expensive industrial buses and controllers
- JSON protocol — efficient and user-friendly data interchange format
- MQTT — ready for IIoT platforms and cloud solutions
- wide range of industrial IO-Link sensors and actuators available
- supported with extended functions
- decentralised architecture to reduce cabling

Typical applications

- Manufacturing support systems
- OEE monitoring
- Data collection / evaluation
- Smart device control
- Predictive maintenance
- Intralogistics
- Building automation
- Cloud solutions
- Wireless applications
- Stand-alone installations
- Home automation



IO-Link Master

Legacy systems revamped

Retrofit applications in focus

Earlier generations equipment, it is a common requirement to make the machine more transparent to ensure smooth operation and improve performance.

This can be achieved by processing signals coming from multiple measuring points. In general, this should be done without modifying the existing control system.

Suitable for Retrofit

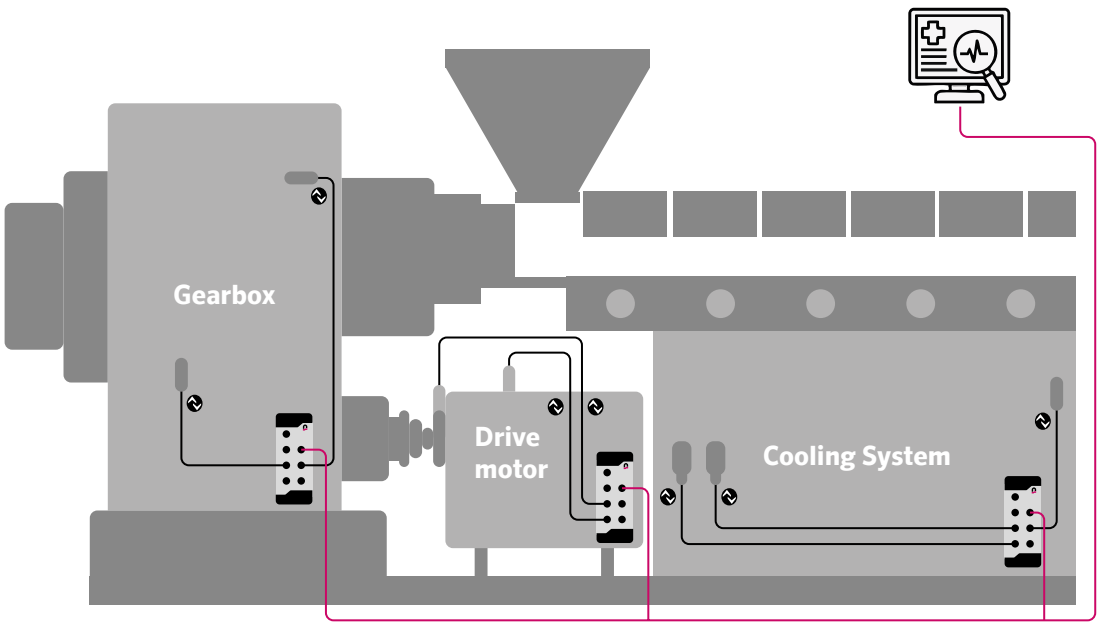
The smart solutions offered by nass magnet are suitable for retrofit applications supporting the setup of a parallel network for data processing and analysis.

Benefits

- Simple upgrading of existing equipment
- Easy extension of diagnostic functions for energy efficiency
- Data collection for better machine performance
- Improved product quality by fine-tuning the manufacturing process
- Condition monitoring for preventive maintenance, reduced downtime

Application example

Extruder machine



IO-Link Master

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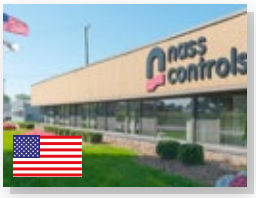

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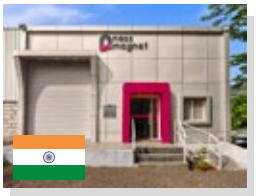

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