



More than **sensors + automation**

Sensors that have a say!


 IO-Link



# Temperature and Pressure Sensors with IO-Link

Simple – Direct – Safe





# JUMO IO-Link sensors for temperature and pressure measurement

Long plant downtimes now belong to the past. The new JUMO temperature and pressure sensors with IO-Link use the integrated diagnostic function to better plan the availability or the exchange of sensors. In addition, time-consuming parameterizations when changing sensors are eliminated as the necessary data is transferred from the superordinate system.



 **IO-Link**

# Temperature and Pressure Sensors with IO-Link

Overview [Mounting and startup](#) [Plant efficiency and availability](#)

## Sensors that have a say!

### Your benefits in a nutshell

- Optimization of the production process through communication down to the lowest field level
- Reduction of mounting and startup times
- Increase of plant efficiency due to maximum transparency down to the sensor level
- Reduction of maintenance and service costs with simultaneous increase in plant availability
- High degree of process reliability due to long operating life and great accuracy
- Flexible use through compact design type and a variety of process connections



Description		JUMO dTRANS T1000 Temperature sensor	JUMO dTRANS p35 Pressure sensor
Type/data sheet		902915	402058
Application	Features	<ul style="list-style-type: none"> <li>- Fastest data transfer rate COM 3</li> <li>- Clear allocation due to IO-Link</li> </ul>	
	Areas of application	<ul style="list-style-type: none"> <li>- Food industry</li> <li>- Mechanical and plant engineering</li> <li>- Packaging industry</li> <li>- Process automation</li> </ul>	
Technical data	Input	-50 to +260 °C	Relative, absolute 400 mbar to 600 bar
	Medium temperature	-50 to +260 °C	-25 to +125 °C
	Ambient temperature	-40 to +85 °C	
	Output	<ul style="list-style-type: none"> <li>- IO-Link device V 1.1 (downward compatible to IO-Link V 1.0)</li> <li>- 2 outputs for switch operation (SIO mode; SIO = standard IO)</li> </ul>	
	Data transfer rate	COM 3 (230,4 kBaud)	
	Process connection	Market-based screw connections and hygienic process connections	
	Protection type	IP65/67	
	Cycle time	2 ms	
	Approvals	EHEDG for process connection JUMO PEKA	
Special features	Compact design type		



## Simply flexible – optimization of the production process through communication down to the lowest field level

Flexibility, production process optimization, and remote serviceability are important performance parameters for machines or plants. Sensors with IO-Link now give the plant operator access to the lowest field level. Only minimal effort is required to retrieve sensor information, parameterization, and diagnoses so that plant conditions can be ideally evaluated.

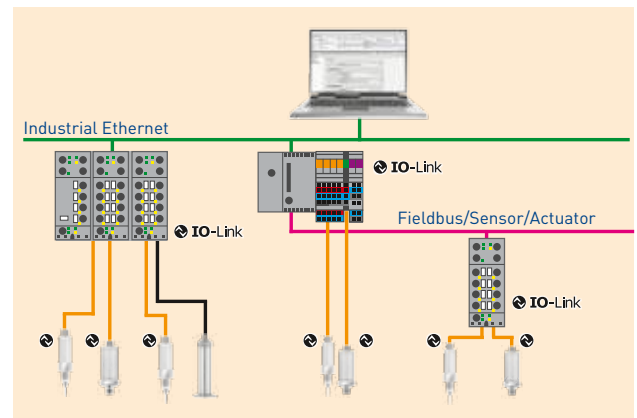
The efficient point-to-point communication of IO-Link is based on the well-known three-wire sensor connection that does not place additional demands on the cable material. IO-Link is consequently not a fieldbus, but the further development of the previous and proven connection technology for sensors.

IO-Link is a serial, bidirectional point-to-point connection for signal transmission and energy supply within any number of networks, fieldbuses, or back panel buses. The M12 plug connectors were defined (among others) for the connection technology in IP65/67. Here, sensors usually have a 4-pole and actuators have a 5-pole connector. IO-Link masters categorically have a 5-pole M12 socket.

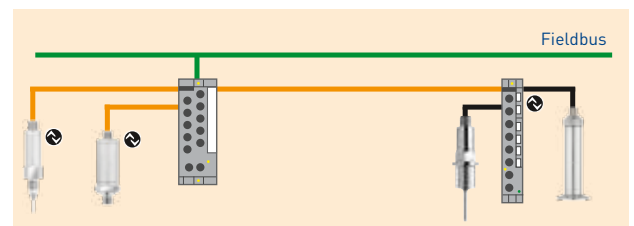
According to IEC 60974-5-2 the terminal assignment is specified as follows:

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

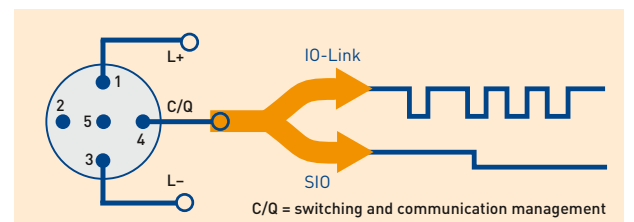
These three pins are not only used to enable the IO-Link communication but also an energy supply to the device of up to 200 mA.



Example of a plant architecture with IO-Link



IO-Link point-to-point connection



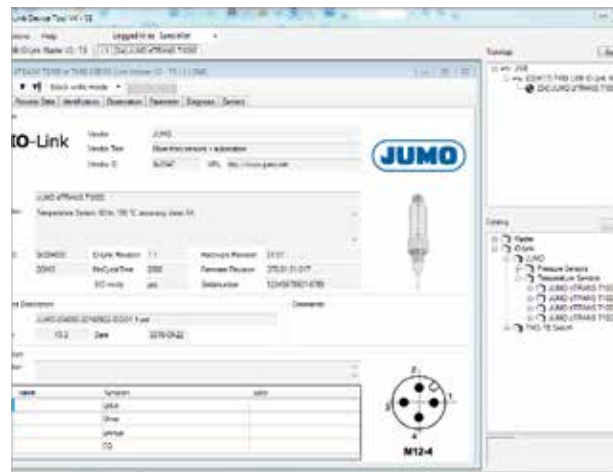
Terminal assignment IO-Link device

## Quick and straightforward – reduction of mounting and startup times

### Mounting

The use of sensors with IO-Link can significantly reduce the required effort for mounting and startup. This advantage is made possible through simplified cabling as well as automation of the startup through parameter storage and duplication.

During mounting, ready-to-install cables are used so that no assembly is required and error sources are omitted.

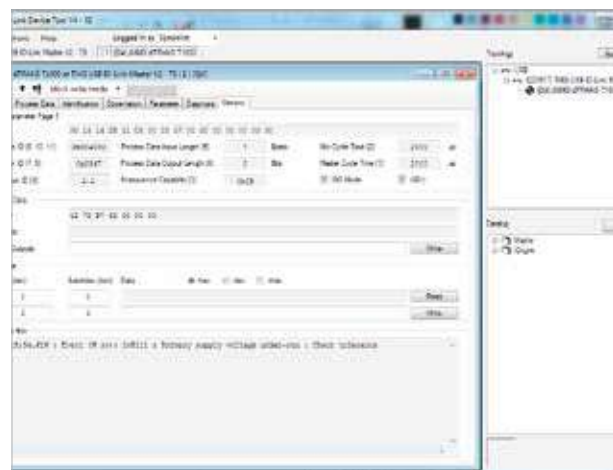


IO-Link device tool

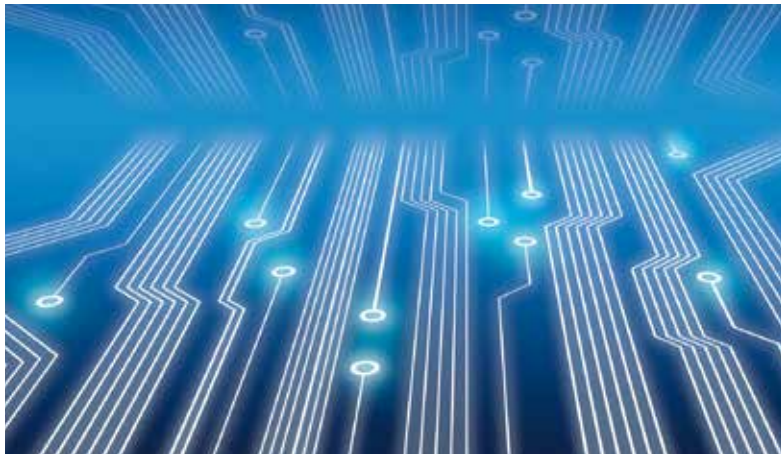
### Startup

Startup is also possible through automation as the parameters can be downloaded and made available to the device in a matter of seconds.

Users particularly appreciate IO-Link due to its simple installation and parameterization as well as its independence from the fieldbus. The result is that the need for wiring is significantly decreased and that each sensor always has its own "ID card" due to consistent parameter data retention. This greatly reduces the amount of work involved in troubleshooting.



General device information



## Simply efficient – increase of plant efficiency due to maximum transparency down to the sensor level

### Sensor status

Times of unexpected plant failures due to a sensor defect are over. The reason here is that the integrated diagnostic mechanisms allow early recognition and repair of defective sensor states.

The functions contained in the sensors – such as operating hours counter, drag indicator, and detection of probe breaks/short-circuits – help to evaluate the sensor states early enough to react so that plant efficiency increases considerably.



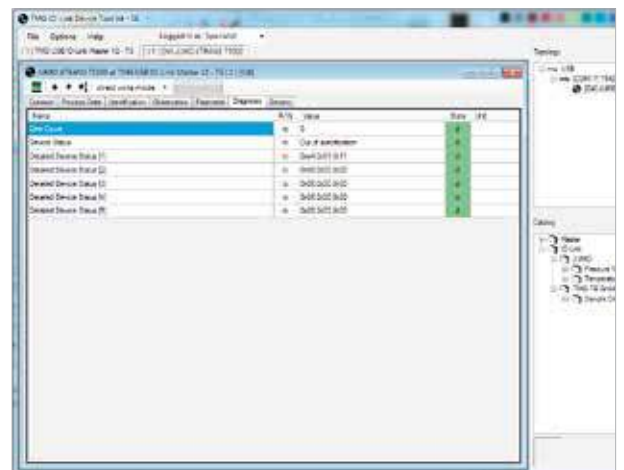
Example plant for IO-Link sensors

### Simple and quick data transmission

IO-Link offers the option of exchanging cyclical as well as acyclic data with superordinate levels.

For example, parameter data can be downloaded to a sensor or, alternatively, diagnostic data can be extracted during operation.

Due to a transmission speed COM 3 with 230.4 kBaud and the cycle time of 2 ms data is quickly exchanged and available within seconds.



Diagnosis overview

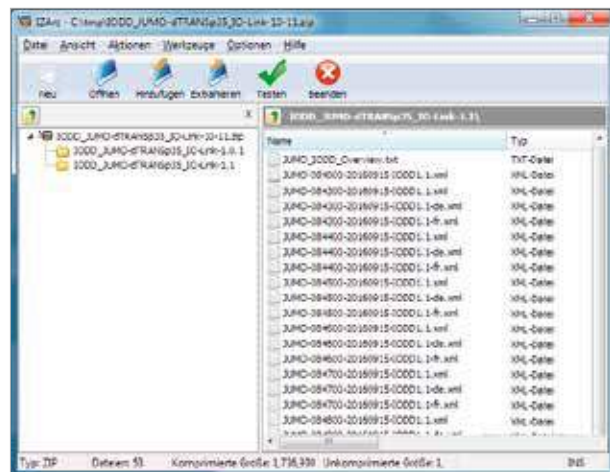
# Temperature and Pressure Sensors with IO-Link

Overview Mounting and startup Plant efficiency and availability

## An eye on costs – cost reduction while plant availability increases at the same time

### Sensor replacement

IO-Link closes the communication gap between the field level and the sensor level. As a result, other than the process variables, data for identification, for parameterization, and about the condition of the device can be transferred. Now information is available that prevents the mix-up with wrong device types during device exchange. The parameterization of the sensors is saved in a superimposed fashion so that it can be automatically transferred during device exchange.

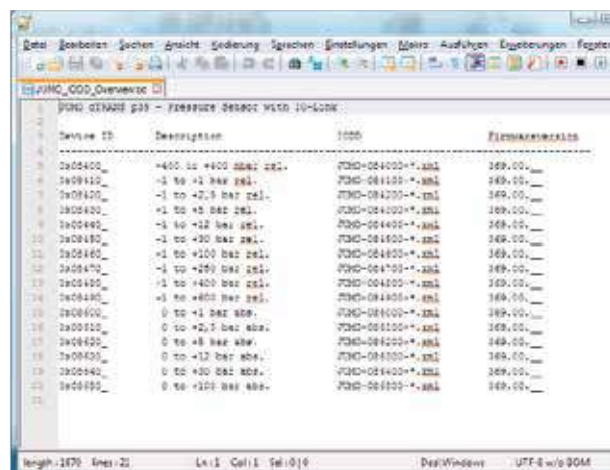


Example IODD

### Eliminate errors before they can take hold

Each IO-Link device includes a device ID. The IO-Link master retrieves the device ID and can assign the device to an IODD. This offers the option to distinguish the sensor type (temperature sensor/pressure sensor) from other ones through the device id as each sensor type possesses several device IDs. These clearly identify the sensor and describe its different features. One result is that the exchange of a sensor with another that deviates in the measuring range and accuracy class can be identified immediately.

The wrongly mounted sensor is instantly replaced by the correct one and is not even implemented, which prevents its destruction or an error during running operation of the plant.



Overview of the existing IODDs using the example of a pressure sensor



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