meister®
MEMBER OF THE MEISTER-GROUP

GET INTO THE FLOW®

# CONNECT TO THE DIGITAL FUTURE

## IO-LINK Transceiver
## SIGNAL 4.0 IO PRO


MASTERPIECES
MADE IN GERMANY

**www.meister-flow.com**

# DIGITALIZE YOUR SYSTEM WITH IO-LINK

## IO-LINK TRANSCEIVER SIGNAL 4.0 IO PRO

Conventional limit switches attached to flowmeters trigger an event only after an upper or lower flow volume limit has been exceeded.

Industry 4.0 requirements demand permanent communication of acquired process- and machine data for documentation purposes, quality assurance or failure analysis.

Meister's SIGNAL 4.0 IO PRO has been developed to meet this demand by providing a digital output signal via an IO-Link interface for continuous measurement and communication of real-time flow volumes from our variable area flowmeters.

Additionally, this sensor has been built in a very compact design, is highly reliable and suited for all media types.

## OUR SIGNAL 4.0 IO PRO IS THE BEST FIT FOR YOU, IF...

- you need to reliably capture and transmit one or even multiple process data points from your machine or process
- you require accurate and error-free transmission of your process data without unnecessary conversions of analog signals
- you wish accurate documentation and central data storage
- you need to reduce the number of different sensor connection interfaces
- precision, efficiency and longevity are important in your business


## AREAS OF APPLICATION FOR OUR SIGNAL 4.0 IO PRO

**Typical areas of application for our transceiver are:**

- Use on mechanical flowmeters
- Integration of pressure- and temperature signals from external sensors
- Viscosity calculations for ISO VG oils based on measured temperature
- Combined with tailored 3D-printed components, such as our FlowBase®

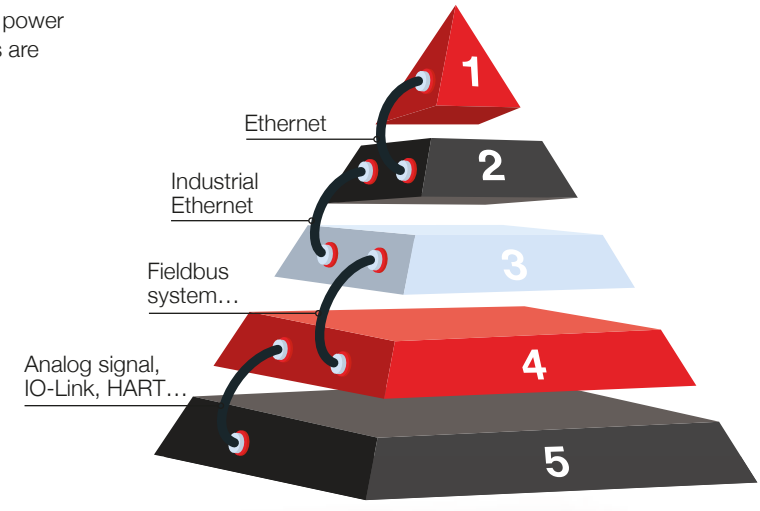
Our SIGNAL 4.0 IO PRO is most suited for applications where a constant and uninterrupted information exchange between sensor and control unit is important for maximum process performance.


SIGNAL 4.0 IO PRO
OPTIMIZED FOR
TODAY, PREPARED
FOR TOMORROW!
meister
RVO/U-2.8
Medium: Water
Flow: 3...8 l/min
P_max: 16 bar
T_max: 100 °C
IO-Link

# WHAT IS IO-LINK?

IO-Link is a globally recognized communication protocol to exchange information between the field- and sensor/actuator-level. It is the basis of the Industry 4.0 automation pyramid.

Bidirectional serial data is used for signal processing and power supply, in accordance with IEC 61131-9. IO-Link Masters are available for nearly all field bus types.




1 Management level
(Data servers, visualization of productivities)

2 Supervisory level
(Engineering tools, control rooms, HMI)

3 Control level
(Control units, PLC)

4 Field level
(Remote I/O, IO-Link Masters)

5 Sensor- / Actuator level
(IO-Link devices, binary / analog sensors / actuators)

# WHY IO-LINK?

## KEY ADVANTAGES OF IO-LINK

**IO-Link reduces machine setup time**

There is no need to use special shielded cables because electromagnetic environments have no impact on the digital, binary IO-Link signal. Instead, standardized industrial connectors are used (M12 or M8), which are easier to connect and more cost efficient. All parameterizing data for smart sensors or actuators are automatically imported from the control units and do not need to be parameterized manually, which reduces machine setup time.

**IO-Link revolutionizes servicing and maintenance**

With IO-Link devices transmitting process data in plain text, service technicians can easily determine the status of an application. This allows for the prediction of necessary maintenance activities, even remotely, enabling downtime to be seamlessly integrated into production schedules.

**IO-Link simplifies documentation**

Thanks to software-based parameterization and centralized data storage, creating documentation for sensors and actuators in industrial plants is straightforward. When delivering machinery or equipment to a customer, this quick and error-free documentation of the default settings ensures a fast and efficient setup for initial operation.

**IO-Link reduces costs**

Expensive analog-cards in the control unit become obsolete. Standard cables are cheaper than shielded cables. Smart configurable sensors or actuators result in less variation of different sensor or actuator models. Purchasing procedures become simpler and less storage space is required. All this leads to consequential cost reductions.

**IO-Link increases the productivity**

Parameters of an IO-Link device are stored inside the IO-Link Master. In case an IO-Link device is replaced, the stored parameters are automatically uploaded onto the new device. This increases productivity by reducing maintenance tasks and machine downtime.

**IO-Link ensures process stability**

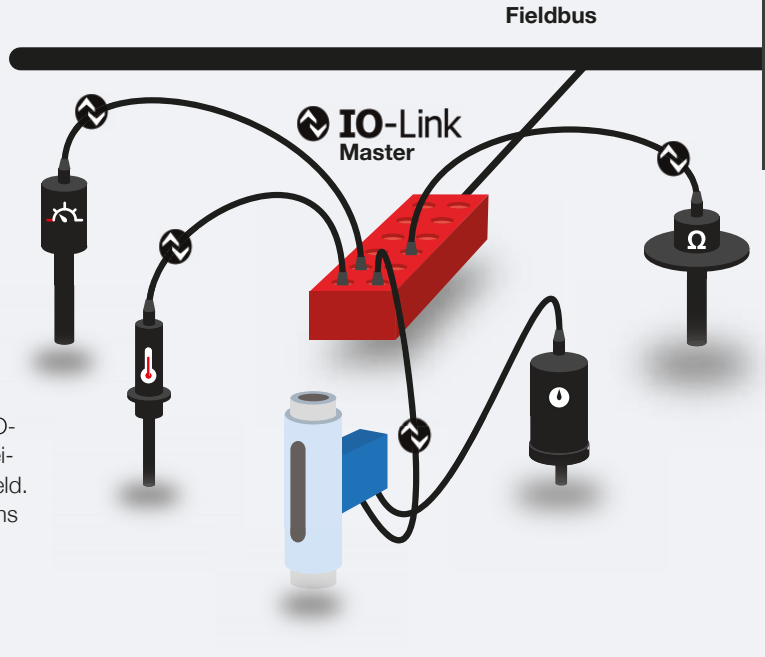
The two most important objectives of Industry 4.0 are increase of quality and efficiency. In order to achieve those goals, all processes must be continuously monitored to achieve a high process repeatability. The accurate, error-free, flexible and user-friendly information transmission via IO-Link is the basis to ensure maximum process stability.

## THE MOST IMPORTANT SYSTEM COMPONENTS

- IO-Link Master
- IO-Link Device (Sensor / Actuator)
- Engineering tool for designing and parameterization of the IO-Link system

**Signal routing**

The IO-Link master establishes the connection between the IO-Link devices and the automation system. It can be mounted either in the control cabinet or installed as a remote I/O in the field. The communication can be routed via various field bus systems or proprietary product-specific communication protocols.



# HOW DOES THE SIGNAL 4.0 IO PRO WORK?

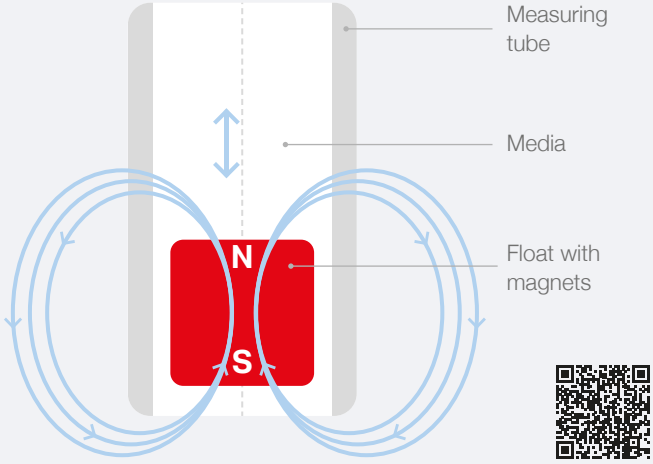
## THIS IS HOW THE IO-LINK COMMUNICATES

The communication of IO-Link is bidirectional. This means that an IO-Link device can transmit data to the machine and receive data that is sent from the machine. This allows a **continuous communication between IO-Link devices and the control unit.**

Several process data elements can be combined into one data package and sent between the IO-Link master and the IO-Link device via a 24 V signal data protocol. In addition, EMC-robust transmission ensures immunity to electromagnetic interference.


## SIGNAL CAPTURING

Our SIGNAL 4.0 IO PRO measures the flow rate with a **Hall-Sensor.** Such semiconductors provide electrical signals in proportion to the exposed magnetic field. As the float inside the flowmeter changes its position, the magnetic field around the Hall-Sensor changes accordingly. The changing intensity of the magnetic field is converted into a corresponding flow rate.




## IO-LINK OUTPUT

With IO-Link, it is possible to **transmit various process data and service data** through one cable. Data transmission is free of potential errors from electromagnetic interference **due to the digital communication signal.** Conversion of traditional analog transmitted process data into digital data at the control unit is no longer necessary, adding a further advantage of the IO-Link.

With IO-Link, the transmitted value is exactly the same as the measured value. The visualization software of the utilized IO-Link master provides a **quick overview of all measured data.**

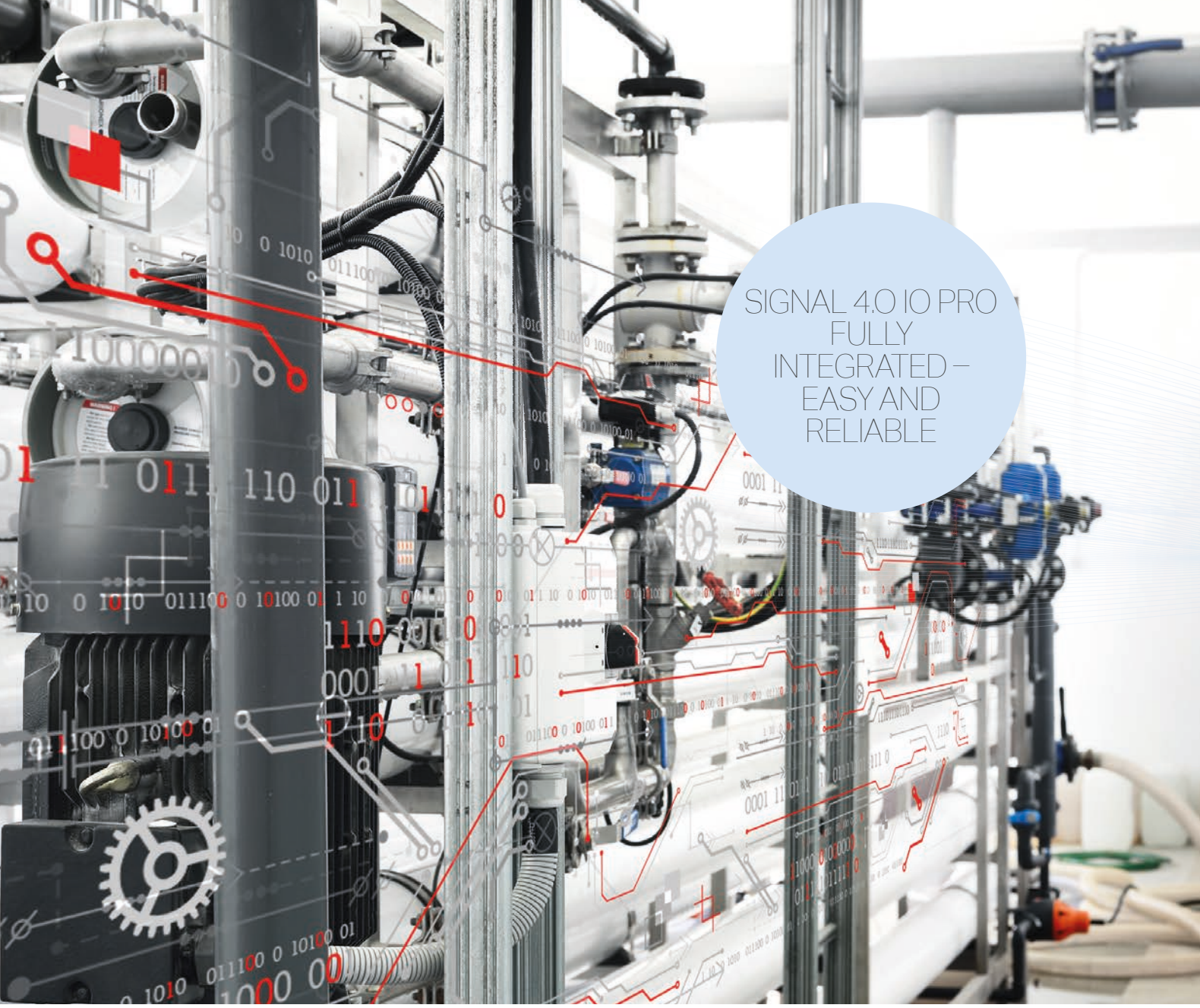
# IODD (IO DEVICE DESCRIPTION)

For every device, there is an electronic device description available – the IODD. It contains a wide range of information for system integration.
The configuration tools of the various IO-link master manufacturers ensure a uniform display and thus manufacturer-independent handling of the devices.

**The IODD-file includes:**

- Communication properties
- Device data
- Device parameters with value ranges and default values
- Text description
- Identification-, process- und diagnosis data

The device is identified and localized in the machine by a manufacturer- and device ID.




# FUNCTIONS + FEATURES

## PARAMETERIZATION – EASY AND FROM ANYWHERE

Our SIGNAL 4.0 IO PRO allows for **easy sensor parameterization** – conveniently from a remote location or from a hand-held device. **Sensor- / actuator parameters can be changed dynamically** by directly accessing the device information and parameter data via software tools.

In case a device replacement is necessary, all stored parameters in the IO-Link master can be easily up-loaded onto the automatically identified new device.

## RELIABLE AND EFFICIENT OPERATION

Thanks to the information flow down to the sensor level, IO-Link offers you comprehensive diagnostic options as well as the possibility of maintenance through remote access. This service data can also be acquired anytime, even during normal machine operation.

With the help of our SIGNAL 4.0 IO PRO, wire breakage or short circuits can be detected immediately by the IO-Link master.

This leads to a reliable error detection and quick error correction.

In combination with the measurement of temperature and pressure data, these process indicators can be captured for evaluation of the sensor load and for the prediction of maintenance activities to minimize interruption of the operation.

Business interruptions are the biggest economic threat for organizations.

Avoid or reduce this risk by choosing the most reliable sensors with proven functionality for efficient operations via optimized production- and maintenance plans.

## MEISTER PRECISION

In terms of transmission reliability, our SIGNAL 4.0 IO PRO is a real master at work. The digital communication protocol makes faulty measurement data transmission and errors from conversions of analog signals a problem of the past.

**You can be assured that the transmitted data is exactly the same as the measured data.**

## EXPERIENCE OUR SIGNAL 4.0 IO PRO LIVE

Experience our smart transceiver in action together with a range of other Meister products and get interesting insight into our current developments.

We invite you to get a free product consultation at the workshop-level in our FlowMobil®.

Directly at your company premises, we provide live product presentations by our skilled experts in our professionally equipped booth on wheels.

# FITS EVERYWHERE

## UNIVERSAL APPLICATION

…means also that our **SIGNAL 4.0 IO PRO** can be combined easily with various flowmeters from **Meister Strömungstechnik®.** Thanks to its compact design, it can be connected to **all of Meister's variable area flowmeters with metal housing.**

Our **SIGNAL 4.0 IO PRO transceivers** are mounted onto the flowmeters from **Meister Strömungstechnik®** at our production plant in Germany. It is therefore not necessary to calibrate the **SIGNAL 4.0 IO PRO** at the customers' site before use, but can be put into operation immediately.

## FLOWBASE®

FlowBase® is an **additive manufactured, tailor-made distribution system** for liquid media. The FlowBase® body is developed according to **customer specifications** and 3D printed, so that it is **optimally adapted to the requirements** of the application.

Material and process connections can be freely selected by the customer. The FlowBase® can be designed so that further components can be integrated as required.

In combination with the IO-Link transceiver SIGNAL 4.0 IO PRO, the FlowBase® unfolds its full potential. Thus, the sensors for **flow, pressure, and temperature measurement** can be integrated in a space-saving and streamlined manner. In addition, a combination with other components such as valves and filters is also possible.

# TECHNICAL DATA

| | |
|---|---|
| SIGNAL OUTPUT | **IO-Link Specification V1.1** |
| POWER SUPPLY | **24 VDC (20 ... 30 VDC)** |
| POWER CONSUMPTION | **approx. 1,5 W** |
| DATA TRANSFER RATE | **COM3 (230,4 kBaud)** |
| OPERATING TEMPERATURE | **-20 °C to 70 °C** |
| STORAGE TEMPERATURE | **-20 °C to 70 °C** |
| ACCURACY | **± 1 %*** |
| DIMENSIONS | **77,5 x 48,5 x 26 mm** |

| | |
|---|---|
| IP PROTECTION LEVEL | **IP 65 and IP 67** |
| MATERIAL | **Polyamide** |
| CONNECTION | **Circular Connector M12x1, A-coding**<br>**– 4 pin for IO-Link Interface (Plug)**<br>**– 5 pin for connection with external pressure and temperature sensors (Socket)** |

* The actual accuracy depends on the flow sensor used.

Upon request, the accuracy of the flow sensor can be significantly increased further through customized calibration.

# TAILOR-MADE THROUGH 3D PRINTING

**Meister Strömungstechnik®** is increasingly relying on additive manufacturing processes. This enables **high flexibility in design** and the implementation of **customized solutions** for our customers. In this way, for example, the housing geometry of the SIGNAL 4.0 IO PRO was optimized for universal application and all important data printed directly onto the housing. In addition, the customer is free to choose specific logos and corporate colors.

Together with our sister company **3Dflow4industry®**, which specializes in industrial 3D printing, we will also find the customized solution for you - quickly, competently and to your satisfaction!

# THE LITTLE BROTHER OF OUR SIGNAL 4.0 IO PRO

# SIGNAL 4.0


All of Meister's flowmeters can be equipped with our analog transmitter SIGNAL 4.0 for continuous flow monitoring.

**This space-saving combination offers continuous measuring and transmitting of the flow rate as an analog data signal.**

MEISTER STRÖMUNGSTECHNIK®

# A STRONG BRAND

## WITH RELIABLE PRODUCTS

With over 40 years of experience **Meister Strömungstechnik®** develops, produces and globally distributes flowmeters for industrial applications to measure and monitor liquids and gaseous media.

Our products are characterized through outstanding **quality, reliability and longevity,** especially under harsh conditions in nearly every industry.

Thousands of customers and millions of applications worldwide rely on our **masterpieces "Made in Germany" by Meister Strömungstechnik®.**

## MASTERPIECES MADE IN GERMANY FOR OVER 40 YEARS

Since 2002, we are **DIN ISO 9001** certified. Of course, we do comply with all relevant standards and guidelines, including UL/CSA certification for most of our products.

Many of our products are ATEX certified and can be used in explosive environments. **Maximum customer value is the highest priority of Meister Strömungstechnik®.**

We constantly invest in product improvements, **product qualifications and in our employees.** In that way, we constantly expand and improve our competence level to successfully achieving maximum value for our business partners.

You need expert consultation or support?
We are here to support you every step of your way.

meister®
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